AL-FARABI KAZAKH NATIONAL UNIVERSITY
Faculty of Medicine and Healthcare, Higher School of Medicine
Department of Fundamental Medicine

PROGRAM
of final exam on discipline for academic year 2020-2021

MiF2203 "Normal structure and function of human body"
11 ECTS

Approved final exam form - written exam

Topics included in final exam:

1. The lymphatic system and Immune system
2. Fluid Balance and Electrolyte Balance
3. Acid–Base Balance
4. Histology of the Lymphatic System Cells of the lymphatic system, types of lymphatic tissue, red bone marrow, thymus, lymph nodes, tonsils, and spleen:
5. General Anatomy and Digestive Processes The Mouth Through Esophagus
6. The Stomach, The Liver, Gallbladder, and Pancreas
7. The Small Intestine and Large Intestine
8. Histology of digestive system Microscopic Anatomy of digestive organs and tissue II Topic: Digestive system. Middle section: small intestine, colon, duodenum
9. Nutrition
10. Metabolic States and Metabolic Rate
11. Body Heat and Thermoregulation
12. Histology of digestive system II Microscopic Anatomy of digestive organs and tissue III Liver, pancreas
13. Overview of the Endocrine System The Hypothalamus and Pituitary Gland
14. Other Endocrine Glands
15. Hormones and Their Actions
16. Histology of Endocrine System I Microscopic Anatomy of endocrine organs and tissue Endocrine system. Central endocrine system. Hypothalamus, pituitary, pineal gland.
17. Hormones and Their Actions Endocrine Disorders
18. Stress and Adaptation Eicosanoids and Other Signaling Molecules
19. Histology Microscopic Anatomy of endocrine organs and tissue Peripheral endocrine system. Adrenal gland, thyroid, parathyroid glands.
20. Histology Sexual Reproduction and Development
21. Histology Reproductive System Male reproductive system. The male Reproductive system Male Reproductive Anatomy
22. Histology Female reproductive system: structure and functions of the ovary, ovogenesis, fallopian tubes.
23. Female reproductive system: structure and functions of the uterus, vagina, ovarian-menstrual cycle; age-related changes; hormonal regulation.
24. The male Reproductive System Sperm and Semen Male Sexual Response
25. Reproductive Anatomy: structure and functions of the ovary, ovogenesis, fallopian tubes.
26. Histology Sex cells. Early stages of development of the human embryo.
27. Oogenesis and the Sexual Cycle Female Sexual Response
28. Pregnancy and Childbirth Lactation
29. Fertilization. Splitting up. Cleavage. Implantation

30. Cleavage. Implantation
31. Human embryology Gastrulation. Differentiation of germ layers, organogenesis.
32. Extraembryonic organs – amnion, yolk sac, chorion, placenta, umbilical cord
33. Histology Supportive Cells (Neuroglia). Peripheral nervous system. The spinal cord
34. Nervous system. Peripheral nervous system. The spinal cord
35. Biophysics of nervous System Electrophysiology of Neurons Synapses Neural Integration. The laws of geometric optics. Eye as an optical system
36. Biophysics of nervous System
37. The Nervous System
38. The Spinal Cord
39. The Spinal nerves
40. Somatic Reflexes
41. Overview of the Brain Meninges, Ventricles, Cerebrospinal Fluid, and Blood Supply
42. The Hindbrain and Midbrain The Forebrain
43. Integrative Functions of the Brain
44. Histology of nervous system Central nervous system. Brain. The cerebral cortex. Cerebellum.
45. Histology Overview of the Brain Meninges, Ventricles, Cerebrospinal Fluid, and Blood Supply
46. The nervous System The Cranial Nerves
47. Histology The Sensory Organs I Organ of sight, organ of smell. Organs of hearing and balance, taste.
48. The Autonomic Nervous System I General Properties of the Autonomic Nervous System
49. Anatomy of the Autonomic Nervous System
50. The Autonomic Nervous System II Autonomic Effects on Target Organs
51. Central Control of Autonomic Function
52. The nervous System -The Sensory Organs I Properties and Types of Sensory Receptors
53. The General Senses; The Chemical Senses
54. The Chemical Senses—Taste and Smell
55. Eye and Vision
56. Hearing and Equilibrium

