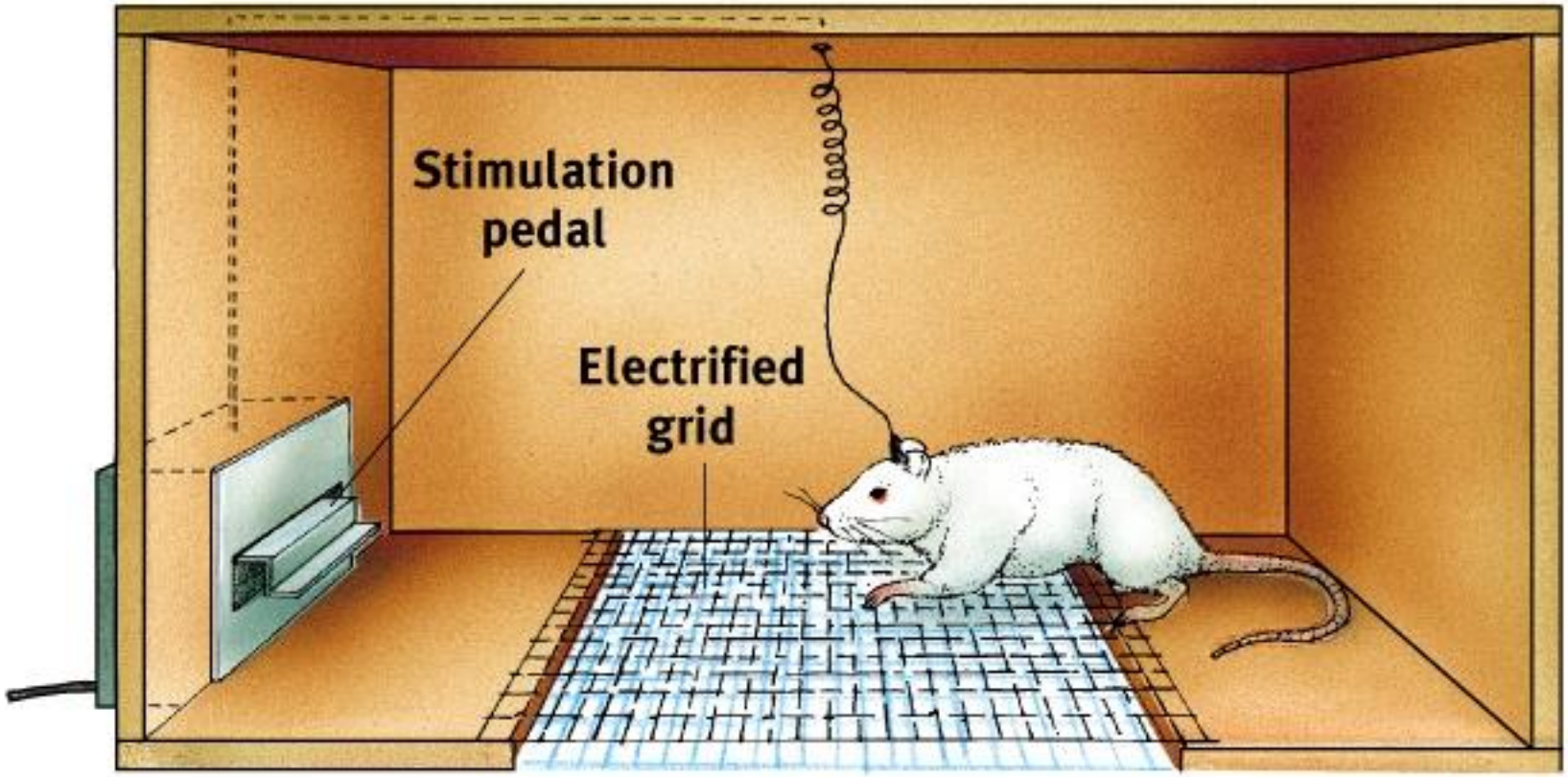
Hypothalamus

- Maybe most important structure in the brain.
- Links nervous system and endocrine system via the *pituitary gland*
- Controls and regulates
  - Body temperature
  - Sexual Arousal
  - Hunger
  - Thirst
  - Endocrine System

