

D1

Neuroanatomie du Système nerveux De la Structure à la Fonction

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D2

The Organization of the Nervous system

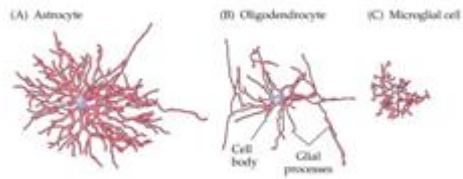
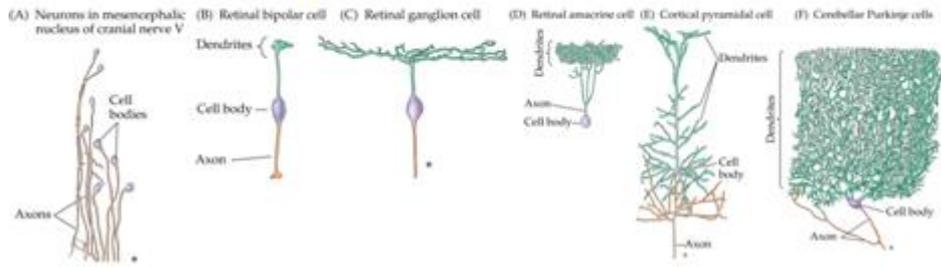
- Cellular Component

- **Nerve Cells:** Neurone : specialised for the intercellular communication
- **Neuroglial Cells:** Astrocyte, oligodendrocyte, Schwann Cells, microglia cells lack of axon and dendrite
- **Neural Circuits:** defined by synaptic connections
- **Neural Systems:** concern circuits that serve similar functions; two major neural system
 - Sensory system
 - Motor system

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The Organization of the Nervous system

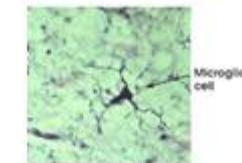
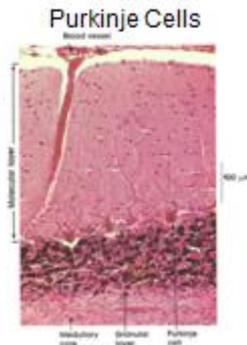
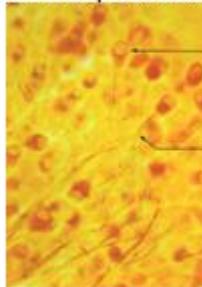
• Cellular Component



All these cells can be labelled by different techniques

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SENSORY GANGLION (GASSERIAN)
Pseudo unipolar neurons

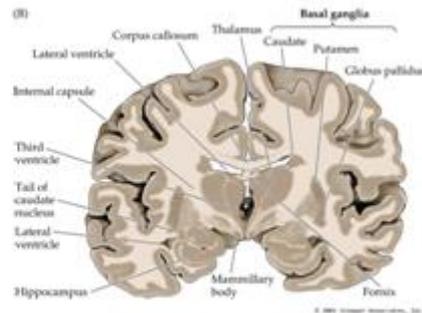
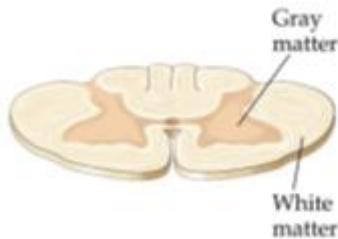


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- Tissue Component

- Gray matter
- White Matter



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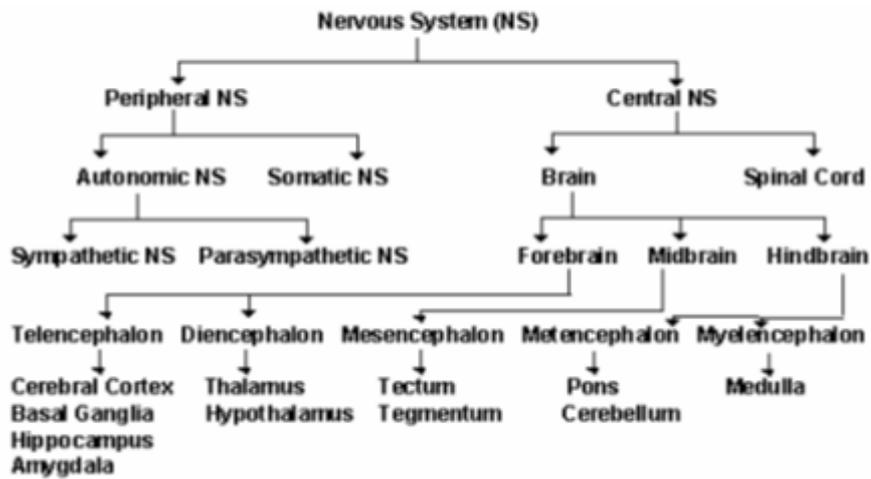
- Structural Components

- Central nervous system
 - Brain
 - Spinal cord
- Peripheral nervous system
 - Sensory System: sensory neurons which link sensory receptors (body surface/specialised receptors)
 - » Dorsal root ganglia lie adjacent to the spinal cord
 - » Cranial nerve ganglia lie adjacent to the brainstem
 - Motor System
 - » Somatic motor division
 - » Autonomic motor division

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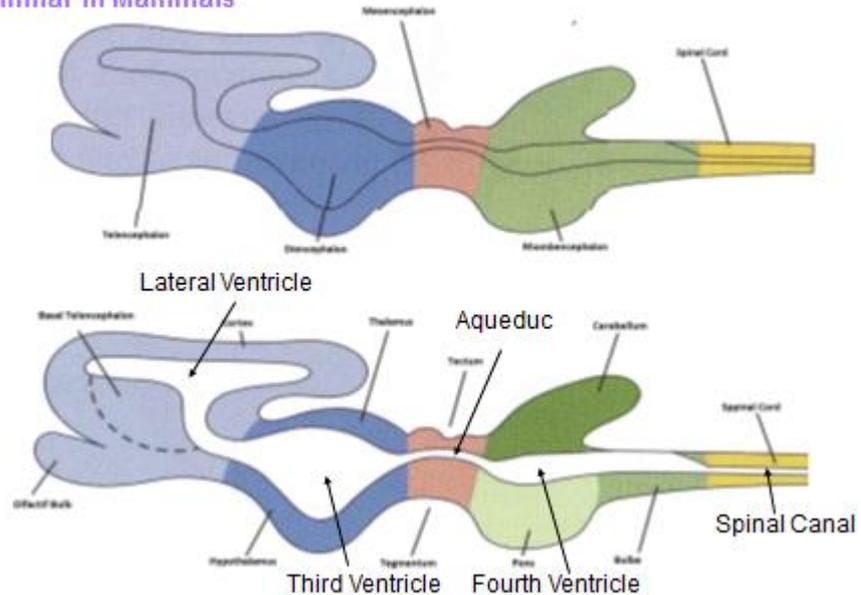
Structural Components