Expected outcomes: Students in the final exam must demonstrate the ability to:

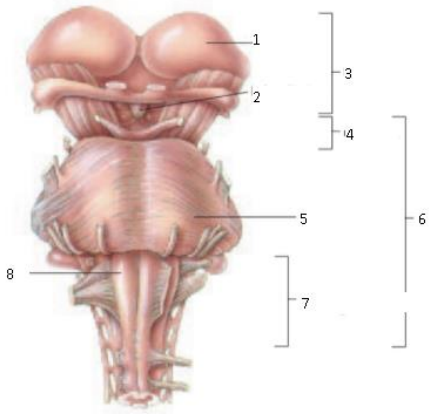
1. demonstrate knowledge of anatomy physiology of lymphatic system
2. demonstrate knowledge of physiology of water and electrolyte balance, acid and base balance.
3. demonstrate knowledge of anatomy, topography and visualization in the age and sexual aspects of human organ systems;
4. be able to identify cellular and non-cellular structures that make up the tissues of organ systems on microscopic specimens with an understanding of their formation and function;
5. demonstrate knowledge of the physiological processes that determine the activity and mechanisms of regulation of human organs and systems (digestion, excretion, movement, blood formation, functioning of the senses);
6. understand and apply knowledge of the neuro-endocrine regulation of homeostasis, metabolism in different situations;
7. understand the processes and anatomical and physiological processes during pregnancy, development and growth, involutional changes, with various physiological stress variants;
8. demonstrate knowledge of the physiology of higher nervous activity and the cognitive process;
9. be able to conduct research on basic physiological functions;
10. demonstrate analytical skills in the integration of knowledge of the anatomy, histology and function of the human body to understand and evaluate normal life processes.
11. demonstrate the ability to identify learning gaps and create strategies to enhance one’s own knowledge and skills.

12. communicate effectively with other students and teachers regarding medical and scientific information, articulate their opinions clearly when discussing the morphological structure and physiological processes, and work effectively as a member of the team.

Sample typology of exam assignments

For written exam

Anatomy:



Indicate which view is shown on the picture. Identify which part of the CNS is shown. Explain its embryonic development. Name each anatomical structure that is marked in the picture and describe its function. Describe which tracts pass through these structures.

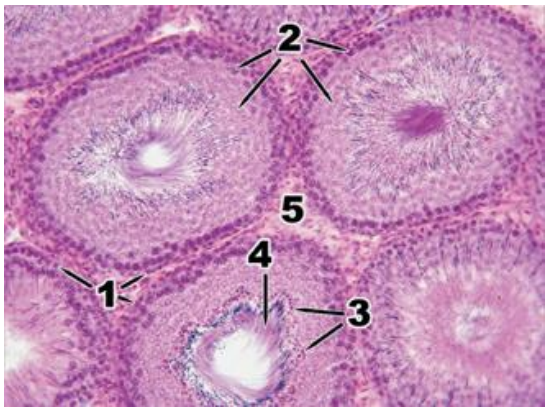
Physiology:

1. List the functions of the lymphatic system;
2. Explain how lymph forms and returns to the bloodstream;
3. Name the major cells of the lymphatic system and state their functions;
4. Describe the structure and function of the red bone marrow, thymus, lymph nodes, tonsils, and spleen
5. Name the major fluid compartments and explain how water moves from one to another
6. List the body's sources of water and routes of water loss;
7. Describe mechanisms of regulating water intake and output;
8. List the functions of sodium and potassium;
9. Explain how electrolyte balance is regulated;
10. Describe three ways the body regulates pH.
11. List the regions of the digestive tract and the accessory organs of the digestive system;
12. Describe the gross anatomy of the digestive tract from the mouth through the esophagus;
13. Identify the esophagus in the model;
14. Describe the composition and functions of saliva;
15. List the functions and major physiological processes of the digestive system;
16. Distinguish between mechanical and chemical digestion;
17. Identify the basic chemical process that underlies all chemical digestion, name the major substrates and products of this process;
18. Describe the nervous control of salivation and swallowing.
19. Describe the gross anatomy of the stomach;
20. Identify the stomach in the model;

