

D1

Neuroanatomie du Système nerveux De la Structure à la Fonction

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D2

The Organization of the Nervous system

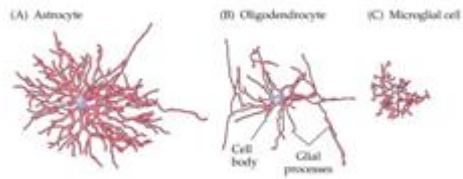
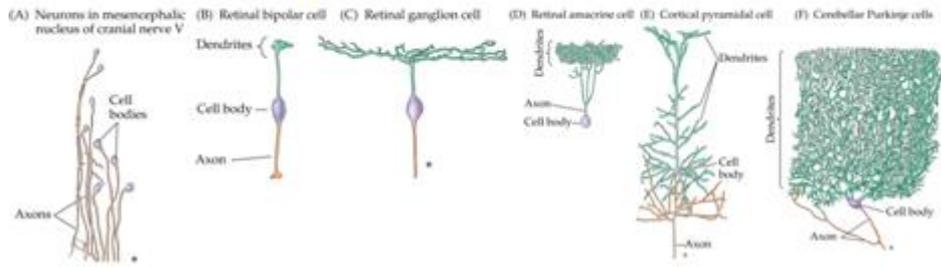
- Cellular Component

- **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

D3

The Organization of the Nervous system

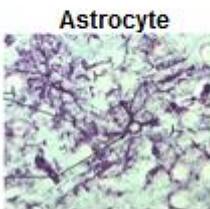
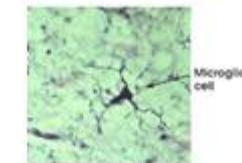
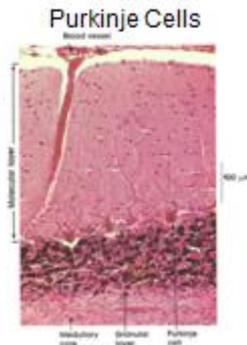
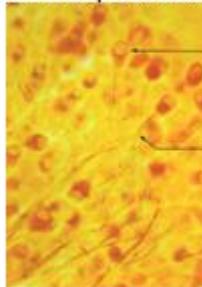
• Cellular Component



All these cells can be labelled by different techniques

D4

SENSORY GANGLION (GASSERIAN)
Pseudo unipolar neurons

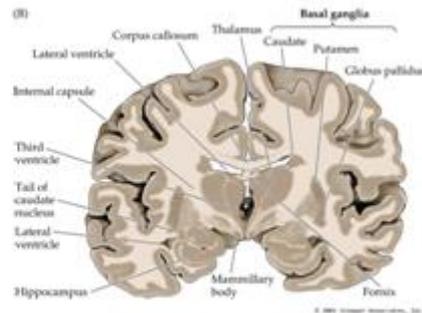
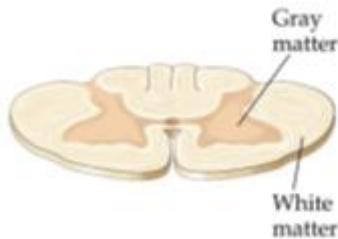


D5

The Organization of the Nervous system

- Tissue Component

- Gray matter
- White Matter



D6

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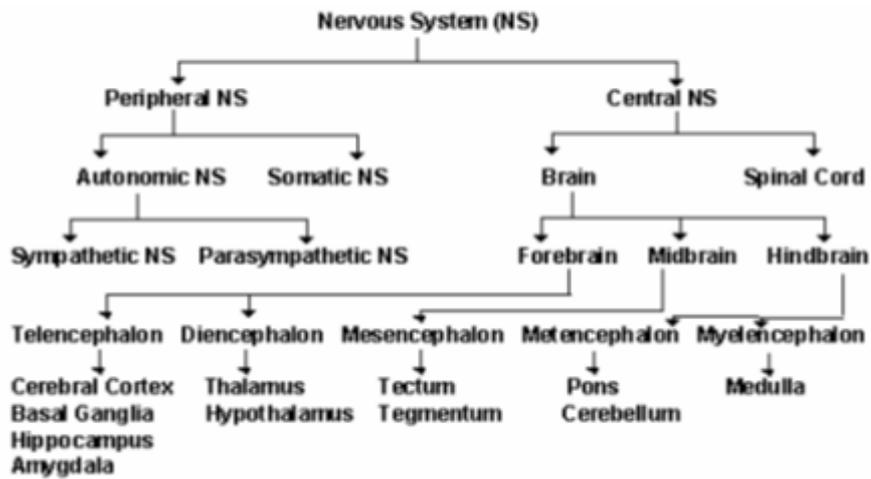
- Structural Components

