

University of Szeged, Faculty of Medicine
Department of Anatomy, Histology and Embryology

Chairman: Prof. András Mihály MD, PhD, DSc

Address: Kossuth L. sgt. 40., H-6724 Szeged, Hungary
 Mail address: P.O. Box 427, H-6701 Szeged, Hungary

Tel.: +36-62-545-665
 Fax: +36-62-545-707

E-mail: office.anatomy@med.u-szeged.hu
<http://anatomy.szote.u-szeged.hu/Anatomy>

TOPICS OF THE ANATOMY FINAL EXAMINATION 2016 Autumn Term

I. OSTEOLOGY, SYNDESMOLOGY, MYOLOGY

1. The external base of the skull.
2. The internal base of the skull.
3. The temporal bone.
4. The frontal bone. The ethmoid bone. General osteology, ossification, bone regeneration. Norma frontalis et lateralis: radiological anatomy of the skull.
5. The occipital and the parietal bones. Features of the newborn skull. Sutures and fontanelles.
6. The sphenoid bone and the pterygopalatine fossa.
7. The bony nasal cavity. The paranasal sinuses.
8. The mandible and the maxilla. Anatomy of the teeth.
9. The orbit. The hard palate. Topography of the orbit.
10. The temporomandibular joint and the muscles of mastication.
11. General syndesmology (types and components of the joints). The atlantooccipital and atlantoaxial joints.
12. The structure (bones and joints) and movements of the vertebral column.
13. The structure of the thorax (bones and joints). The layers of the thoracic wall. Topography of the intercostal space.
14. The bones of the upper limb. The radiological anatomy of the upper limb.
15. The joints and movements in the shoulder girdle.
16. The elbow joint, pronation and supination.
17. The joints and movements of the wrist and the hand. The carpal tunnel.
18. The bones and ligaments of the pelvis.
19. The bones of the lower limb. The radiological anatomy of the lower limb.
20. The structure and movements of the hip joint.
21. The structure and movements of the knee joint.
22. The joints, ligaments and movements of the foot.
23. General myology: types, innervation and regeneration of the muscles.
24. The muscles of facial expression.
25. The superficial muscles of the neck. Muscle triangles.
26. The deep muscles of the neck, the suboccipital muscles, the deep (axial) muscles of the back.
27. The broad muscles of the abdomen, muscles of the posterior abdominal wall. The layers of the abdominal wall.
28. The rectus abdominis muscle and the rectus sheath.
29. The inguinal canal and the layers of the scrotum.
30. The superficial muscles of the trunk: the thoracohumeral and spinohumeral muscles.
31. The muscles of respiration (origin, insertion, innervation). The anatomy of the diaphragm.
32. The axillary fossa, quadrangular and triangular axillary spaces.

33. The muscles of the shoulder and scapula. The rotator cuff. Muscles of the arm.
34. The cubital fossa. Muscles of the forearm.
35. The structures of the volar and dorsal carpal regions (tendon sheaths, osteofibrous compartments). The muscles of the hand.
36. The external and internal muscles of the hip. Supra- and infrapiriform hiatuses.
37. The muscles of the pelvic floor and of the perineum. Ischioanal fossa, pudendal canal.
38. The subinguinal hiatus, femoral canal and femoral triangle.
39. The muscles of the thigh. Adductor canal, popliteal fossa.
40. The topography of the medial and lateral malleolar regions.
41. The muscles of the leg. The muscles of the sole and back of the foot..