21. State the function of each type of epithelial cell in the gastric mucosa;
22. Identify the secretions of the stomach and state their functions; 14.Explain how the stomach produces hydrochloric acid and pepsin; 15.Describe the contractile responses of the stomach to food;
23. Describe the three phases of gastric function and how gastric activity is activated and inhibited.
24. Describe the gross anatomy of the liver, gallbladder, bile duct system, and pancreas;
25. Identify the liver, gallbladder, bile ducts, and pancreas in the model;
26. Contrast the mucosa of the colon with that of the small intestine; 20.State the physiological significance of intestinal bacteria; discuss the types of contractions that occur in the colon;
27. Explain the neurological control of defecation.
28. Describe some factors that regulate hunger and satiety;
29. Define nutrient and list the six major categories of nutrients;
30. Describe some factors that alter the metabolic rate; identify the principal sources of body heat;
31. Describe the name the six types of cells that aid neurons, and state their respective functions;
32. Describe the myelin sheath that is found around certain nerve fibers, and explain its importance;
33. Describe the relationship of unmyelinated nerve fibers to their supportive cells;
34. Characterize the embryonic sources of development and the general laws of the structure, morphofunctional features of the organs of the nervous system.
35. Reproduce simple and complex reflex arcs typical of the somatic and autonomic nervous system, taking into account their characteristics at the organ and cellular levels.
36. Explain why a cell has an electrical charge difference (voltage) across its membrane;
37. Explain how stimulation of a neuron causes a local electrical response in its membrane; explain how local responses generate a nerve signal; 35.Give examples of neurotransmitters and neuromodulators and describe their actions;
38. Describe the stages of sleep, their relationship to the brain waves, and the neural mechanisms of sleep;
39. Identify the brain regions concerned with consciousness and thought, memory, emotion, sensation, motor control, and language; and discuss the functional differences between the right and left cerebral hemispheres.
40. Describe the microscopic anatomy of the ear, the eye, organ of taste and smell.
41. Name the three major components of the diencephalon and describe their locations and functions;
42. Describe the location and functions of the reticular formation.
43. Find and identify the Hindbrain and Midbrain in the model.
44. Define describe the anatomy of nerves and ganglia in general;
45. Describe the attachments of a spinal nerve to the spinal cord;
46. Discuss the production, circulation, and function of the cerebrospinal fluid that fills these chambers;
47. List the 12 cranial nerves by name and number;
48. Define receptor and sense organ;
49. Explain how the two divisions of the autonomic nervous system differ in general function.
50. Discuss the relationship of the adrenal glands to the sympathetic nervous system;
51. Explain how the ANS controls many target organs through dual innervation;
52. Identify the properties of sound waves that account for pitch and loudness;
53. Explain the features of spermatogenesis, the endocrine function of the testes, determine the tissue composition and layers of the vas definers and additional organs of the male reproductive system**.**
54. List the functions of sodium and potassium;
55. Name several organs of the endocrine system;

56. Contrast endocrine with exocrine glands;
57. Recognize the standard abbreviations for many hormones;
58. Describe similarities and differences between the nervous and endocrine systems;
59. Define hormone and endocrine system; name several organs of the endocrine system;
60. Contrast endocrine with exocrine glands;
61. Recognize the organs of the endocrine system on their constituent tissue elements at the microscopic and ultramicroscopic levels.
62. Characterize the embryonic sources of development and the general laws of the structure, morphofunctional features of the organs of the endocrine system.
63. Describe the microscopic anatomy of portion of the endocrine system.
64. Identify the chemical classes to which various hormones belong; 19.Describe how hormones are synthesized and transported to their target organs;
65. Describe how hormones stimulate their target cells;
66. Discuss how the body adapts to stress through its endocrine and sympathetic nervous systems. explain what eicosanoids are and how they are produced;
67. Relate the process of egg production to the cyclic changes in the ovary and uterus.

