

وسهلا

أهلا



الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

Dr. Youssef Hussein Anatomy اليوتيوب

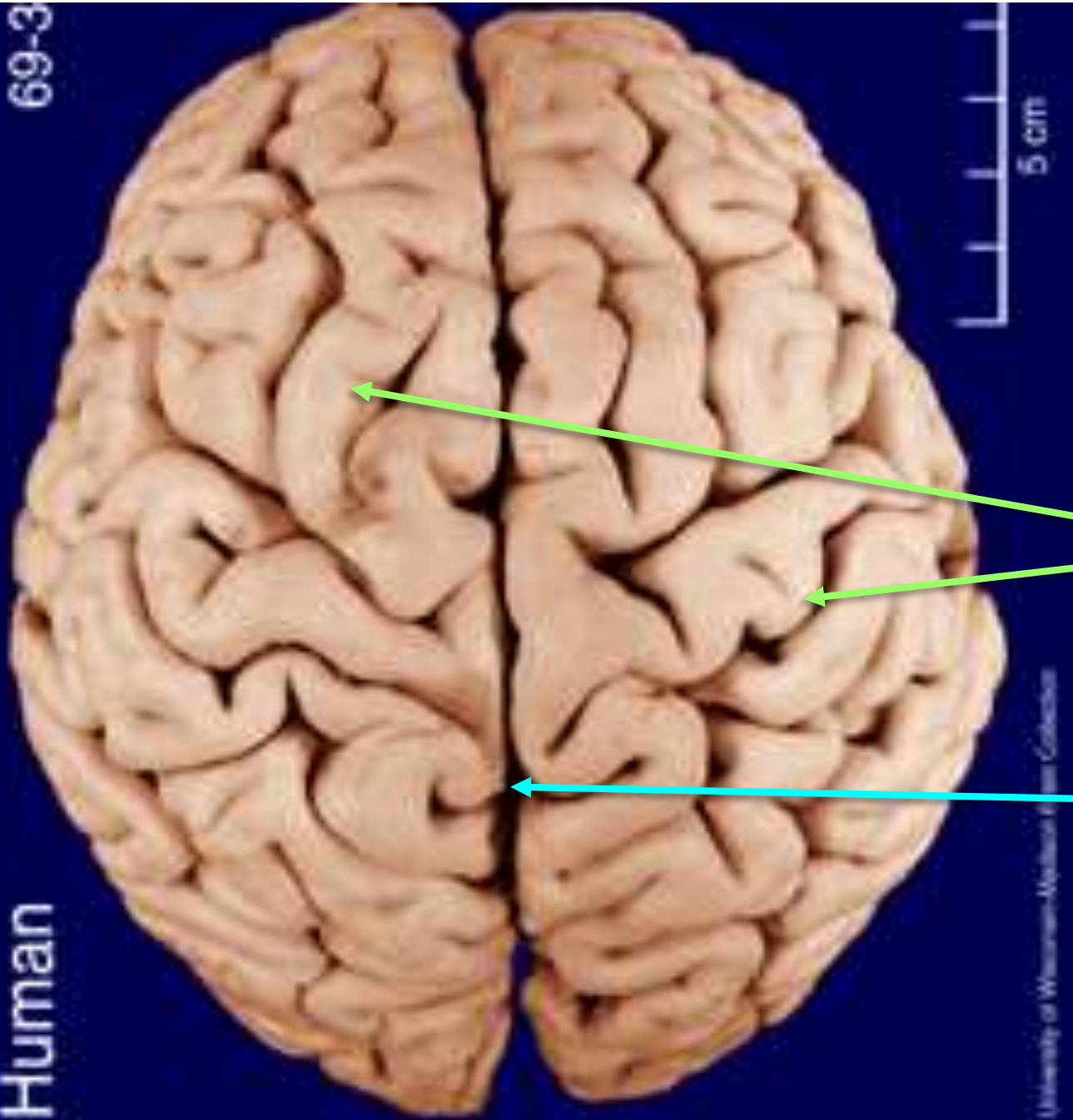
جروب الفيس د. يوسف حسين (استاذ التشريح)



Cerebrum

69-3

Human



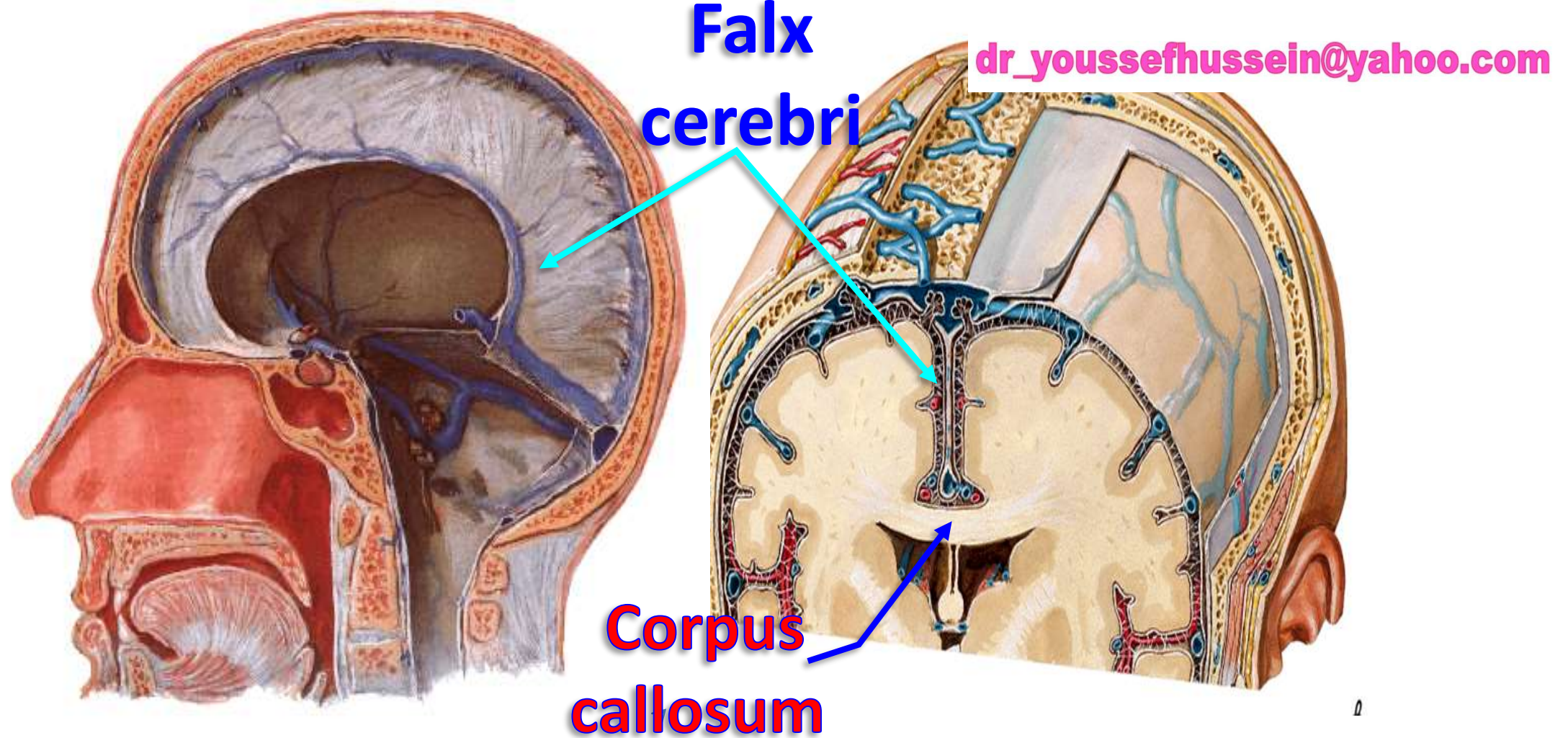
University of Wisconsin-Madison Human Specimen Collection