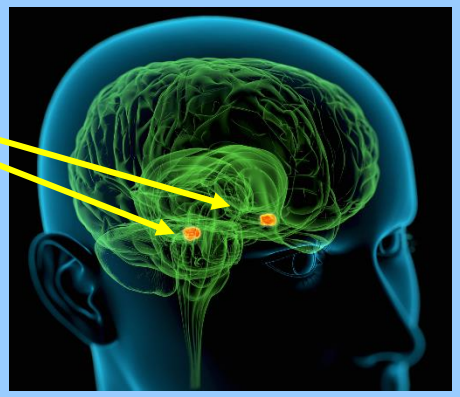
The Hypothalamus and orexin

Rat with an Implanted Electrode in reward center of Hypothalamus



The Hypothalamus, reward centers and drug addiction

Amygdala



- Involved in learning, and the processing of emotional memories.
- Measures sensory input for potential threat level, then
  → hypothalamus
- Regulates volatile emotions like fear and anger.

Disorders affecting region:

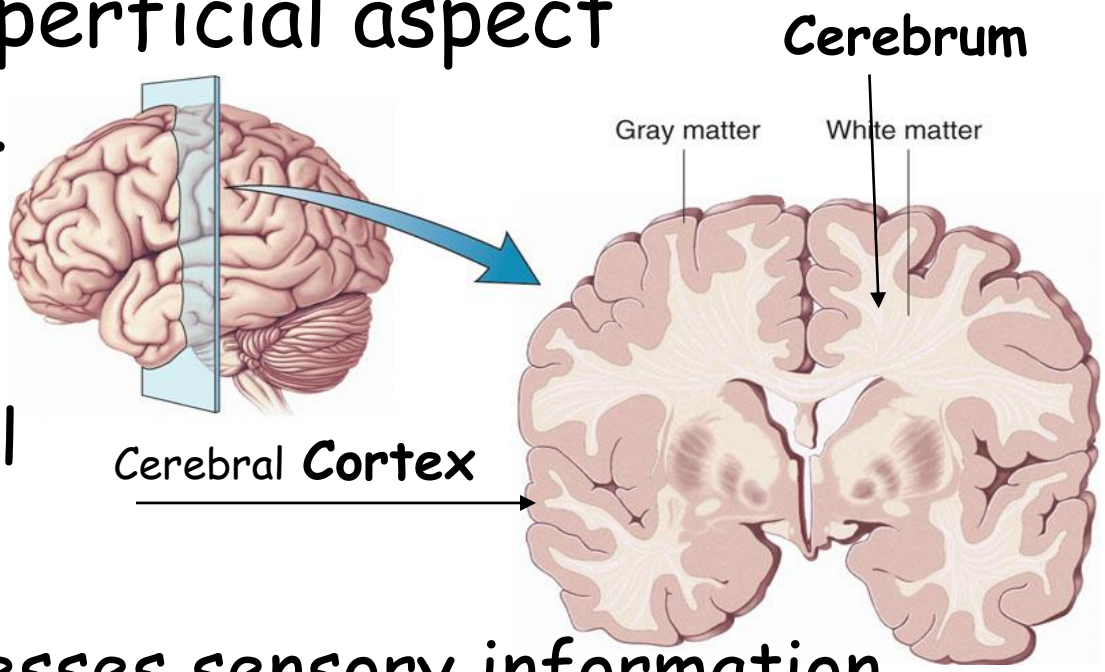
depression
anxiety

Cerebrum -The largest division of the brain. It is divided into two hemispheres, each of which is divided into four lobes.