Histology:



Identify the structures of the testis indicated by the numbers. Describe the structure of the testis. Describe the structure of the blood-testis barrier. Explain its functional significance.

List of Anatomical Structures for Examination

1.Digestive system:

The vestibule of the oral cavity; The oral cavity itself; Upper / lower lip; Adhesions of the lips; Frenulum of the upper / lower lip; cheek; the fatty body of the cheek; gums; the bridle of the tongue; hyoid fold; the hyoid papilla; hard and soft palate; palatine tongue; amygdala fossa; palatine tonsil; pharynx; the muscle of the tongue; palatine-lingual muscle; crown, neck; incisors; the tongue and its parts; lingual tonsil; tongue papillae: filiform, conical, mushroom-shaped, grooved, leaf-shaped; the lingual muscle; styloid muscle; the parotid gland; submandibular gland; the hyoid gland; small sublingual ducts; pharynx; the arch of the pharynx; the nasal, oral, and laryngeal parts of the pharynx; pharyngeal (adenoid) tonsil; pharyngeal opening of the auditory tube; esophagus; cervical, thoracic, abdominal parts of the esophagus; the stomach; front / rear walls; small / large curvature; cardiac hole and cardiac part; the arch and body of the stomach; pyloric part; the gatekeeper's hole and flap; the pyloric sphincter; folds of the stomach; gastric fields; the hepatic-gastric ligament; the small intestine and its departments: duodenum, skinny, ileal; circular folds; intestinal villi; intestinal glands; group lymphoid nodules; an ampoule (bulb) of the duodenum; the upper, descending, horizontal, ascending

parts of the duodenum; the colon and its parts: cecum, ascending / transverse / descending / sigmoid colon; rectum; ribbons of the colon: mesenteric, omentum, free; colon gaustra; omental processes; ileocecal valve; vermiform appendix; the right / left bend of the colon; semilunar folds of the colon; the sacral / perineal bend of the rectum; an ampoule of the rectum; the anal (anal) channel; anus; the internal / external sphincter of the anus; transverse folds of the rectum; anal (anal) pillars, sinuses, flaps; rectal venous plexus; the liver, its surface: diaphragmatic / visceral; the lower edge; ligaments of the liver: crescent, coronoid, right and left triangular, hepatic-gastric, hepatoduodenal, round; the right / left lobe of the liver; the fossa of the gallbladder; tenderloin, fissure of the round ligament; venous ligament fissure; the groove of the inferior vena cava; the gate of the liver; own hepatic artery; portal vein; square fraction; caudate lobe; a lobule of the liver; interlobular arteries, veins; central veins; bile ducts; interlobular ducts; right / left / common hepatic duct; gall bladder; the bottom, body, neck of the gallbladder; cystic duct; spiral fold; common bile duct; hepatic-pancreatic ampoule; the pancreas, its parts: head, body, tail; pancreatic tenderloin; front / back / bottom surface; upper / front / lower edge; pancreatic duct; accessory duct of the pancreas; spleen: diaphragmatic / visceral surface, upper / lower edge, anterior / posterior end; the gates of the spleen;

2. Reproductive system:

The surfaces, ends and edges of the testicle; the protein coat and the mediastinum; tubules and ducts of the testis; the epididymis and its parts; the sinus of the appendage; the vas deferens and its parts; spermatic cord and its parts; the shell of the testis and spermatic cord; the weight of the testis and epididymis; the prostate gland; seminal vesicles; vas deferens; bulbourethral glands; the cavernous and spongy bodies of the penis; the foreskin of the penis; bridle of the foreskin; parts of the urethra, its bends and sphincters; scrotum. the ends, edges and surfaces of the ovary; own and suspensory ligaments of the ovary; fallopian tube; fringe pipes; the uterine part, the isthmus, ampoule and funnel of the fallopian tube; the mesentery of the tube; the body, bottom and cervix; the opening of the uterus; lip front and rear; cervical canal, uterine cavity; round and wide ligaments of the uterus; the vagina; the vaginal vault; the vestibule of the vagina; the female urethra; onion vestibule; large and small labia; the clitoris; glands of the vestibule; superficial / deep transverse muscle of the perineum; the sphincter of the urethra; sciatic-cavernous muscle; the sphincter of the anus; muscle lifting the anus; perineal fascia; sciatic-rectal fossa.