- 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

D7

The Organization of the Nervous system

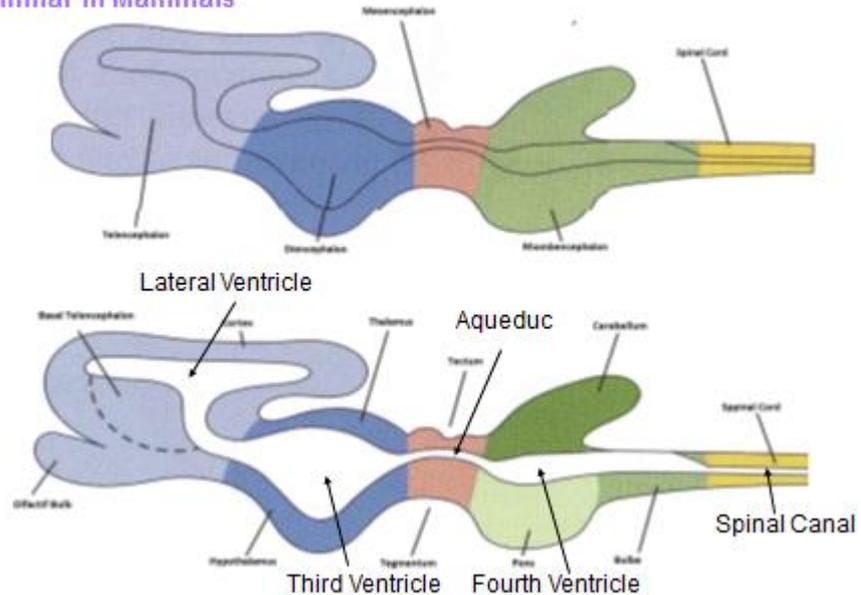
Structural Components



D8

The Organization of the Nervous system

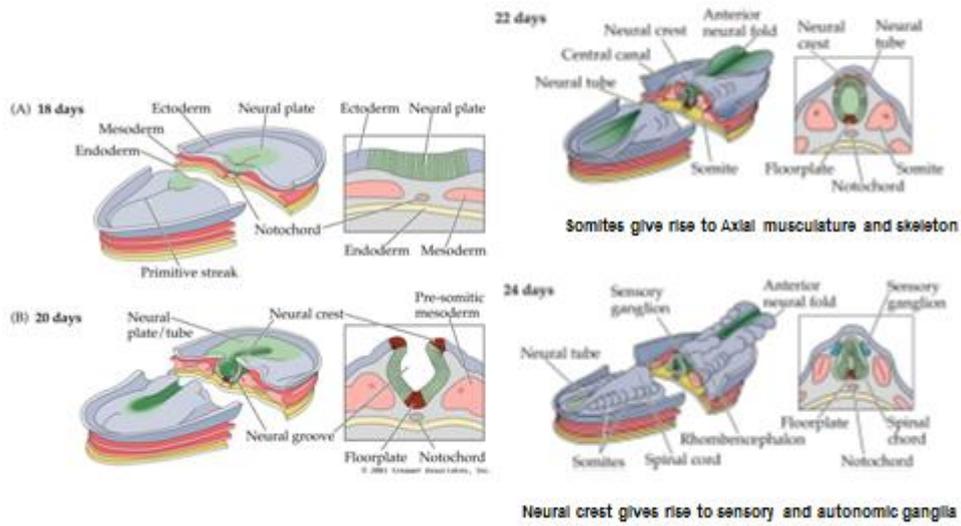
- From early stage of development, the organisation of the brain is similar in Mammals



D9

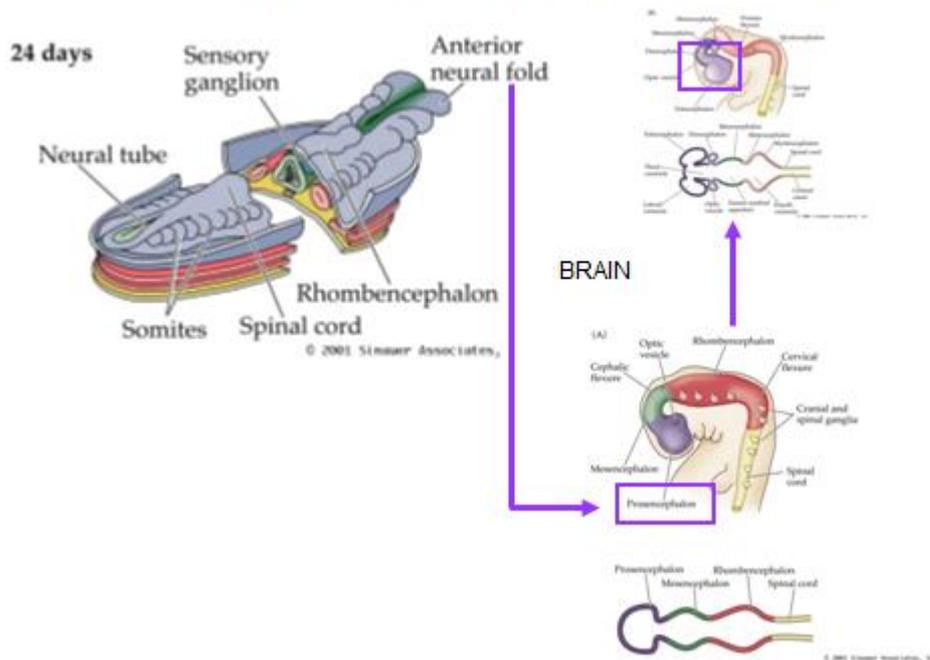
The Organization of the Nervous system

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



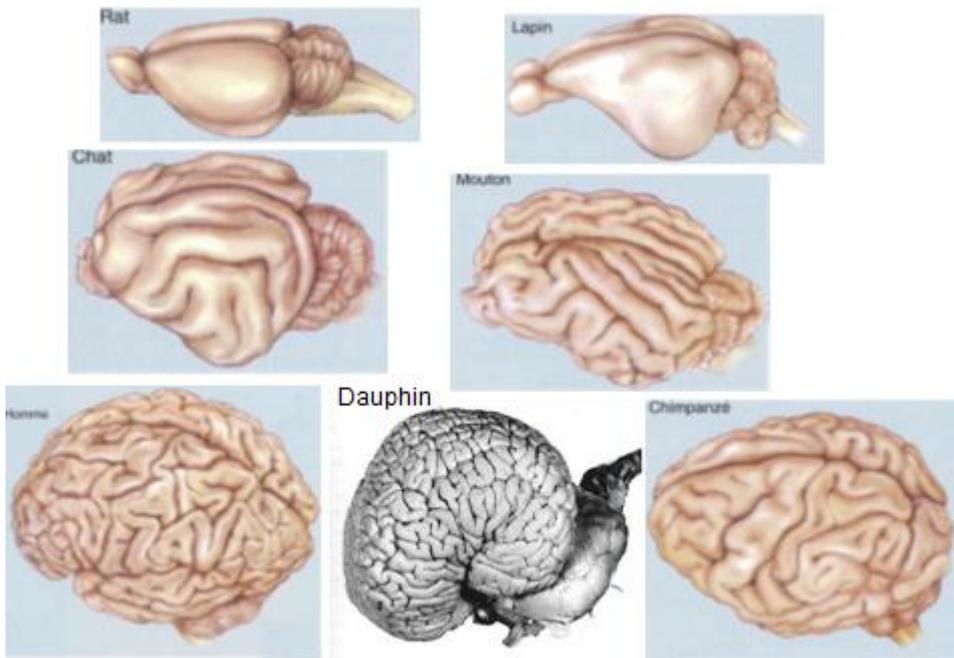
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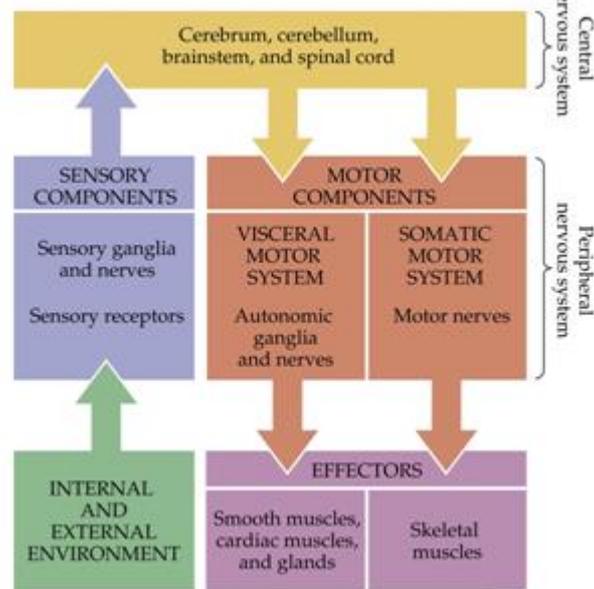
D11