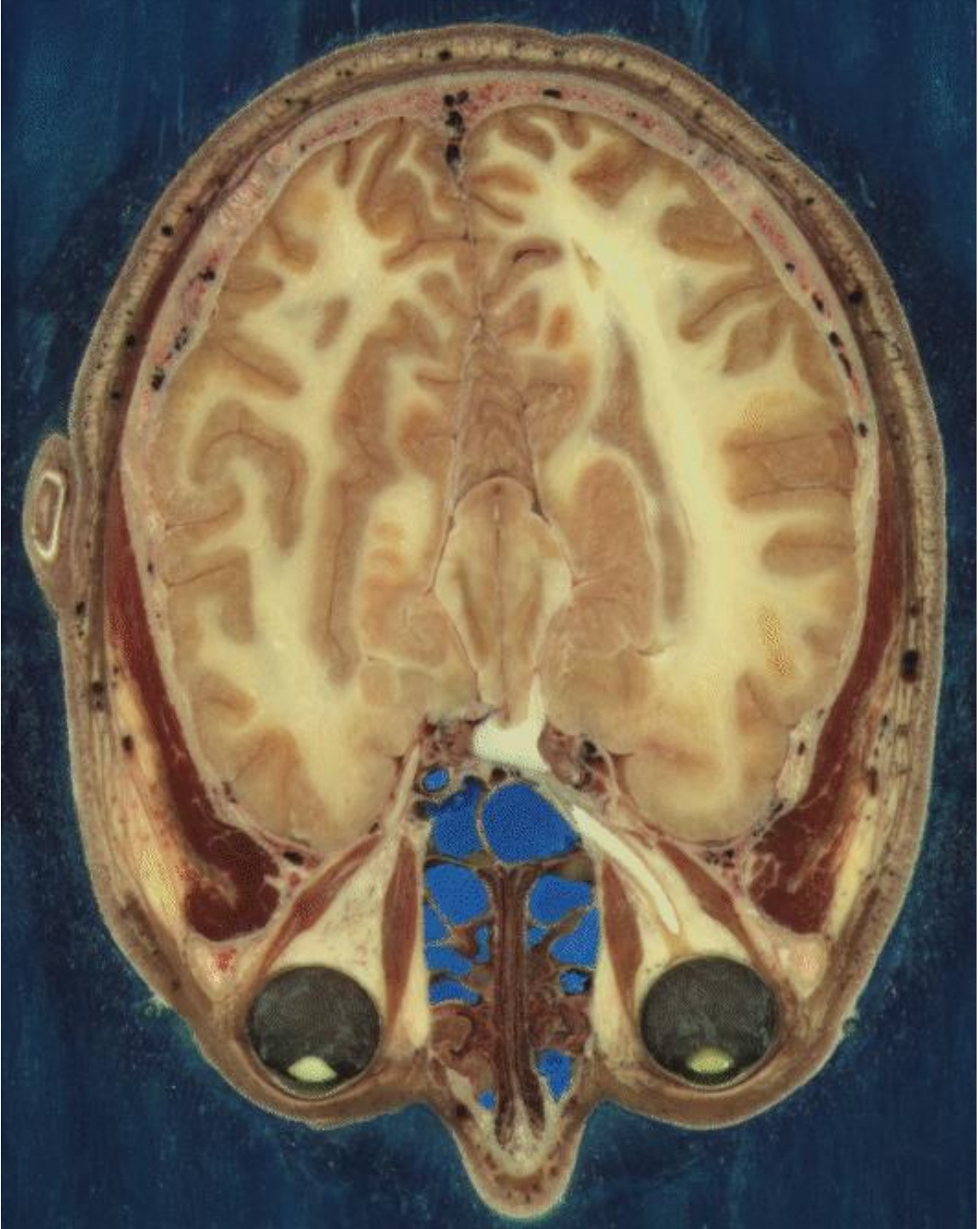
Cerebral Cortex - The outermost layer of gray matter making up the superficial aspect of the cerebrum.

Neurons in cerebral cortex: 16.5 billion

Glial cells in cerebral cortex: 60 billion



- Receives and processes sensory information.
- Made up of densely packed neurons we call "gray matter".
- Glial Cells – Supports brain cells, creates myelin, involved with learning and thinking, they "clean up" NT's and ions. *"Neural nannies"*