3.Endocrine system:

The hypothalamus; thyroid gland (lobes and isthmus); parathyroid gland; the pituitary gland; thymus gland; pineal gland; the adrenal gland; the pancreas; testicles; the ovaries.

4. Nervous system:

The medulla oblongata; a bridge; the cerebellum; the midbrain; the diencephalon; 6) the final brain; the hindbrain; the brain stem;

the fourth ventricle; the roof of the fourth ventricle; superior cerebral sail; diamond-shaped fossa; the upper and lower legs of the cerebellum; the median groove; facial tubercle; triangles of the hyoid and vagus nerves; medial elevation; the vestibular field; brain strips; lateral pockets; the legs of the brain; the intersternal fossa, the posterior perforated substance; black substance; the roof of the midbrain; the base of the leg of the brain; water supply of the midbrain, central gray matter; the upper cerebellar legs; superior cerebral sail; triangle triangle; the thalamus, its anterior tubercle and pillow; medial and upper surfaces, brain strips; interthalamic fusion; triangles of leashes, leashes, adhesion of leashes; the pineal gland; medial and lateral cranked bodies; visual crossroads; optic tracts; gray tubercle, funnel, pituitary gland; mastoid bodies; the third ventricle; cervical thickening; lumbosacral thickening; brain cone; terminal thread; the front median gap; the posterior median sulcus; anterior lateral groove; posterior lateral groove; back intermediate furrow; front spine; back spine; spinal cord node; the spinal nerve; a segment of the spinal cord; the front horn; back horn; lateral horn; lateral intermediate substance, central intermediate substance; the central channel; the front cord; the back cord; lateral cord; own bundles (anterior, lateral, posterior); the posterior spinal cord pathway; the anterior spinal cord pathway; lateral spinothalamic pathway; lateral cortical-spinal (pyramidal) pathway; the red-nuclear-spinal path; anterior spinotalamic pathway; anterior cortical-spinal

(pyramidal) pathway; the roof of the spinal cord; the reticulo-spinal path; the hard membrane of the spinal cord; epidural space; arachnoid membrane; subarachnoid space; the soft membrane of the spinal cord; the gear ligament.

5. Lymphatic system:

lymphatic organs primary and secondary, Thymus, lymphatic nodes, spleen, bone marrow, lymphatic vessels, lymphatic trunks, lymphatic ducts.

List of histological slides:

1. Spermatozoa. Hematoxylin. x 1000.
2. Oocytes of mammal. Hematoxylin – eosin. x 630.
3. Maternal part of the placenta. Hematoxylin – eosin. x 100.
4. Umbilical cord of pig. Hematoxylin – eosin. x 40.
5. Fetal part of the placenta. Hematoxylin – eosin. x 400.
6. Ependymal glia of the spinal cord. Azocarmine. x 400.
7. Myelinated nerve fibre. Osmium impregnation. x 200.
8. Cornea. Hematoxylin – eosin. x 100.
9. Posterior wall of the eye. Retina in the dark. Hematoxylin – eosin. x 200.
10. Spiral organ (organ of Corti). Hematoxylin – eosin. x 400.
11. Spinal ganglion. Hematoxylin – eosin. x 400.
12. Transverse section of the spinal cord. Silver impregnation. x 40.
13. Cerebral (brain) cortex . Silver impregnation. x 200.
14. Cerebellum. Silver impregnation. x 200.
15. Spleen. Hematoxylin – eosin. x 200.
16. Thymus. Hematoxylin – eosin. x 100.
17. Hypophysis of cat. Hematoxylin – eosin. x 200.
18. Adrenal (suprarenal) gland. Zonae glomerulosa and fasciculata. Azocarmine. x 200.
19. Thyroid gland. Hematoxylin – eosin. x 400.
20. Parotid gland. Hematoxylin – eosin. x 630.
21. Esophagus. Hematoxylin – eosin. x 100.
22. Stomach. Fundus (region of neck and body of glands). Congo-Roth. x 200.
23. Duodenum. Hematoxylin – eosin. x 100.
24. Human liver. Hematoxylin – eosin. x 100.
25. Uterus. Endometrium. Hematoxylin – eosin. x 200.
26. Mammary glands of cow. Hematoxylin – eosin. x 100.
27. Oviduct. Azocarmine. x 40.
28. Ovary of cat. Cortex . Hematoxylin – eosin. x 100.
29. Prostate gland. Hematoxylin – eosin. x 100.
30. Testis. Hematoxylin – eosin. x 200.

