

SİNİR SİSTEMİ 2

Prof. Dr. Ayhan Cömert

Ankara Üniversitesi Tıp Fakültesi
Anatomi Anabilim Dalı

CEREBRUM

- ▶ **Cerebral hemispheres**
 - ▶ Longitudinal cerebral fissure
 - ▶ Gyrus: folds in the cortex that serve to increase surface area
 - ▶ Sulcus: slit-like depressions between the gyri
 - ▶ Fissures: deep sulci

The right hemisphere senses the left side and controls the left side of the body

Functional Cortical Areas

- ▶ Phineas Gage's Story...
 - ▶ Sept. 14, 1848

Layering may separate out inputs and outputs from different regions

- Projections to different regions arise from different layers

Frontal Lobe

- ▶ Precentral gyrus
 - ▶ Primary motor area (4)
- ▶ Secondary motor area (6, 8, 44, 45)
- ▶ Broca's area (primary speech area (44, 45))
- ▶ Higher level cognitive functions (reasoning, judgment, personality) (**9, 10, 11, 12**)

A homonculus ('little man') shows the body map for motor representation of different areas of the body. Note that some body areas, such as the fingers, have disproportionately larger representation than other body areas, such as the trunk.

The frontal lobe is the site for motor planning and motor output, but in humans the frontal lobe -- especially the prefrontal cortex -- performs many other functions:

Initiating activities

Planning

Holding critical information ready to use

Changing mental set from one line of thinking to another

Monitoring the effectiveness of ones actions

Inhibiting plans and actions that are ineffective or self defeating

Parietal Lobe

- ▶ Postcentral gyrus
 - ▶ Primary sensory area (3, 1, 2)
- ▶ Secondary sensory area (40)
- ▶ Somaesthetic association area (5, 7)
- ▶ Cortical reading area (39)

A homonculus ('little man') shows the body map for somatosensory representation of different areas on the body. Note that some body areas, such as the face, have disproportionately larger representation than other body areas, such as the trunk.

Temporal Lobe

- ▶ Primary auditory area (Heschl gyri; **41, 42**)
- ▶ Secondary auditory area (Wernicke; **22**)
- ▶ Secondary speech area
 - ▶ left, connected to Wernicke and Broca)
- ▶ Olfactory area (**34**)
- ▶ Olfactory association area (**28**)

Occipital Lobe

- ▶ Primary vision area (**17**)
- ▶ Secondary vision area (**18, 19**)

White mater

- **Commissural fibers:** corpus callosum, anterior commissure...
- **Association fibers:** arcuate fascicle, uncinata fascicle,.....
- **Projection fibers:** ascending and descending tracts

CEREBRUM

Basal Nuclei (Basal Ganglia):

Caudate nucleus

Lentiform nucleus

Clastrum

Globus Pallidus

Corpus amygdaloideum

Subthalamic nuclei

Substantia nigra

▶ Disorders: Parkinsonism, Chorea, Athetosis, Hemiballism

Basal Nuclei

- ▶ Act by modifying ongoing activity in motor pathways
- ▶ Primary functions
 - ▶ Regulates muscle tone throughout the body
 - ▶ Selecting and maintaining purposeful motor activity while suppressing useless or unwanted patterns of movement
 - ▶ Helping monitor and coordinate slow, sustained contractions, especially those related to posture and support
 - ▶ Controls large automatic movement

CEREBRUM

▶ Diencephalon:

- ▶ Epithalamus
- ▶ Metathalamus
- ▶ Dorsal thalamus
- ▶ Ventral thalamus (subthalamus)
- ▶ Hypothalamus
- ▶ Hypophysis

- ▶ Elhan, A. (2003). Anatomi terimleri sözlüğü. 1. Baskı. Güneş Kitabevi. Ankara.
- ▶ Demirel A., Koşar N.Ş. (2006). İnsan Anatomisi ve Kinesiyolojisi. 2. Baskı. Nobel Yayın Dağıtım. Ankara.
- ▶ Dere, F. (1999). Anatomi Atlası ve Ders Kitabı. 5. Baskı. Adana Nobel Tıp Kitabevi. Adana.
- ▶ Guyton, A.C. (1989). Tıbbi Fizyoloji. Türkçe Üçüncü Baskı. nobel Tıp Kitabevi. İstanbul.
- ▶ Standring, S. (2008). Gray's Anatomy. Fortieth Edition. Churchill Livingstone Elsevier. Spain.
- ▶ Elhan, A.: İnsan Anatomisi Atlası (çeviri: Köpf-Maier, P: WolfHeidegger's Atlas of HumanAnatomy. 5.ed.) Güneş Kitabevi, Ankara, 2001.
- ▶ Elhan, A.: Temel Klinik Anatomi (çeviri: Moore, K.L.), İkinci baskı, Güneş Kitabevi, 2006.
- ▶ Standring, S.: Gray's Anatomy. The Anatomical Basis of Clinical Practice. 38.ed., Churchill Livingstone, New York, 2003.