White matter

- 60% of brain
- Myelinated (causes color)
- Transmission

to and from gray, and from gray to other parts of the body

Gray matter

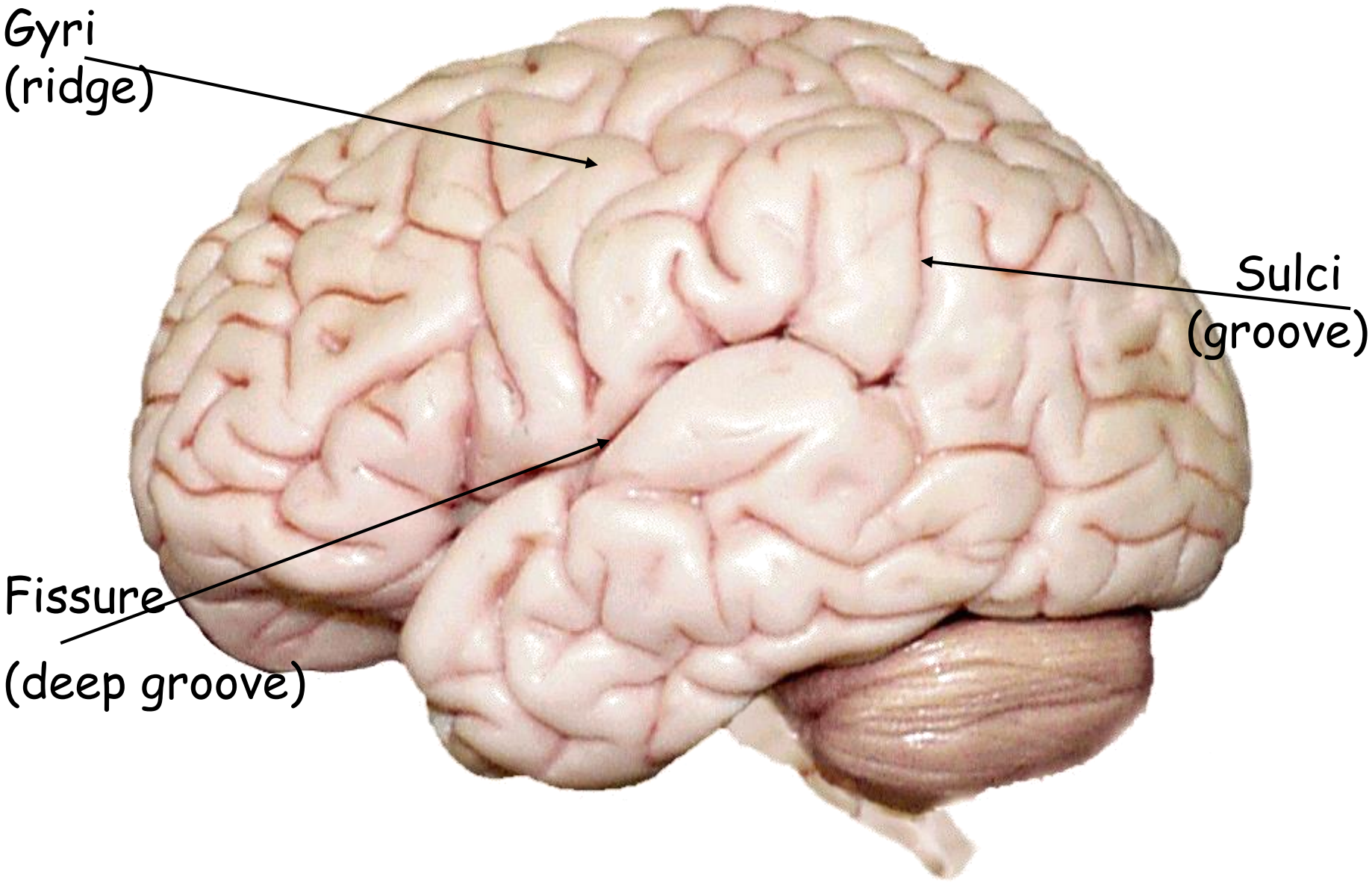
- 40% brain
- Gray nuclei causes color
- No myelin
- Processing and "decisions"

Cerebral Features:

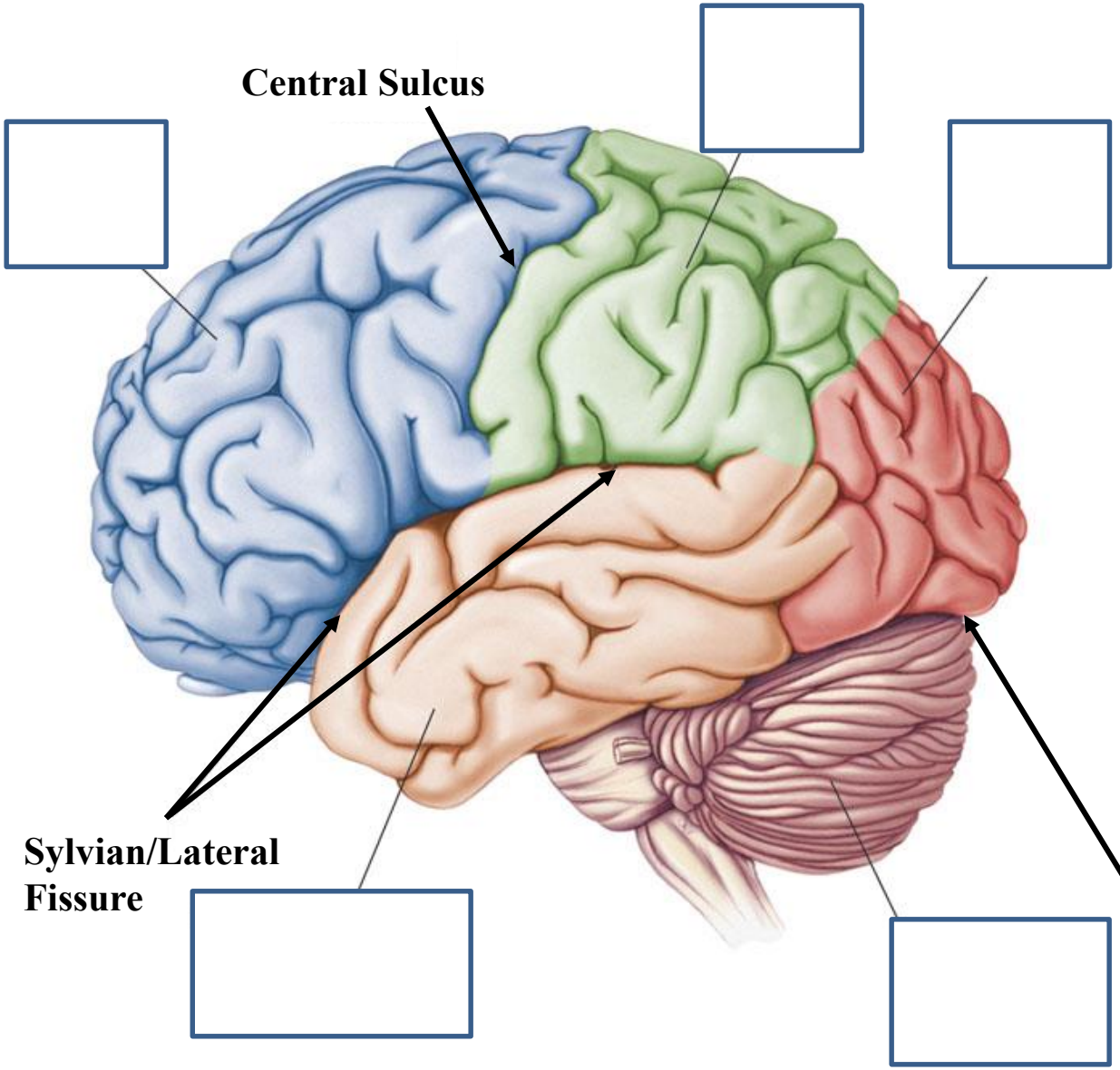
- **Gyri** – Elevated ridges "winding" around the brain.

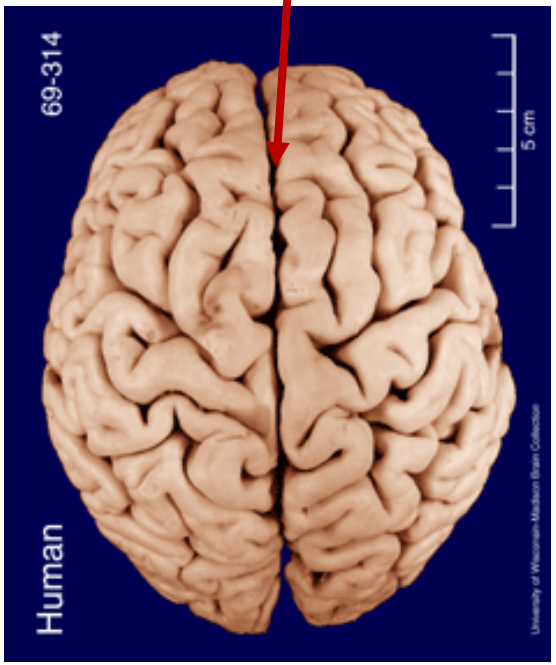
- **Sulci** – Small grooves dividing the gyri
  - **Central Sulcus** – Divides the Frontal Lobe from the Parietal Lobe

- **Fissures** – Deep grooves, generally dividing large regions/lobes of the brain
  - **Longitudinal Fissure** – Divides the two Cerebral Hemispheres
  - **Transverse Fissure** – Separates the Cerebrum from the Cerebellum
  - **Sylvian/Lateral Fissure** – Divides the Temporal Lobe from the Frontal and Parietal Lobes


Gyri
(ridge)
Sulci
(groove)
Fissure
(deep groove)

Specific Sulci/Fissures:





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