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D12

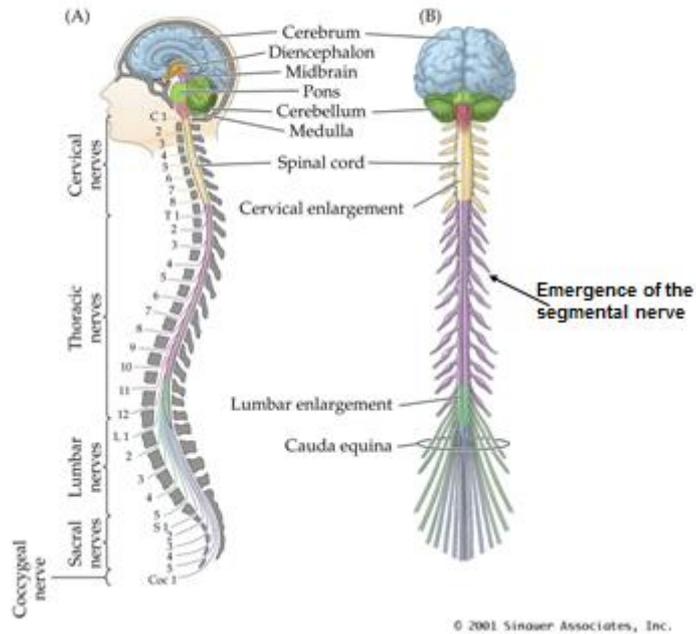
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D13

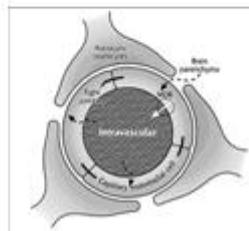
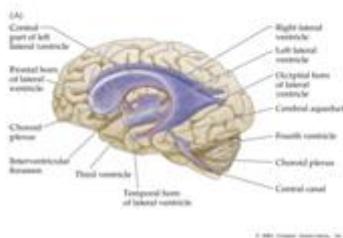
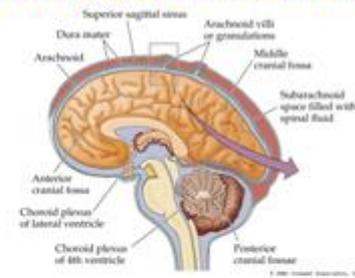
The Organization of the Nervous system



D14

The Organization of the Nervous system

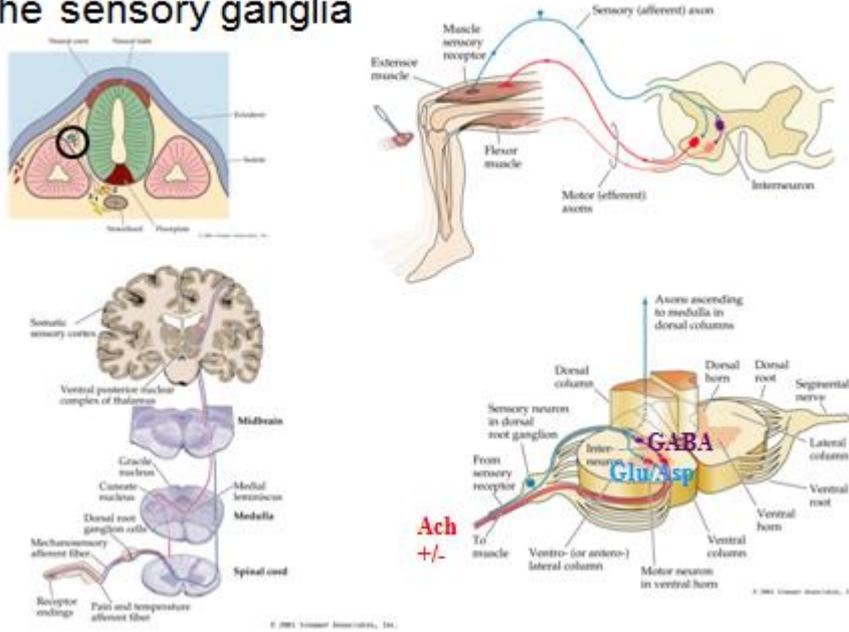
- All brains have protection and blood vascularisation