Grading Scale for answer quality

Mark	Criteria	Grading scale

excellent	1. all key aspects included and presented logically; 2. high accuracy (relevance, without redundancy) and consistent focus on question; 3. excellent integration of theoretical issues; 3. provision of relevant examples; 4. in-depth analysis and theoretical justification of given problem (if applicable), all key aspects identified and interpreted; 5. fluency in use of professional terminology	90 - 100
good	1. all key aspects included and presented logically; 2. consistent focus on question with satisfactory accuracy, and relevance, and/or some redundancy; 3. satisfactory integration of theoretical issues; 3. lack of examples; 4. satisfactory analysis and theoretical justification of given problem (if applicable), most key aspects identified and interpreted; 5. correct use of professional terminology	75 - 89
satisfactory	1. most key aspects included; 2. satisfactory focus on question - some lapses of relevance and/or noticeably redundancy; 3. theoretical issues presented without noticeably integration; 3. provision of unsuccessful examples or no examples; 4. some analysis and theoretical justification of given problem (if applicable), most key aspects identified and interpreted; 5. correct use of professional terminology	50 - 70
unsatisfactory (FX)	1. most key aspects missed; 2. lack of focus on question - no relevance and notable redundancy; 3. some theoretical issues presented in someway; 3. no or irrelevant examples; 4. some analysis and theoretical justification of a given problem (if applicable), most key aspects missed; 5. lapses in use of professional terminology	25 - 49
failed	1. most or all key aspects missed; 2. no focus on question, irrelevant information; 3. theoretical issues missed or superficial; 3. no or irrelevant examples; 4. no analysis and no theoretical justification of a given problem (if applicable), most key aspects missed; 5. lapses in use of professional terminology	0-24

Grading system

Letter Grade	The digital equivalent of points	% content	Traditional system assessment
A	4,0	95-100	excellent
A-	3,67	90-94	
B+	3,33	85-89	good
B	3,0	80-84	
B-	2,67	75-79	
C+	2,33	70-74	satisfactory
C	2,0	65-69	
C-	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0	25-49	unsatisfactory
F	0	0-24	
I (Incomplete)	-	-	“Discipline is not completed” *(not taken into account when calculating GPA)*
P (Pass)	-	-	"Credit" *(not taken into account when calculating GPA)*
NP (No Pass)	-	-	«Fail» *(not taken into account when calculating GPA)*
W (Withdrawal)	-	-	"Failure to discipline" *(not taken into account when calculating GPA)*
AW (Academic Withdrawal)			Withdrawal for academic reasons *(not taken into account when calculating GPA)*
AU (Audit)	-	-	"Discipline is listened" *(not taken into account when calculating GPA)*
certified		30-60 50-100	Certified (examined)
Not certified		0-29 0-49	Not certified
R (Retake)	-	-	Re-learning the discipline

Exam technology instruction

1. The exam lasts exactly **3 hours.**
2. At the specified time, the student visits the **"app.oqylyq.kz" website.**
3. Student receives login and password in **IS Univer.**
4. Generation of a ticket for each student is made automatically.
5. The exam begins with obligatory proctoring (you cannot turn off the camera and microphone): - you need a laptop or home computer with a webcam. If it is not available, you can use the smartphone camera, for example, with the "DroidCam client" application.

