3 MAJOR FISSURES : 2HEMISPHERES

- **Left**
  - Lateral Ventricle
  - Third Ventricle
  - Lateral Fissure

- **Right**
  - Central Fissure
  - Sulcus
  - Gyros

- Fissure- Fissures
- Sulcus- Sucli
- Gyros- Gyri

- Sulci+Gyri --> Surface x3
THE CORPUS CALLOSUM (3.11)

• Corpus Callosum -> Contralateral -> Perceptual + Motor Info Flow
• Precise connections between the 2 hemispheres of the brain
• Coordination between the right side and left side of the body (e.g. hands and feet)
• Allow for some specialized functions to be restricted to only one side (e.g. language on left, face perception on the right)

• 4 Lobes
  • Frontal Lobe
  • Parietal Lobe
  • Temporal Lobe
  • Occipital Lobe
SENSORY PROCESSING

- **Lateralization**: Right vs Left
- **Convergence**: From simple sensory features to more complex ones
- Different parts of the body one representative by different groups of neurons. The number of neurons “in charge” of a body part is not proportional to the size of that part
- Sensory And Motor Homunculus: How the brain sees the body
• Limbic Cortex
• Neocortex
• Corpus Callosum
• Fornix
• Mammillary Body
• Amygdala
• Hippocampus
• (Neo) Cortex: Evolutionary ‘new’
• Limbic Cortex: Evolutionary ‘old’
BASIL GANGLIA

- Caudate
- Putamen
- Globus Pallidus (Control of movement, related to Parkinson’s Disease)

https://www.youtube.com/watch?v=CegK0qImsSs
• Diencephalon = Thalamus + Hypothalamus
• **Thalamus**
  • 2 lobes linked by the massa intermedia
  • Major sensory structure made of specialized media

• Ears -> Medial Geniculate Nucleus
• Eyes (Retina) -> Optic Chiasm -> Lateral Geniculate Nucleus
• -Also has some motor outputs
• Cerebellum (Memory for fine learned movement)
HYPOTHALAMUS

• Controls the Autonomic (heart, lungs) and Endocrine (hormones) system
• Species specific behaviors ( Four F’s)
• Pituitary
• Posterior Pituitary Gland: Oxytocin (Child Birth) Vasopressin (Anti-Diuretic hormones control urine output)
• Vasopressin (Anti-diuretic hormone, control urine output)
• Both substances are involved in attachment behaviors

• Hypothalamus -> Posterior Pituitary-> Hormones in Blood
• Anterior pituitary gland (prolactin, production of milk)
• Controls the production of other hormones (e.g. sex hormones, growth hormones)
• Hypothalamus-> Hormone Releasing-> Anterior Factor Molecules Capillaries
• Midbrain = Mesencephalon

**Tactum**
• Sensory reflexes (e.g. eye movements)
• Pineal Glands (Sleep/Wake cycle, Jetlag)

**Colliculi**
• Superior Colliculus (vision)
• Inferior Colliculus (audition)

**Tagmentum**
• Reticular Formation
• Sleep attention, movement, reflex's
• Many nuclei
• Periaqueductal Grey Matter (Pain Processing)

Species typical basic behavior (mating aggression) Red nucleus and Substantia Nigra) Motor Info (project to basil ganglia) Parkinson's Disease
• **Midbrain**
  • Brainstem=Diencephalon+ Midbrain + Hindbrain

• **Hindbrain**
  • Metencephalon= Cerebellum+ Pons
  • Myelencephalon= Medulla (Oblongeita)

• **Cerebellum**
  • Dense and specialized structure (Little Brain)
  • Made of: Cerebellar cortex, deep nuclei and peduncles
  • Coordination of complex movements (walking, jumping)
  • Smooth precise movements
• Relay between the cortex and the cerebellum
• Many nuclei
• Vestibular
• Facial
• Cochlear
• **Medulla**: Modulating heart and long functions
• [https://www.youtube.com/watch?v=T2zjB4ctu4](https://www.youtube.com/watch?v=T2zjB4ctu4)
• Sensory information enters dorsally (into the back) and motor information exists ventrally (belly side)
1. Olfactory - Smell
2. Optic - Vision
3. Occulomotor
4. Trochelear
5. Abduces
6. Trigominal - Touch, Pain, Jaw Muscles
7. Facial - Facial Muscle, Taste
8. Auditory - Hearing, Balance
9. Glossopharyngeal - Muscles of throat, larynx, taste
10. Vagus - Internal Organs
11. Spinal Accessory - Neck Muscle
12. Hypoglossal - Tongue Movement