D15

The Organization of the Nervous system

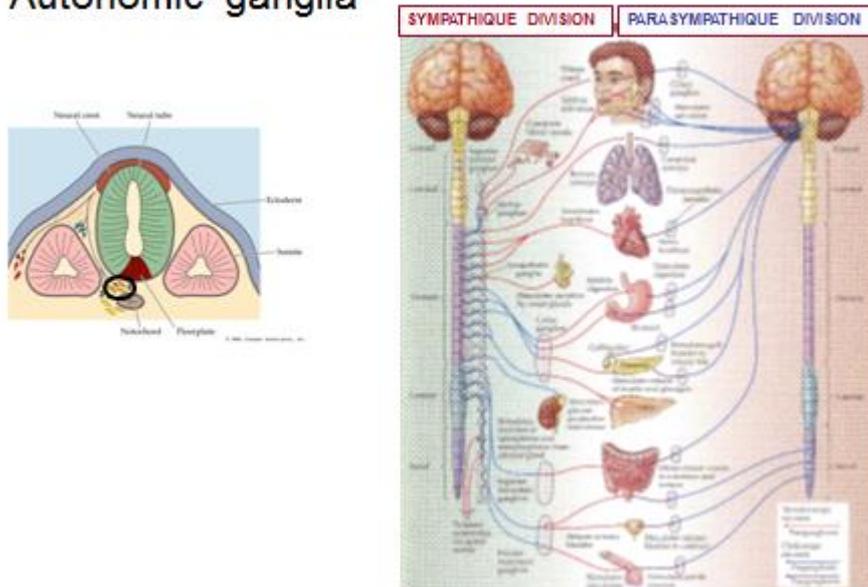
- The sensory ganglia



D16

The Organization of the Nervous system

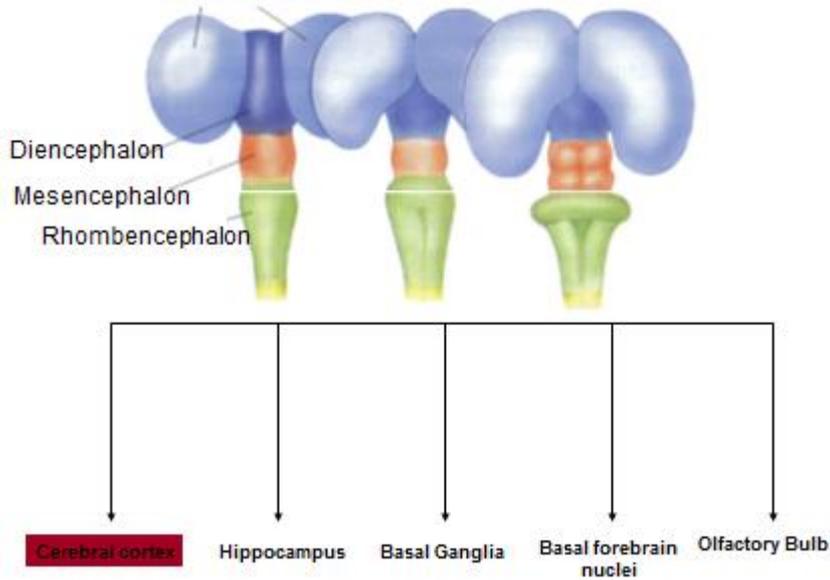
- Autonomic ganglia



D17

The Organization of the Nervous system

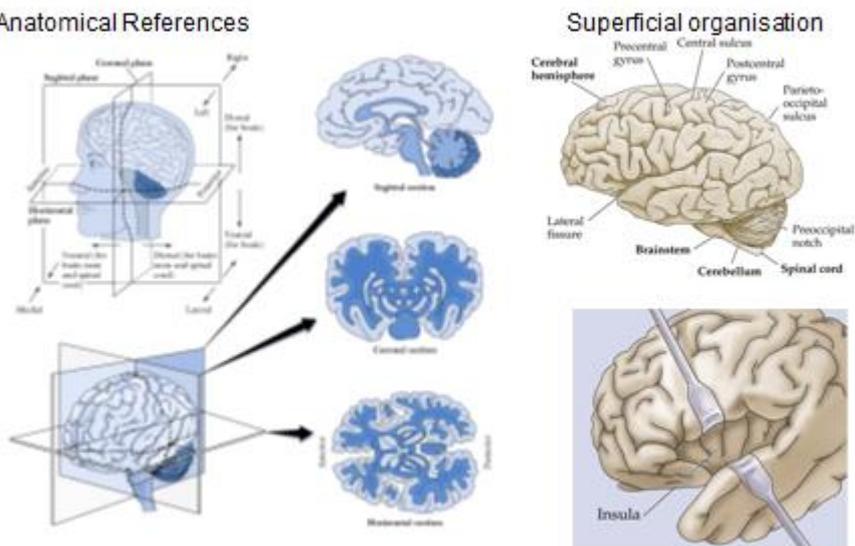
- The birth of the telencephalon
2 cerebral hemisphere



D18

The Organization of the Nervous system

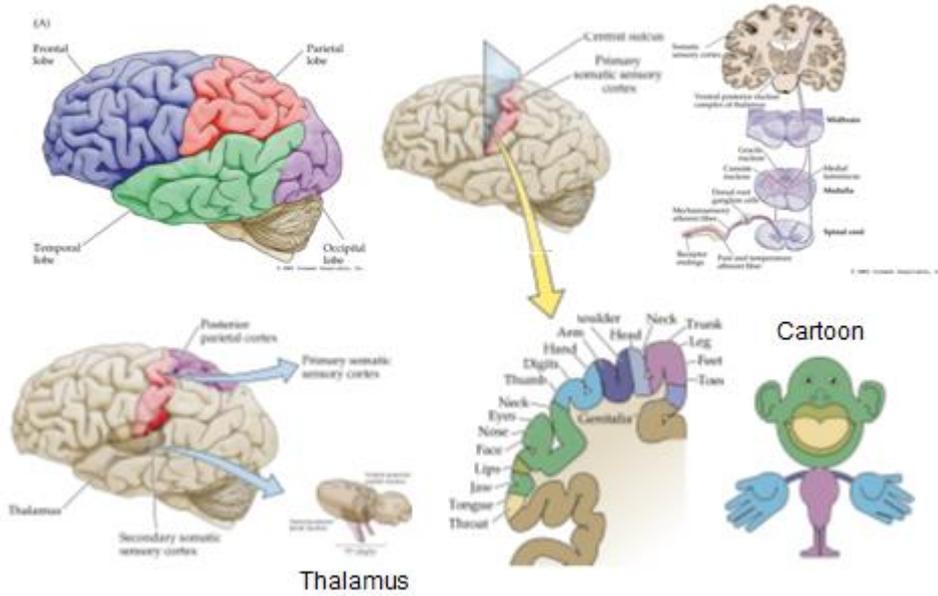
- The Cerebral Cortex
- Anatomical References



