Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Universität Zürich[UZH]

ZNZ HS16 Introduction to Neuroscience I Fall 2016

version 1.0

The Summary of the lectures in 2016

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Repository page:
https://github.com/ssinhaleite/znz-intro-to-neuroscience-I-summary
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Wednesday 25th January, 2017

ZNZ - Institute of Neuroinformatics, ETH, UZH

Contents

Human & Comparative Neuroanatomy

Human Neuroanatomy

Nervous system

The nervous system is divided in two parts: the Central Nervous System (CNS) and the Peripheral Nervous System (PNS).

- CNS

  Brain

  Spinal Cord

- PNS

  Somatic and autonomic nervous system

Both system contains gray and white matter. In the PNS the gray matter contains **ganglia**: collection of neuron cell bodies -, the white matter contains **nerves**: bundles of axons. In the CNS the gray matter is divided in:

- Neural cortex - gray matter on the surface of the brain
- Nuclei - collection of neuron cell bodies in the interior of CNS
- Centers - collection of neuron cell bodies in CNS, each center has specific processing functions
- High centers - the most complex centers in brain.

The white matter in CNS is divided in two parts: the tracts: bundle of CNS axons that share a common origin and destination -, and the columns: several tracts that form an anatomically distinct mass

The centers and tracts that connect the brain with other organs and system in the body are called **pathways**. The ascending (sensory) pathway is called afferent. The descending (motor) pathway is called efferent.

Figure 1 shows some views of the brain.

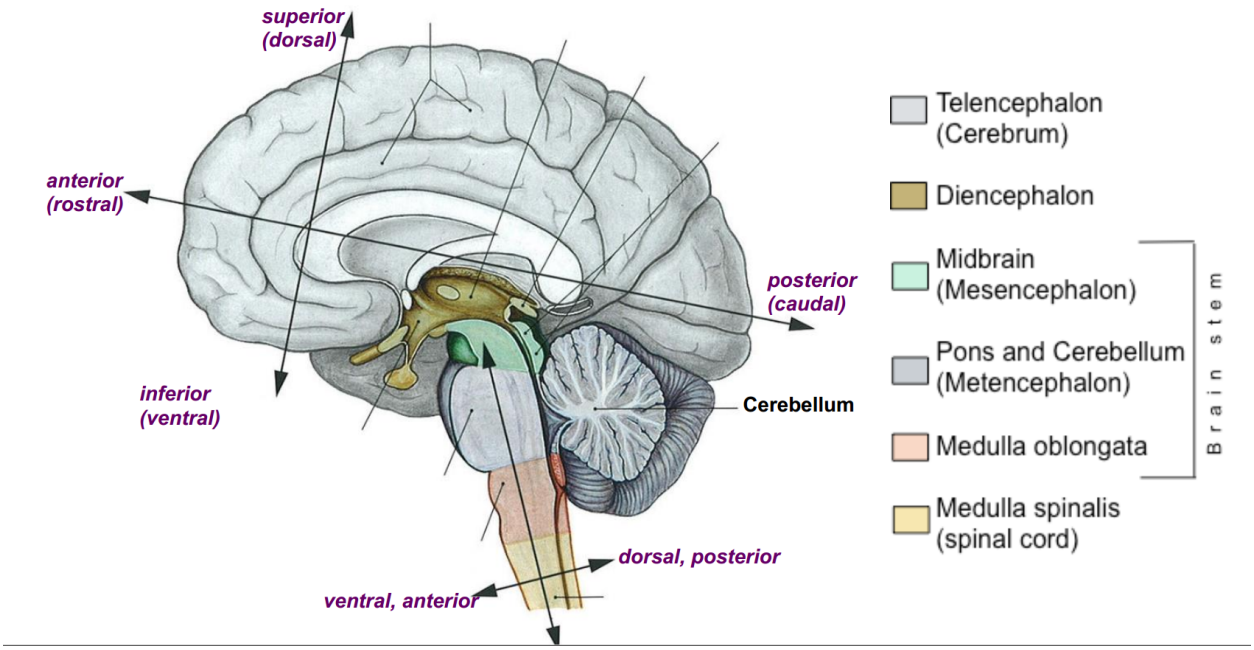

Figure 1: Views of the Brain

Comparative Neuroanatomy

Molecular & Cellular Neuroscience

Building a central nervous system

Excitability

Glia and more

Synapses

Systems Neuroscience

Somatosensory and Motor Systems

Visual System

Auditory & Vestibular System

Circuits underlying Emotion

Learning in artificial and biological neural networks

References

The pictures used in this summary are from the following books and slide sets and belong to their respective owners. In the context of the summary they are used for educational purposes only.

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