It is divided into two cerebral hemispheres, separated by longitudinal fissure

2 cerebral hemispheres

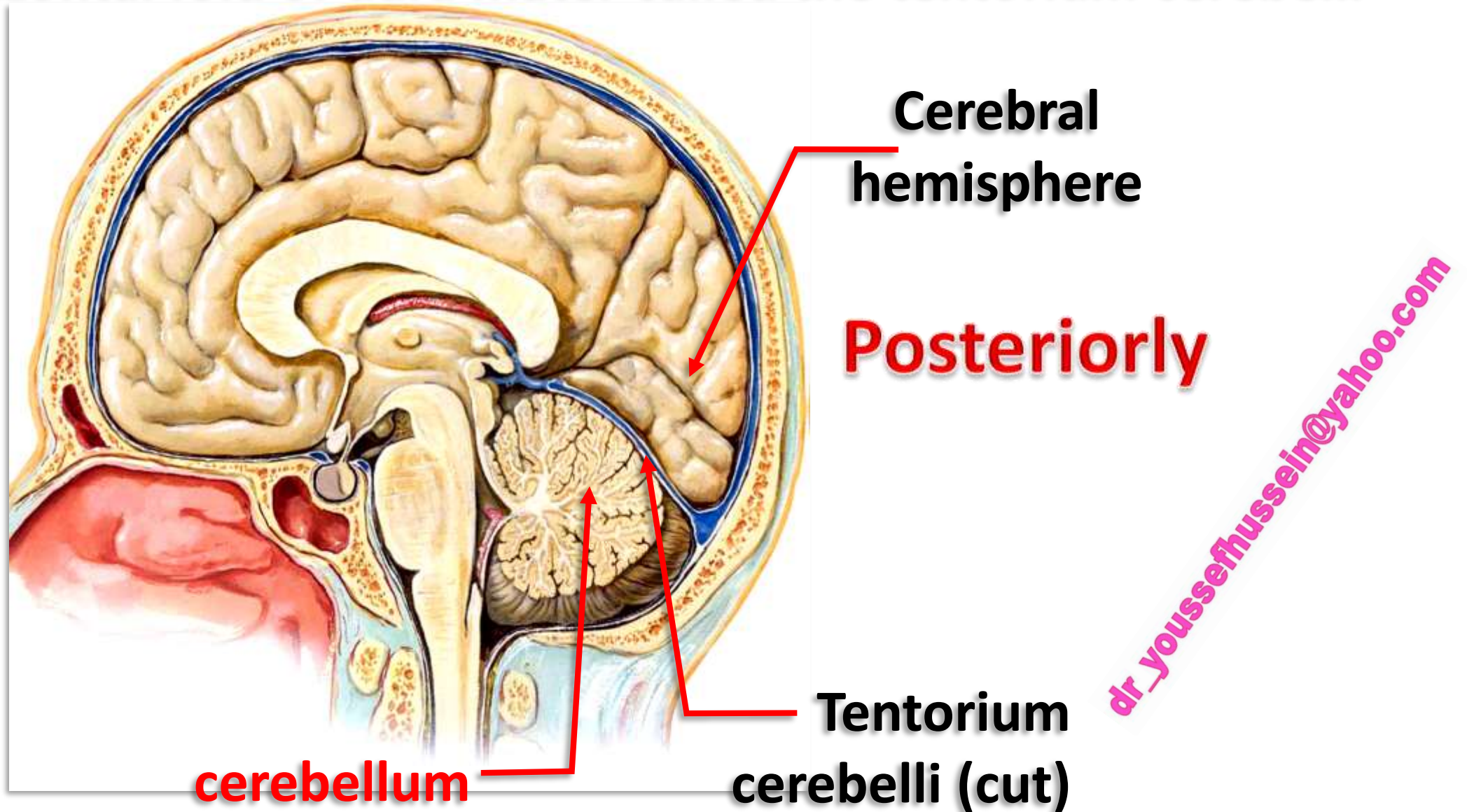
longitudinal fissure

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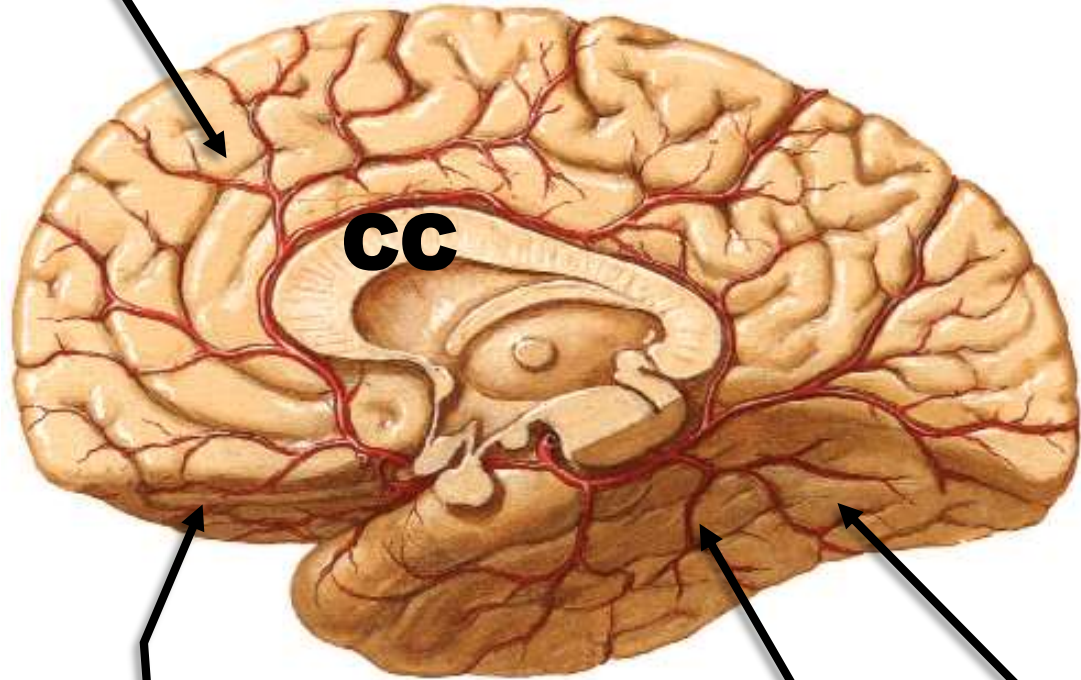


- The longitudinal fissure contains the sickle-shaped fold of dura matter, the falx cerebri
- Two hemispheres connected together by CC

The cerebral hemispheres are separated from the cerebellum by a horizontal fold of dura mater called the tentorium cerebelli



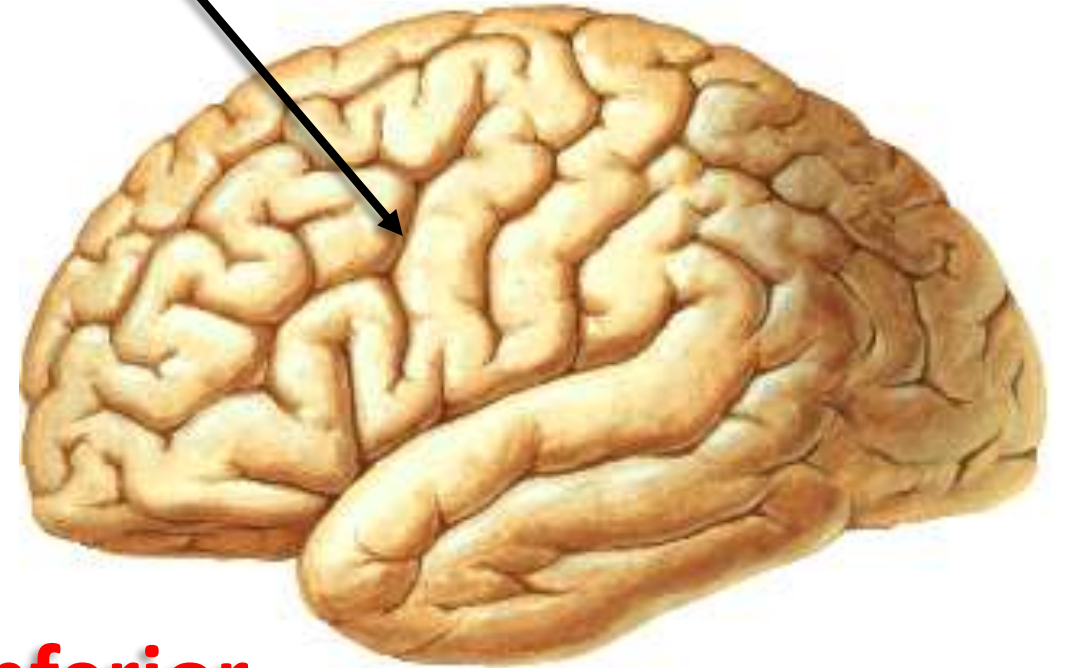
2- Medial Surface



3A- Orbital part

3B- Tentorial part

1- Superolateral Surface



3- Inferior Surface

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Each cerebral hemisphere has 3 surfaces

- **Surfaces of the Cerebral Hemisphere**

1- Superolateral surface: the widest surface of the hemisphere.

- This is a convex surface which is directed upward and laterally.

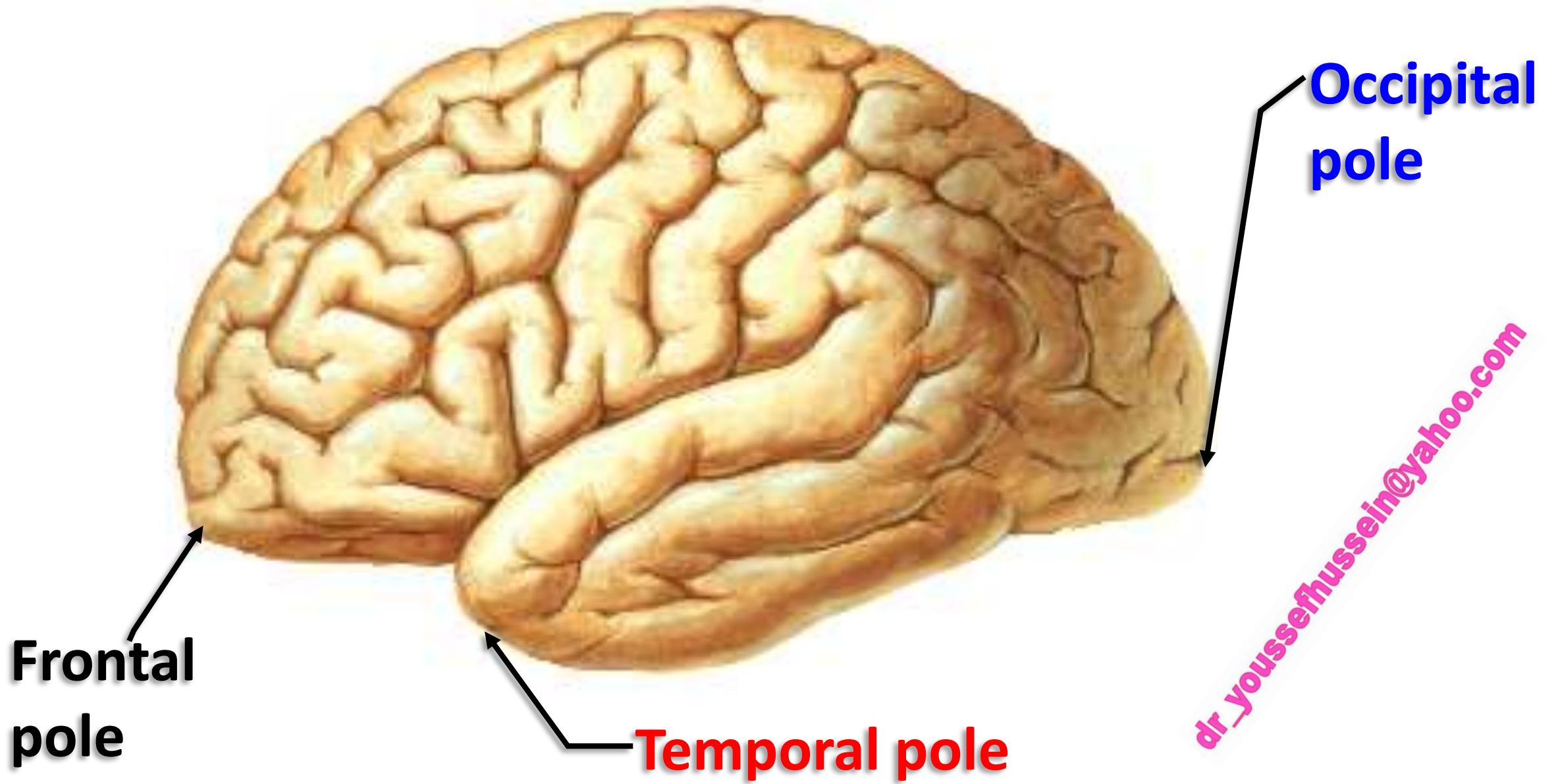
2- Medial surface: is a flat surface which is separated from the opposite side by the longitudinal fissure which lodges the falx cerebri. It contains the **corpus callosum** which connects the two cerebral hemispheres.

