MENTAL HOSPITAL PHONE MENU

- Hello and thank you for calling The State Mental Hospital.
  Please select from the following options menu:
- If you are obsessive-compulsive, press 1 repeatedly.

  If you are co-dependent, please ask someone to press 2 for you.

  If you have multiple personalities, press 3, 4, 5 and 6.

  If you are paranoid, we know who you are and what you want,
  stay on the line so we can trace your call.

  If you are delusional, press 7 and your call will be forwarded to the Mother Ship.

  If you are schizophrenic, listen carefully and a little voice will tell You which number to press.

  If you are manic-depressive, hang up. It doesn't matter which number you press,
  nothing! will make you happy anyway.

  If you are dyslexic, press 9-6-9-6.

  If you are bipolar, please leave a message after the beep or before the beep or after the beep.
- But Please wait for the beep.

  If you have short-term memory loss, press 9.
  If you have short-term memory loss, press 9.
  If you have short-term memory loss, press 9.

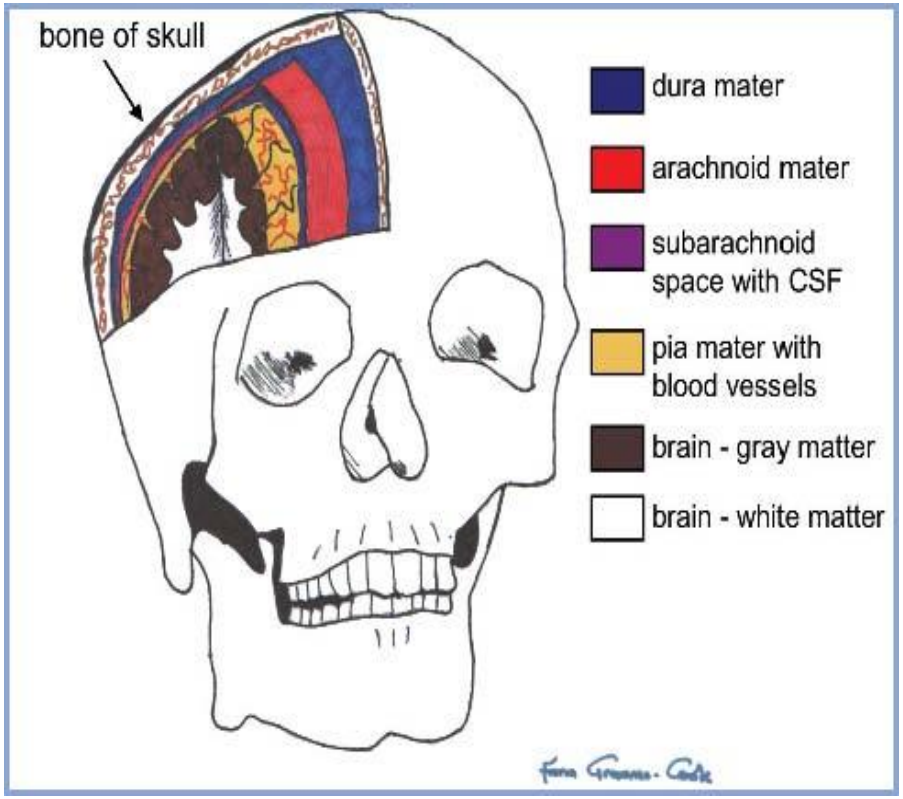
  If you have low self-esteem, please hang up. Our operators are too busy to talk with you.

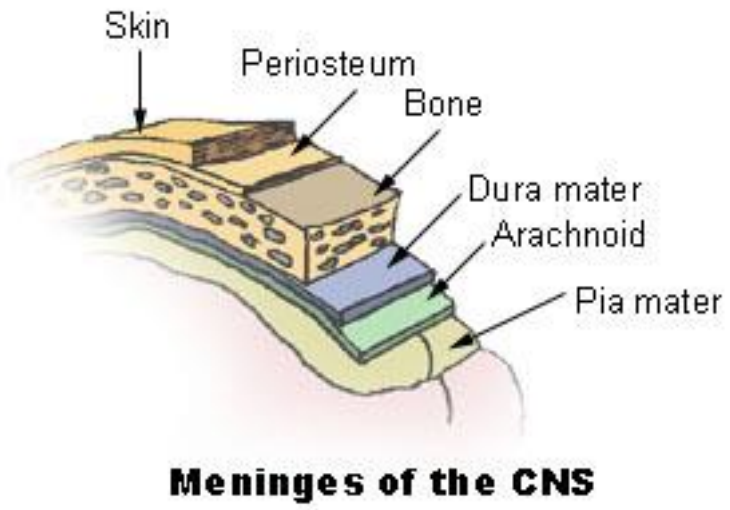
The Meninges

Dura mater - outermost layer

Arachnoid mater - no blood vessels, in between layer (resembles a spider web)

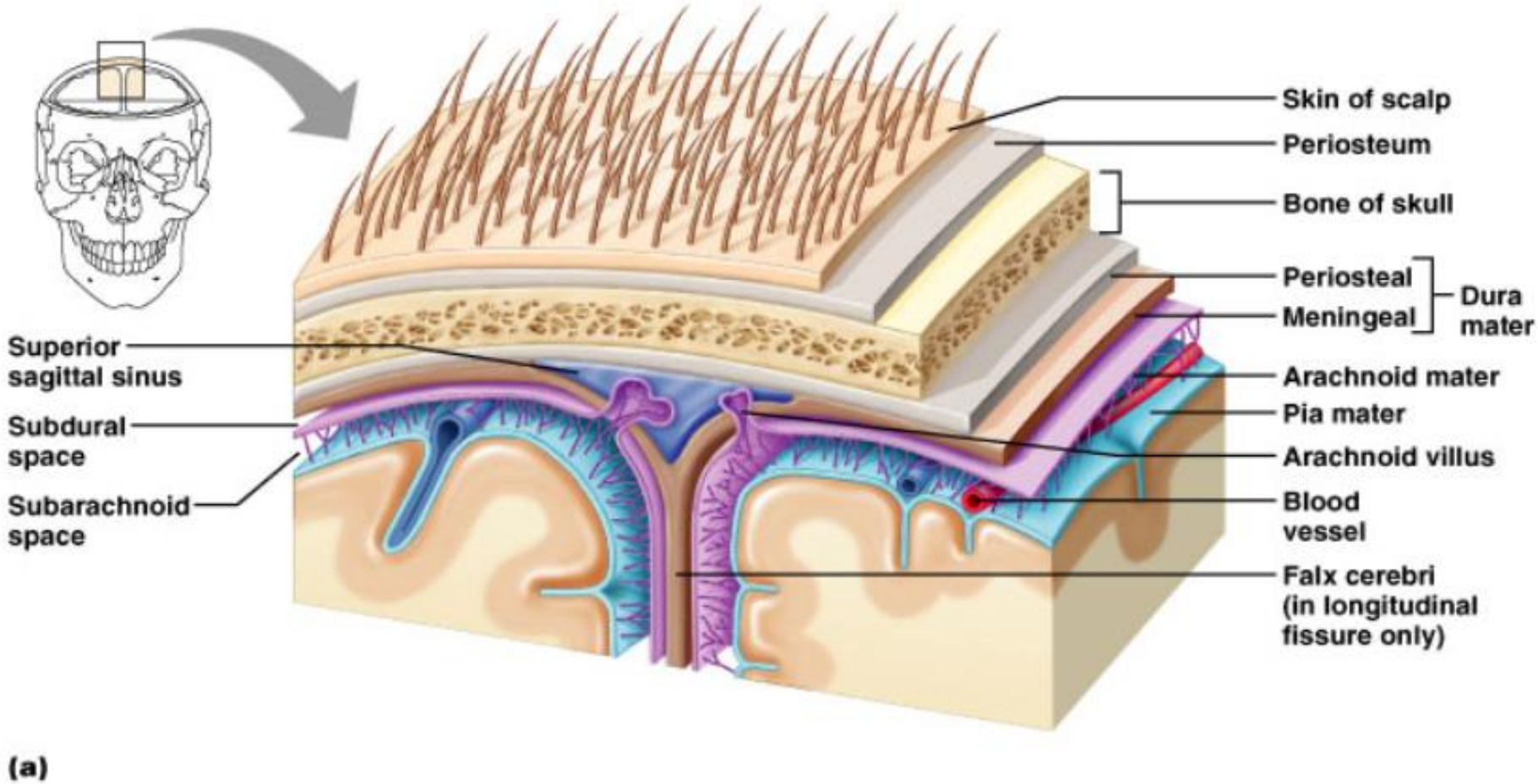
Pia mater -inner membrane, contains nerves and blood vessels to nourish cells