D8

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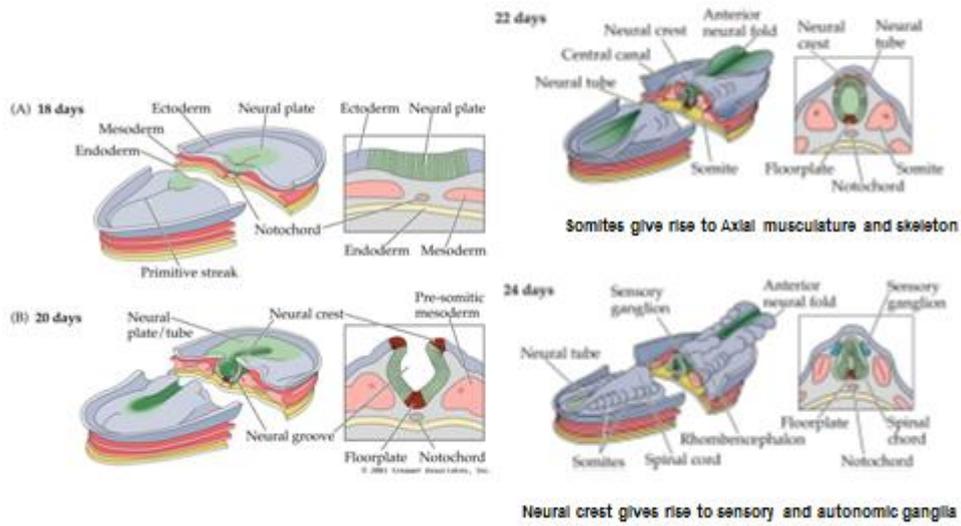
- From early stage of development, the organisation of the brain is similar in Mammals



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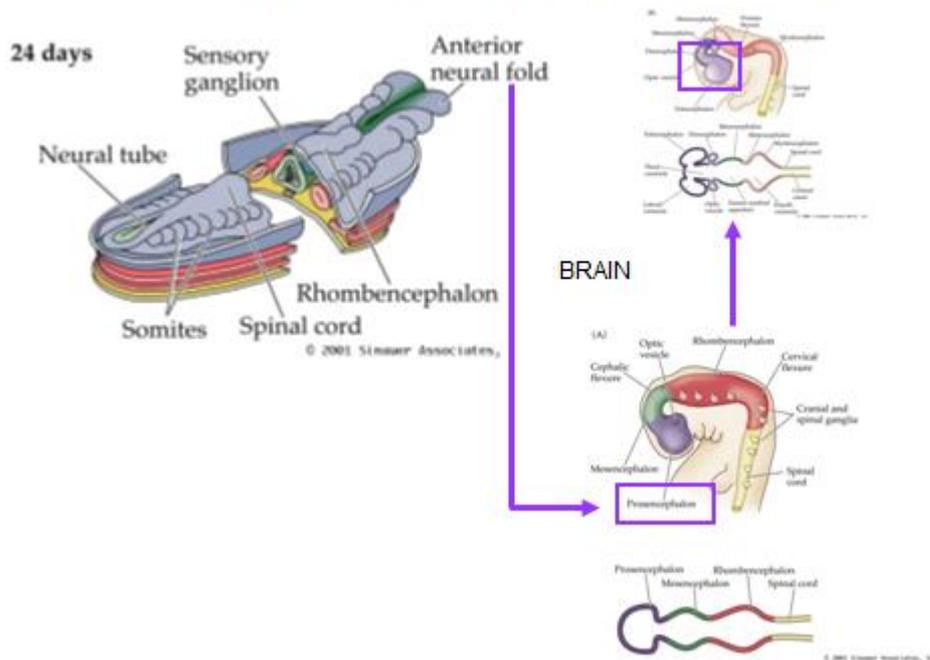
The Organization of the Nervous system

- **Functions are related to the brain development**
The skin and the nervous system emerge from ectoderm