3- Inferior surface: is directed inferiorly and is divided by the stem of the lateral sulcus into two parts:

a- Anterior (orbital surface) rests on the roof of the orbit.

b- Posterior (tentorial surface) rests on the tentorium cerebelli.

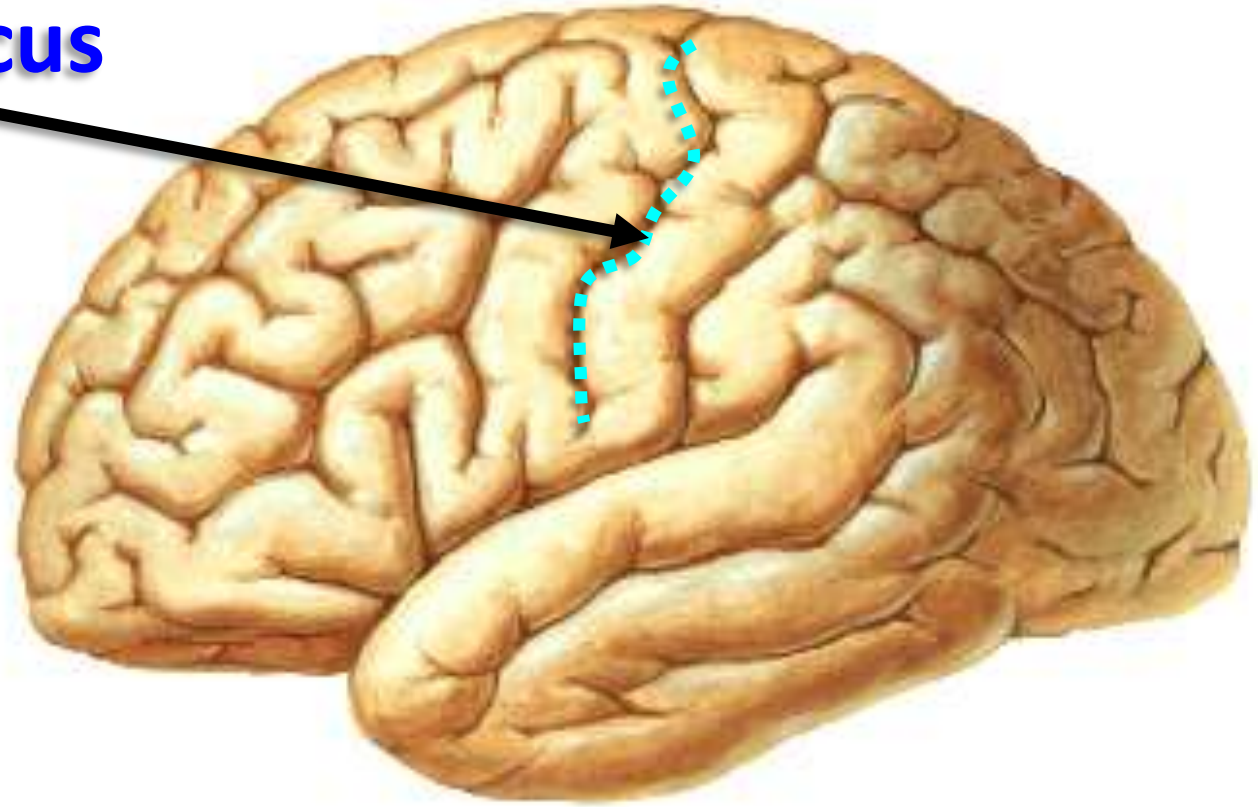
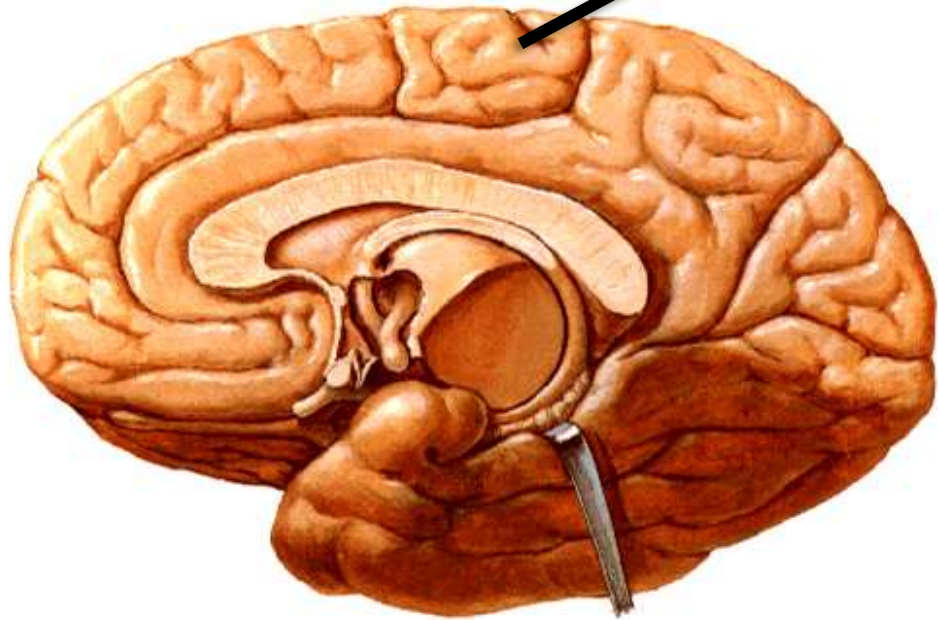
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Each cerebral hemisphere has 3 poles

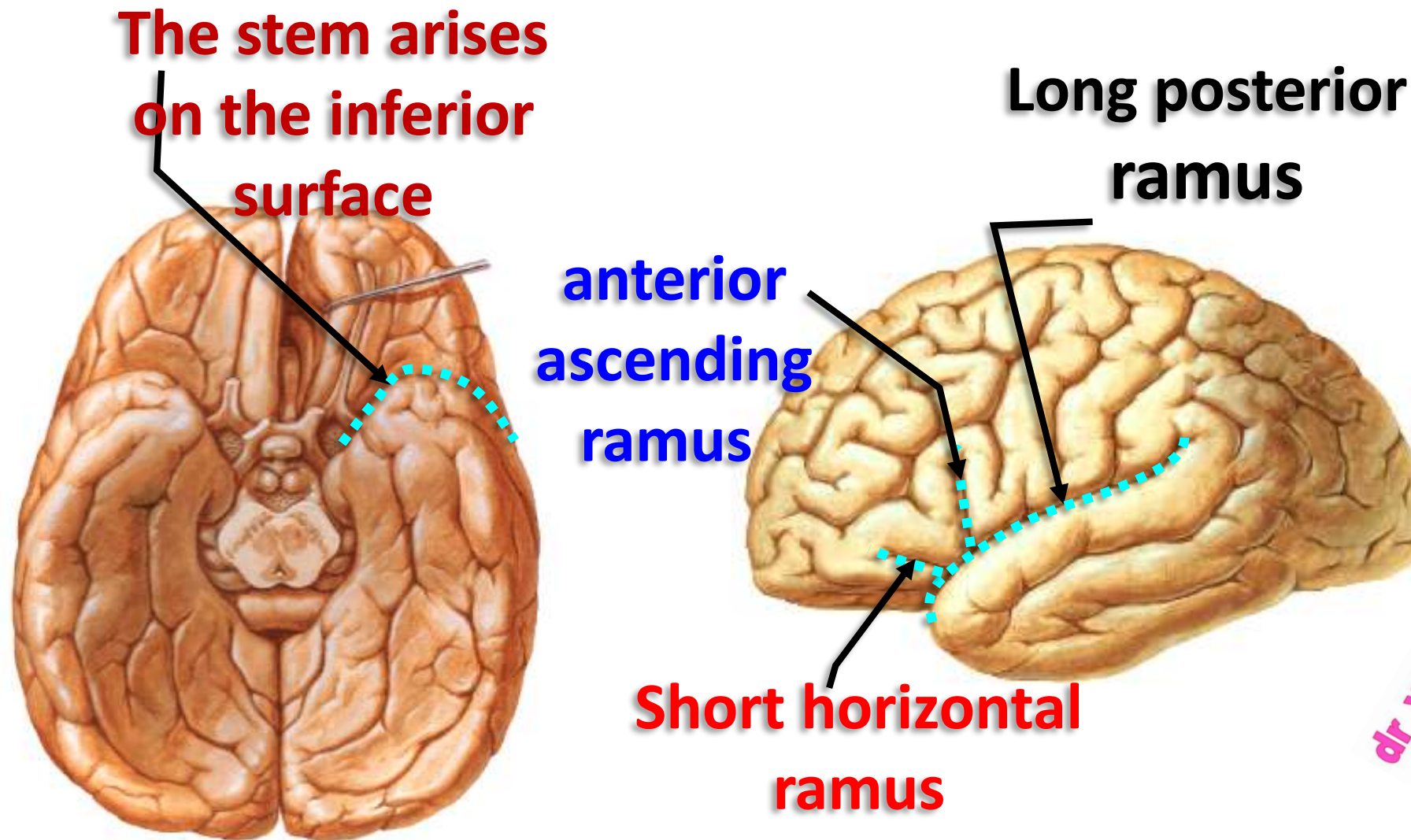
Main Sulci and Lobes of the cerebral hemisphere