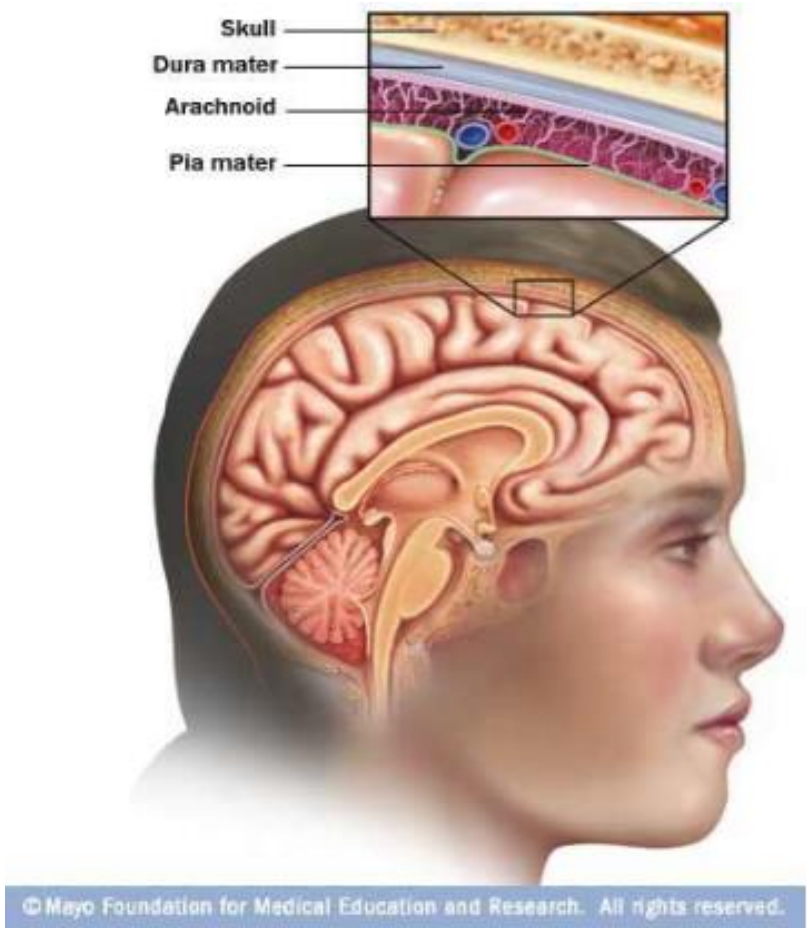
Meninges of the CNS

The Meninges

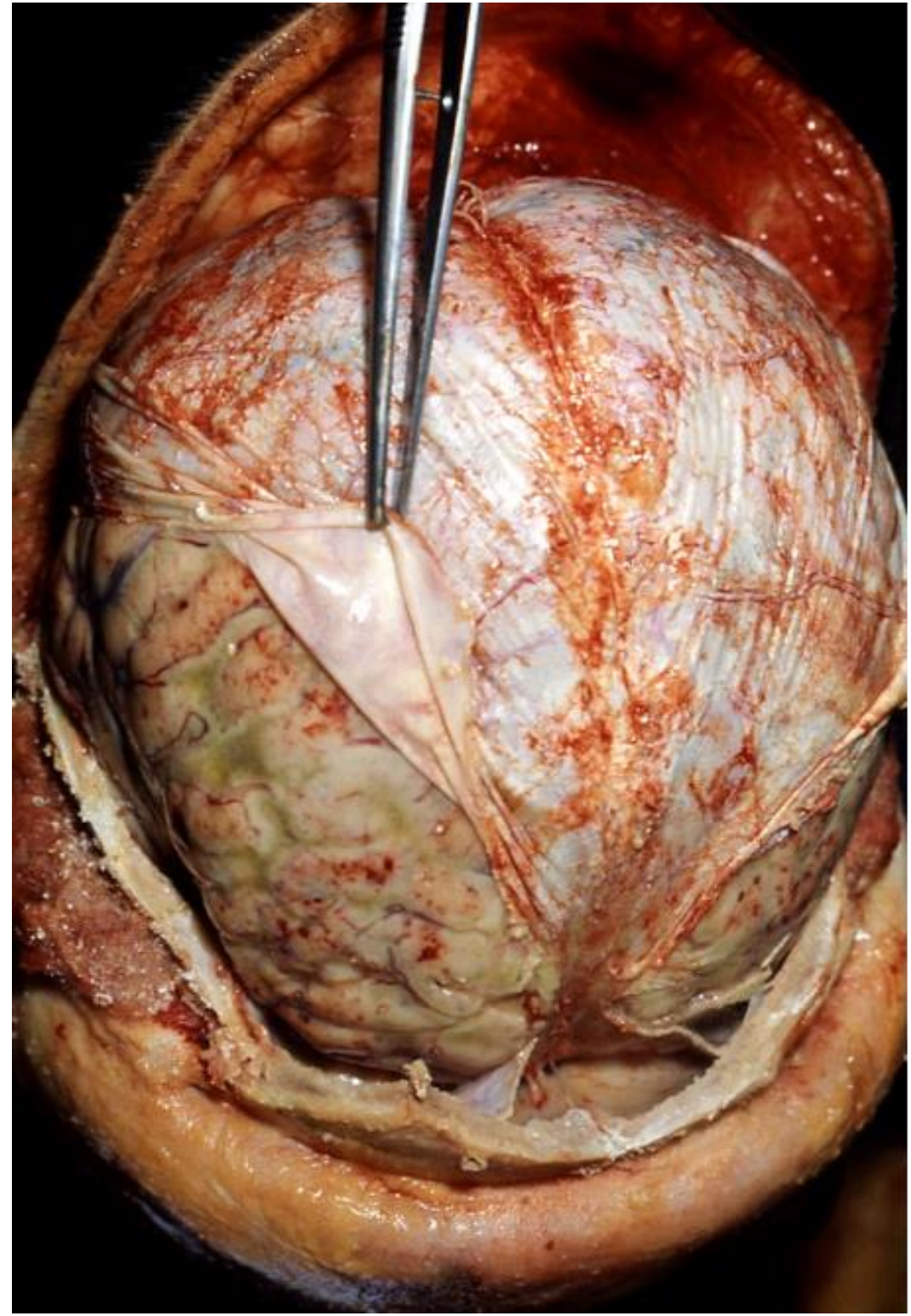


CSF = cerebrospinal fluid

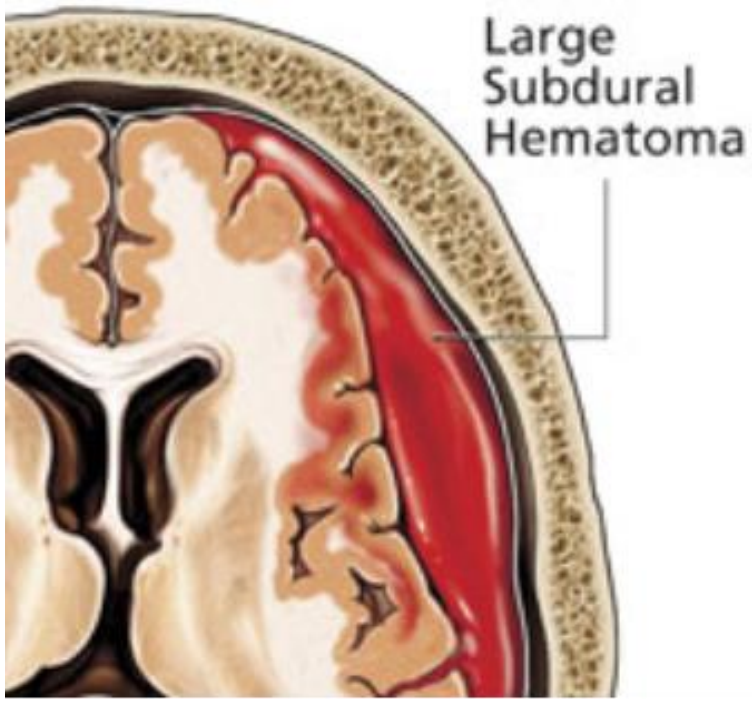
Figure 13.25a

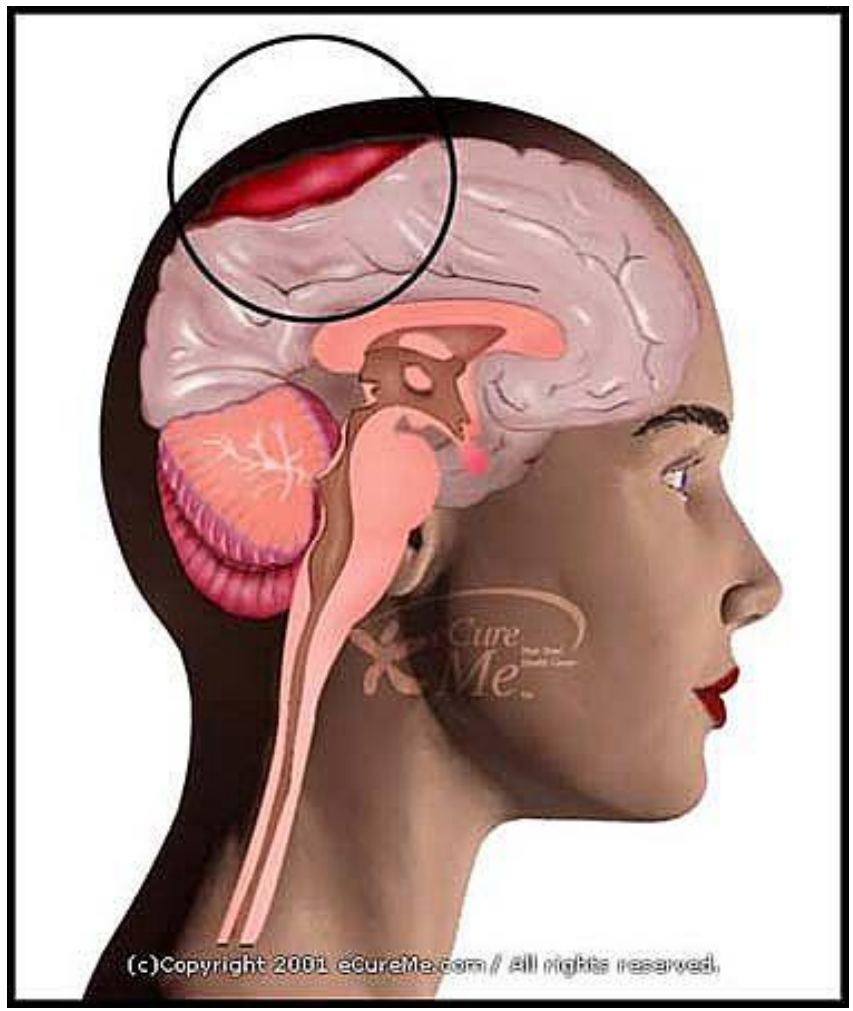


Dura mater is being peeled away in this photo.



Subdural Hematoma



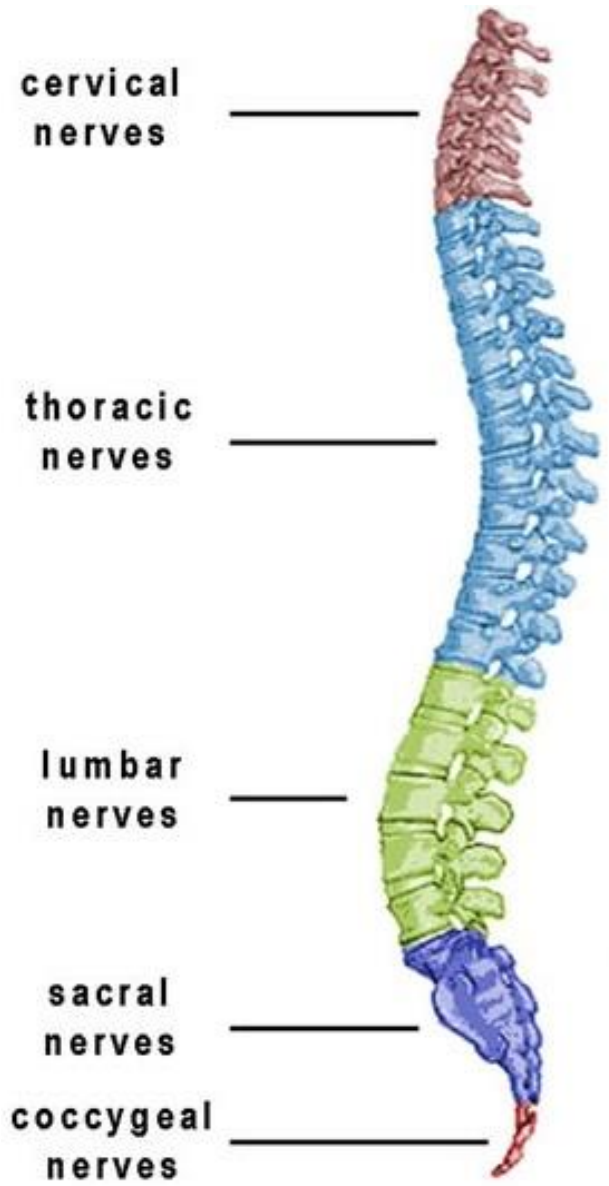


"Whoa! *That* was a good one! Try it, Hobbs — just poke his brain right where my finger is."

Spinal Cord

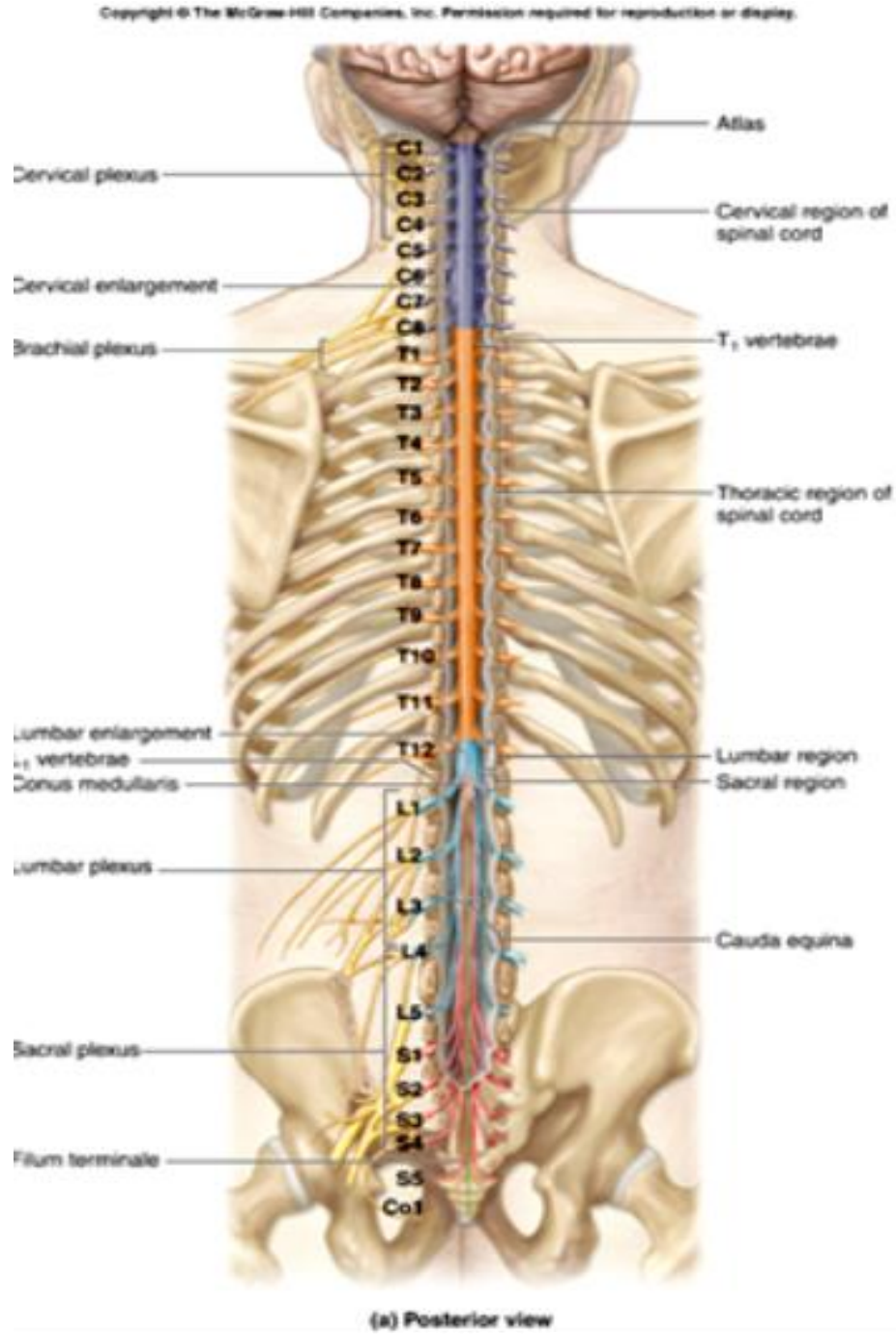
passes down the vertebral canal, has 31 segments (each with a pair of spinal nerves)

Cervical enlargement = supplies nerves to upper limbs (neck)
Lumbar enlargement = supplies nerves to the lower limbs (lower back)
FUNCTION: conducting nerve impulses, serves as a center for spinal reflexes

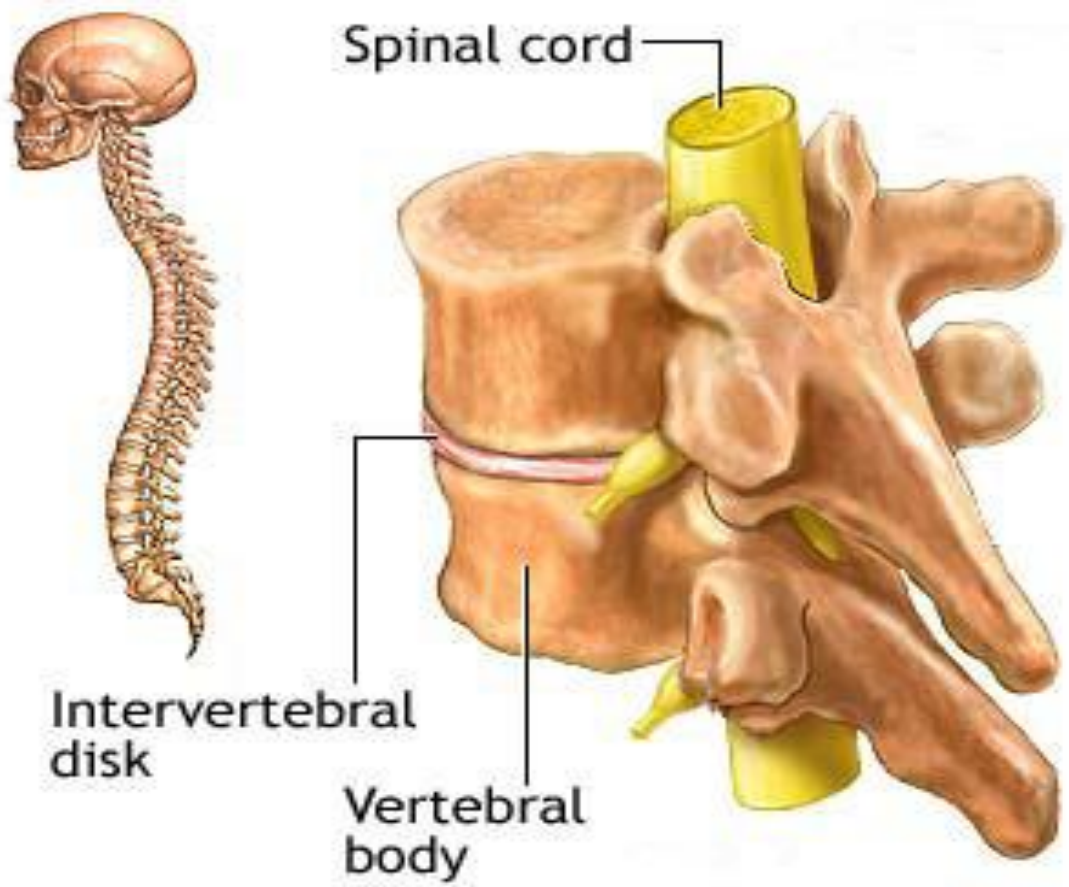


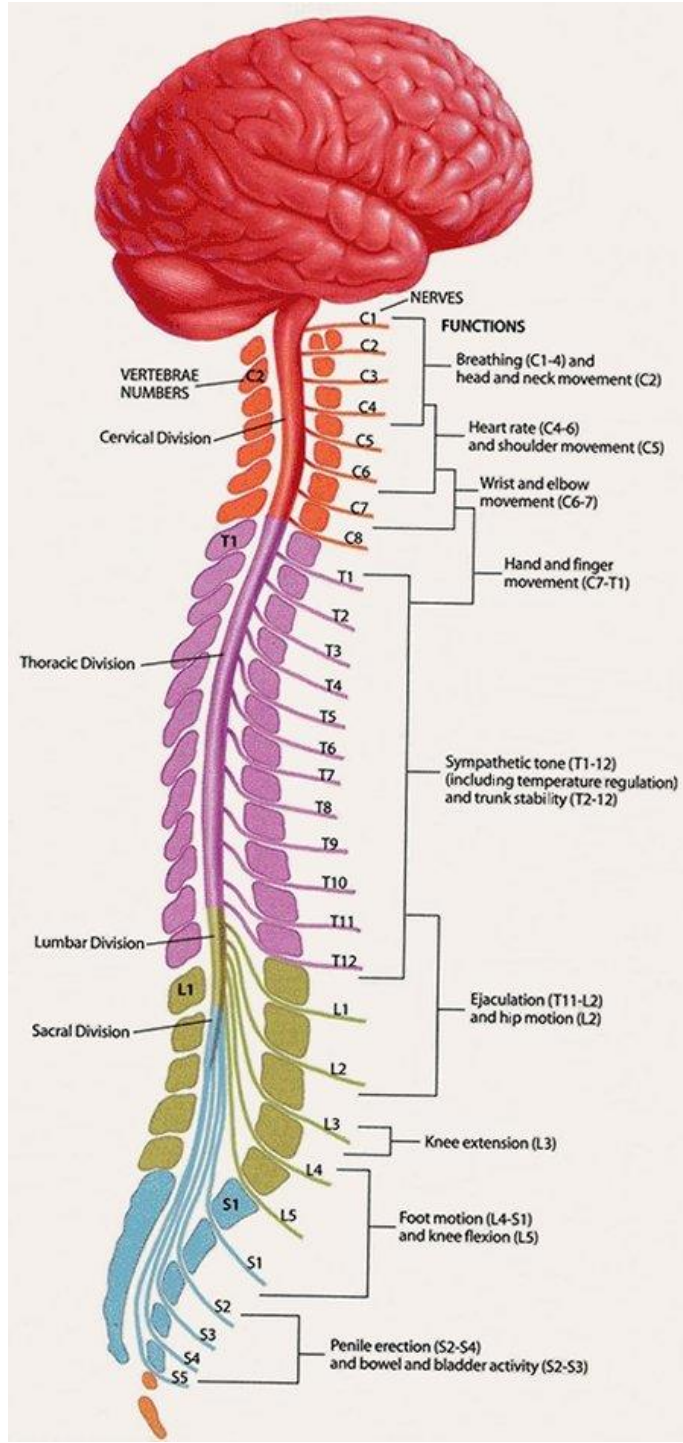
ASCENDING - impulses travel to the brain (sensory)