6. The answer is printed in the field of the **OQYLYQ** program itself. A handwritten response form on a piece of paper is **NOT PROVIDED.**
7. Upon completion of the exam, the student clicks the "**Finish**" button.

Basic literature:

1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function (2016, McGraw-Hill Education) на англ. яз.
2. Costanzo, Linda S.: BRS Physiology. Board Review Series.7 edition. -Wolters Kluwer Health, 2018.- 307p. - ISBN 1496367693, 9781496367693
3. Leslie P. Gartner: Color Atlas and Text of Histology. - 7th Edition. - Wolters Kluwer, 2017. ISBN 1496346734, 9781496346735
4. Russell K. Hobbie, Bradley J. Roth: Intermediate Physics for Medicine and Biology. - Springer, 2015. - ISBN 3319126822, 9783319126821
5. Andersson D, Medical Terminology: The Best and Most Effective Way to Memorize, Pronounce and Understand Medical Terms: Second Edition, ISBN-13 : 978-1519066626, 2016
6. Shoibekova, Alima Zhorabaevna. Latin and Fundamentals of Medical Terminology for Medical Students with Training English [Text] : educational man. / A. Zh. Shoibekova, 2016. - 163, [1] p.
7. Sembulingam, K. Essentials of Medical Physiology [Text] : [monogr.] / K. Sembulingam, P. Sembulingam ; Madha Medical College [et al.]. - 7th ed. - New Delhi ; London ; Philadelphia : Jaypee, 2016. - 1112 p. : il. - Ind.: p. 1069-1112. - ISBN 978-93-85999-11-6

Additional literature:

8. Standring, Susan: Gray's Anatomy: The Anatomical Basis of Clinical Practice. - 41 Elsevier Limited, 2016
9. Elaine N. Marieb, Lori A. Smith: Human Anatomy & Physiology Laboratory Manual, Main Version. - 11 edition. - Pearson Education,2015. - ISBN 9780133999143
10. Scanlon V. C, Essentials of Anatomy and Physiology 8th Edition, F.A. Davis Company, 2018
11. Victor P. Eroschenko, Atlas of Histology with Functional Correlations 13th Edition, LWW, 2017
12. William Bialek: Biophysics: Searching for Principles. -Princeton University Press, 2012. - ISBN 0691138915, 9780691138916
13. Ghosh, Byas Deb. Human Anatomy [Text] : For Students / B. D. Ghosh ; [Anatomical Society of India (West Bengal Chapter) et al.]. - 2nd ed. - New Delhi ; Panama City ; London : Jaypee, 2013. - 948 p. : il. - Ind.: p. 913-948. - ISBN 978-93-5025-942-9
14. Mazumdar, Sibani. Anatomy at a Glance [Text] : An Exam-Oriented Text / S. Mazumdar ; Calcutta National Medical College [et al.]. - 2nd ed. - New Delhi ; London ; Philadelphia : Jaypee, 2014. - 534 p. : il. - Ind.: p. 525-534. - ISBN 978-93-5152-355-0 : App.: p. 519-520. Glossary: p. 521-524.
15. Baktybayeva, Lyaila Kyrgyzbayevna. Base of Physiology [Text] : laboratory practicum / L. K. Baktybayeva, G. T. Zhamanbayeva, M. S. Kulbayeva ; Al-Farabi Kazakh National University. - Almaty : Qazaq University, 2017. - 146 p. : il. - Bibliogr.: p. 145. - ISBN 978-601-04-3138-6

Online resources:

1. https://app.lecturio.com/#/
2. https://3d4medical.com/
3. https://www.youtube.com/channel/UCc_I2c2bUtO0p4DVeo6-Kxg
4. https://sites.google.com/a/umich.edu/bluelink/curricula/anatomy-403?authuser=0
5. https://histologyknmu.wixsite.com/info/gistologicheskie-sajty
6. http://www.histology-world.com/contents/contents.htm
7. http://www.histologyguide.com/slidebox/02-epithelium.html
8. https://histology.medicine.umich.edu/resources
9. https://web.duke.edu/histology/
10. http://virtualslides.med.umich.edu/Histology/view.apml?listview=1&