D19

The Organization of the Nervous system

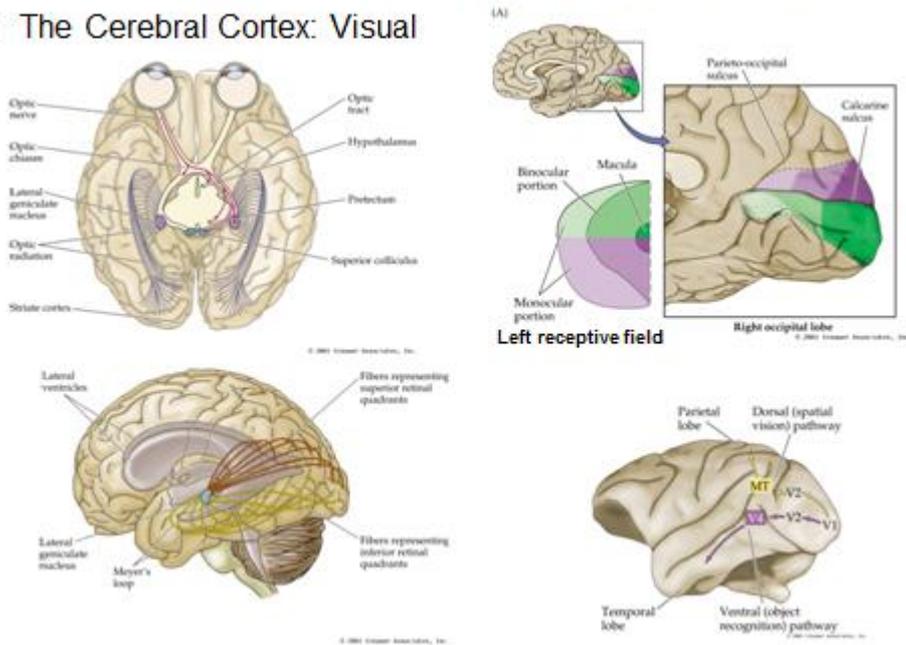
- The Cerebral Cortex: Somatic



D20

The Organization of the Nervous system

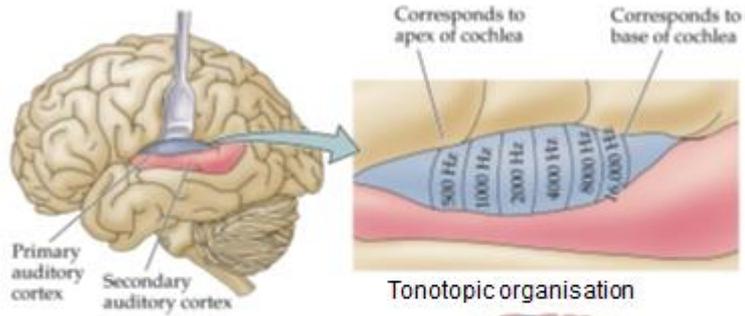
- The Cerebral Cortex: Visual



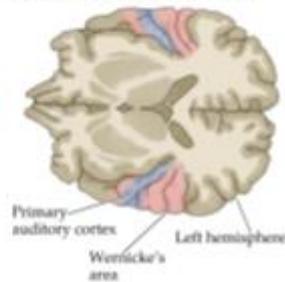
D21

The Organization of the Nervous system

- The Cerebral Cortex: Auditory



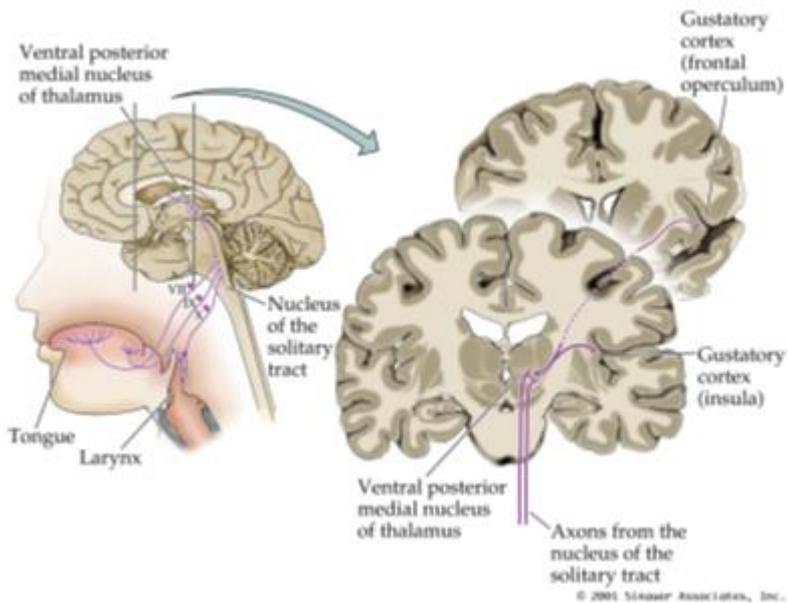
The frontal and parietal lobes are removed



D22

The Organization of the Nervous system

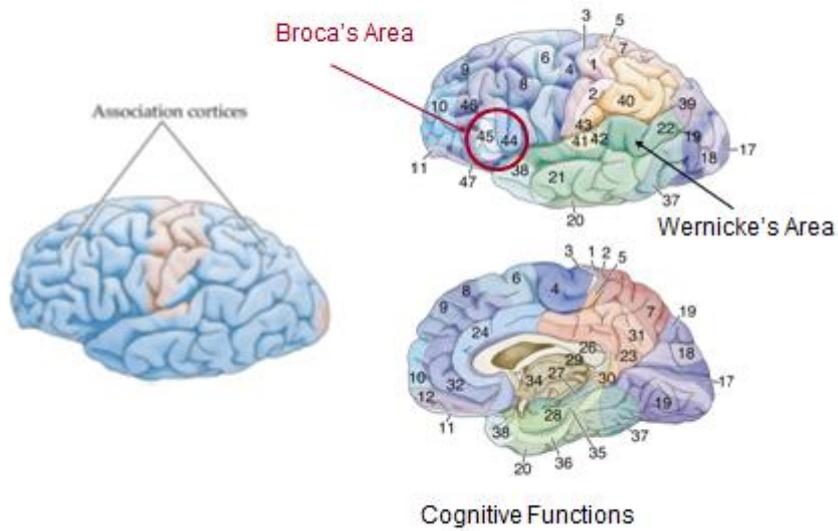
- The Cerebral Cortex: Gustative



D23

The Organization of the Nervous system

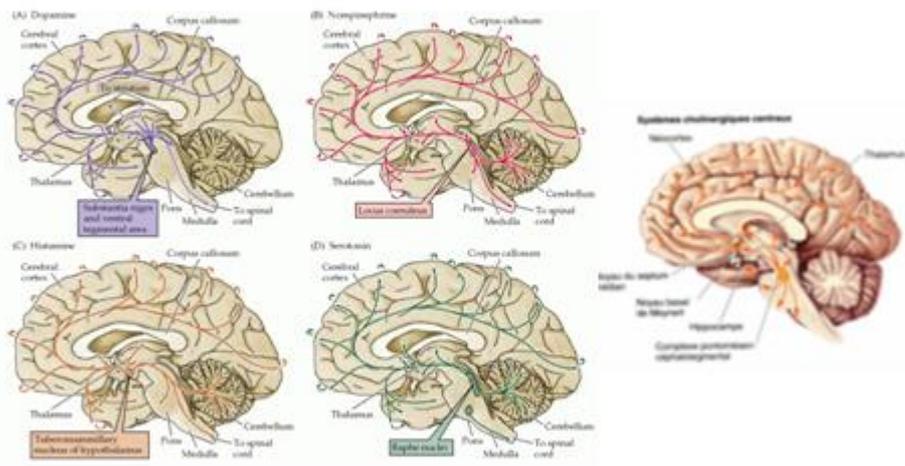
- The Cerebral Cortex: The Association Cortices