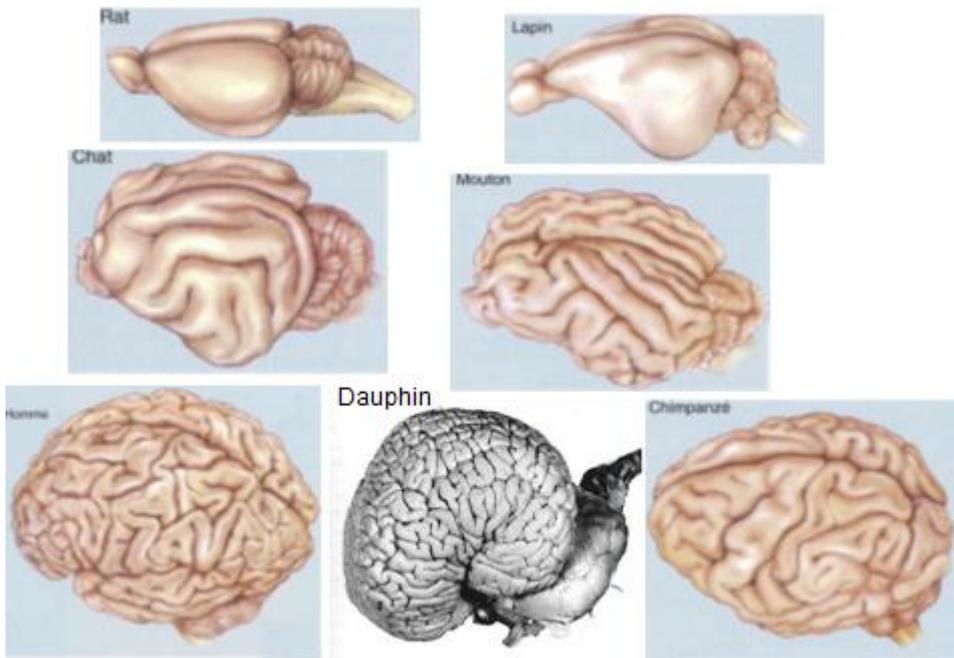
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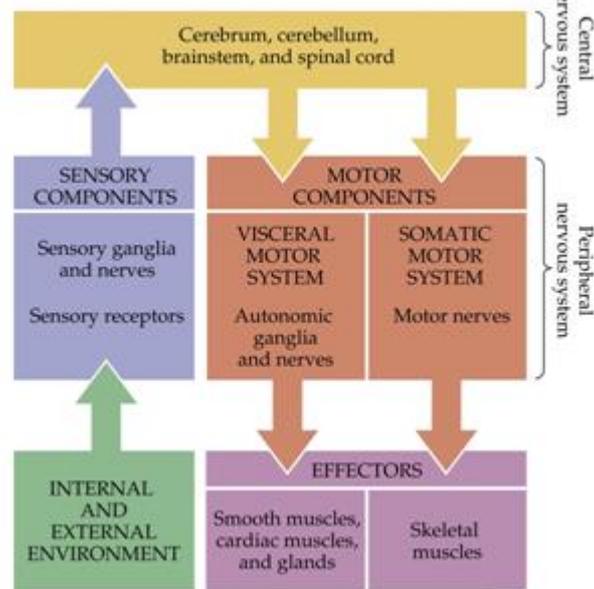
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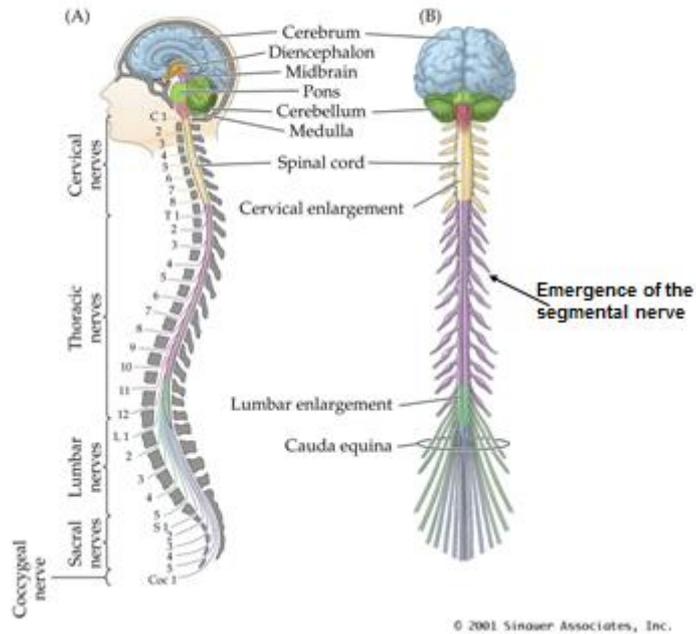
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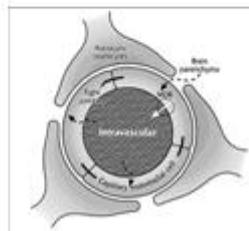
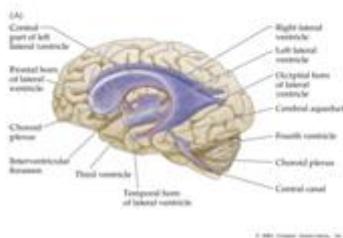
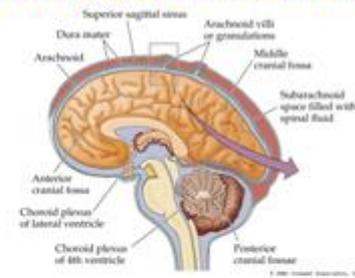
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The Organization of the Nervous system

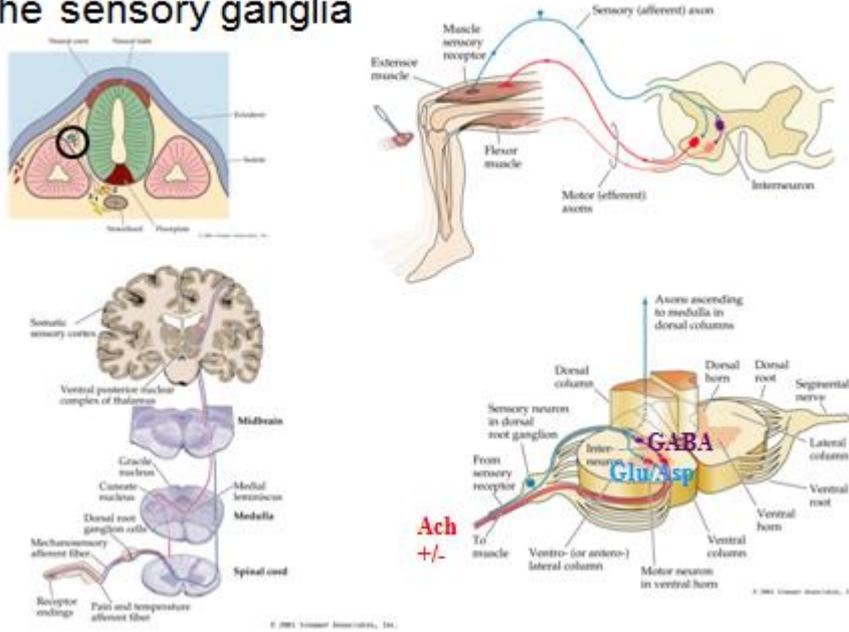
- All brains have protection and blood vascularisation



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The Organization of the Nervous system