DESCENDING - impulses travel to the muscles (motor)



Spinal reflexes - reflex arcs pass through the spinal cord



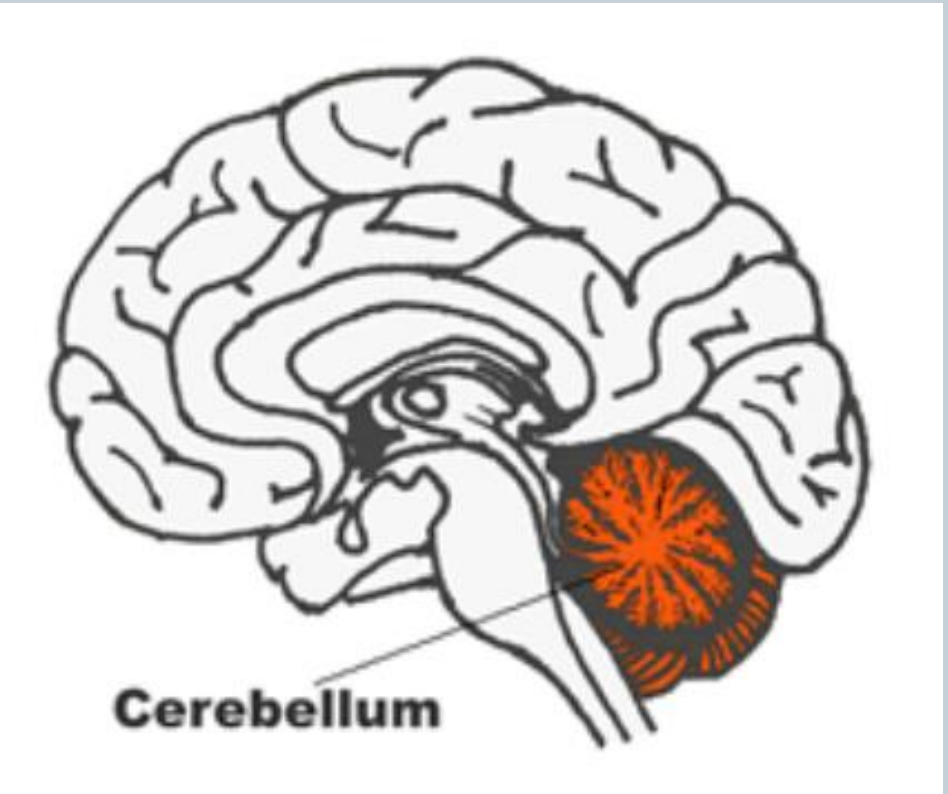

NERVES
FUNCTIONS
VERTEBRAE NUMBERS
C2
Cervical Division
T1
Thoracic Division
Lumbar Division
L1
Sacral Division
S1
S2
S3
S4
S5
C1
C2
C3
C4
C5
C6
C7
C8
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1
L2
L3
L4
L5
S1
Breathing (C1-4) and head and neck movement (C2)
Heart rate (C4-6) and shoulder movement (C5)
Wrist and elbow movement (C6-7)
Hand and finger movement (C7-T1)
Sympathetic tone (T1-12) (including temperature regulation) and trunk stability (T2-12)
Ejaculation (T11-L2) and hip motion (L2)
Knee extension (L3)
Foot motion (L4-S1) and knee flexion (L5)
Penile erection (S2-S4) and bowel and bladder activity (S2-S3)

THE BRAIN

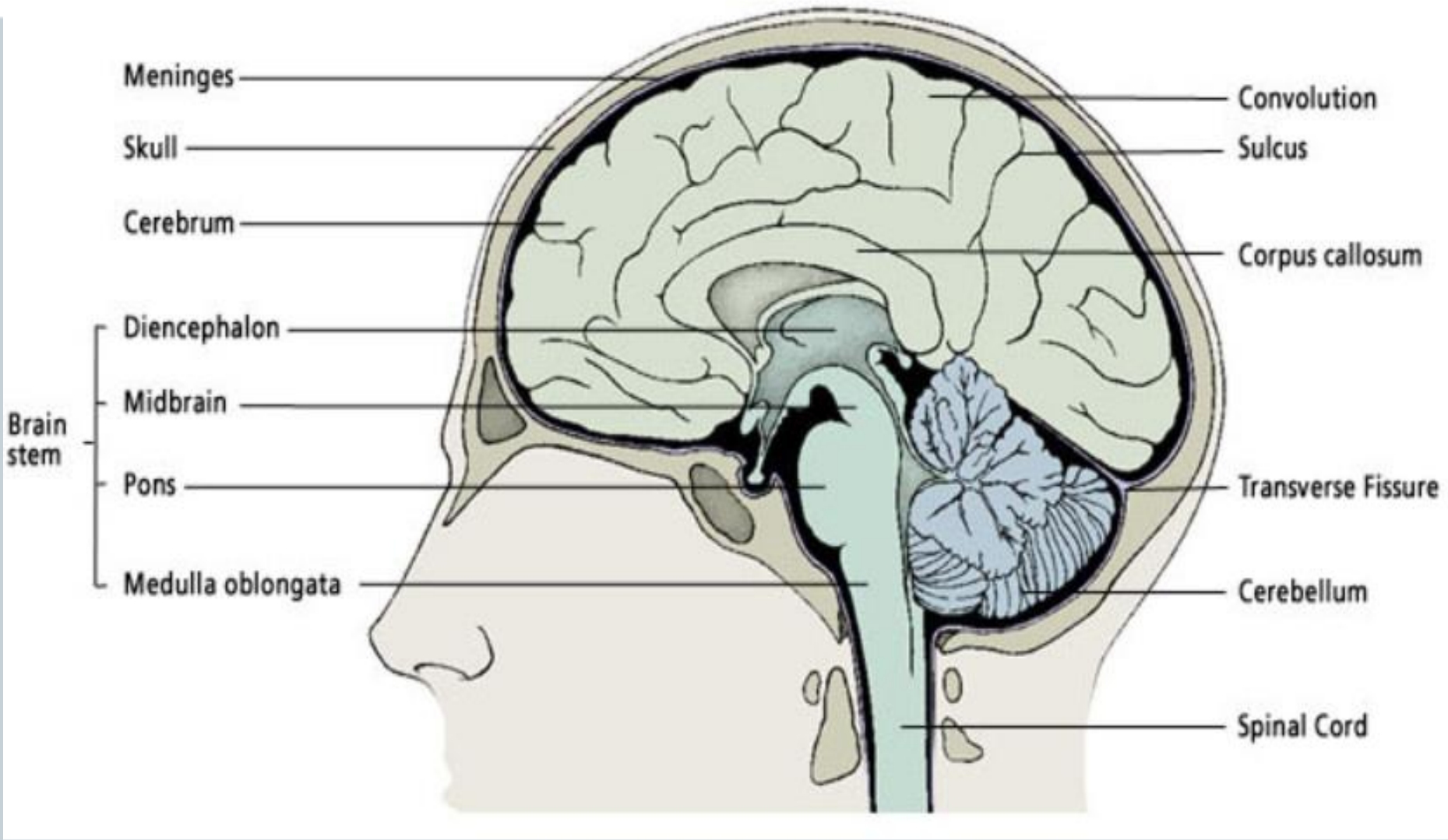
- **ANATOMICAL REGIONS**
  - **Cerebrum**
  - **Cerebellum**
  - **Brain Stem**

CEREBELLUM

- Balance and coordination



The Major Portions of the Brain Include the Cerebrum, Cerebellum and Brain Stem



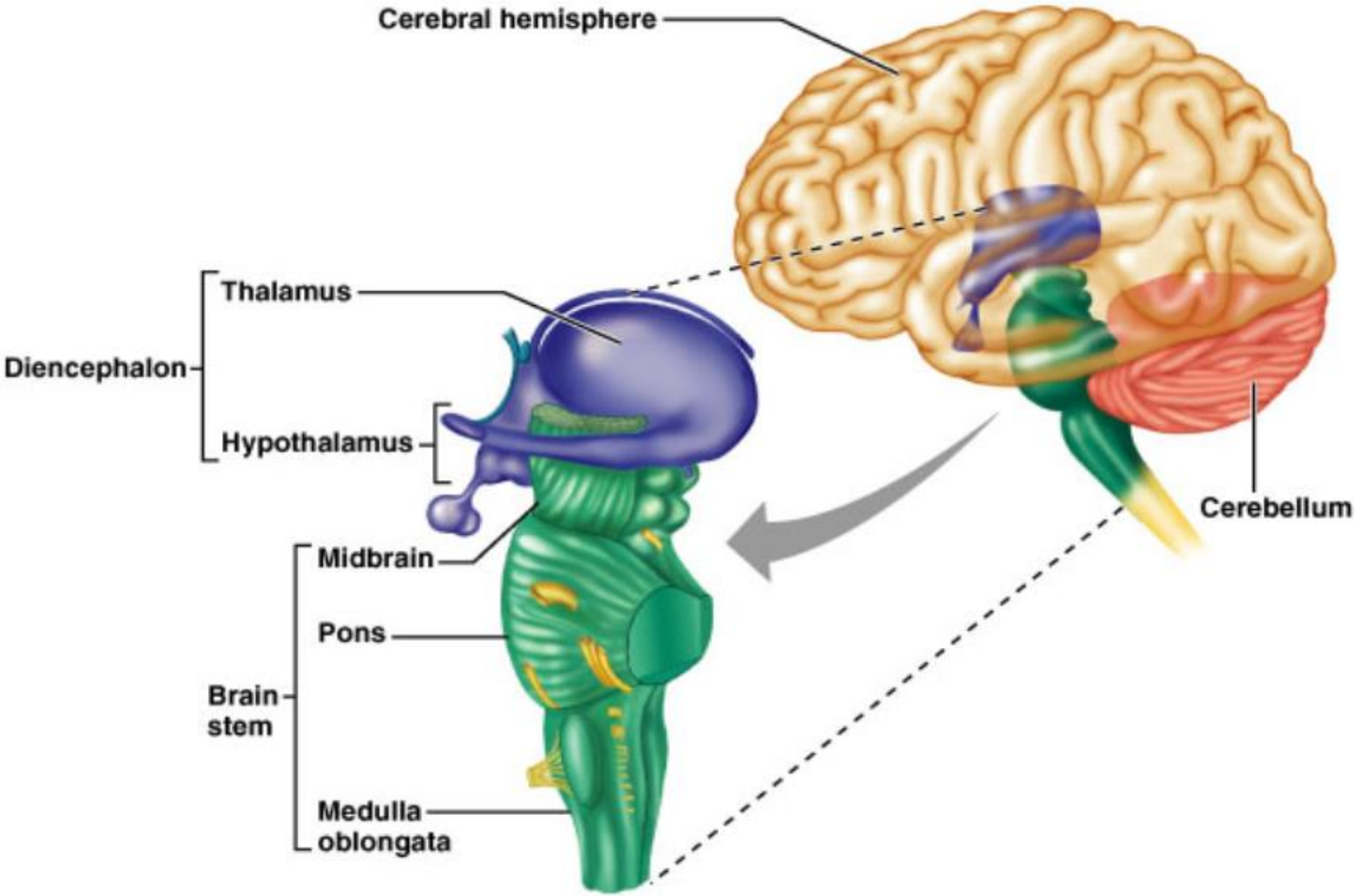
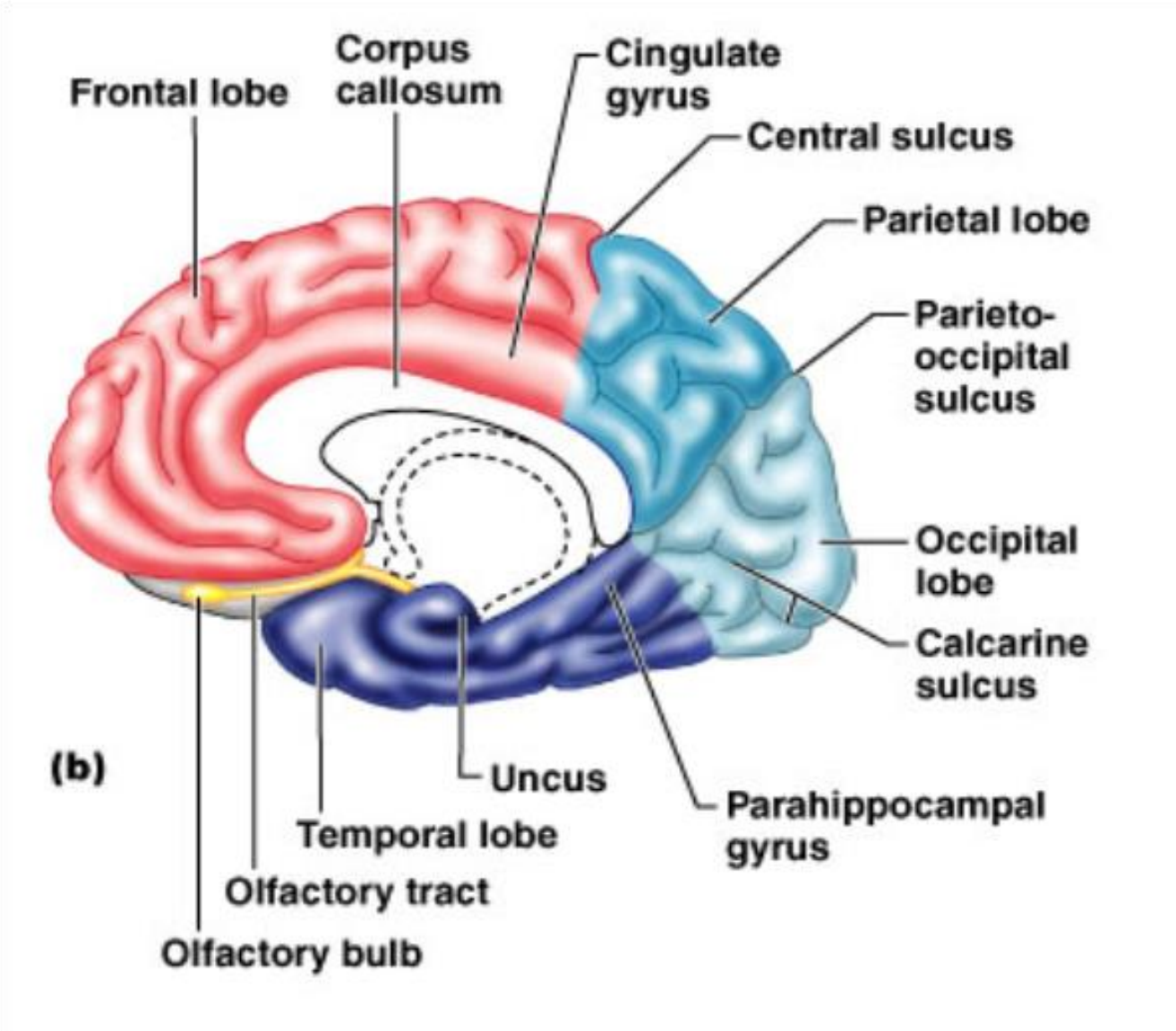

