

### CONTENT MODULE 3

1. Classification of arteries. General morphology of the wall of blood vessel.
2. Elastic arteries: location, peculiarities of their wall structure.
3. Mixed arteries: location, peculiarities of their wall structure.
4. Muscular arteries: location, peculiarities of their wall structure.
5. Arterioles: functional significance and their structure.
6. Capillaries: classification, structure, functional significance. Features of the endothelium structure.
7. Classification of veins. Features of the structure according to hemodynamic conditions.
8. Heart: structure and function. Embryonic sources and peculiarities of development.
9. Myocardium: structure and function.
10. Atypical cardiomyocytes of heart: features of their structure and function.
11. Endocardium, its structure. Heart valves. Epicardium: structure and function.
12. Bone marrow: types, location, structure and function.
13. Thymus as the central organ of T-lymphocytopoiesis, its function. Lobule of thymus: structure. Blood-thymus barrier: location, components and significance for an organism.
14. Epithelioreticular cells: types, structure. Age and accidental involution.
15. Lymph nodes. Functional zones of lymph nodes.
16. Cortex: zones of lymph node, cellular composition, functional significance. System of sinuses of lymph nodes.
17. Lymph nodes. Thymus-dependent zone (T-zone). Medulla: structural components, cellular composition of medullary cords.
18. Spleen. White pulp: zones of the lymphatic nodule (follicle), cell composition, functional significance.
19. Spleen. Red pulp: components, cell composition, functional significance. Blood supply of the spleen: open and closed systems.
20. Spinal cord: general morphofunctional characteristic. Gray matter: horns, nuclei.
21. White matter of the spinal cord: structural composition, functional significance.
22. Spinal ganglion: structure, functional significance.
23. Cerebral cortex: layers, cellular composition.
24. Pyramidal and non-pyramidal neurons: structure and functional significance. Morphological types of cerebral cortex. Neuroglia of the cerebral cortex.

25. The structure of Module - as the morphofunctional unit of cerebral cortex.
26. Cerebellum. Cortex of the cerebellum: layers, neuronal composition. Afferent and efferent nerve fibers.
27. Histophysiology of the autonomic nervous system. General morphofunctional characteristics, parts.
28. Autonomic ganglia: location, general morphology, cellular composition. Autonomic reflex arc: components, location, neurotransmitters.
29. Somatic reflex arc: components, location, functional significance. Simple and compound reflex arches.
30. Classification of sense organs. Smell organ: location, functional significance. Olfactory epithelium: cellular composition. Mechanisms of smell perception.
31. Taste organ: location, functional significance. Structure of taste bud.
32. Organ of vision. General morphology. The wall of the eyeball. Embryonic sources and peculiarities of development.
33. Functional apparatuses of the eye: dioptric, accommodation, receptor, accessory.
34. Cornea: structure, nourishment.
35. Lens: structure, nourishment. Growth and regeneration of the lens. Vitreous body: structure, features of the chemical composition of the matrix, function, nourishment.
36. Ciliary body: components, functional significance.
37. Photoreceptor apparatus of the eye. The retina: layers, neuronal composition.
38. Photoreceptor cells: types, location, functional significance.
39. Rods: number, structure, functional significance.
40. Cones: number, structure, functional significance.
41. Macula lutea. Optic nerve disc. Optic nerve.
42. Choroid: layers, structure, functional significance.
43. Middle ear: components and functional significance.
44. Internal ear: components, general morphology, functional significance.
45. Cochlea. Spiral organ of Corti: location, cellular composition. Cytophysiology of the acoustic apparatus.
46. Vestibular part of the membranous labyrinth: location, receptor zones, structure (cellular composition) and function.

47. Hypothalamus: anterior part, nuclei. Neurosecretory cells: structure, cytophysiology. Hypothalamic-neurohypophyseal system. Axo-vasal synapses.
48. Middle hypothalamus: nuclei, hormones, their role in the regulation of endocrine system. Hypothalamic-adenohypophyseal vascular system, its role in the transport of hormones.
49. Acidophilic endocrinocytes of the anterior part of the pituitary gland: types, structure, hormones, their target organs, biological effects.
50. Basophilic endocrinocytes of the anterior part of the pituitary gland: types, structure, hormones, their target organs, biological effects.
51. Intermediate part of the pituitary gland: features of the structure, functional significance. Neurohypophysis: structure, connection with the hypothalamus, functional significance.
52. Pineal body: structure and cellular composition. Hormones, their functional significance.
53. Thyroid gland: general morphology. Follicles: structure, cellular composition. Reconstruction of follicles due to different functional activity.
54. Follicular cells: structure, secretory cycle, its regulation, hormones, their functional significance.
55. Parafollicular cells (C-cells): location, origin, regulation, hormones, their functional significance.
56. Parathyroid glands: structure and function.
57. Adrenal glands: structure, hormones, their functional significance. Regulation of functional activity of the adrenal gland.