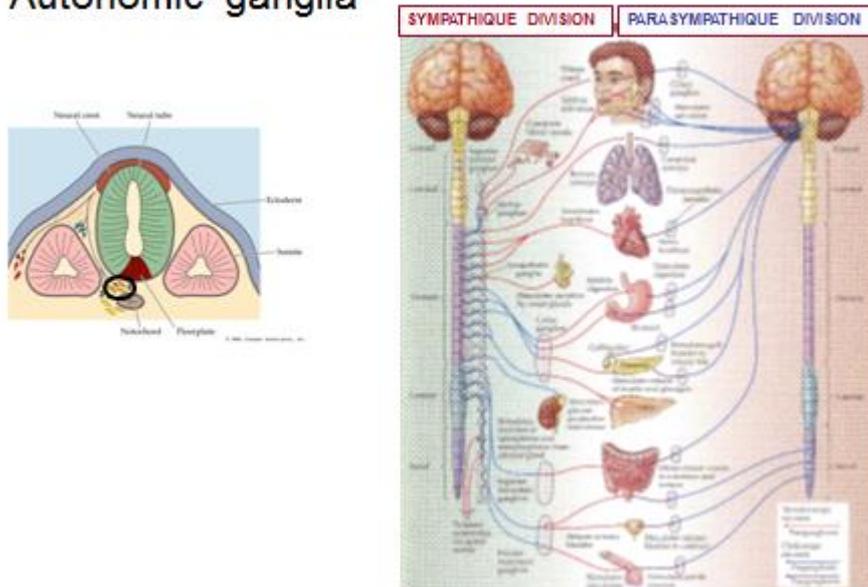
- The sensory ganglia



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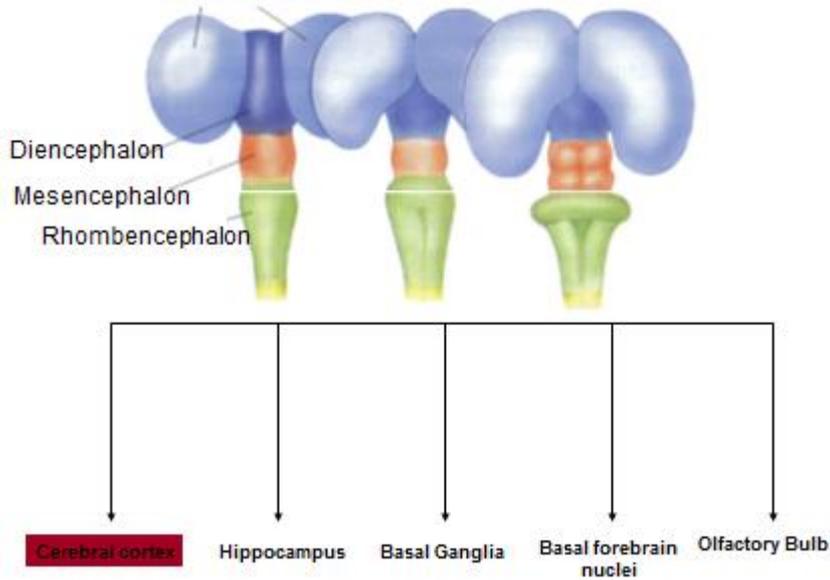
- Autonomic ganglia



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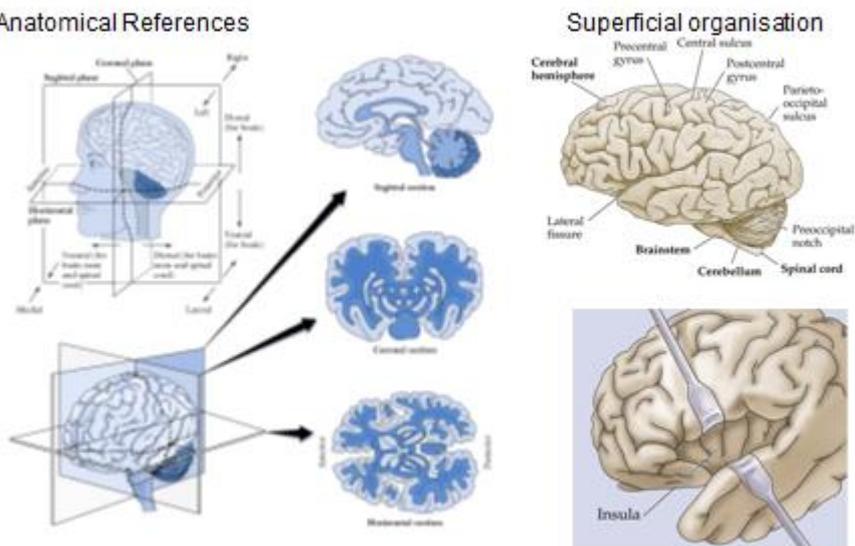
- The birth of the telencephalon
2 cerebral hemisphere



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The Organization of the Nervous system

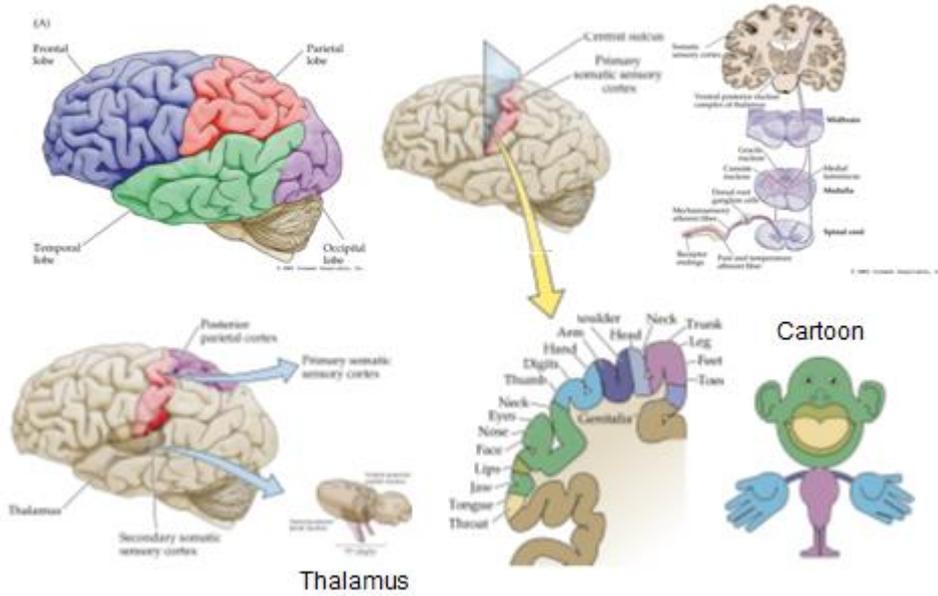
- The Cerebral Cortex
- Anatomical References



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The Organization of the Nervous system