Cerebral hemisphere
Thalamus
Diencephalon
Hypothalamus
Midbrain
Pons
Brain stem
Medulla oblongata
Cerebellum

Figure 13.4

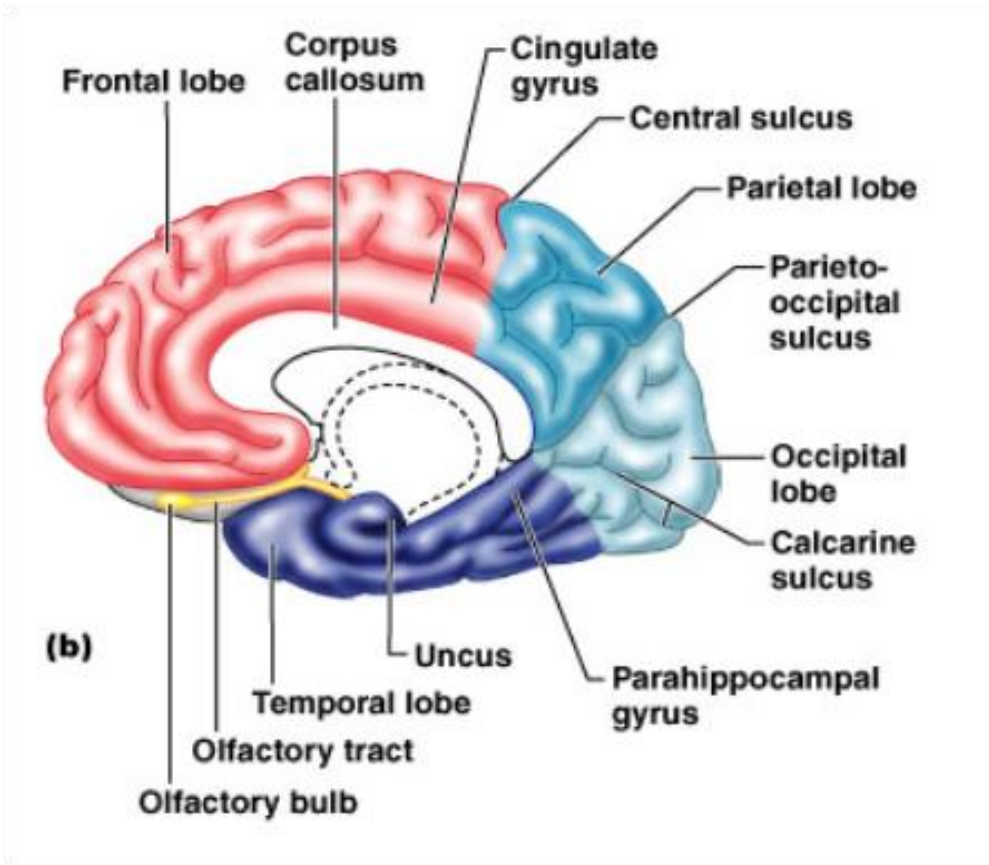
1. Cerebral Hemispheres
- left and right side separated by the ....

2. Corpus Callosum

- connects the two hemispheres



The Cerebral Hemispheres



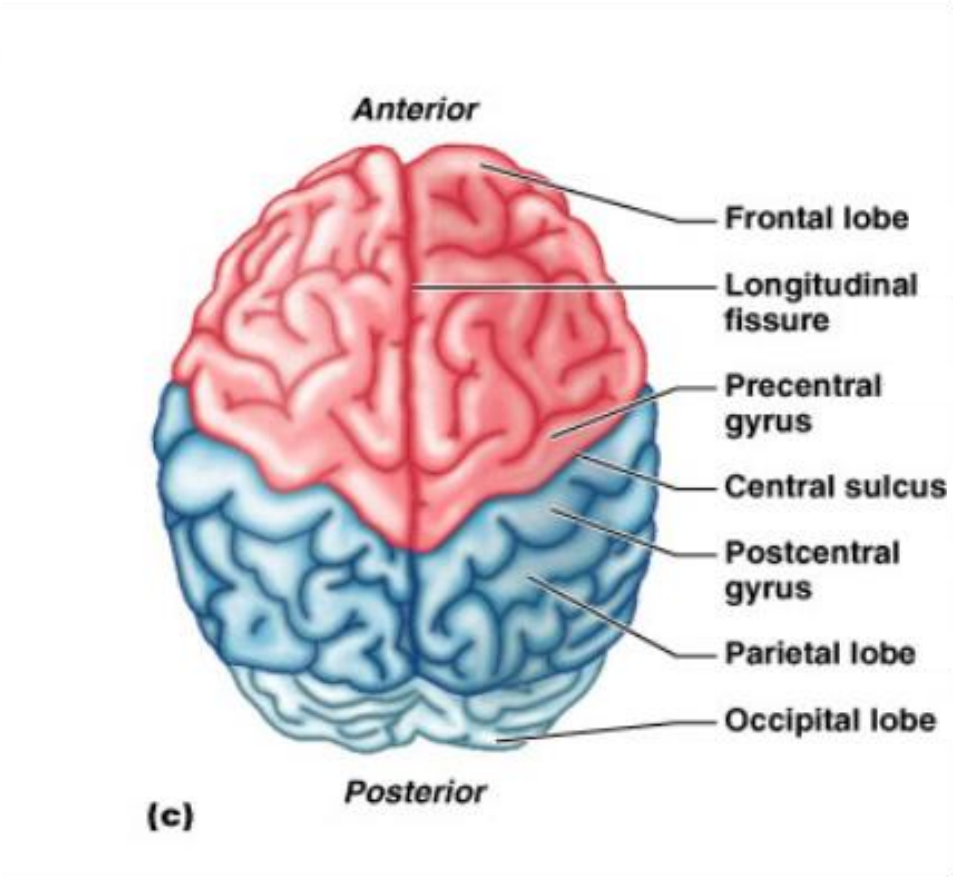
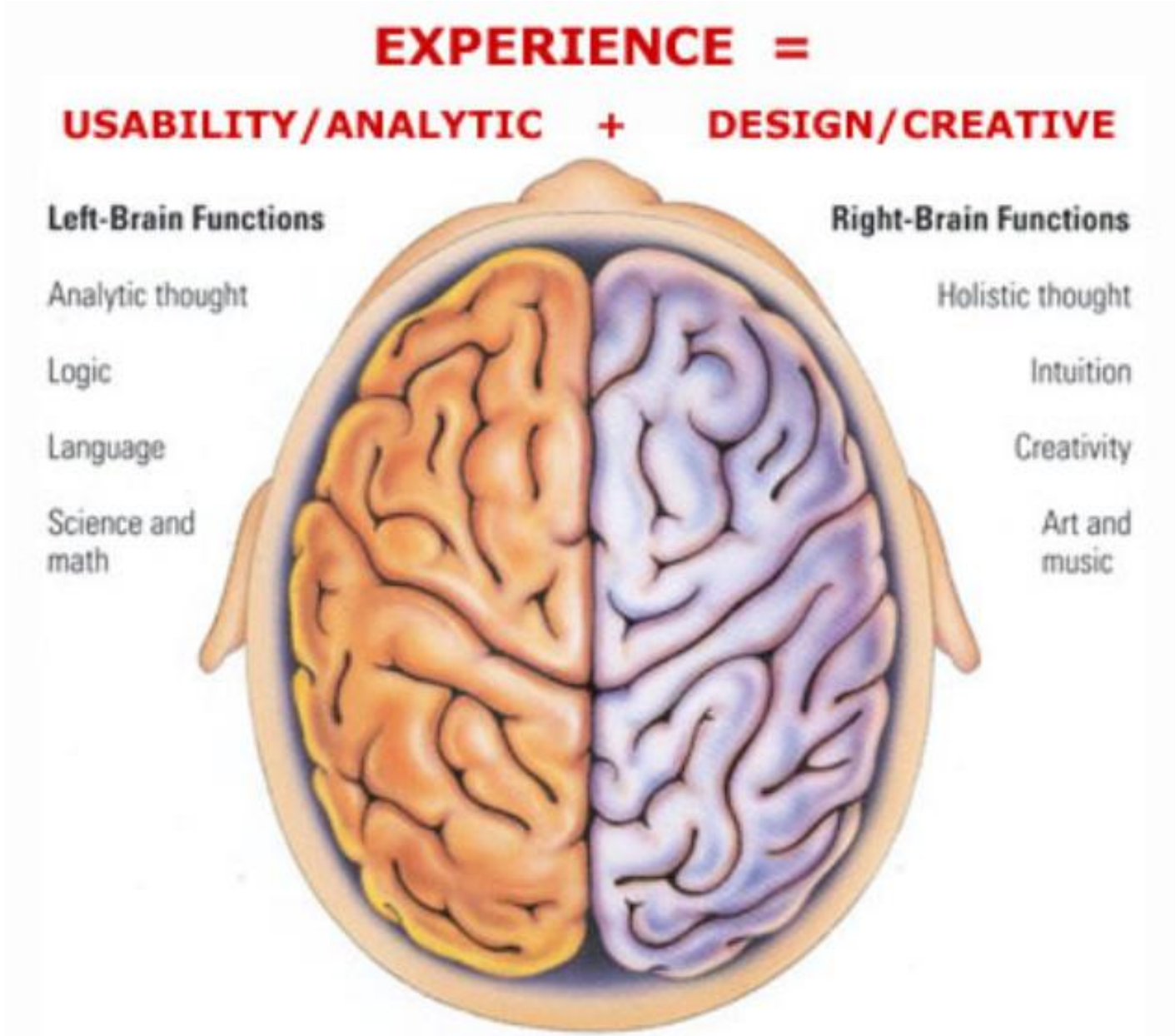


Figure 13.7b, c



Take the Left Brain – Right Brain Test


Corpus callosum

3. Convolutions of the Brain

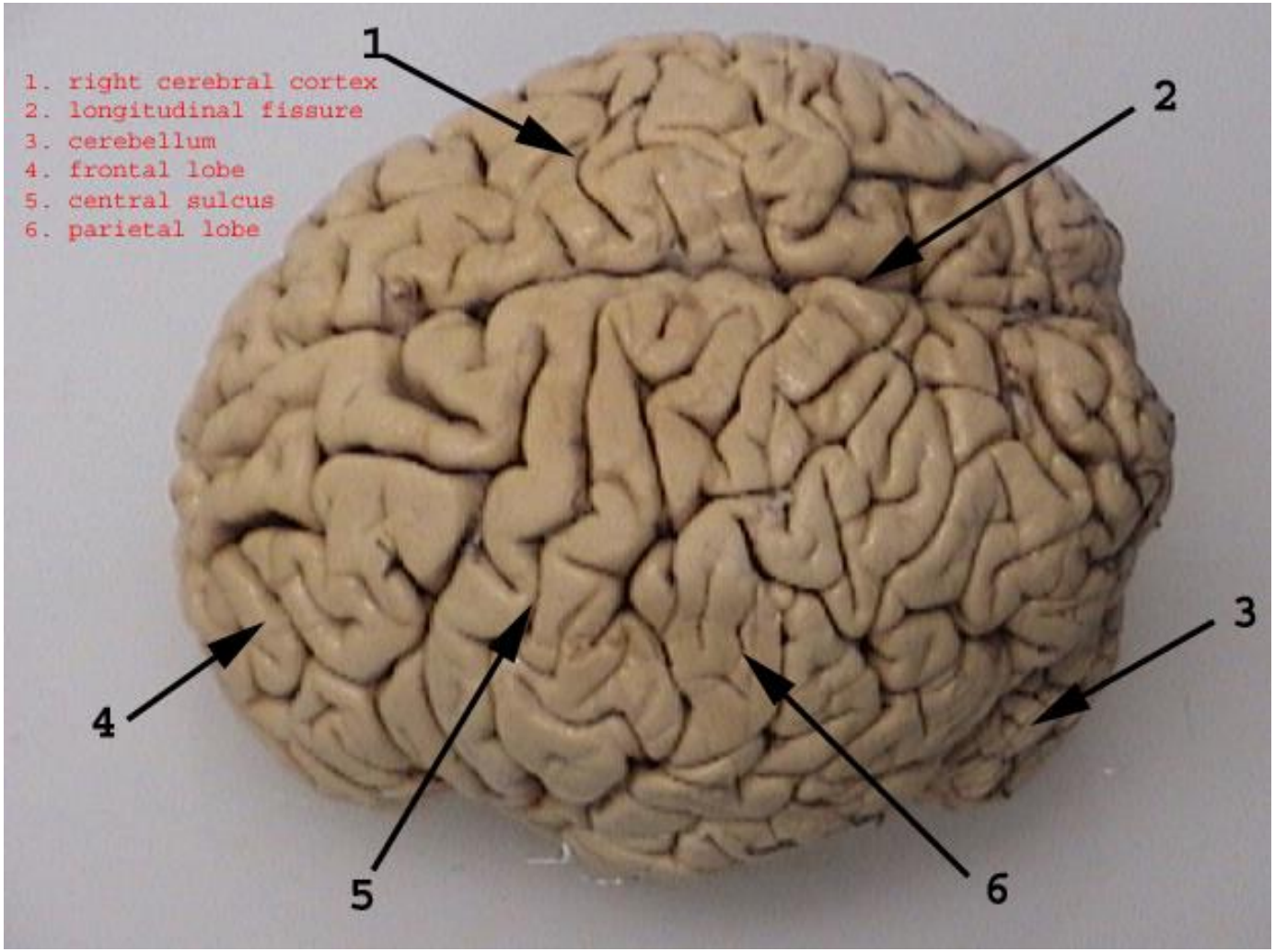
- the wrinkles and grooves of the cerebrum

