

Department of Anatomy, Histology and Embryology
Faculty of Medicine, Semmelweis University
2018/2019 I. Semester

AOKANT461_3A

Anatomy: Morphology, topography and clinically oriented anatomy of the central and peripheral nervous systems (CNS, PNS), organs of special senses, endocrine organs; integrated gross anatomy, cytology, histology and embryology

Histology: Microscopical structure of the CNS and PNS (cerebrum, cerebellum, brain stem, spinal cord, ganglia) organs of special senses (apple of eye, inner ear), endocrine glands (pineal, pituitary, thyroid, suprarenal glands) skin and appendages, mammary gland.

Embryology: Development of the central and peripheral nervous system, development of the organs of senses, together with their malformations

Credits: 7

Lectures: 3 hours/week

Dissection classes: 4 hours /week

Histology laboratory: 12 hrs/semester

NOTE: The second midterm is obligatory. Without a valid (i.e. passing) grade gained in this midterm the semester is not accepted.

Competition - for only those students whose 1st and 2nd midterm grades are at least 4. Topic: complete material of the semester.

In case of, unsuccessful anatomy semifinal exam the exam may be postponed to the following exam period (as a 'CV' exam), if you have exam chance(s) left. Only those students will be allowed to continue their studies (registering for Anatomy 4) whose average score of the first two midterm tests is equal or higher than **3.00**.

Week	Lectures	Dissection room	Histology lab
Week 1 September 10-14	1. Introduction to the study of the nervous system Meninges, hemispheres, the lateral ventricles 2. Differentiation of the neural tube, development of the spinal cord. Neural crest. Craniocaudal and dorsoventral differentiation, malformations 3. Differentiation of the brain vesicles. Gross anatomy of the diencephalon, the III. ventricle.	Divisions of the brain, meninges, arteries and veins of the brain, surface structures of the hemispheres, basis cerebri. Specimen demonstration: dura mater, sinuses	-
Week 2 September 17-21	4. Macroscopy and development of the brain stem and cerebellum, IV. ventricle 5. Development and derivatives of the placode ectoderm and the neural crest 6. Blood supply to the brain, CSF circulation	Lateral ventricles, third ventricle Brain stem, fourth ventricle, cerebellum	-

<p>Week 3 September 24-28</p>	<p>7. Gross anatomy and blood supply of the spinal cord, spinal segment. Dermatomes. 8. Microscopical structure of the spinal cord, Rexed zones. Spinal reflexes, receptors and effectors, proprioceptive reflex arc. 9. Nociceptive (withdrawal) and autonomic reflex arcs. Spinal pathways, injuries, symptoms</p>	<p>Cross sections of the brain. Specimen demonstration: spinal cord together with the membranes</p>	<p>-</p>
<p>Week 4 October 1-5</p>	<p>10. Cells of the CNS: neurons, glia cells. Axon, dendrite, synapses, synaptic transmission, 11. Microscopy of the cerebral cortex. Cortical fields, Brodmann areas 12. Sensory systems</p>	<p>1. Revision 2. Midterm test 1: (oral) Gross anatomy and development of the brain and the spinal cord</p>	<p>-</p>
<p>Week 5 October 8-12</p>	<p>13. Motor systems and tracts, pyramidal tract 14. Structure and connections of the basal ganglia. Motor pathways arising from the brain stem 15. Microscopy of the cerebellum, pathways. Functional considerations</p>	<p>Dissection of the back muscles, suboccipital trigone.</p>	<p>Nervous system I. Peripheral nerve, motor end plate, spinal cord, brainstem</p>
<p>Week 6 October 15-19</p>	<p>16. Diencephalon, thalamic nuclei 17. Introduction to cranial nerves. Classification of sensory, motor and autonomic nuclei 18. Reticular formation, monoaminergic systems</p>	<p>'In situ' dissection of the spinal cord. Demonstration of the spinal ganglia, spinal nerves, membranes.</p>	<p>Nervous system II. Cerebellar and cerebral cortices Pineal body</p>
<p>Week 7 October 22-26</p>	<p>19. Microscopy of the brainstem 20. Trigeminal nerve, trigeminal neuralgia 21. Cranial nerves 3, 4, 6, 7. Central and peripheral paresis</p>	<p>'In situ' brain dissection, Demonstration of the membranes, ventricles, thalamus, brain stem, cranial nerve exits.</p>	<p>-</p>
<p>Week 8 October 29- November 2</p>	<p>22. Glossopharyngeal, vagus, accessory and hypoglossal nerves 23. Sympathetic nervous systems 24. Parasympathetic nervous systems. Autonomic innervation and reflexes of pelvic organs</p>	<p>Cranial nerves 5, 7 and 9. Dissection of the superficial and deep regions of the head (frontal, infraorbital, buccal, infratemporal, parotidomasseteric regions and the parapharyngeal space)</p>	<p>-</p>

<p>Week 9 November 5-9</p>	<p>25. Fibrous and vascular coats of the eyeball. Lens, chambers of the eye, vitreous body, accommodation 26. Inner coat of the eyeball, retina. Morphological basis for colour vision. 27. Optic nerve, visual pathway, visual cortex, disorders. Visual reflexes</p>	<p>Cranial nerves 10, 11 and 12 Dissection of the submandibular, carotid, median cervical regions</p>	<p>-</p>
<p>Week 10 November 12-16</p>	<p>28. Extraocular muscles and eye movements, conjugated eye movements, strabism. 3D vision 29. Protective and lacrimal apparatus of the eye. Development of the eye. Malformations. 30. Skin and appendages. Mammary gland</p>	<p>1. Midterm test 2. (written) Microscopy of CNS, cranial nerves 2. Dissection of the eye (coats and muscles, chambers, optic nerve)</p>	<p>-</p>
<p>Week 11 November 19-23</p>	<p>31. The organ of hearing in general. External ear, auditory tube, tympanic cavity, tympanic membrane, auditory ossicles 32. Bony and membranous labyrinth. Vestibular system 33. Spiral organ of Corti. Auditory pathway, auditory cortex</p>	<p>Dissection of orbit, extraocular muscles</p>	<p>Organs of special senses I. Eyeball, retina, lacrimal gland</p>
<p>Week 12 November 26-30</p>	<p>34. Development of the auditory and vestibular system. Clinical relevances 35. Olfactory and gustatory systems 36. Limbic system</p>	<p>Dissection and demonstration Tympanic cavity, inner ear, temporal bone</p>	<p>Organs of special senses II. Organ of Corti, palm skin, scalp skin, mammary gland</p>

<p>Week 13 December 3-7</p>	<p>37. The hypothalamo-hypophysial system. The pituitary gland 38. Endocrine organs: pineal body, thyroid, parathyroid, adrenal glands 39. Patient demonstration</p>	<p>Midterm test 3: Organs of special senses, head and neck regions</p>	<p>Endocrine organs Pituitary, thyroid, parathyroid, suprarenal glands, Endocrine cells in the testicle, ovary, corpus luteum and pancreas</p>
<p>Week 14 December 10-14</p>	<p>40. Drugs of abuse, opiates, endogenous cannabinoids and receptor mediated actions in the CNS 41. Research in the field of neuroscience 42. Research in the field of neuroscience</p>	<p>Revisions Brain in situ, cranial nerves</p>	<p>Revision</p>