Central sulcus

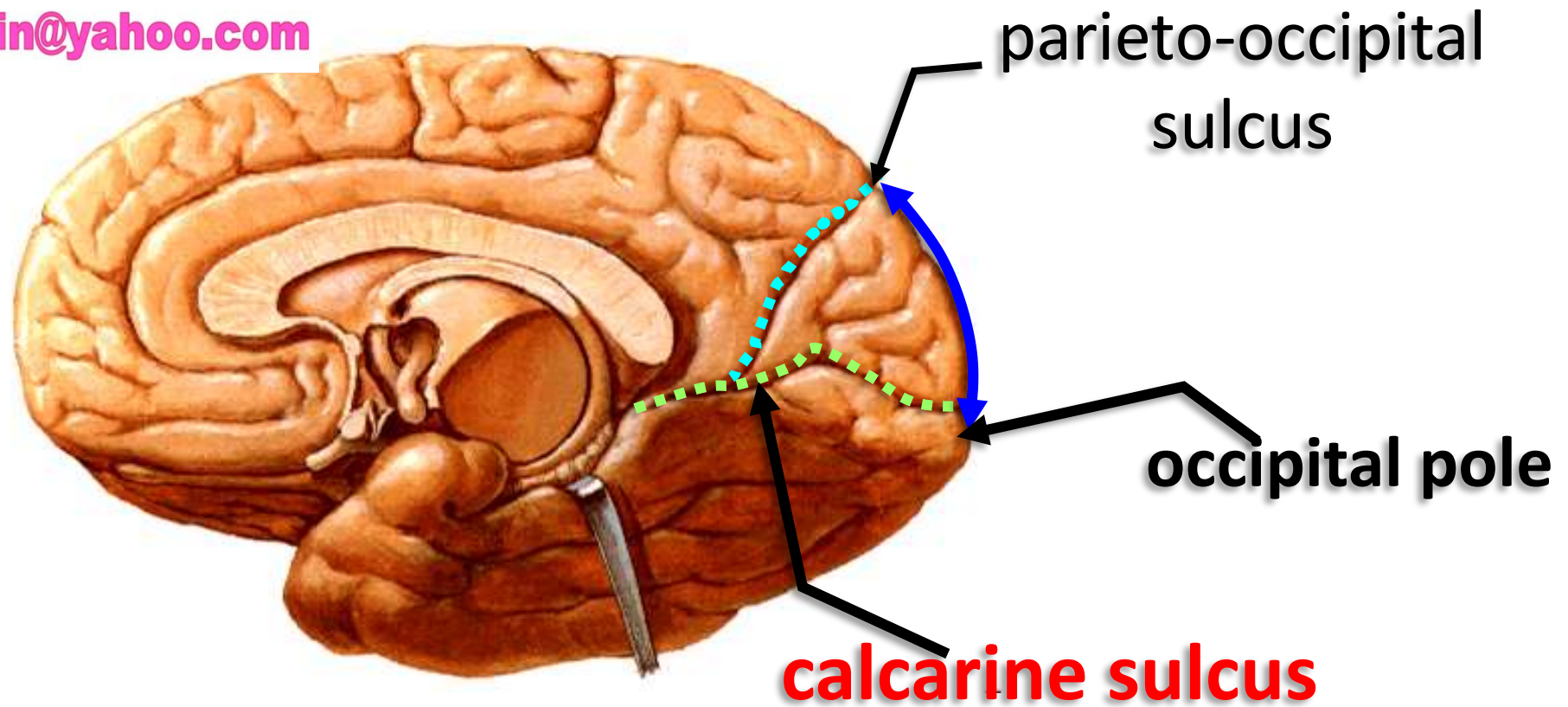


1- Central sulcus (Fissure of Rolando) a deep sulcus about 1/2 inch behind the midpoint between frontal and occipital poles.

- It extends obliquely downwards and forwards and ends slightly above the lateral sulcus.
- It extends a little on the medial surface



2- Lateral sulcus (fissure of Sylvius) consists of a short stem (inferior surface) that divides into three rami (superolateral surface).

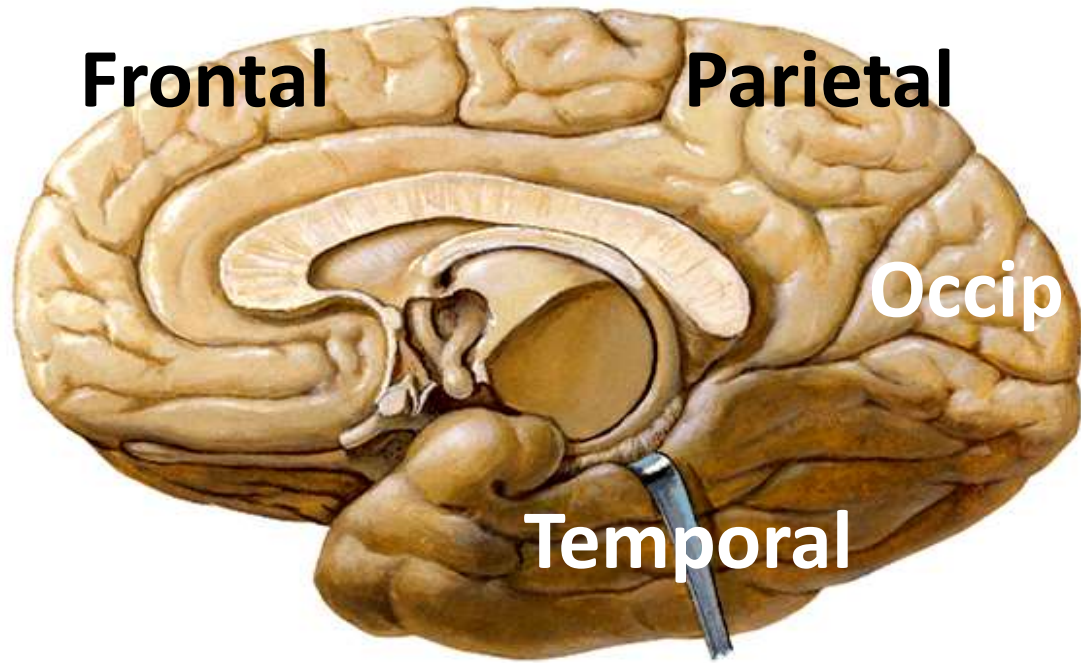


3- Parieto-occipital sulcus begins on the superior medial margin of the hemisphere about 2 inches (5 cm) anterior to the occipital pole, extends downward & forward

4- Calcarine sulcus; begins below the splenium of the corpus callosum to the occipital pole.

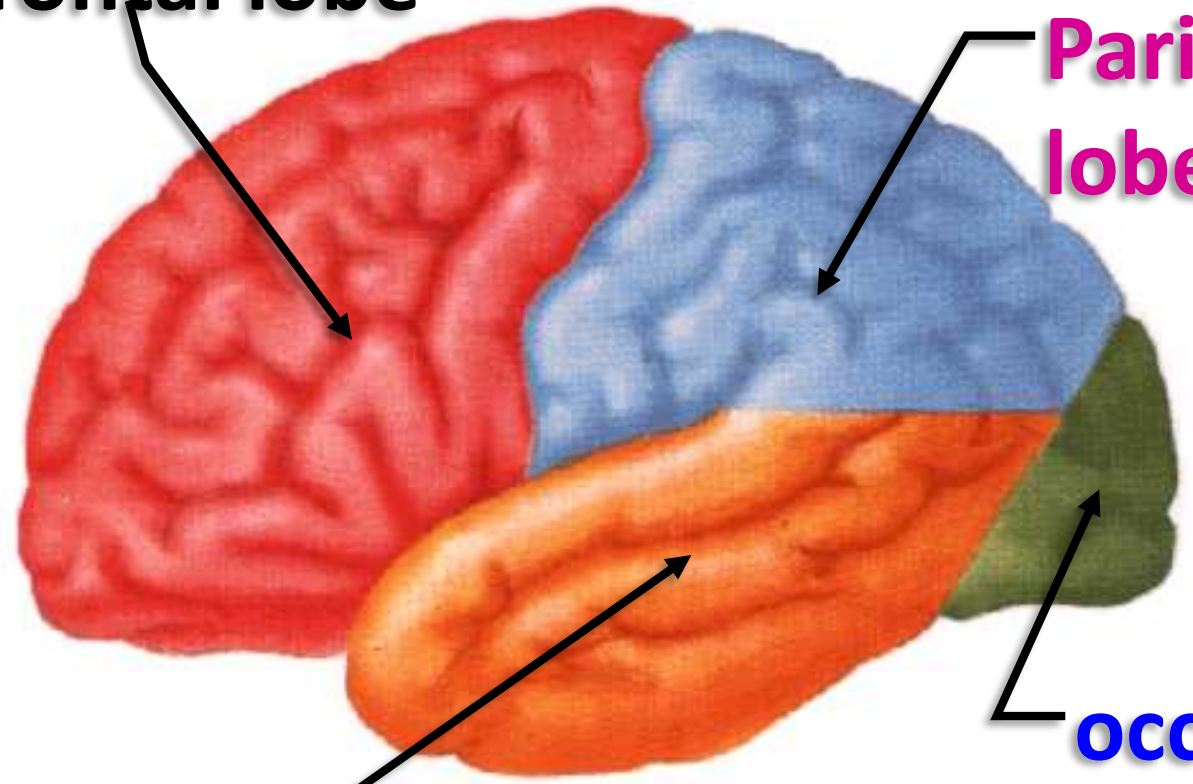
- It is divided by parieto-occipital sulcus into precalcarine and postcalcarine sulcus.