Fissures = deep groove

Sulcus = shallow groove

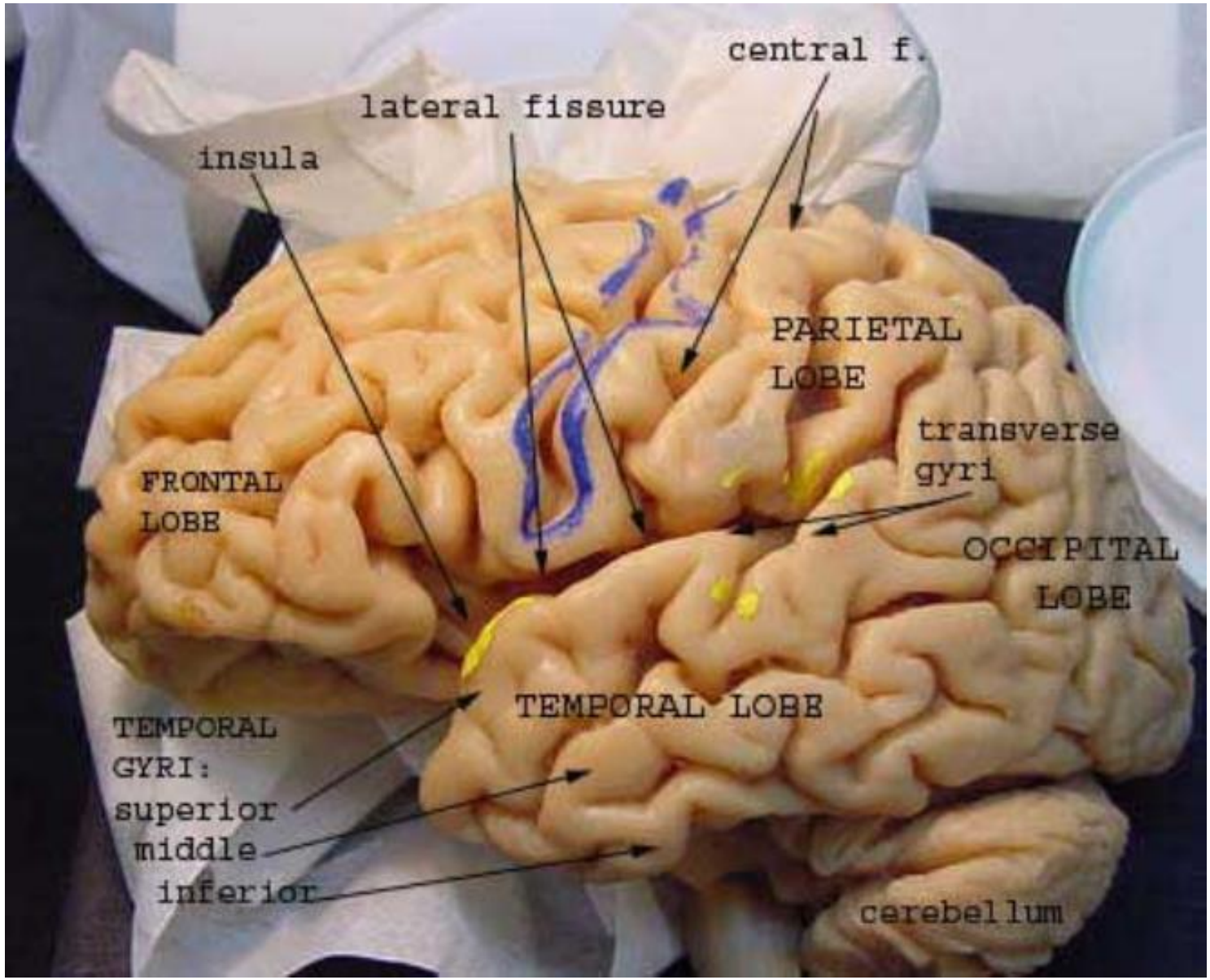
Gyrus = bump

4. Fissures – separate lobes



Longitudinal fissure - separate right and left sides

Transverse Fissure - separates cerebrum from cerebellum



Lateral Fissure separates the temporal lobe from the Frontal and Parietal lobes


CENTER
FOR THE
CHRONICALLY
UNCOORDINATED

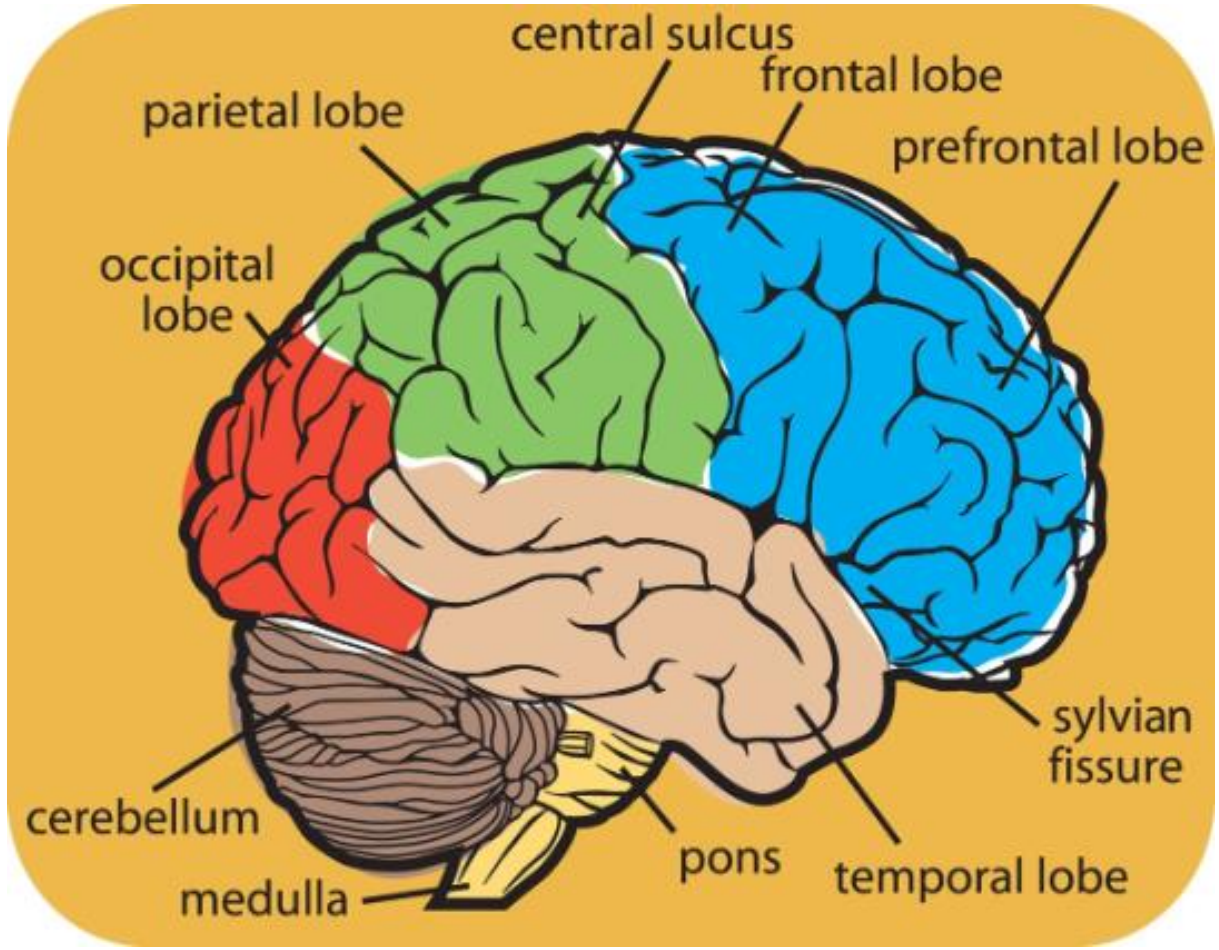
Lobes of the Brain
(general functions)

5. Frontal – reasoning, thinking, language

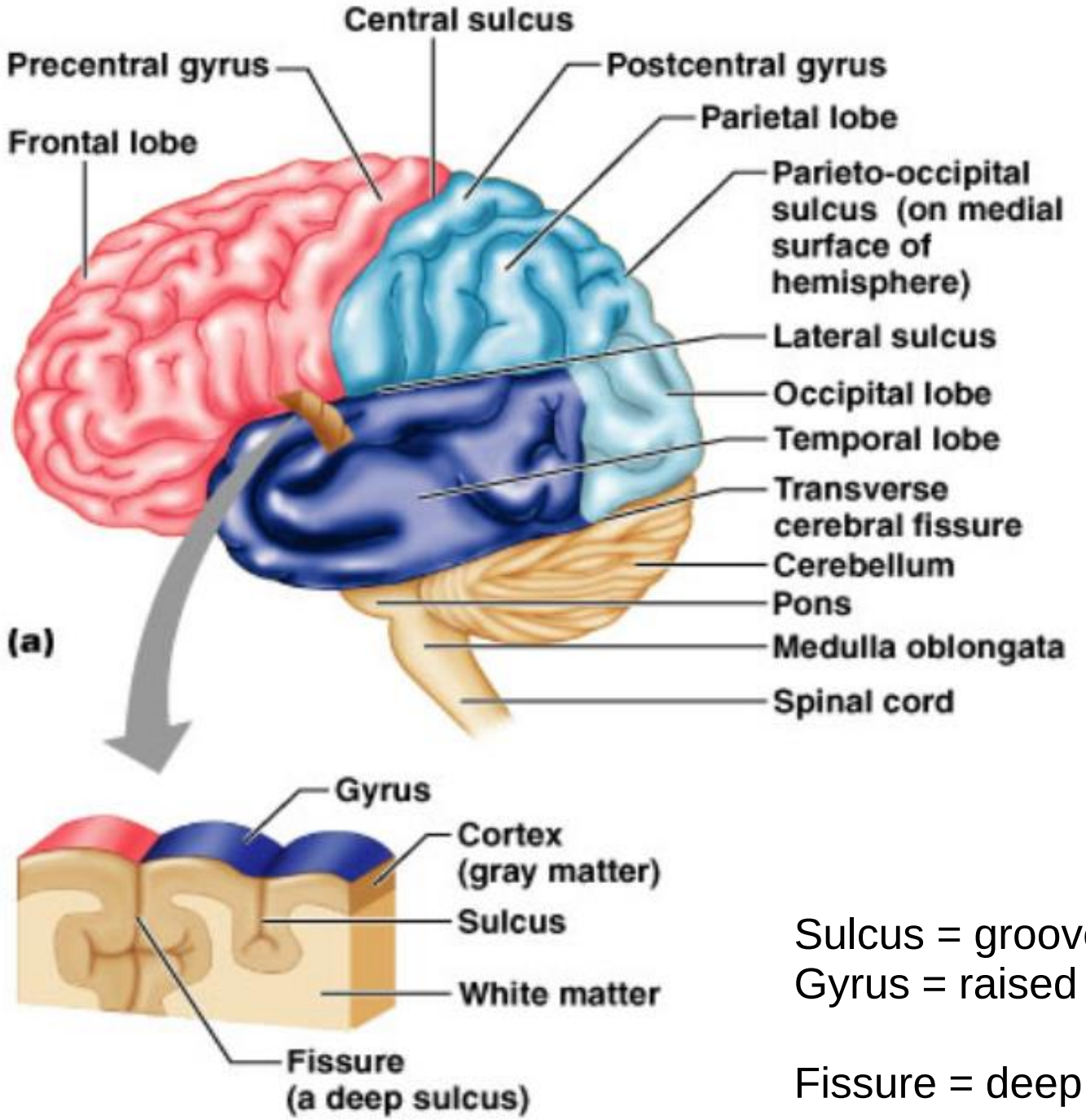
6. Parietal – touch, pain, relation of body parts (somatosensory)

7. Temporal Lobe – hearing

8. Occipital – vision

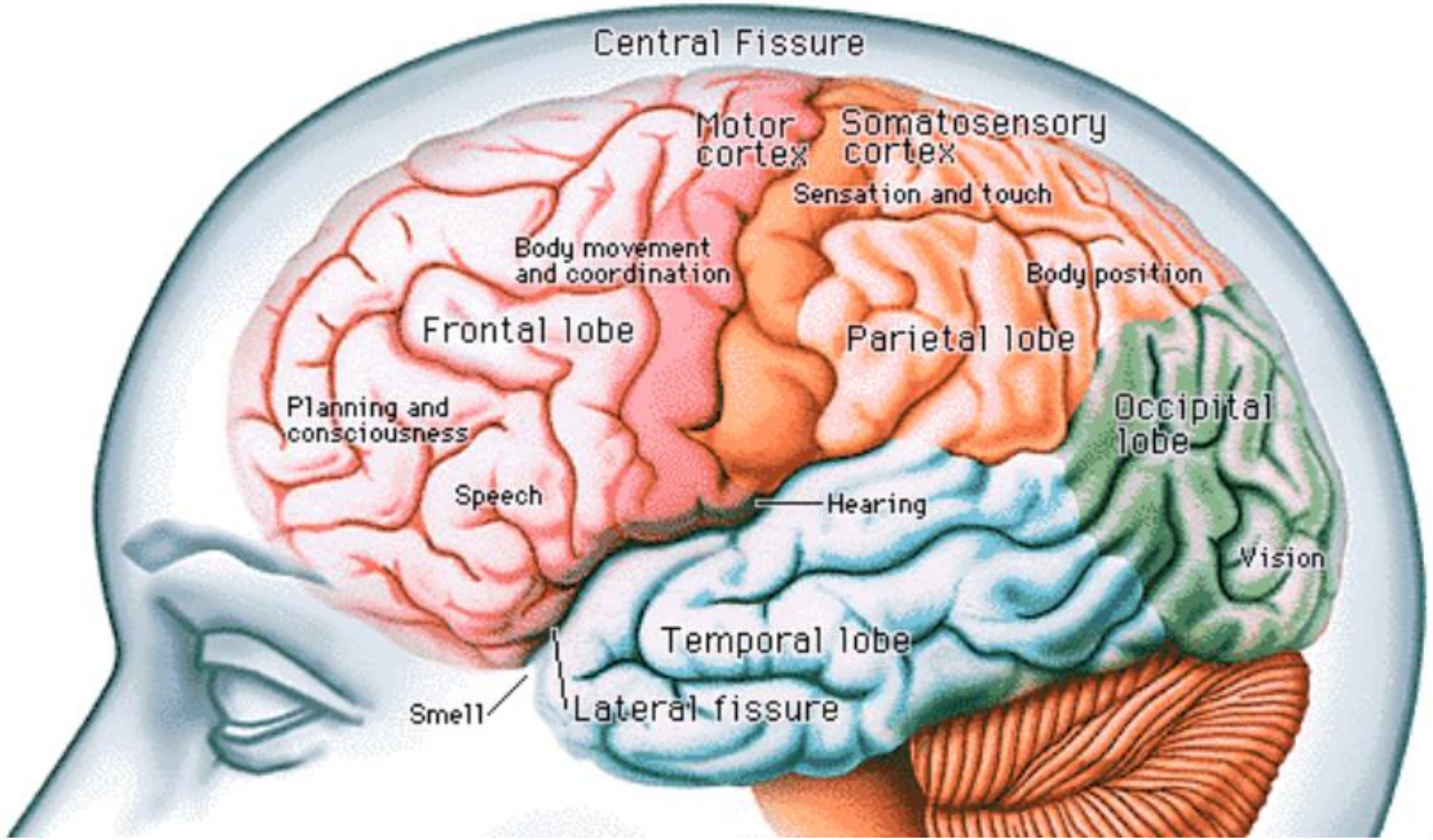


LOBES OF THE BRAIN (CEREBRUM)



Sulcus = groove
Gyrus = raised bump

Fissure = deep groove



9. Cerebral Cortex - thin layer of gray matter that is the outermost portion of cerebrum (the part with all the wrinkles)