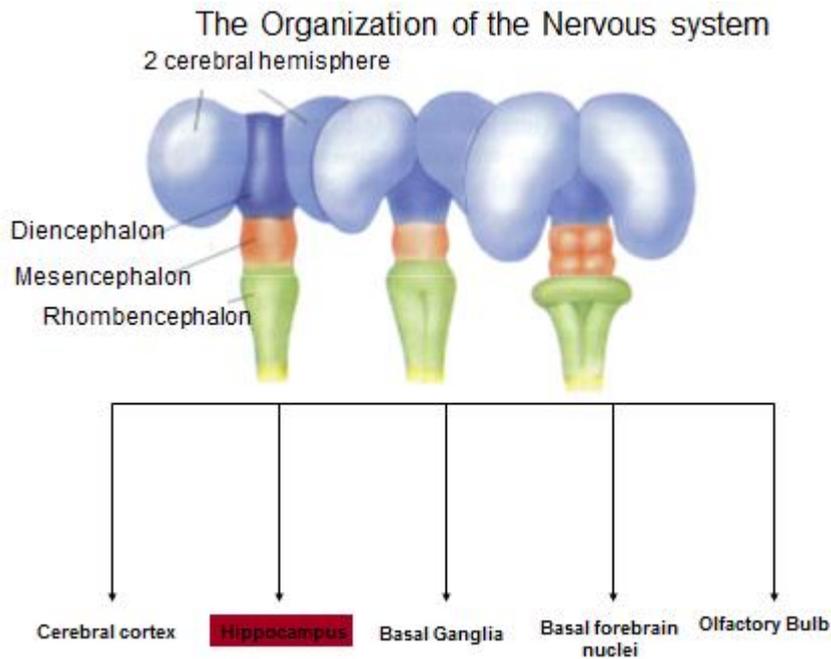
D24

The Organization of the Nervous system

- The Cerebral Cortex



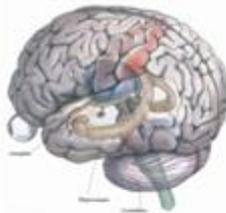
D25



D26

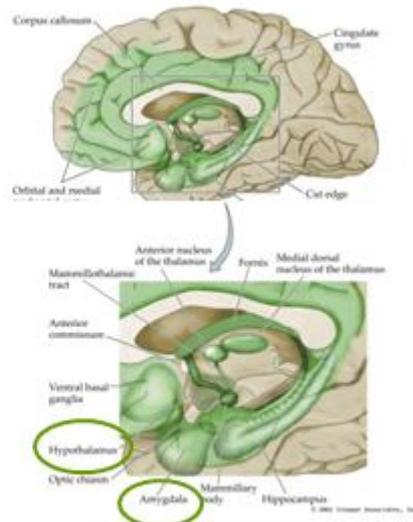
The Organization of the Nervous system

• 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

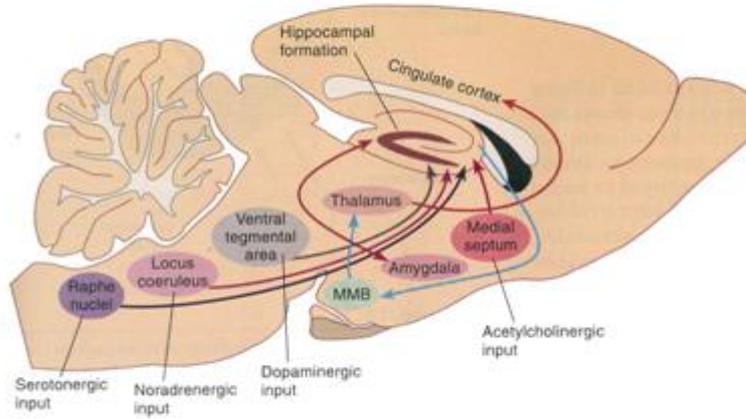


Amygdalla and the hypothalamus are involved in emotional behaviour and aggressive behaviour.