Infero-Medial



frontal lobe

Parietal lobe



temporal lobe

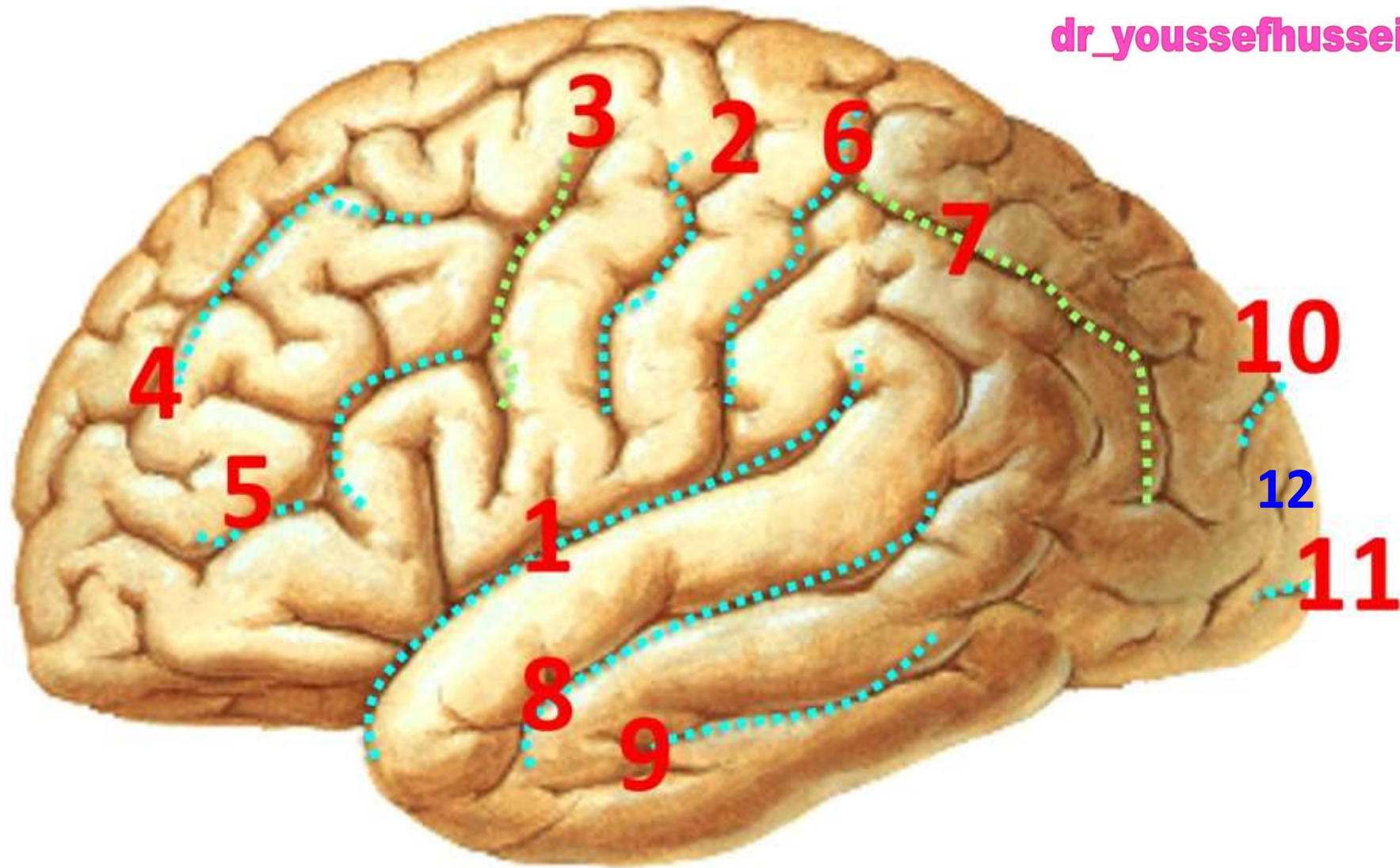
occipital lobe

Superolateral

Each cerebral hemisphere has 4 lobes



**Sulci & Gyri of
the supero-
lateral surface**

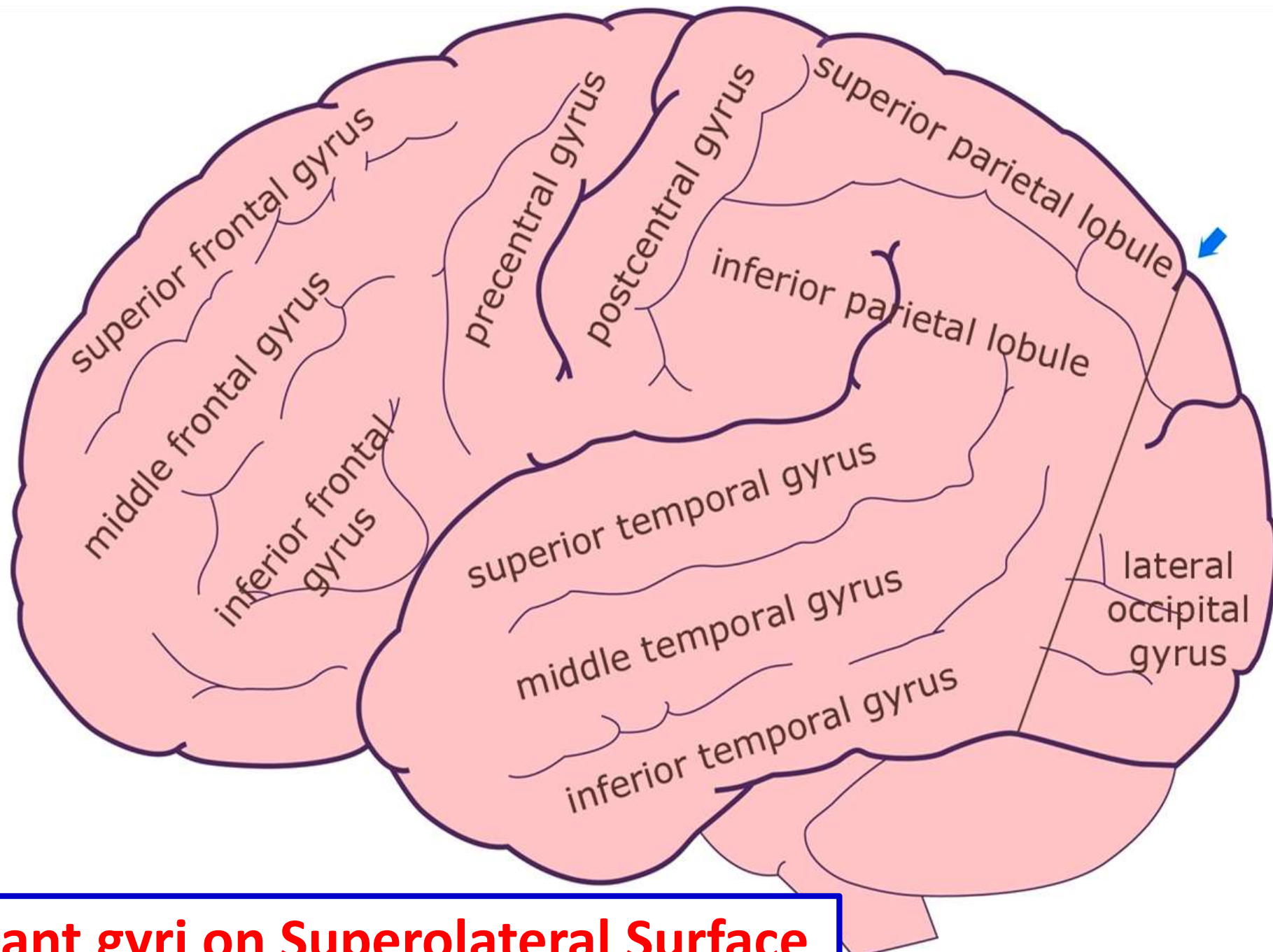


Important Sulci on the supero-lateral surface

• Sulci on the Supero-lateral surface

- 1- **Lateral sulcus** (fissure of sylvius):
- 2- **Central sulcus** (Fissure of Rolando):
- 3- **Precentral sulcus**: about 1 cm (finger's breadth) in front central sulcus.
- 4 & 5- **Superior and inferior frontal sulci**: begin close to the precentral sulcus and extend forwards.
- 6- **Postcentral sulcus**: about 1 cm (finger's breadth) behind central sulcus.
- 7- **Intraparietal sulcus**: extends backwards from the middle of the postcentral sulcus.
- 8 & 9- **Superior and inferior temporal sulci**: on the temporal lobe parallel to the lateral sulcus.
- 10- **Parieto-occipital sulcus**: 5 cm in front the occipital pole.
- 11- **Calcarine sulcus**: its posterior end reaches to the occipital pole.
- 12- **Lunate sulcus (Simian)** at the occipital lobe

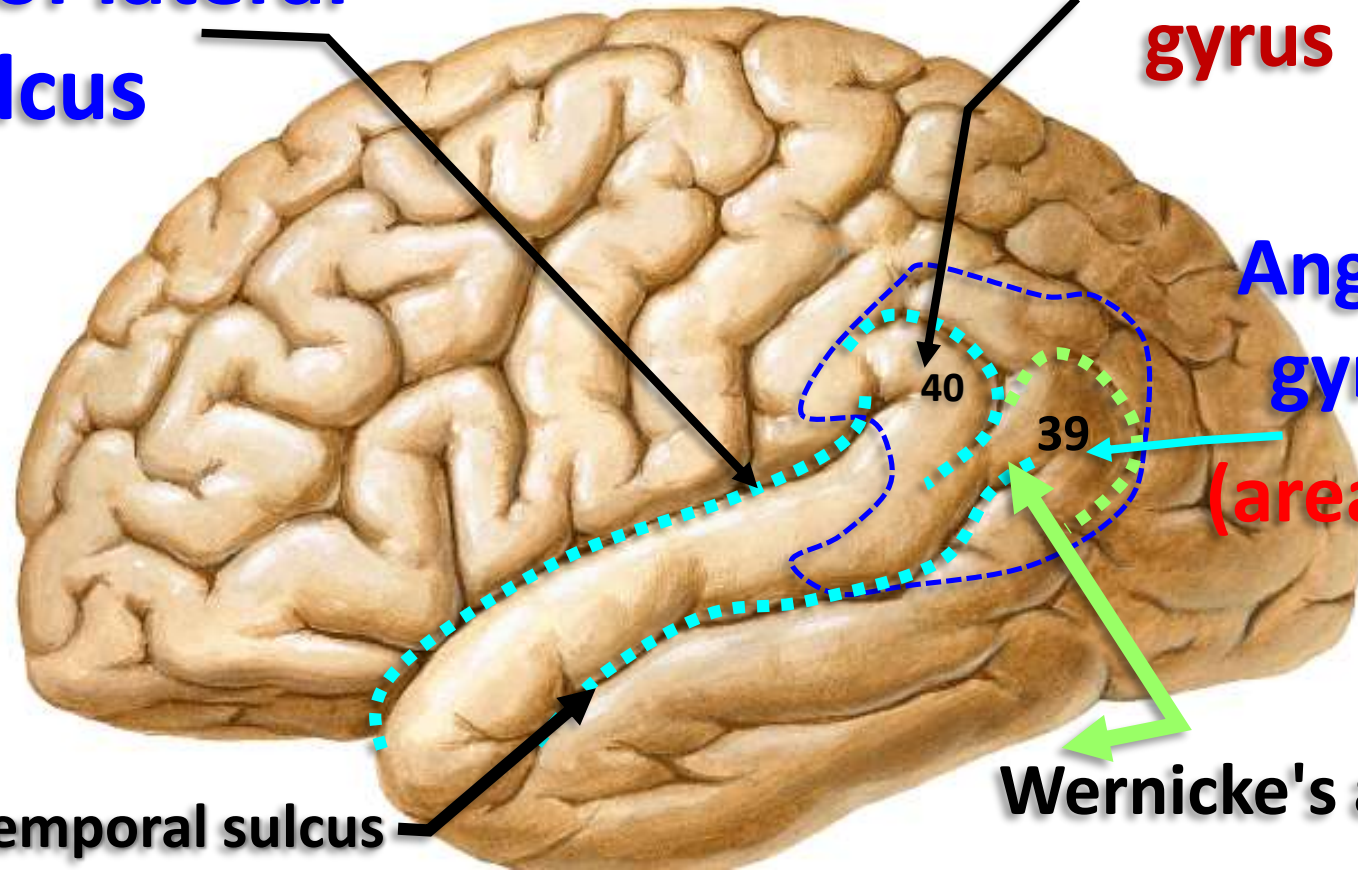
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Important gyri on Superolateral Surface