Functional and Structural Areas of the Cerebral Cortex

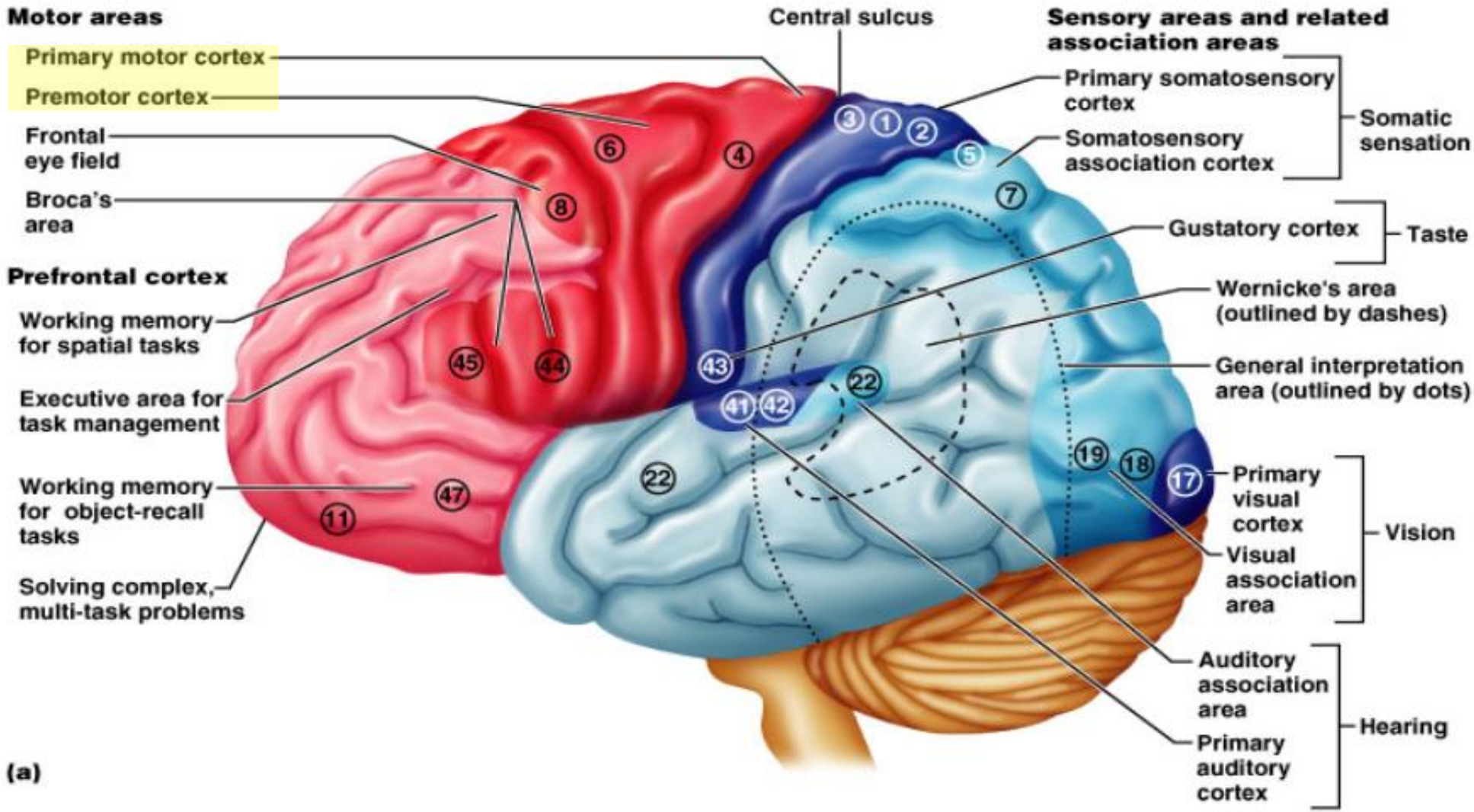


Figure 13.11a

Motor Area

- Location = precentral gyrus
- Function = Fine motor movements

Premotor Area

- Location = in front of the motor area
- Function = coordination of gross skeletal muscles
- Reflex movements

Motor speech area (Broca's Area)

- Location = base of motor area
- Function = speech – only found in left hemisphere
- Aphasia = without speech
- Agraphia = inability to write
- Word deafness = inability to understand spoken words
- Word blindness = inability to understand written words

Prefrontal area

- Location = in front of the premotor area
- Function = complex intellectual activities, solving math problems, personality (phineas gage)

General Sensory Area

- Location = post central gyrus
- Function = where stimulus is coming from and the intensity
- Recognize position of body

Auditory Area

- Location = superior part of temporal lobe
- Function = hearing

Visual Area

- Location = occipital lobe
- Function = vision

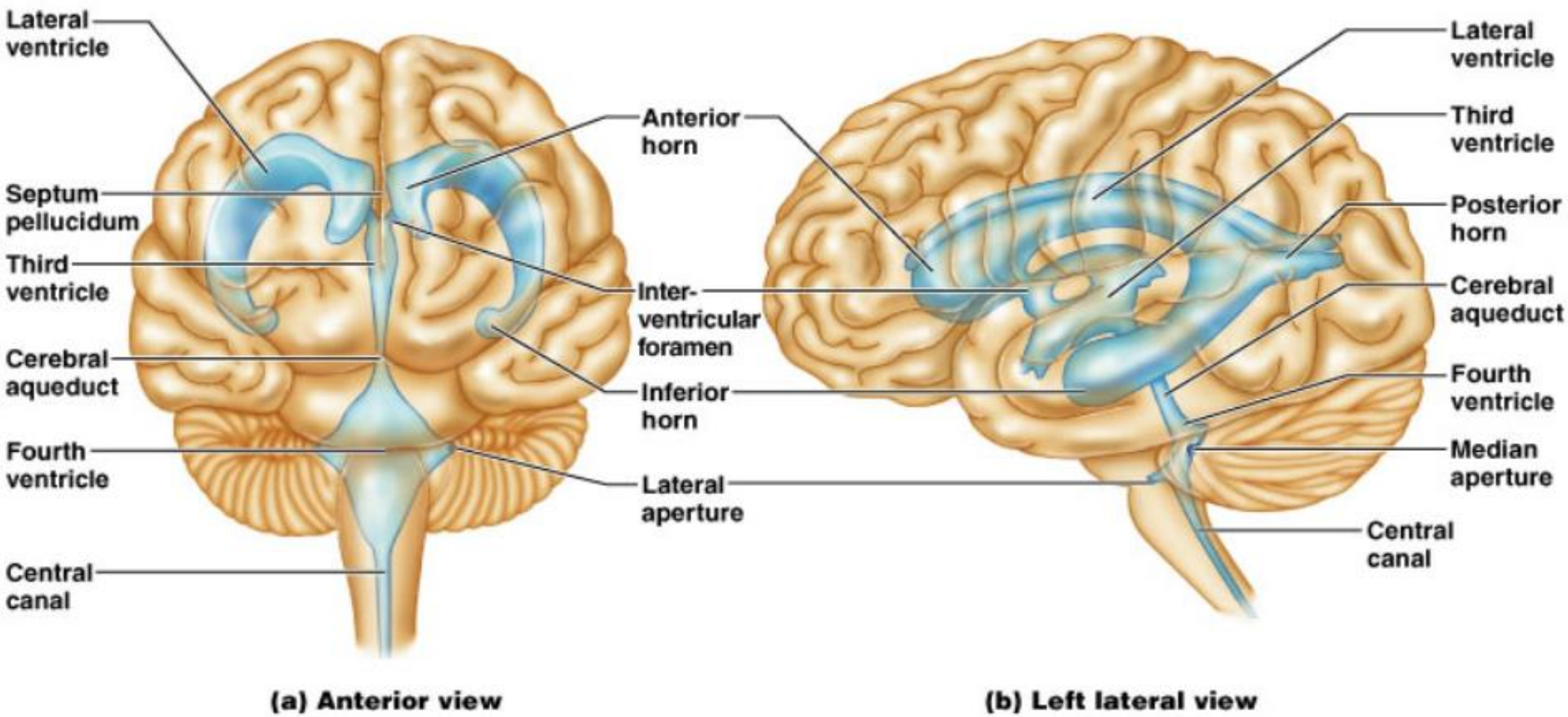
Olfactory and Gustatory Areas

- Location = temporal lobe
- Function = smell and taste

Association areas

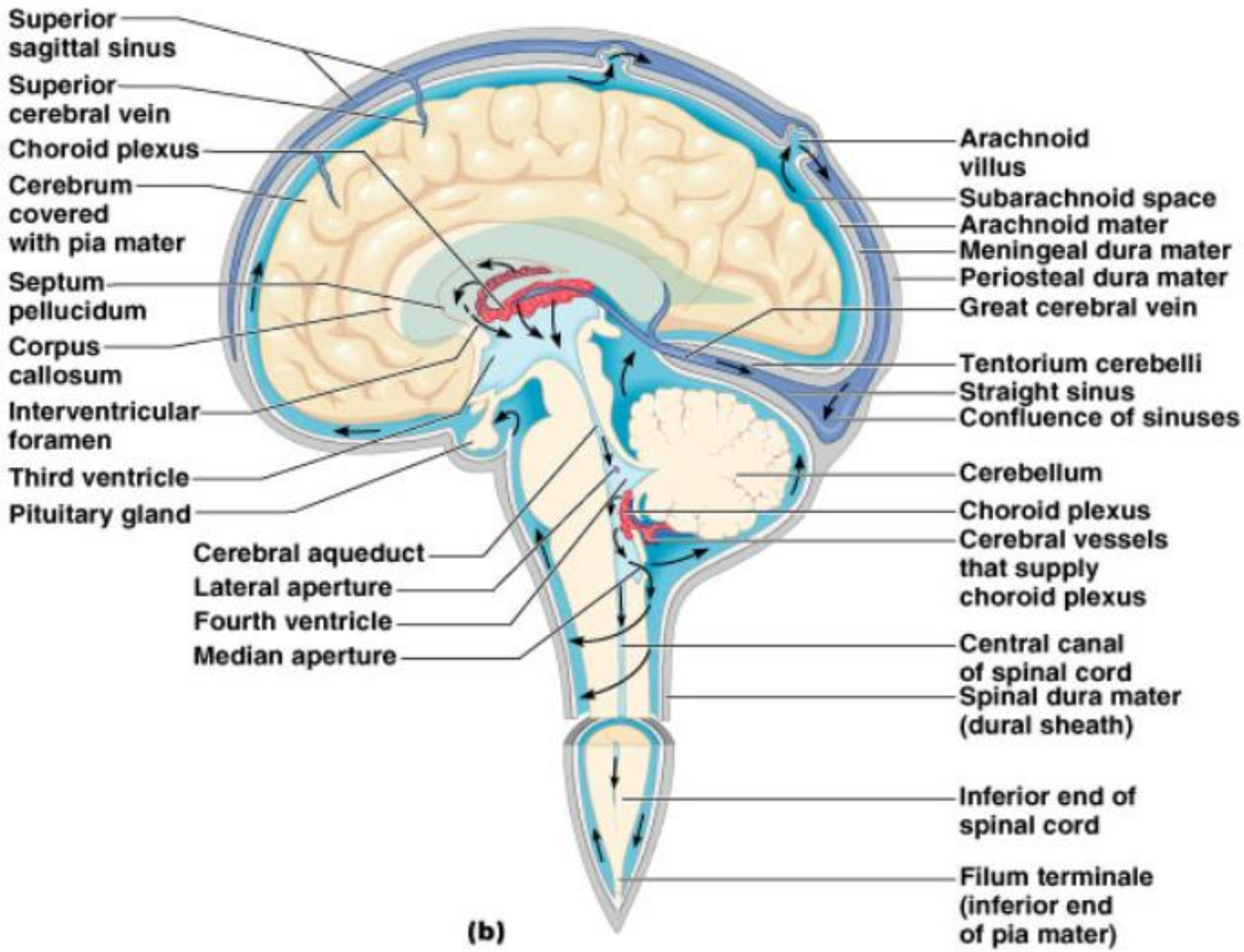
- Remaining areas of the cerebral cortex
- Integration of all sensory and motor activity

10.VENTRICLES OF THE BRAIN



Fluid filled cavities, contain CSF

11. Cerebrospinal Fluid (CSF) - fluid that protects and supports brain



Flow of CSF

- Choroid plexus of lateral ventricle
- Lateral ventricle
- Interventricular foramen
- Third ventricle
- Cerebral aqueduct
- Fourth ventricle
  - Median aperture
  - Lateral aperture

  Subarachnoid space

  Arachnoid villus

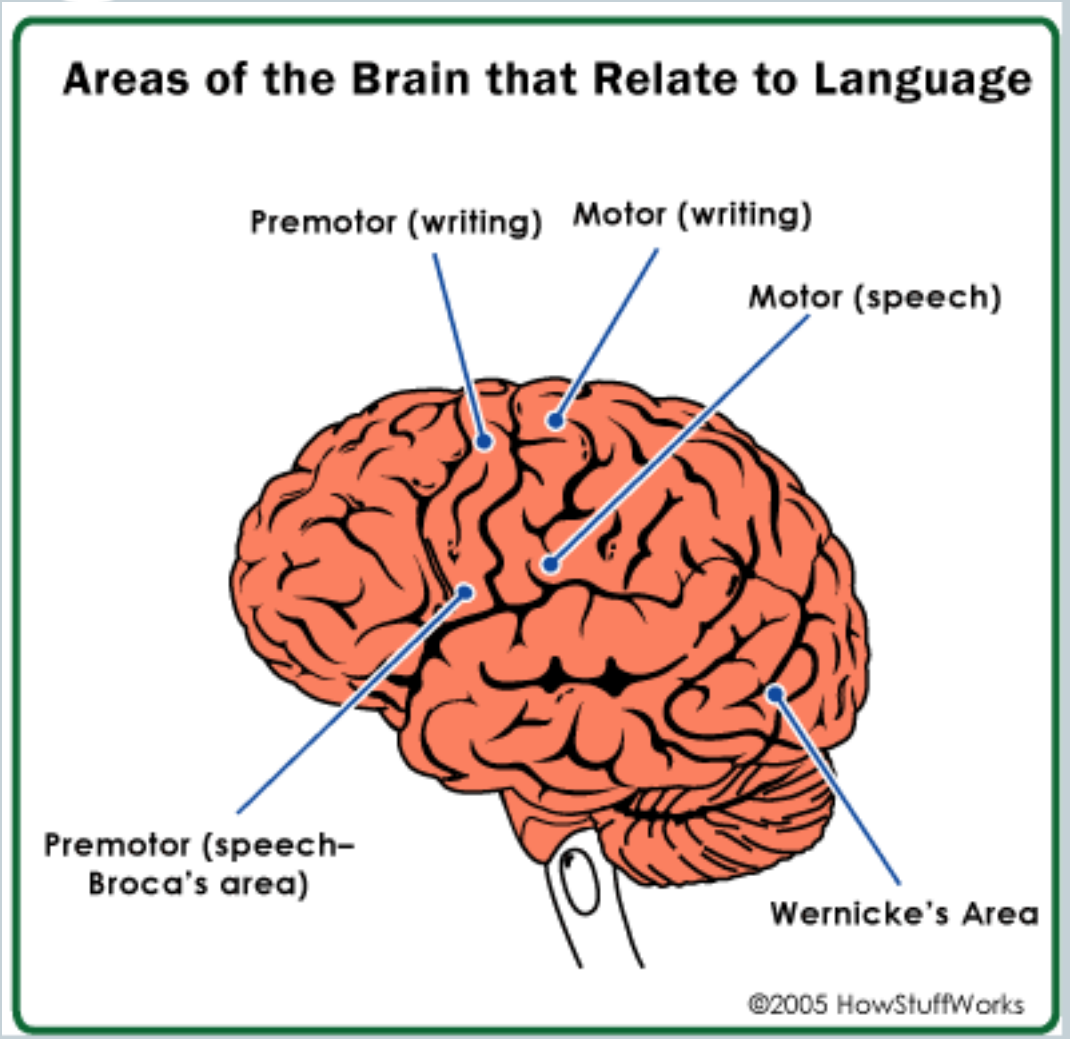
  Superior sagittal sinus

FUNCTIONAL REGIONS

- **A. MOTOR AREAS**
- **B. SENSORY AREAS**
- **C. ASSOCIATION**

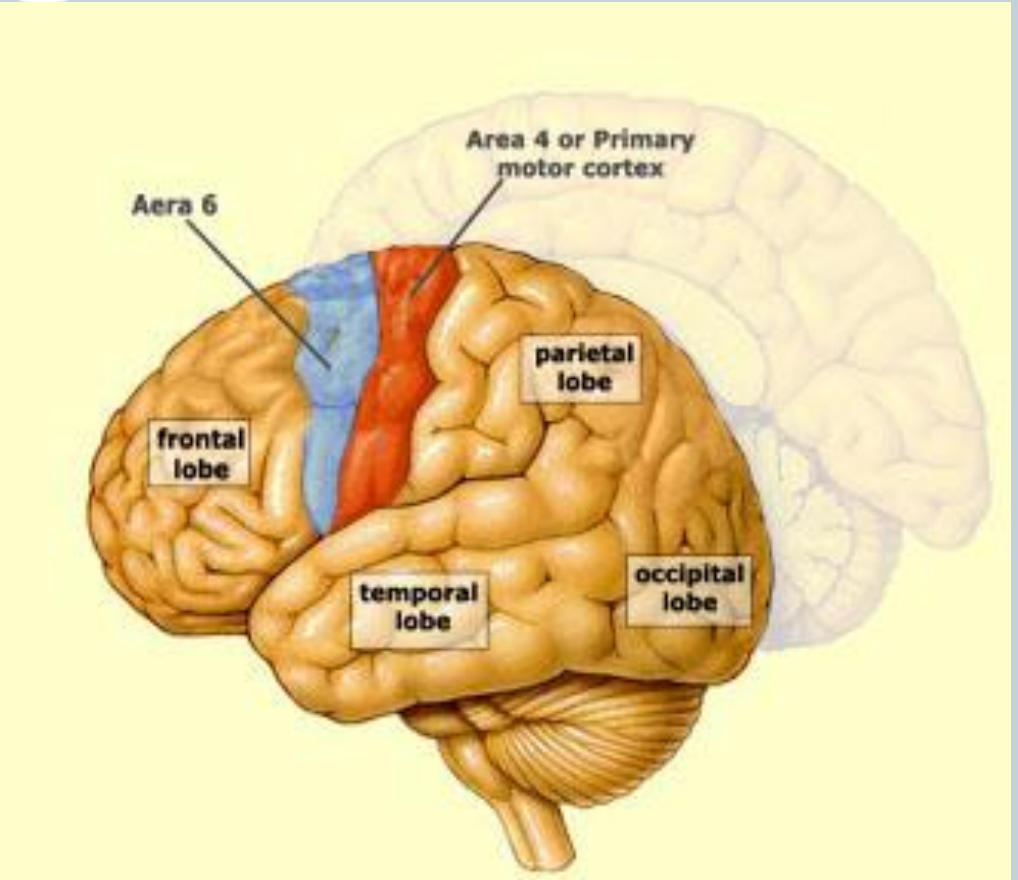
12. Motor Areas

- controls voluntary movements
- the right side of the brain generally controls the left side of the body
-also has Broca's Area (speech)