II. SPLANCHNOLOGY, HISTOLOGY AND EMBRYOLOGY

1. The anatomy and histology of the ovary. Oogenesis and folliculogenesis.
2. The anatomy and histology of the uterus, uterine tubes and vagina. The menstrual cycle.
3. The anatomy and histology of the scrotum, the testis and epididymis. The spermatogenesis.
4. The ovulation, fertilization, cleavage and implantation.
5. The formation of the placenta. Structure of the mature placenta.
6. The structure of the blastocyst and the formation of the embryonic disc. The formation of the amnion and the yolk sac: gastrulation and neurulation.
7. Derivatives of the germ layers.
8. The lateral and cephalocaudal foldings of the embryo. The clinical importance of the fetal membranes and the amniotic fluid. Twinning and teratogenesis.
9. The development and derivatives of the branchial apparatus.
10. The anatomy and histology of the heart and the pericardium.
11. The histology and types of the vessels; the fine structure of the capillaries.
12. The fetal circulation and circulatory changes at birth.
13. The parts, topography and direct (parietal and visceral) branches of the aorta.
14. The anatomy of the common carotid artery, the branch system of the internal and external carotid artery.
15. The anatomy of the common iliac artery, the branch system of the internal and external iliac artery.
16. The anatomy and branches of the subclavian artery. The topography and tributaries of the superior vena cava. The innervation and lymphatic drainage of the thoracic wall and thoracic cavity.
17. The arteries, veins, skin innervation and lymphatic drainage of the upper limb.
18. The arteries, veins, skin innervation and lymphatic drainage of the lower limb.
19. The anatomy and histology of the lymph nodes. The anatomy of the lymphatic circulation.
20. The definition, parts and structures of the mediastinum. The projection of the thoracic organs onto the thoracic wall. The radiological anatomy of the thorax.
21. The anatomy, histology of the nose, the nasal cavity and paranasal sinuses.
22. The anatomy, histology of the larynx.
23. The anatomy, histology of the trachea, bronchial tree, the lungs and pleura.
24. The anatomy, topography and histology of the oral cavity and pharynx.
25. The anatomy, histology of the teeth.
26. The anatomy, histology of the tongue and the salivary glands.
27. The anatomy, histology of the esophagus and the stomach.
28. The anatomy, histology of the small intestines.
29. The anatomy, histology of the large intestines.
30. The anatomy, histology of the rectum and the anal canal.
31. The anatomy, histology of the liver and the extrahepatic biliary system.
32. The anatomy, histology of the pancreas.

33. The tributaries of the inferior vena cava and the hepatic portal vein. Portocaval anastomoses. The lymphatic drainage and innervation of the visceral organs of the abdominal cavity.
34. The layers, duplicatures and recesses of the peritoneum. The peritoneal relations of the abdominal viscera. The topographical regions of the abdominal cavity, the projection of the abdominal viscera onto the abdominal surface.
35. The anatomy, histology of the kidney.
36. The anatomy, histology of the ureters and urinary bladder.
37. The anatomy of the female and male lesser pelvis (organs, topography, blood supply, innervation, lymphatic drainage).
38. The anatomy of the female and male perineum.
39. The anatomy, histology of the penis and the urethra.
40. The anatomy, histology of the female external genital organs.
41. The anatomy, histology of the deferent duct, prostate and seminal vesicle.
42. The histology of the blood cells: qualitative and quantitative blood cell count.
43. The histology of the red bone marrow. The development of the blood cells. The stages of fetal blood production.
44. Cells of the immune system. The histology and topography of the lymph follicles. Immunity of organs.
45. The anatomy, histology of the thymus.
46. The anatomy, histology of the spleen.
47. The anatomy, histology of the pituitary gland.
48. The anatomy, histology of the thyroid, parathyroid and pineal glands. Diffuse endocrine systems.
49. The anatomy, histology of the adrenal gland.
50. The anatomy, histology of the integumentary system and mammary gland.

III. NEUROANATOMY AND SENSE ORGANS

1. The blood supply of the central nervous system, arteries, veins and dural sinuses. Blood-brain barrier.
2. The anatomy, histology, blood supply and innervation of the meninges. Subarachnoid space of the spinal cord and the brain.
3. The anatomy of the brain ventricles and the choroid plexus. The formation and circulation of the cerebrospinal fluid. The subarachnoidal cisterns.
4. Histology of the peripheral nerves, receptors, effectors and ganglia.
5. The anatomy of the cervical plexus.
6. The anatomy of the brachial plexus.
7. The anatomy of the lumbar plexus.
8. The anatomy of the sacral plexus.
9. The anatomy of the peripheric sympathetic nervous system (peripheral ganglia, plexuses and nerves).
10. The anatomy of the peripheric parasympathetic nervous system (peripheral ganglia, plexuses and nerves).
11. The anatomy of the spinal cord (gross anatomy, meninges, blood supply). The spinal cord segment.
12. The white matter of the spinal cord (ascending, descending and intersegmental tracts).
13. The structure of the gray matter of the spinal cord. Neuron types, transmitters, nuclei and the Rexed laminae. Anatomy of the spinal reflexes.
14. The fine structure of the medulla oblongata (nuclei and tracts).
15. The fine structure of the pons (nuclei and tracts).
16. The fine structure of the midbrain (nuclei and tracts).
17. The anatomy, histology and connections of the cerebellum. The role of the cerebellum in the regulation of the movements.