Long posterior
ramus of lateral
sulcus

(area 40) Supramarginal
gyrus



Angular
gyrus
(area 39)

Superior temporal sulcus

Wernicke's area

- **Supramarginal gyrus (area 40)** is gyrus around the posterior end of the lateral sulcus into the parietal region
- **Angular gyrus (area 39):** is gyrus around the posterior end of the superior temporal sulcus into the parietal region

- **Gyri On the supero-lateral surface**

A- Frontal lobe;

- 1- **Precentral gyrus** between the central and precentral sulci.
- 2- **Superior frontal gyrus**; lies above the superior frontal sulcus.
- 3- **Middle frontal gyrus** lies between the superior and inferior frontal sulci.
- 4- **Inferior frontal gyrus**; below inferior frontal sulcus, from anterior to posterior:
 - a- Orbital part below the horizontal ramus.
 - b- Triangular between the horizontal, and ascending rami.
 - c- Opercular part behind the ascending ramus.

B- Parietal lobe;

- 1- **Postcentral gyrus**: between the central and postcentral sulci.
- 2- **Superior parietal gyrus (lobule)** above the intraparietal sulcus.
- 3- **Inferior parietal gyrus (lobule)** below the intraparietal sulcus.
- 4- **Supramarginal gyrus** around the posterior end of the lateral sulcus.

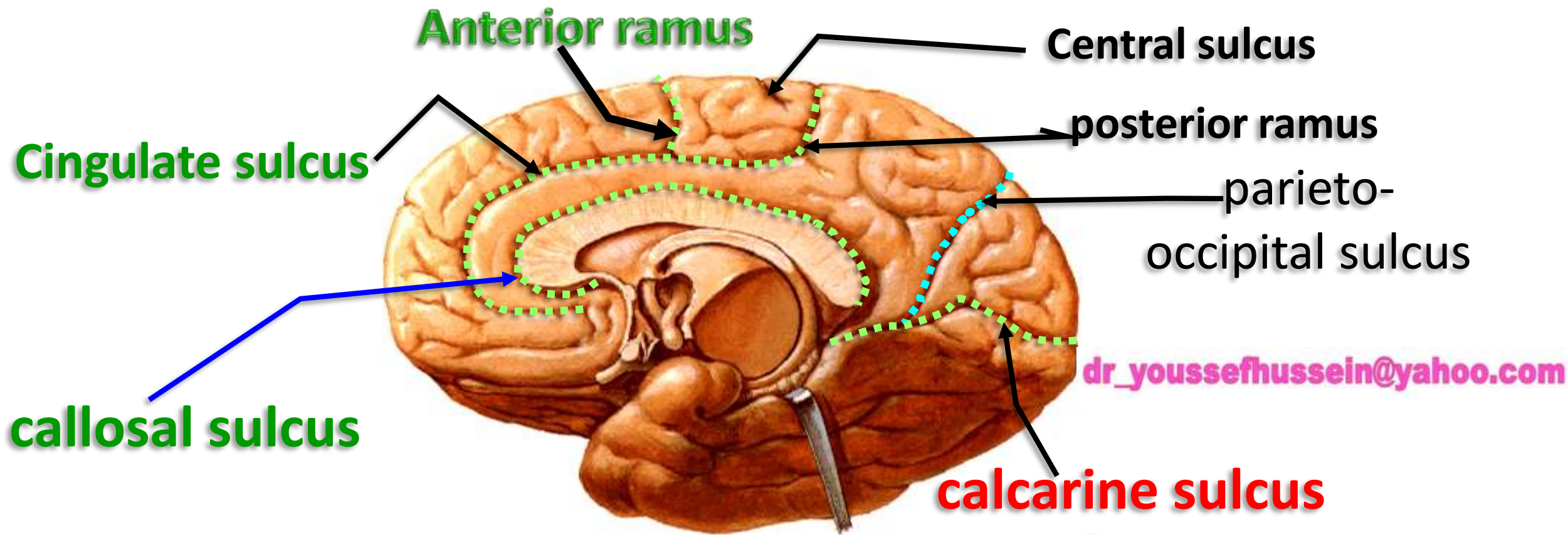
C- Temporal lobe;

- 1- **Superior temporal gyrus** between lateral sulcus and superior temporal sulcus.
- 2- **Middle temporal gyrus** lies between the superior and inferior temporal sulci.
- 3- **Inferior temporal gyri**: lies below the inferior temporal sulcus.
- 4- **Angular gyrus** around the posterior end of the superior temporal sulcus.

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**Sulci & Gyri of
the medial
surface**



- **Sulci on the Medial Surface**

- 1- **Callosal sulcus:** close to the upper surface of the corpus callosum.
- 2- **Cingulate sulcus;** about finger's breadth above and parallel to the callosal sulcus.
 - It **ends** by dividing into two rami in front and behind the central sulcus.
- 3- **Central sulcus:** between the two branches of the cingulate sulcus.
- 4- **Parieto-occipital sulcus.**
- 5- **Calcarine sulcus.**

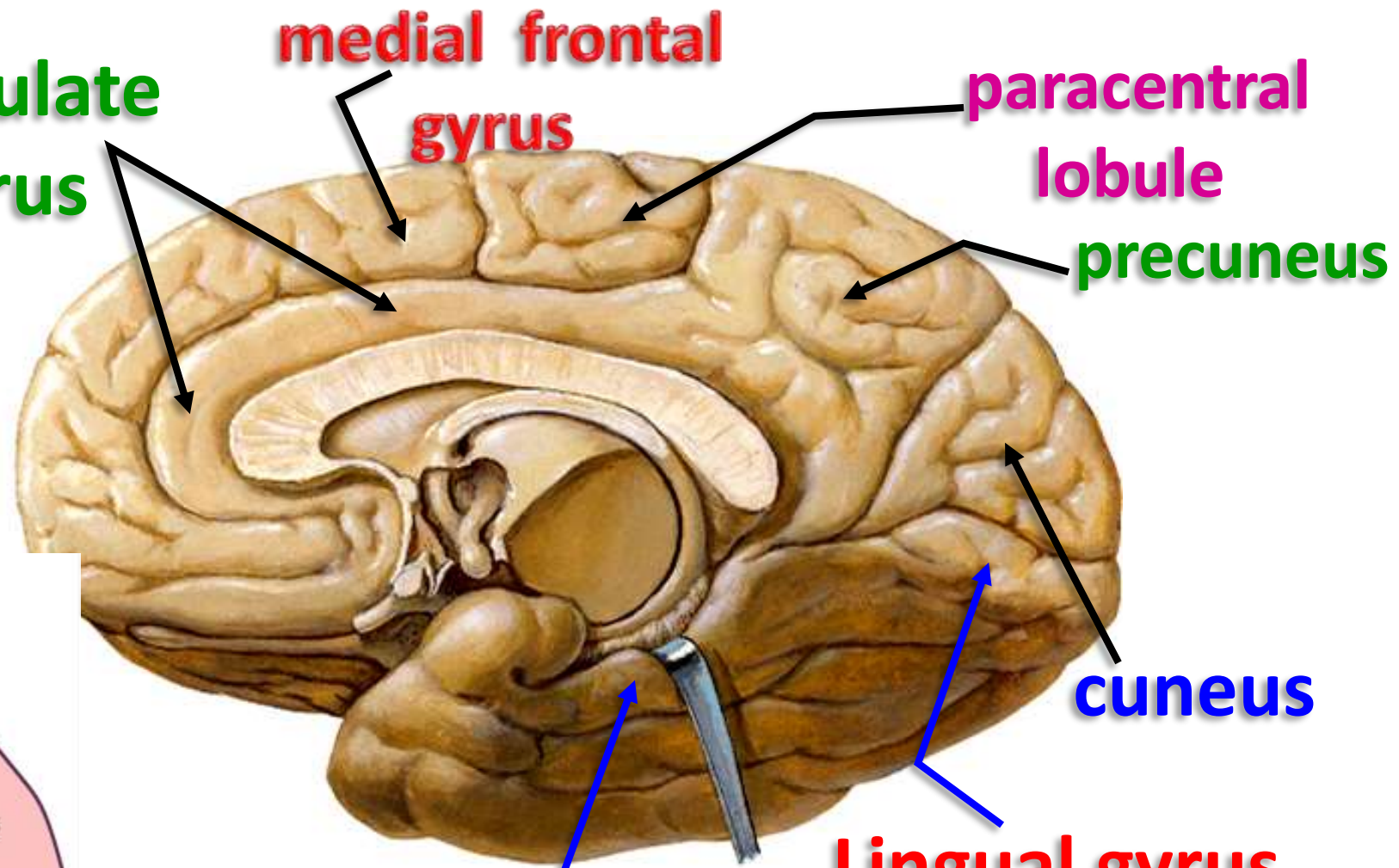
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cingulate
gyrus