13. Sensory Area

- involved in feelings and sensations (visual, auditory, smell, touch, taste)



14. Association Areas

- higher levels of thinking, interpreting and analyzing information

BRAIN STEM

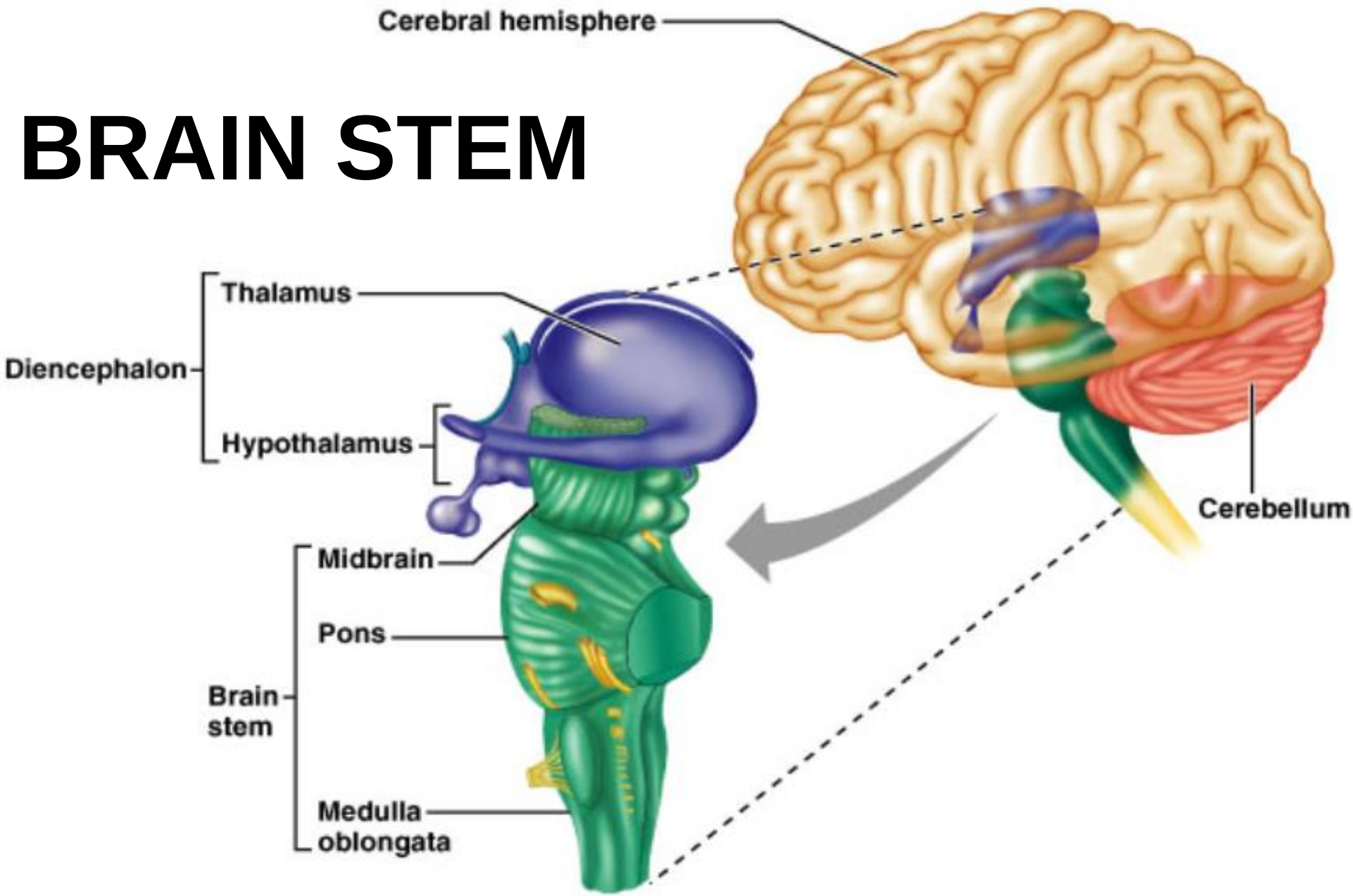
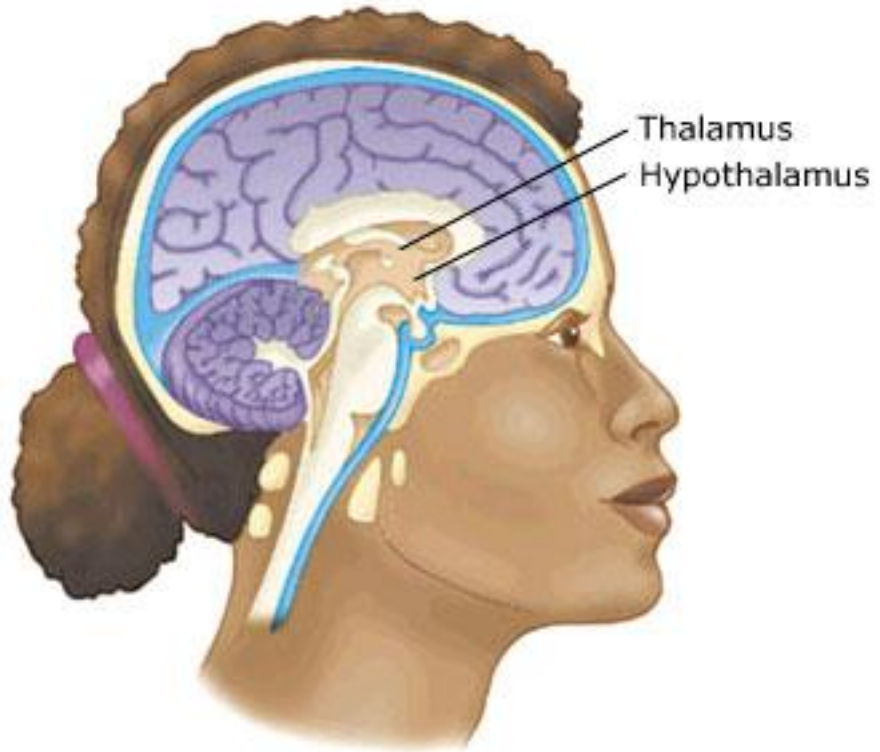


Figure 13.4

BRAIN STEM

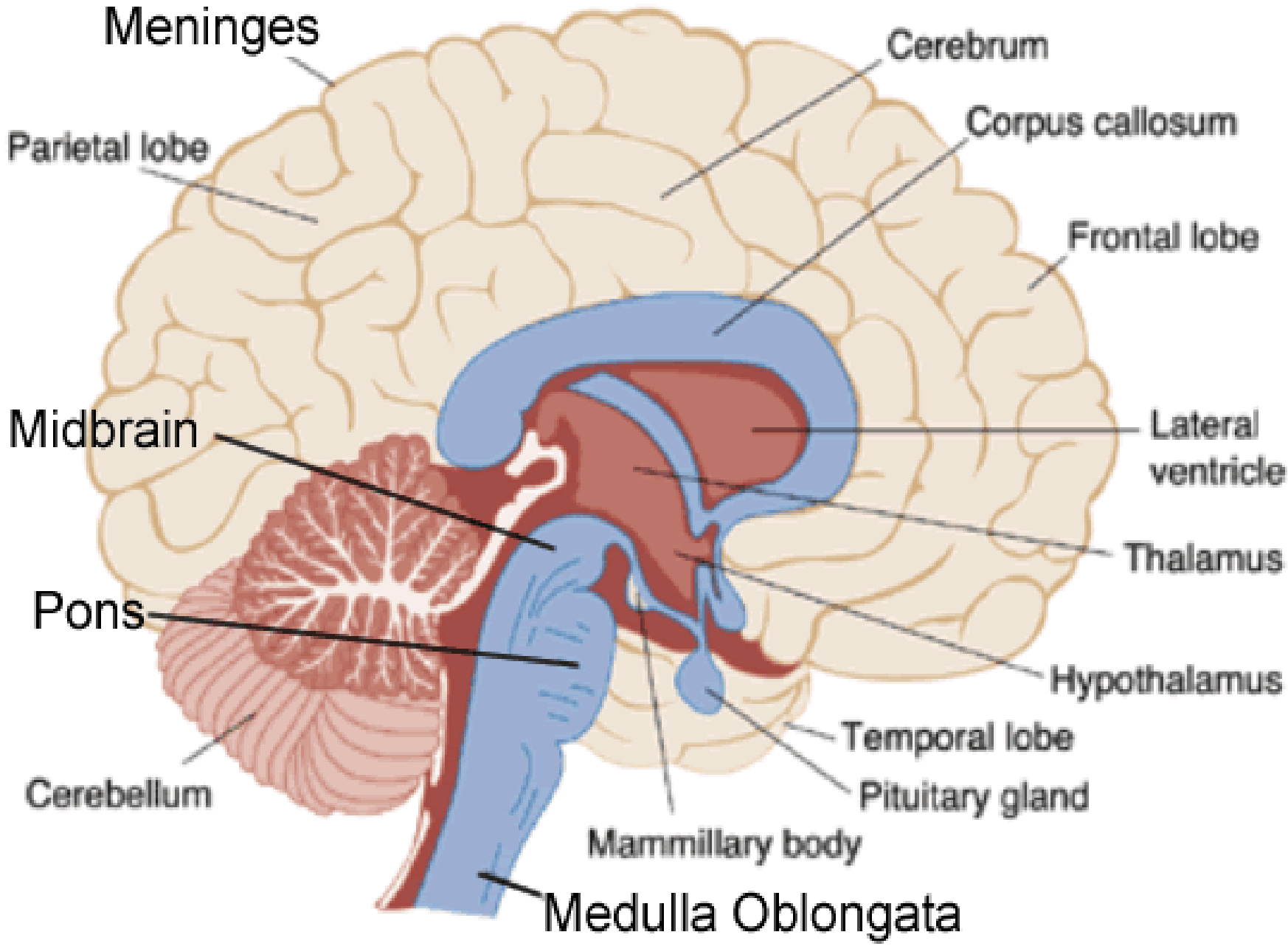
- Consists of three parts:
  - **PONS**
  - **MIDBRAIN**
  - **MEDULLA OBLONGATA**