18. Nuclei and connections of the hypothalamus. Neurosecretion. Anatomical basis of the neuroendocrine regulation
19. Structure of the thalamus: nuclei and connections.
20. The anatomy, transmitters and connections of the basal ganglia. The role of the basal ganglia in the regulation of the movements.
21. The gyri and sulci of the neocortical lobes, their function and blood supply. Brodmann areas.
22. The histology, cell types, afferents, efferents and transmitters of the neocortex.
23. White matter of the hemispheres: association and commissural fiber systems. Centrum semiovale and internal capsule.
24. The anatomy of the limbic system and the circuit of Papez. The amygdala and its connections. Structure and connections of the hippocampus. The neuroanatomy of the olfactory system.
25. The anatomy of motor pathways: corticospinal and corticobulbar tracts.
26. The origin, brain stem localization, thalamic termination and thalamocortical projections of the spinothalamic tract. Neuroanatomy of the pain.
27. The ascending tracts of the spinal cord's dorsal column, the medial lemniscus and its projections.
28. The brain stem nuclei and the peripheral branches of the the oculomotor, trochlear and abducent nerves.
29. The brain stem nuclei of the trigeminal nerve and the trigemino-thalamic projections. The peripheral branches of the trigeminal nerve.
30. The brain stem nuclei and the peripheral branches of the facial nerve.
31. The brain stem nuclei and the peripheral branches of the glossopharyngeal, vagus, accessory and hypoglossal nerves.
32. The anatomy and histology of the external fibrous coat, vascular coat and the refractive media of the eye. The cornea reflex. Formation and absorption of the aqueous humor.
33. The anatomy and histology of the retina. Blood supply of the retina. The pupillary reflex.
34. The neuroanatomy of the visual pathway, representation of the visual fields in the different structures of the visual system. The central control of the eye movements (pathways of the horizontal and vertical gazing).
35. Additional structures of the eye: eyelids, lacrimal apparatus, muscles of the eye.
36. The anatomy, histology of the middle and external ear.
37. The structure of the osseous and membranous labyrinth. Fundus of the internal acoustic meatus.
38. The fine structure of the macula statica, ampullary crest and the organ of Corti.
39. The neuroanatomy of the auditory and the vestibular pathways.

IV. HISTOLOGICAL SLIDES

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| 1. Unicellular glands (small intestine, PAS) | 34. Trachea (HE) |
| 2. Elastic cartilage (orcein) | 35. Lung (HE) |
| 3. Bone (ground cross section) | 36. Kidney (HE) |
| 4. Endochondral ossification (HE) | 37. Ureter (HE) |
| 5. Skeletal muscle (cross sect., HE) | 38. Urinary bladder (HE) |
| 6. Skeletal muscle (longit. sect., HE) | 39. Penis-urethra (HE) |
| 7. Cardiac muscle (HE) | 40. Testis-epididymis (HE) |
| 8. Blood smear (MGG) | 41. Spermatic cord (HE) |
| 9. Bone marrow (HE) | 42. Prostate (HE) |
| 10. Aorta (resorcin-fuchsin) | 43. Seminal vesicle (HE) |
| 11. Artery and vein (HE) | 44. Ovary (HE) |
| 12. Lymph node (HE) | 45. Oviduct (HE) |
| 13. Thymus (HE) | 46. Uterus (HE) |
| 14. Spleen (HE) | 47. Uterine cervix (HE) |
| 15. Palatine tonsil (HE) | 48. Pituitary gland (HE) |
| 16. Radix of the tongue (HE) | 49. Thyroid gland (HE) |
| 17. Lip (HE) | 50. Parathyroid gland (HE) |
| 18. Back of the tongue (HE) | 51. Adrenal gland (HE) |
| 19. Circumvallate papilla (HE) | 52. Corpus luteum (HE) |
| 20. Parotid gland (HE) | 53. Peripheral nerve (cross section, HE) |
| 21. Submandibular gland (HE) | 54. Peripheral nerve (longit. section, HE) |
| 22. Oesophagus (HE) | 55. Sensory ganglion (HE) |
| 23. Stomach: cardia (HE) | 56. Sensory nerve ending (Meissner, Ag) |
| 24. Stomach: fundus and corpus (HE) | 57. Sensory nerve ending (Pacinian, HE) |
| 25. Duodenum (HE) | 58. Spinal cord (HE) |
| 26. Jejunum (HE) | 59. Cerebellum (HE) |
| 27. Ileum (HE) | 60. Cerebral cortex (HE) |
| 28. Large intestine (HE) | 61. Eye (HE) |
| 29. Vermiform appendix (HE) | 62. Eyelid (HE) |
| 30. Anal canal (HE) | 63. Lacrimal gland (HE) |
| 31. Liver (HE) | 64. Hairy skin (HE) |
| 32. Gall bladder (HE) | 65. Mammary gland (HE) |
| 33. Pancreas (HE) | 66. Placenta (HE) |

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