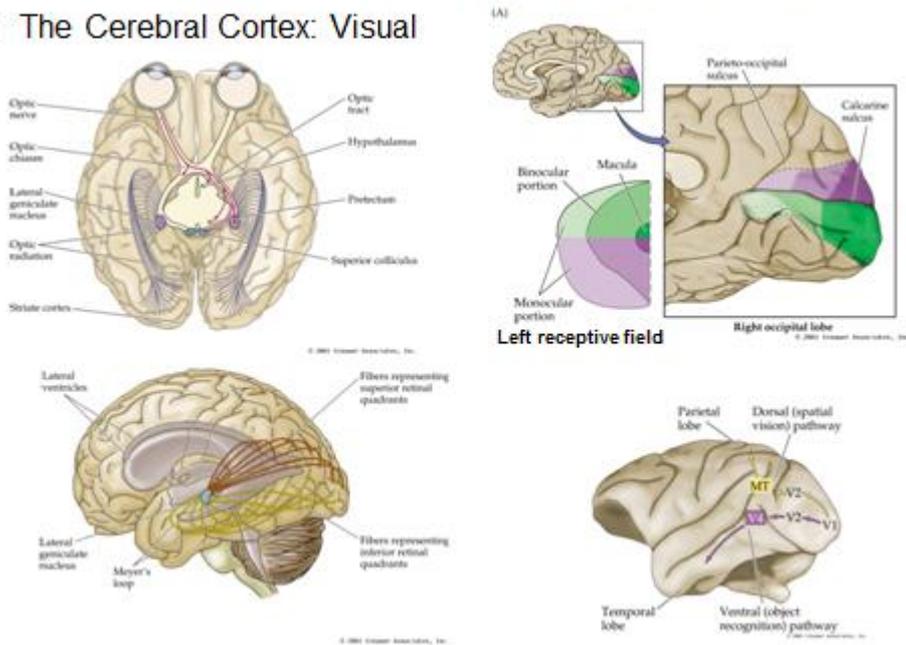
- The Cerebral Cortex: Somatic



D20

The Organization of the Nervous system

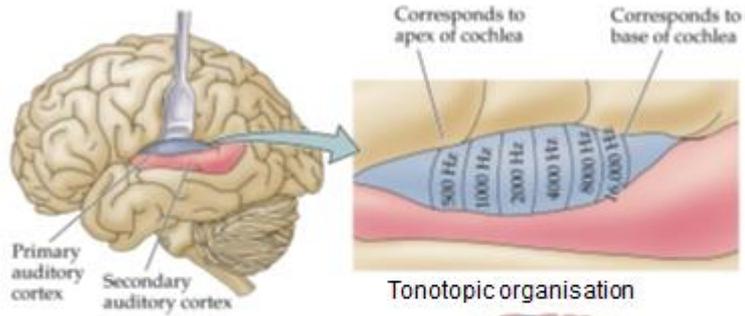
- The Cerebral Cortex: Visual



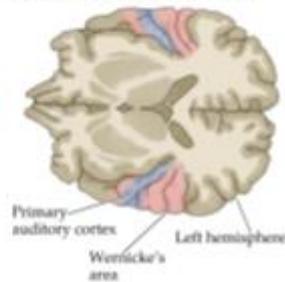
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The Organization of the Nervous system

- The Cerebral Cortex: Auditory



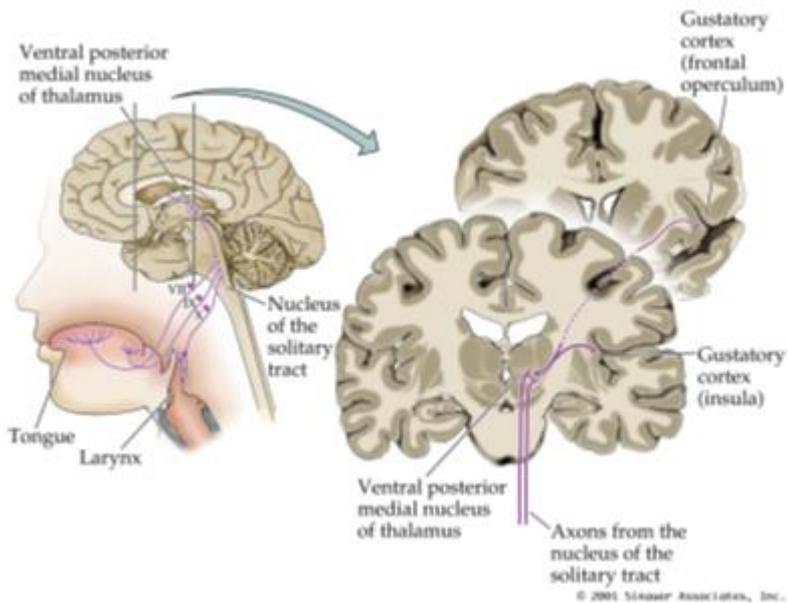
The frontal and parietal lobes are removed



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The Organization of the Nervous system

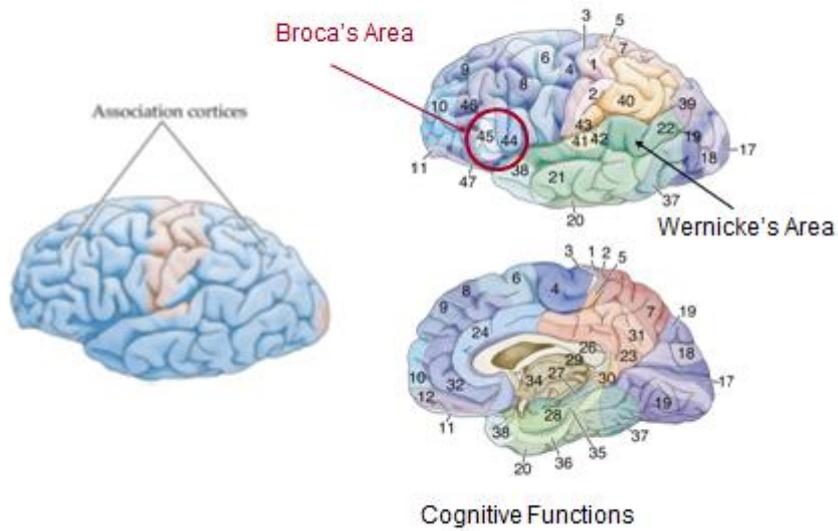
- The Cerebral Cortex: Gustative



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The Organization of the Nervous system

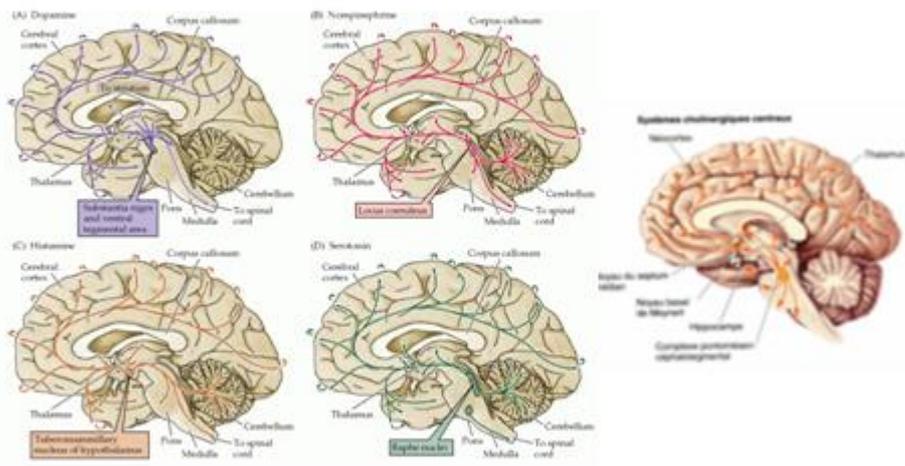
- The Cerebral Cortex: The Association Cortices