D27

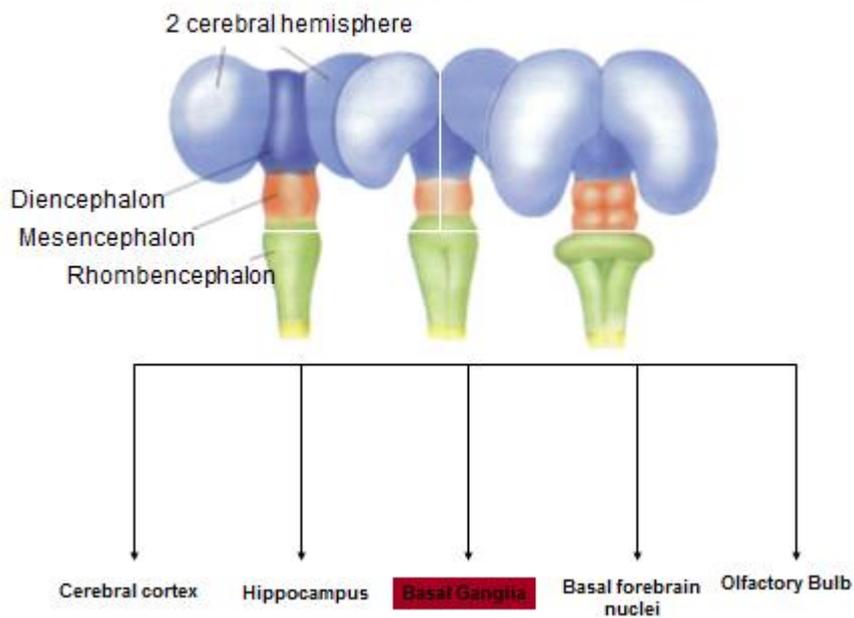
The Organization of the Nervous system

- **The Hippocampus: Innervation**



D28

The Organization of the Nervous system

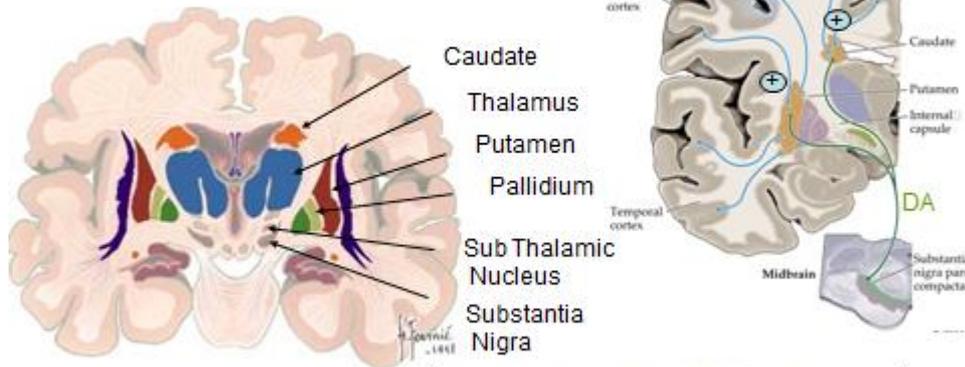


D29

The Organization of the Nervous system

• The Basal Ganglia

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

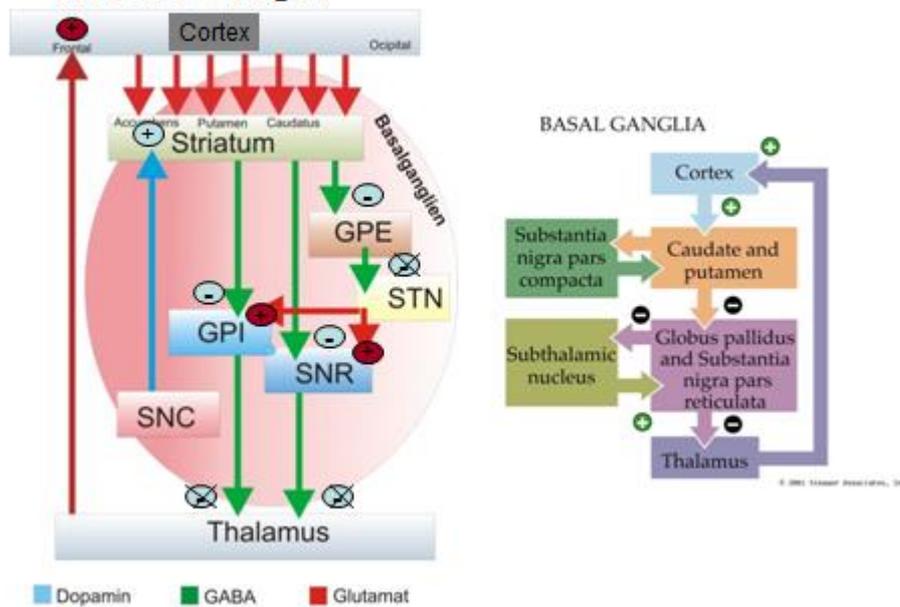


Dynamic system of subcortical structures that interact each other with a proper rhythmicity and with a parts of thalamus and cortex

D30

The Organization of the Nervous system

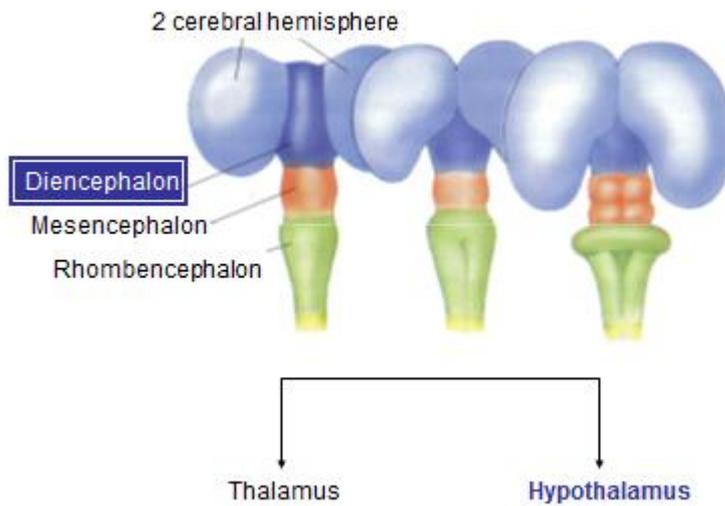
• The Basal Ganglia



D31

The Organization of the Nervous system

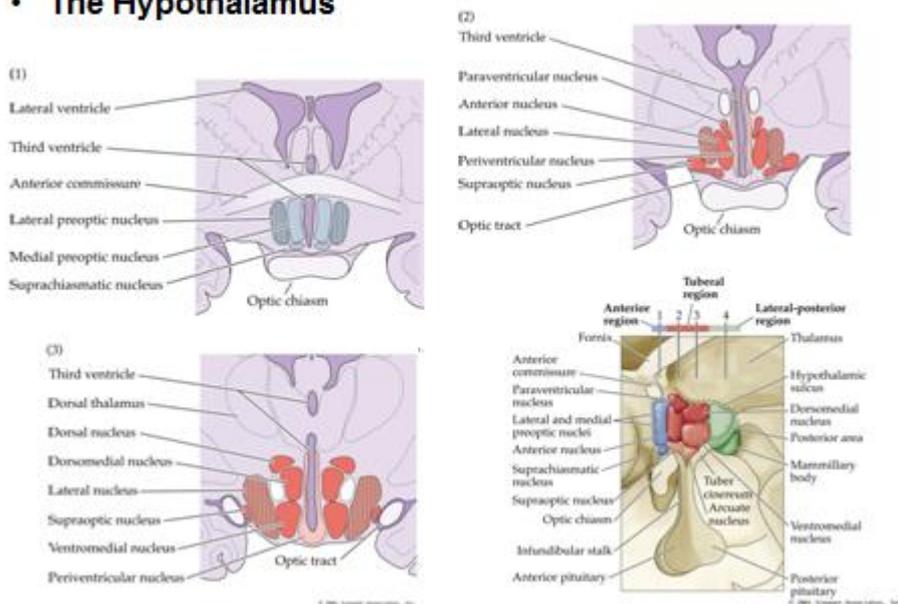
• The Diencephalon:



D32

The Organization of the Nervous system

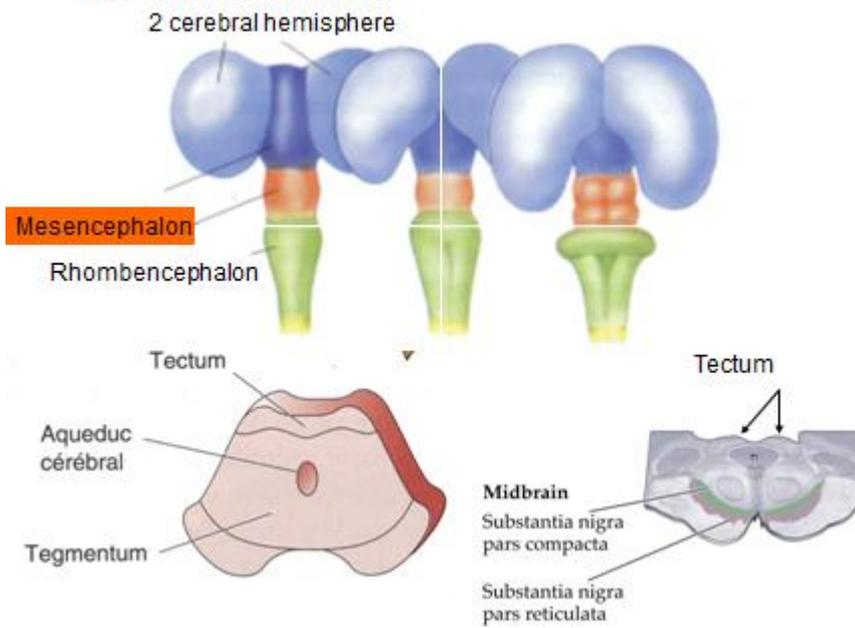
• The Hypothalamus



D33

The Organization of the Nervous system

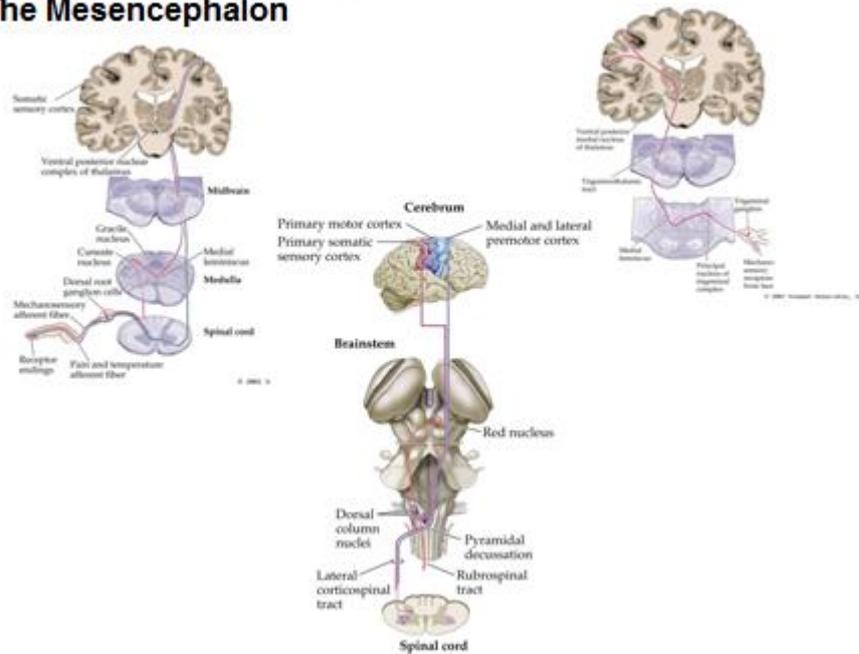
- **The Mesencephalon**



D34

The Organization of the Nervous system

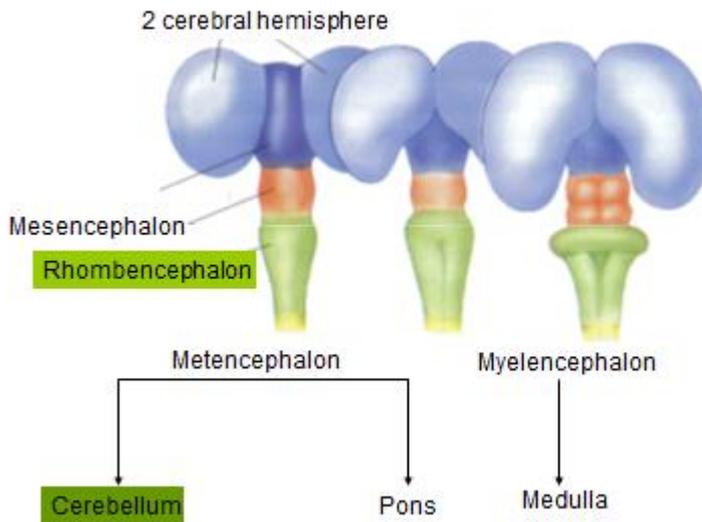
- **The Mesencephalon**



D35

The Organization of the Nervous system

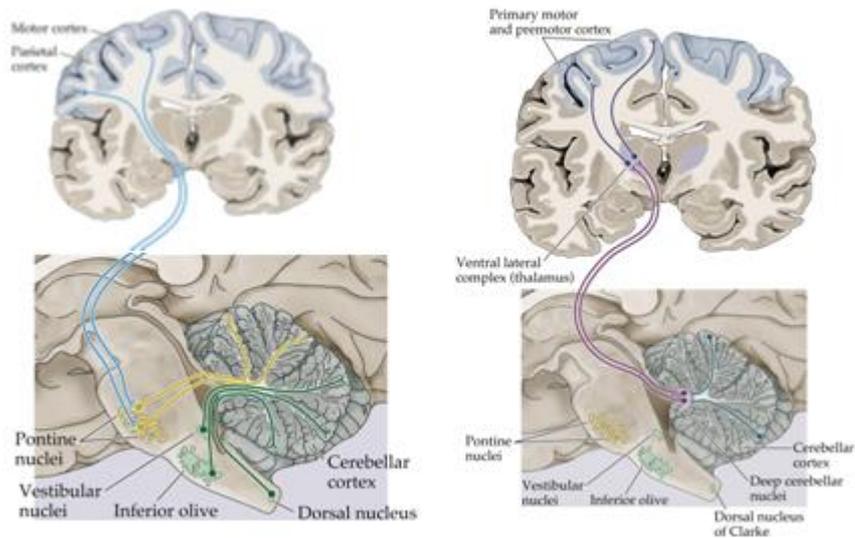
- **The Caudal Brain**



D36

The Organization of the Nervous system

- **The Cerebellum**



D37

The Organization of the Nervous system

- **The Caudal Brain**

