PYB102: The Mind and the Brain

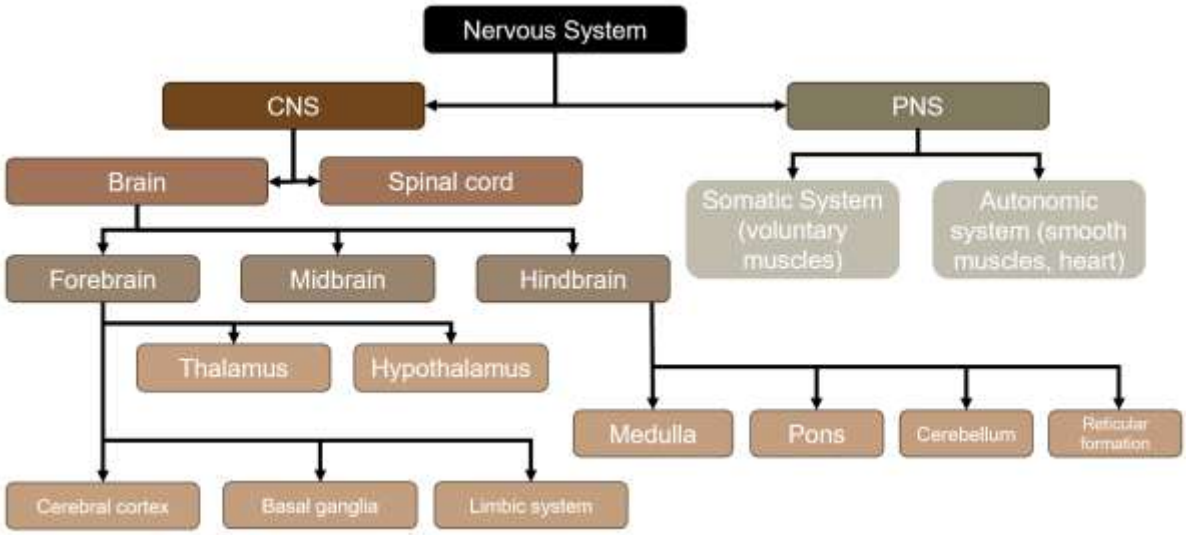
Semester 2, 2023

PYB102 – The Mind and the Brain

Week 1: Introduction and Foundations of Neuroanatomy

Lecture

Foundations of neuroanatomy

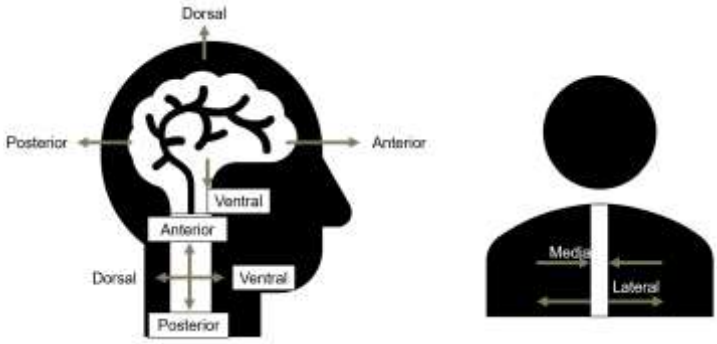


The **central nervous system** refers to the brain and the spinal cord, while the **peripheral nervous system** is the muscles.

Neuroanatomical terms and conventions

Term	Meaning
Tract	Bundles of axons in the CNS – **white matter**
Nerve	Bundles of axons in the PNS
Nuclei	Groups of neuron cell bodies in the CNS – **grey matter**
Ganglia	Groups of neuron cell bodies in the PNS

The planes of view of the brain are important for analysing its structure. The brain is broken according to multiple planes, which are demonstrated in the following image. There are also names to describe the anatomical directions of the **neuraxis** (runs from the tip of the nose to the end of the spinal cord). These directions are **dorsal, anterior, ventral and posterior**.



Divisions of the brain

Note that my notebook has more detailed drawings of the brain including specific regions and functions.

Forebrain

The forebrain is divided into telencephalon and diencephalon.

Telencephalon

cerebral cortex: outer layer of cerebral hemispheres. Bumps on it are called gyri or a gyrus and a groove is called a sulcus or sulci.

limbic system: important in learning, memory (hippocampus) and emotion expression (amygdala).

basal ganglia (should be nuclei): group of structures needed for planning and producing movement.

Diencephalon

Thalamus: relay station through which all sensory information passes to get to the cerebral cortex. Filters and begins to organise sensory input.

Hypothalamus: regulation of basic biological drives (eg hunger and thirst), controls autonomic nervous system, regulates body temp, controls pituitary gland which releases hormones into body and controls other glands.

Midbrain

2 pairs of colliculi

superior colliculi: relay visual info and are important for visual attention.

inferior colliculi: relay auditory information and are important for auditory attention.

Neural tube and neural crests

The **neural tube** is present in the fetus (prenatal stage) and is what grows to form the central nervous system. The **neural crests** develop into the peripheral nervous system.