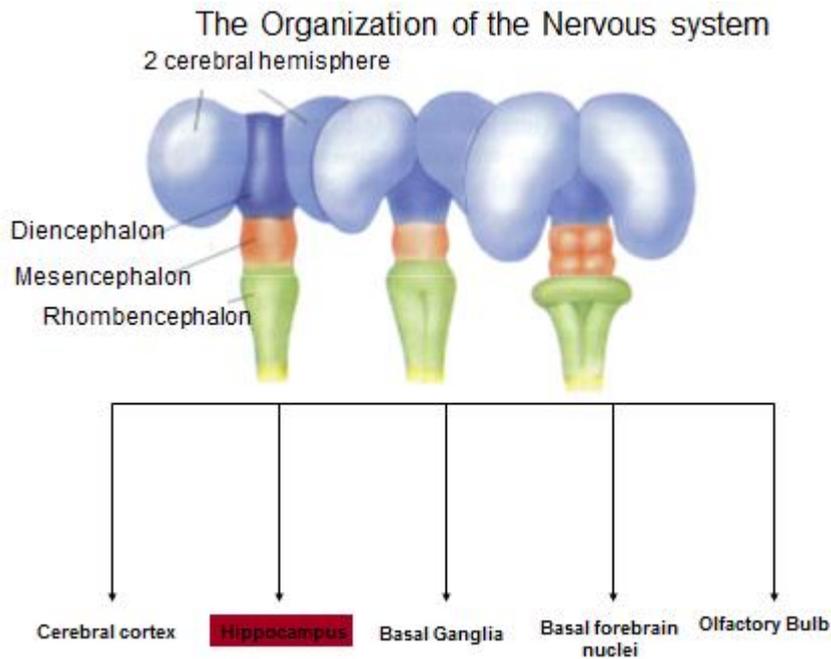
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The Organization of the Nervous system

- The Cerebral Cortex



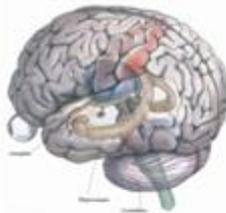
D25



D26

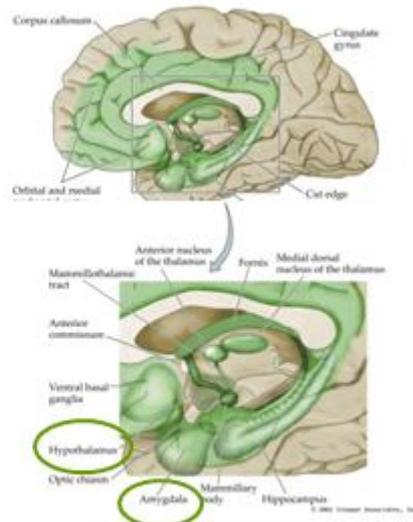
The Organization of the Nervous system

• The Hippocampus



It includes the hippocampus proper, the dentate gyrus, the subiculum, and is a key part of the limbic system.

- Indispensable in the process of anterograde memory processing
- Encode and recall information
- Highly connected to the orbital-medial prefrontal cortex and amygdalla

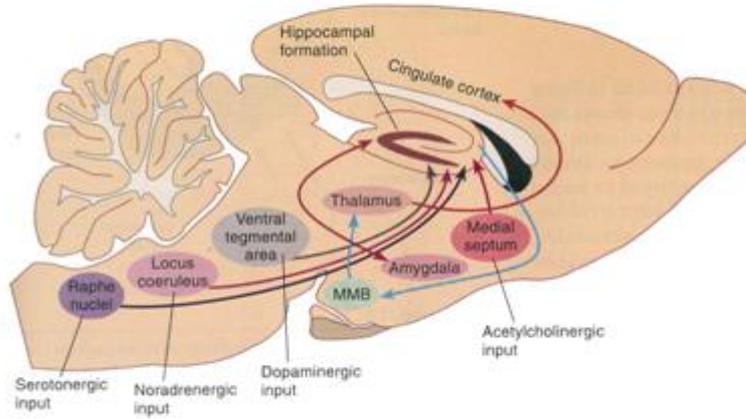


Amygdalla and the hypothalamus are involved in emotional behaviour and aggressive behaviour.

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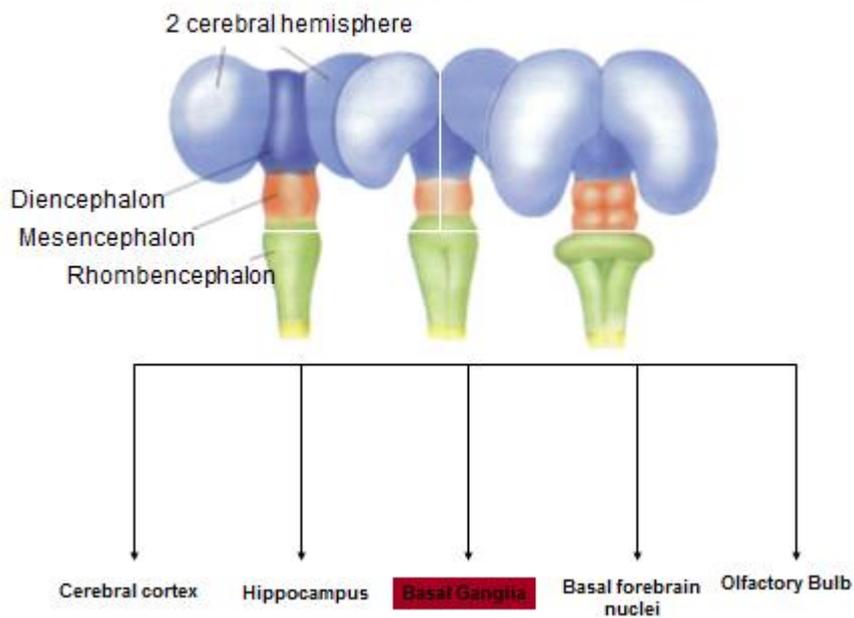
The Organization of the Nervous system

- **The Hippocampus: Innervation**



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The Organization of the Nervous system