Diencephalon

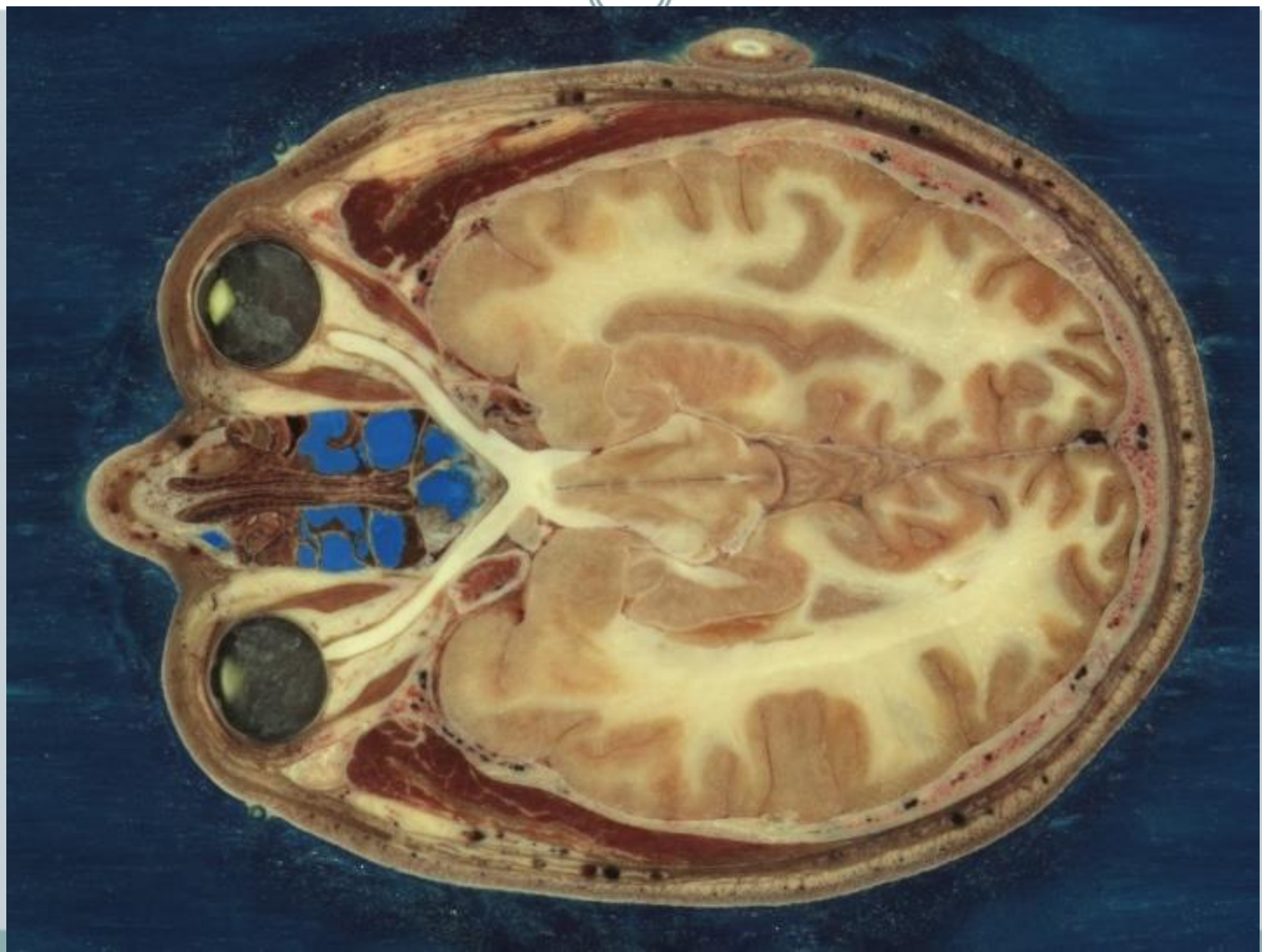


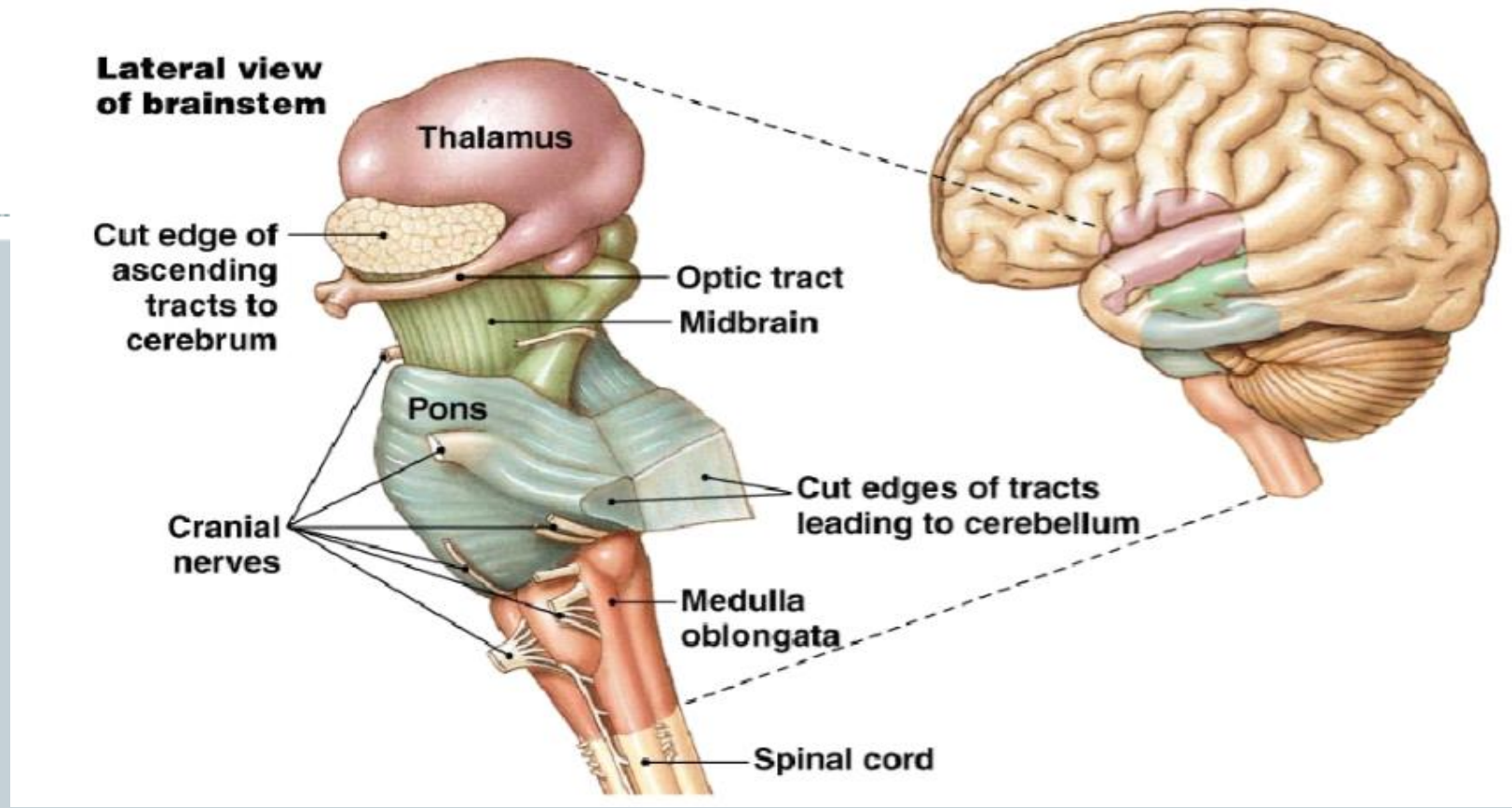
1. Hypothalamus - hormones, heart rate, blood pressure, body temp, hunger

2. Thalamus - relay station

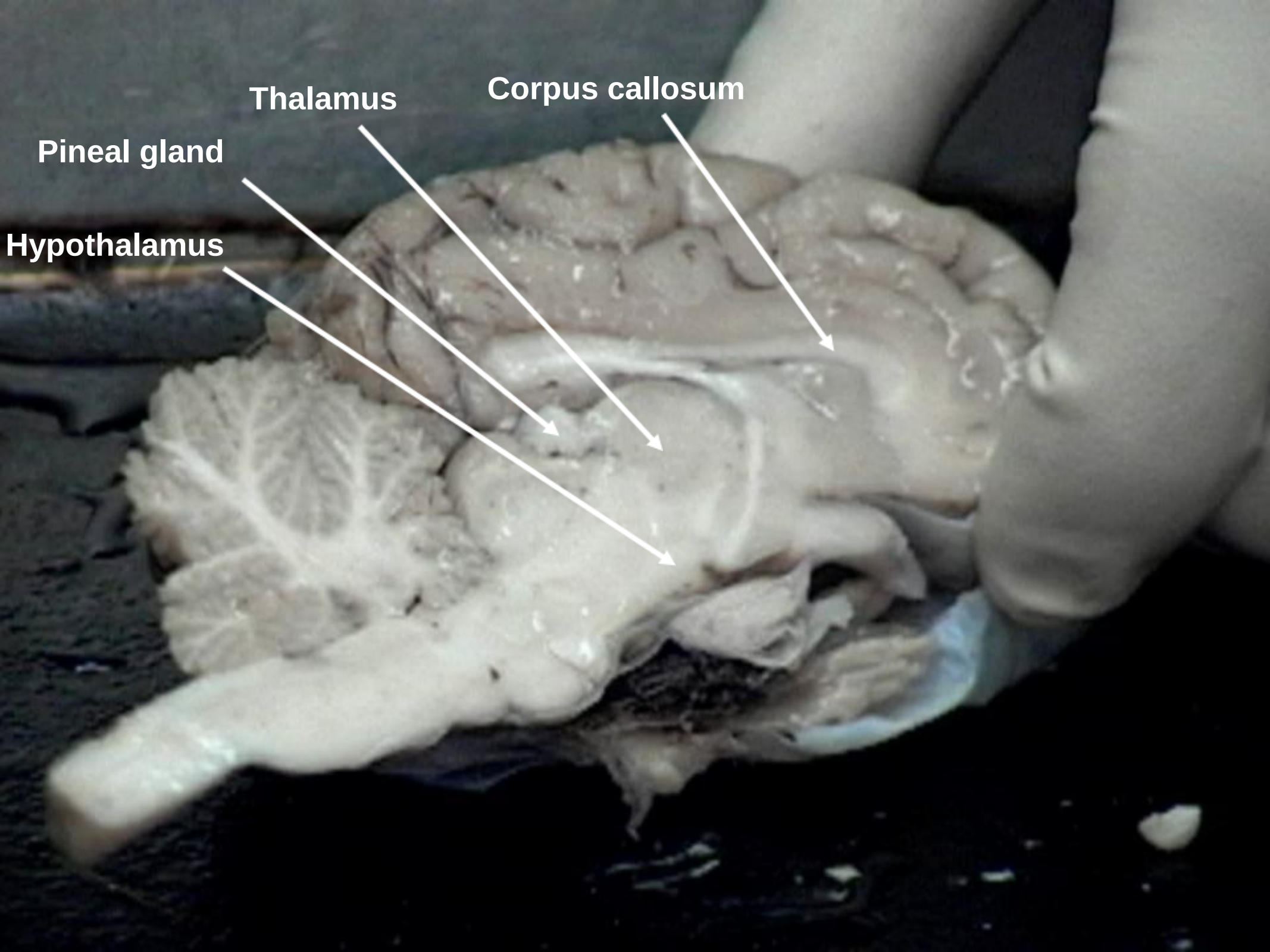

Meninges
Cerebrum
Corpus callosum
Parietal lobe
Frontal lobe
Midbrain
Lateral ventricle
Thalamus
Pons
Hypothalamus
Temporal lobe
Cerebellum
Pituitary gland
Mammillary body
Medulla Oblongata

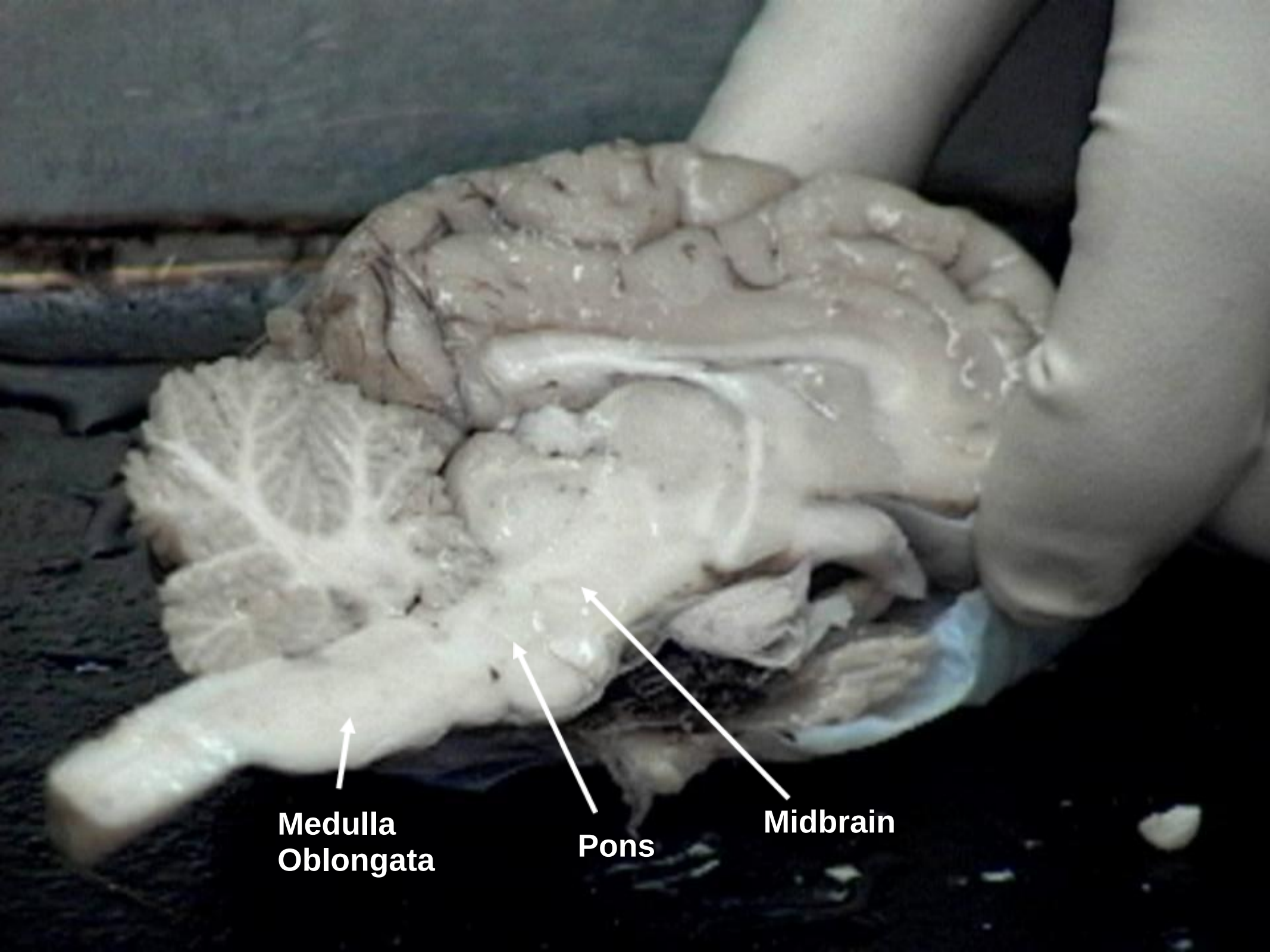
Optic Tract / Chiasma - optic nerves cross over each other





Midbrain – visual reflexes, eye movements
Pons - relay sensory information
Medulla – heart, respiration, blood pressure
Cerebellum - balance, coordination


Thalamus
Corpus callosum
Pineal gland
Hypothalamus

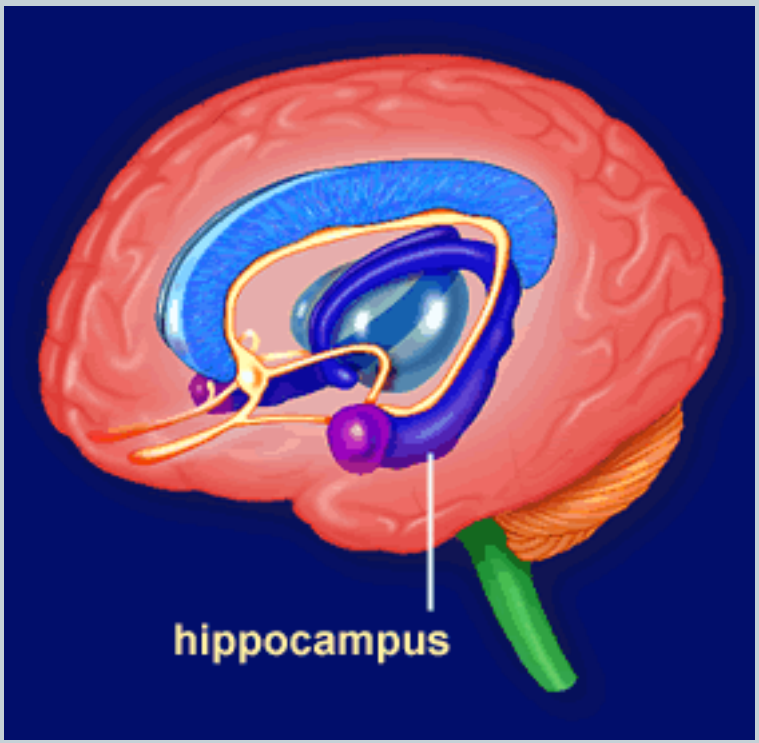

Medulla
Oblongata
Pons
Midbrain

EMOTIONS: LIMBIC SYSTEM

- The prefrontal lobe and the hippocampus are part of a system of structures in the brain.
- The **LIMBIC SYSTEM** also includes olfactory lobes. Therefore, memory, emotion, and smell are linked.
- Crayolas are created today with the same scent because it reminds people of their happy times in childhood.
- Why is the brain formed so that smell and emotions are tied together? Because pheromones are tied to emotions and behavior, so they need the link.

MEMORY: HIPPOCAMPUS

- Memory is controlled by the **HIPPOCAMPUS** ("sea horse"; that's its shape). The hippocampus plays a major role in forging memories.



MEMORY

- We used to classify memory as being long-term or short-term. The new classification is four memory systems that process information for storage and retrieval:
- Episodic, Semantic, Procedural, and Working.

The episodic memory system

- Involved in remembering personal experiences, such as a phone conversation you had yesterday or the movie you watched last week.

The semantic memory system

- Manages the storage and retrieval of general knowledge of facts, such as the number of days in a year or the colors in a rainbow.
- People with problems in this system may have difficulty in naming an object or describing a named object.
- Semantic Memory Tasks
  - 1. What month comes after October?
  - 2. Where do Kangaroos live?
  - 3. What actor played the Joker in the last Batman movie?

The procedural memory system

- Allows us to learn activities and skills that will then be performed automatically with little or no conscious thought.
- Examples are riding a bicycle or driving a car.
- Problems with this system leads to loss of skills or significant difficulties in learning new skills.

The working memory system

- Governs attention, concentration, and short-term retention.
- Problems here can impair her a person's ability to pay attention or to accomplish multi-step tasks.
- Working Memory Tasks
  - 1. Labeling a skeleton (remember that chapter?)
  - 2. Describing the parts of the brain.
  - 3. List all the things you ate yesterday.

Working Memory Test
Memory Game