medial frontal
gyrus

paracentral
lobule

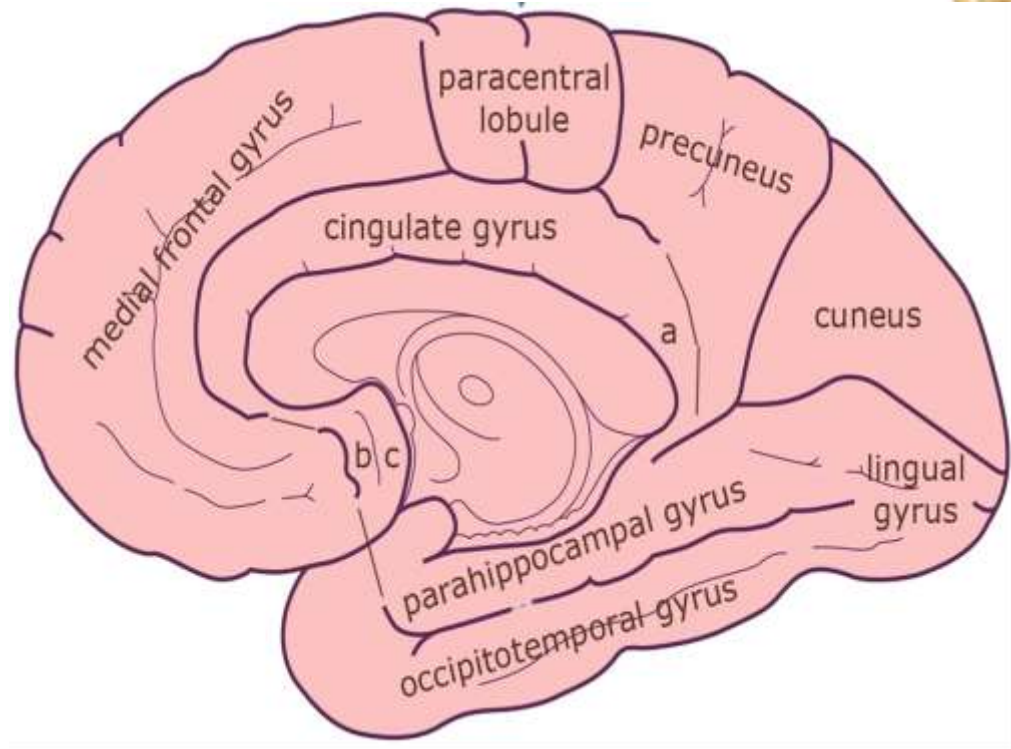
precuneus



cuneus

Lingual gyrus

Parahippocampus



paracentral
lobule

precuneus

cingulate gyrus

cuneus

lingual
gyrus

parahippocampal gyrus

occipitotemporal gyrus

- **Gyri on the Medial Surface**

1- Cingulate gyrus: between the callosal and cingulate sulci.

- The lower part of the posterior end curves downward behind the splenium of corpus callosum and forms a narrow area (**isthmus**) that connects it with the **para-hippocampal gyrus**.


2- Medial frontal gyrus: between the superomedial border and cingulate sulcus.

3- Paracentral lobule: surrounds the central sulcus between the two rami of the cingulate sulcus.

4- Precuneus; Infront parieto-occipital sulcus.

5- Cuneus: the triangular gyrus between the parieto-occipital and postcalcarine sulci (between the two branches of the Y).

6- Lingual gyrus: the elongated, tongue-like gyrus extending below the postcalcarine sulcus to the occipital pole.



**Functional
areas of the
medial surface**

1- Paracentral lobule;

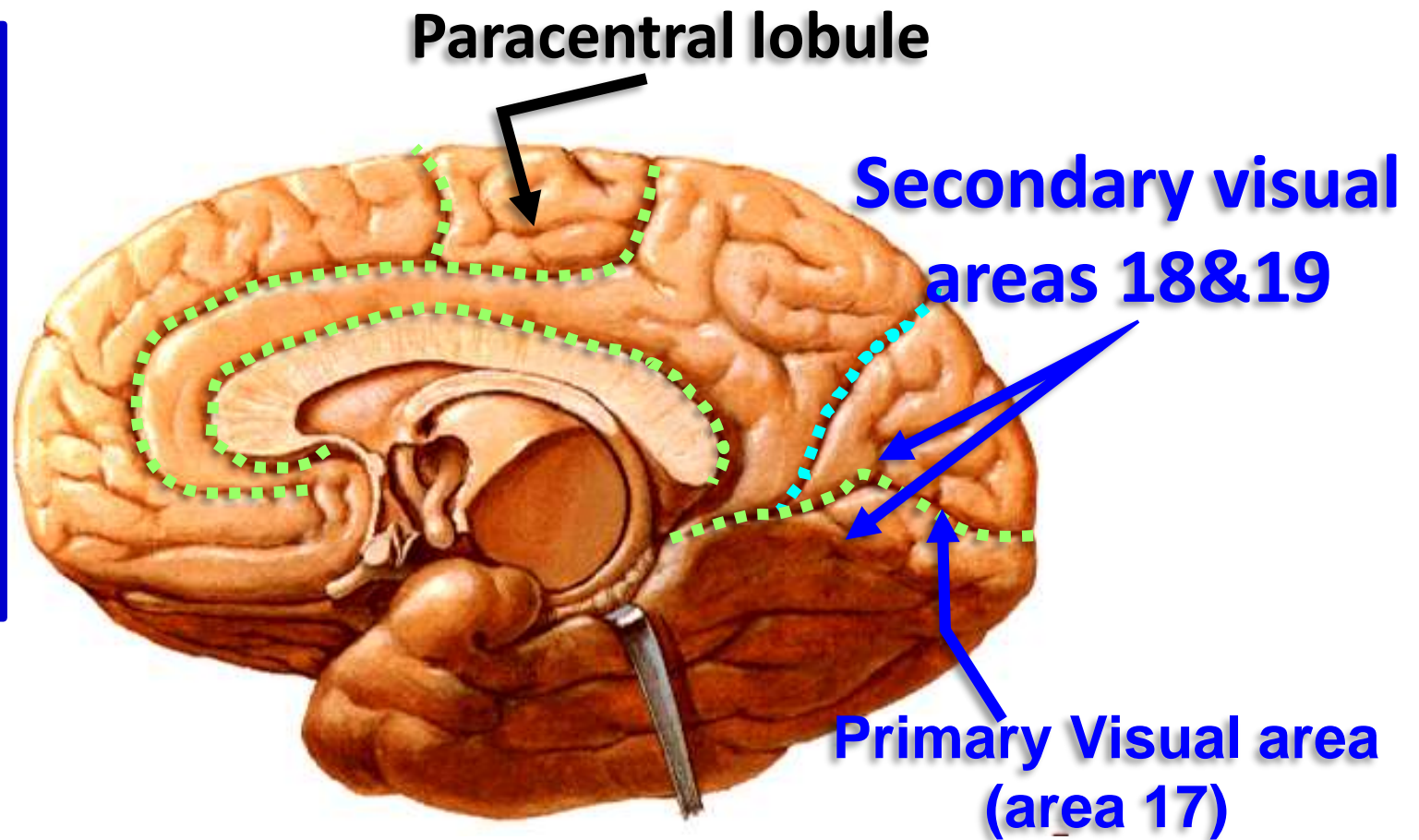
- It continues with the motor and sensory areas in the lateral surface.
- It gives motor fibres and receives sensation from the leg, foot and perineum of the opposite side.
- It controls the micturition and defecation.

2- primary Visual area (area 17);

- It lies on the depth of calcarine sulcus
- It receives visual sensation from the lateral geniculate body (**LGB**) via the optic radiation..
- Damage of the primary visual area causes **blindness**.

3- secondary Visual (association) area (area 18, 19):

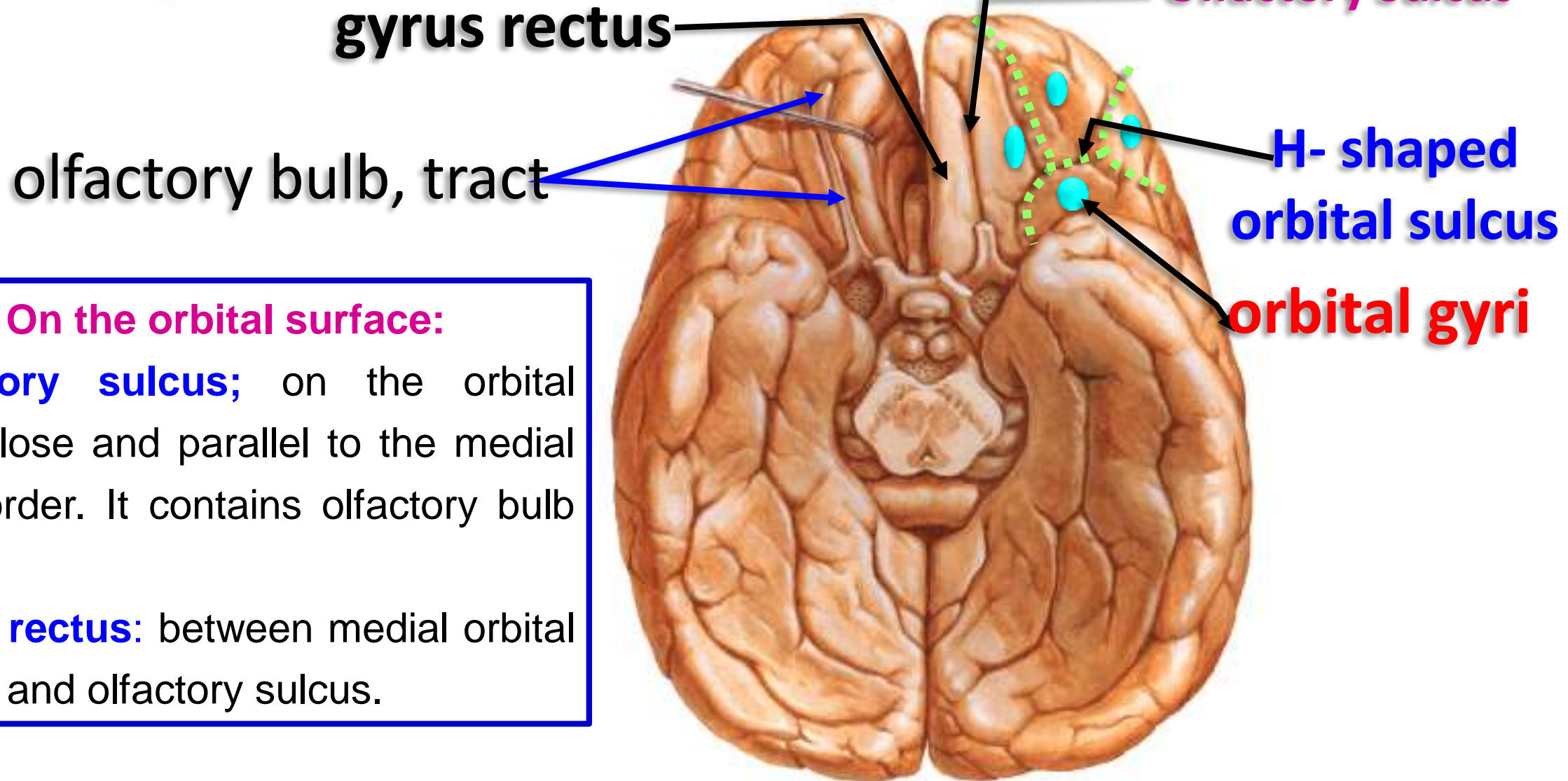
- It lies in the occipital lobe surrounding the primary visual area.
- Damage of this area causes **visual agnosia** (people can not identify the objects).