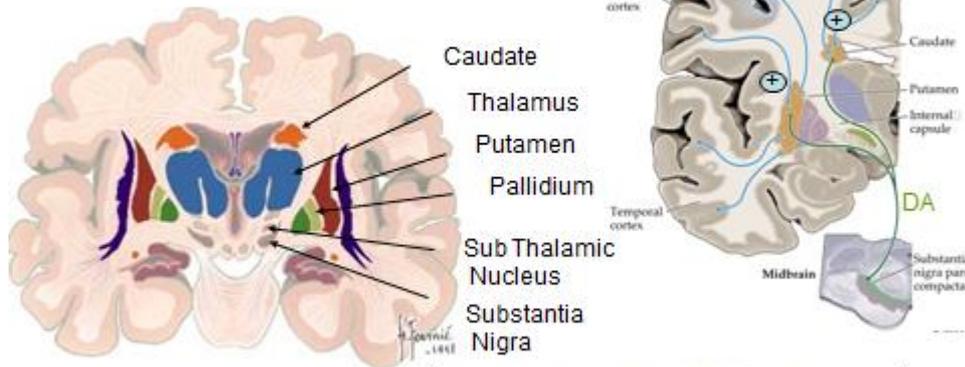


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The Organization of the Nervous system

• The Basal Ganglia

Basal: at the basis of the hemispheres
Ganglia: non adequate nomenclature for the CNS

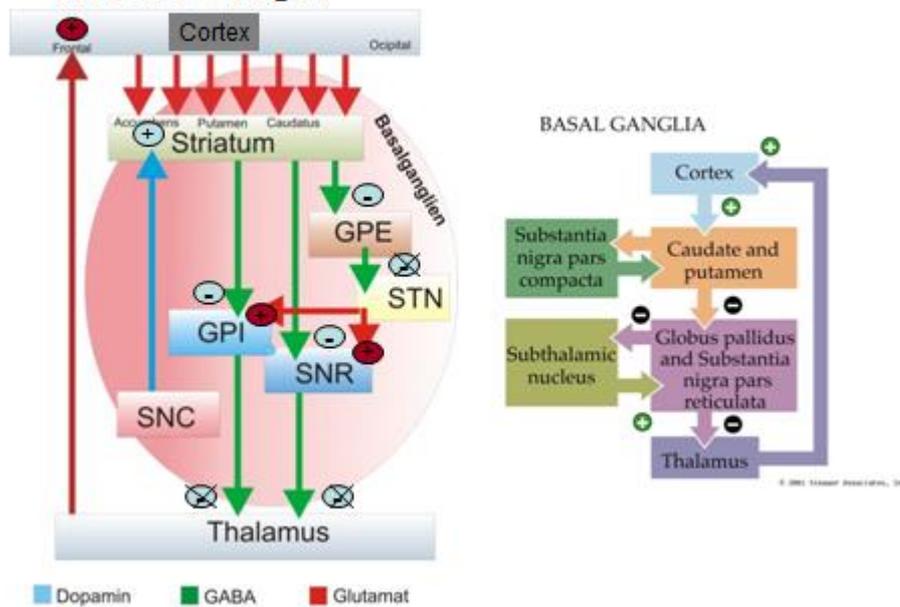


Dynamic system of subcortical structures that interact each other with a proper rhythmicity and with a parts of thalamus and cortex

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The Organization of the Nervous system

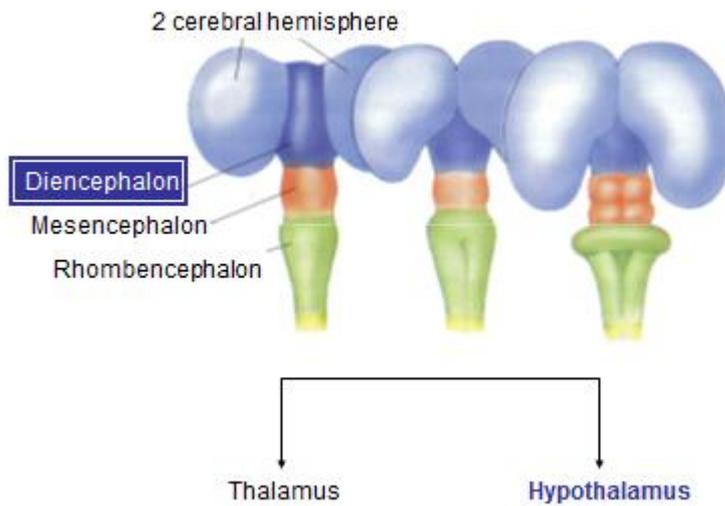
• The Basal Ganglia



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The Organization of the Nervous system

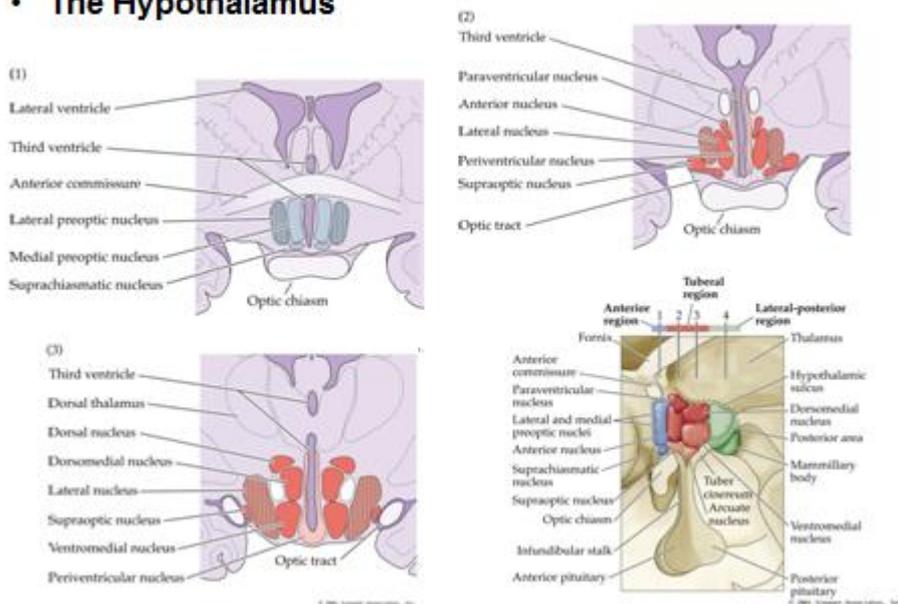
• The Diencephalon:



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The Organization of the Nervous system

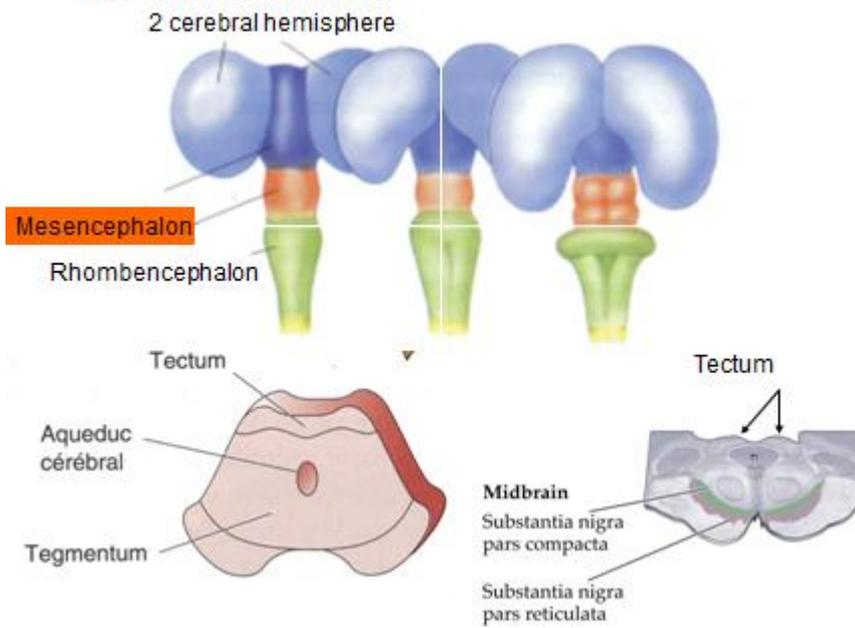
• The Hypothalamus



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The Organization of the Nervous system

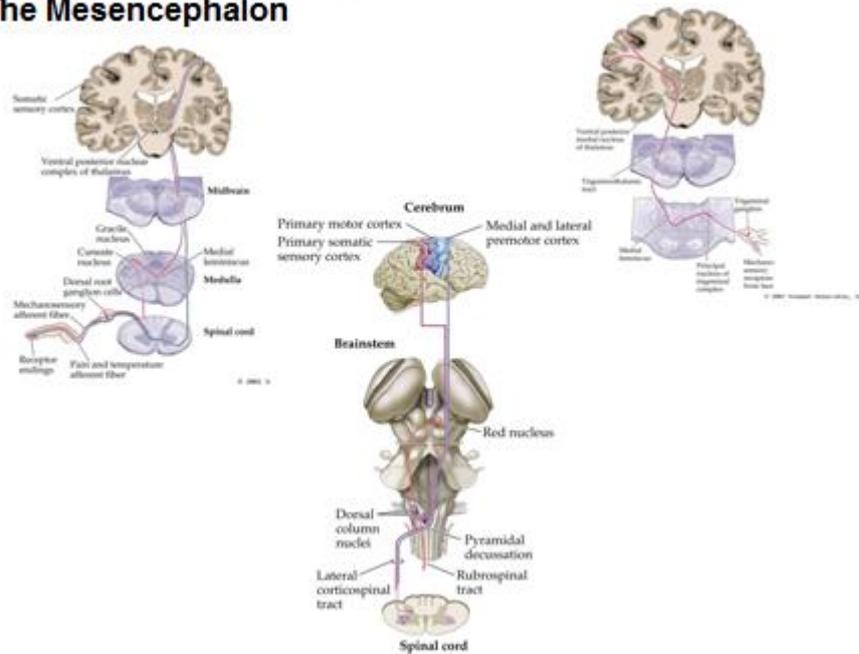
- **The Mesencephalon**



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The Organization of the Nervous system

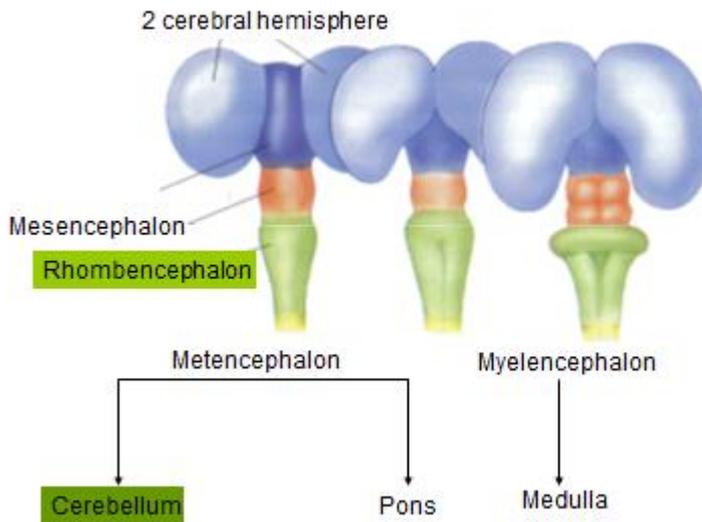
- **The Mesencephalon**



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The Organization of the Nervous system

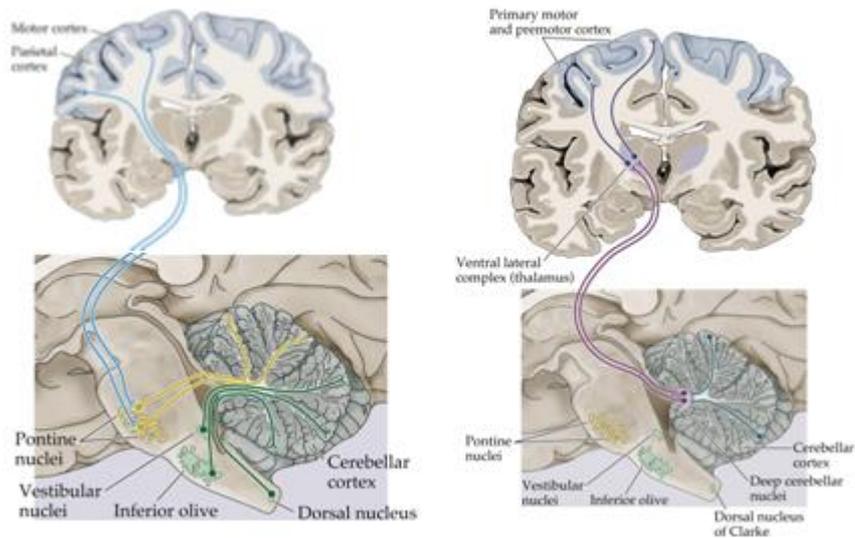
- **The Caudal Brain**



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The Organization of the Nervous system

- **The Cerebellum**



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The Organization of the Nervous system

- **The Caudal Brain**