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**Sulci & Gyri of
the inferior
surface**



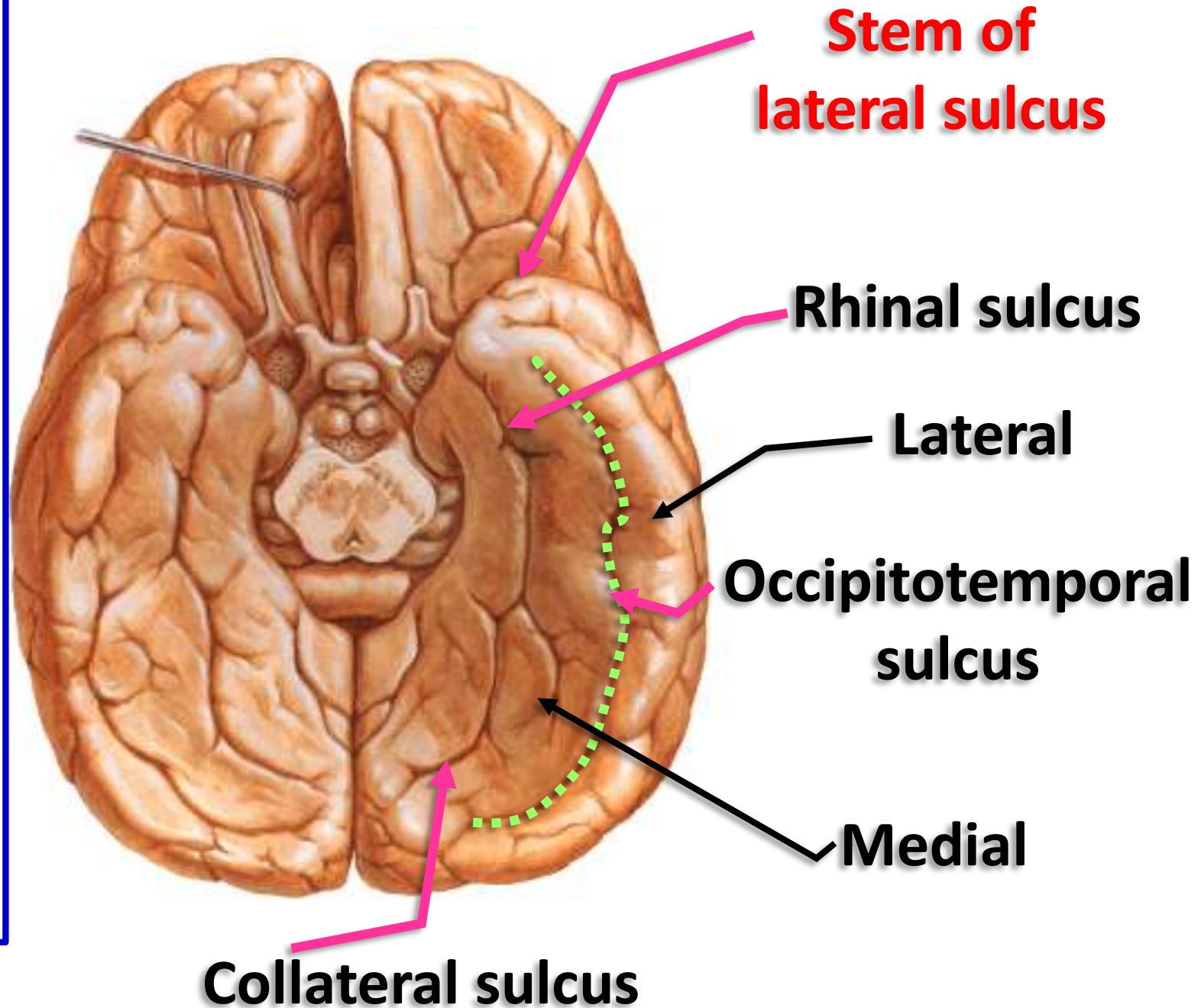
- **On the orbital surface:**

- **Olfactory sulcus;** on the orbital surface close and parallel to the medial orbital border. It contains olfactory bulb and tract.
- **Gyrus rectus:** between medial orbital border and olfactory sulcus.

- **Orbital sulcus:** is H shaped sulcus lateral to the olfactory sulcus.
- **Anterior, posterior, lateral and medial orbital gyri:** on the orbital surface.

- On the tentorial surface:

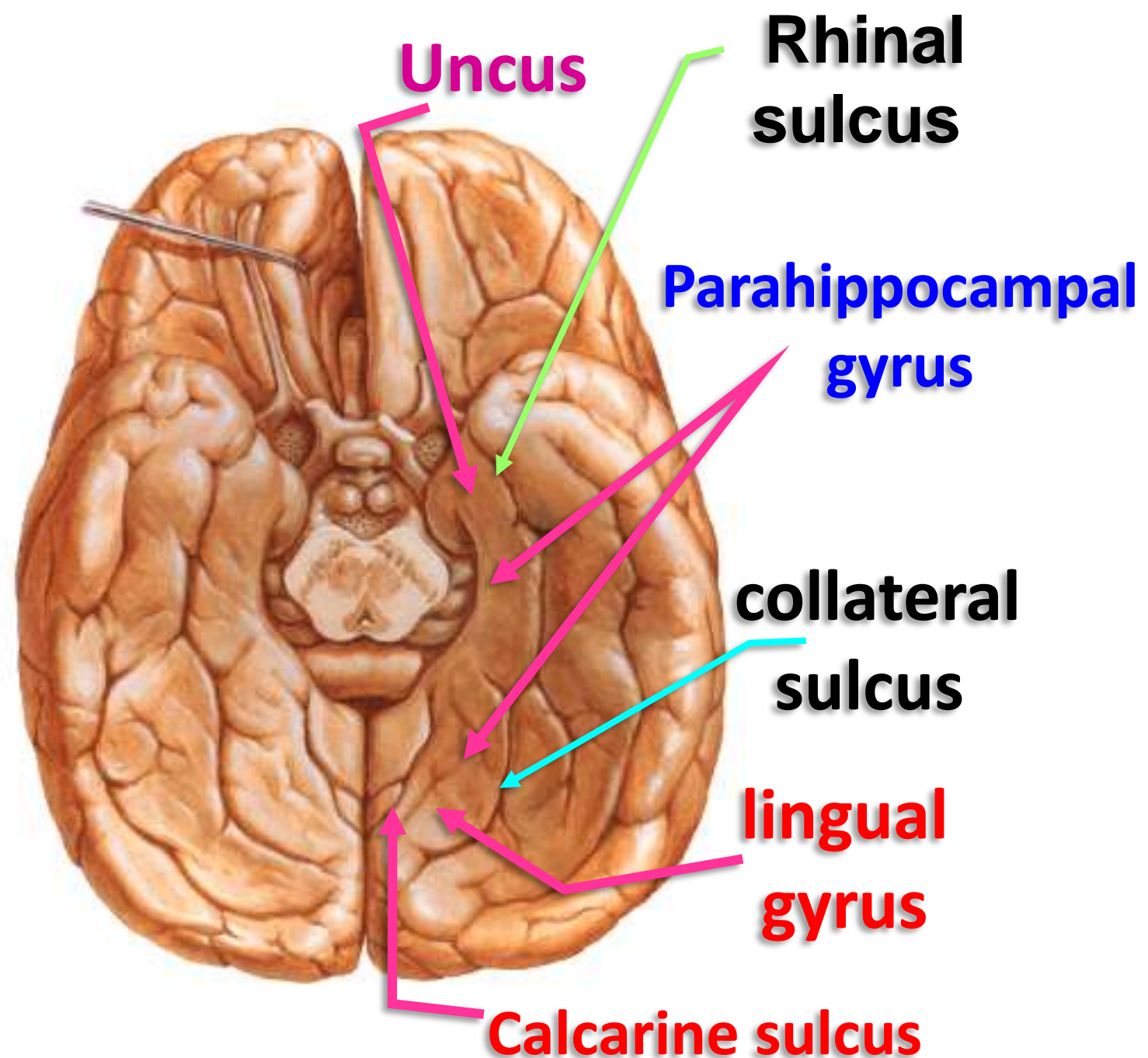
- 1- Stem of lateral sulcus** between the frontal and temporal lobes.
- 2- Occipito-temporal sulcus:** from occipital pole to temporal pole.
- 3- Medial and Lateral occipitotemporal gyrus:** medial and lateral to occipitotemporal sulcus.
- 4- Rhinal sulcus:** extends from the temporal pole.
- 5- Collateral sulcus:** begins close to the posterior end of the rhinal sulcus to the occipital pole.



On the tentorial surface:

- **Lingual gyrus** between collateral sulcus and calcarine sulcus
- **Para hippocampal gyrus** anterior to the lingual gyrus (**Limbic system**)

- **Uncus** anterior to Para hippocampal gyrus, a hook-shaped convolution close to the temporal pole medial to the rhinal sulcus. **Center of the olfactory**



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