#### **CONTENT MODULE 4**

1. Skin and its derivatives. Epidermis: layers, morphological peculiarities of “thick” and “thin” skin.
2. Cellular composition of the epidermis.
3. Glands of the skin. Sebaceous and sweat glands: location, structure of the secretory portions, cellular composition, mechanism of secretion.
4. Hair: types. Structure, growth, hair changing.
5. Oral cavity. Lips, cheeks.
6. Oral cavity. Gums, hard and soft palates.
7. Tongue. General structure. Tongue’s papillae: location, morphology, functional significance.
8. Early stage of tooth development.
9. Late stage of tooth development.
10. Structure of a tooth. Tissues of the tooth: morphology, distribution according to the anatomical parts of the tooth.

11. Lymph-epithelial ring of Pirogov-Valdaer. Structure of a palatine tonsil, its functional significance.
12. Esophagus: tunics, their tissue composition, relief, functions.
13. Stomach: tunics, their tissue composition, relief, functions.
14. Gastro-esophageal junction: peculiarities of morphology in the area of junction.
15. Epithelium of a stomach: structure, functions, peculiarities of regeneration. Gastric glands: types, distribution of cells within the gland, role in a gastric juice formation.
16. Duodenum: tunics, their tissue composition, relief, functions.
17. "Crypt-villous" system. Histophysiology of the intestinal digestion: phases, chemical and structural provision.
18. Large intestine: tunics, their tissue composition, relief, functions.
19. Appendix: morphological peculiarities and functional significance.
20. Rectum: parts, morphological peculiarities and functional significance.
21. Parotid gland: morphological and functional characteristic.
22. Submandibular gland: morphological and functional characteristic.
23. Sublingual gland: morphological and functional characteristic.
24. Pancreas: morpho-functional unit of the exocrine pancreas, its structure and function.
25. Morphological features and functions of exocrine cells of the pancreas, regulation of the secretory activity. Centroacinar cells. Structure of excretory ducts of the exocrine pancreas.
26. Pancreatic islets (islets of Langerhans): location, structure, types of cells, their morphological characteristic, hormones of endocrine pancreas and their functional significance.
27. Morpho-functional units of liver: types and their structure.
28. Hepatocytes: morphological and functional characteristic.
29. Morphological features of sinusoidal capillary of liver. Perisinusoidal space (Disse).
30. Bile passage ways: intrahepatic and extrahepatic. Their morphological characteristic.
31. Gallbladder: morphology and function. Morphological peculiarities of the tunica mucosa (cellular composition of the epithelium).

## **CONTENT MODULE 5**

1. Respiratory system: air passage ways and respiratory portion. Pseudostratified epithelium: cellular composition and their function.
2. Trachea: wall structure and functional significance. Mucociliary apparatus: composition, regulation, role in the air conditioning.
3. Bronchi (main, large, middle and small). Terminal bronchioles: structure and function.
4. Acinus is like a morpho-functional unit of the respiratory portion of a lung.
5. Alveolus: structure, cellular composition and function.
6. Surfactant complex. Blood air barrier: structural components, functional significance.
7. Nephron is like a morpho-functional unit of kidney: types, location and functional significance.

8. Renal corpuscle: morphology. Filtration barrier: structural components and function.
9. Tubular system of the nephron: portions, their location, structure and functional significance. Structural backgrounds of the tubular reabsorption and secretion, regulation of their activity.
10. Structural backgrounds of the tubular reabsorption and secretion, regulation of their activity. Collecting tubules: cellular composition, morpho-functional characteristic, regulation of their activity.
11. Endocrine apparatus of kidney: its components, structure and function.
12. Urinary bladder: morphology and histophysiological features of the urinary bladder.
13. Male reproductive system: its components. Structure and functions of testis.
14. Seminiferous convoluted tubules, their wall structure. Blood-testis barrier.
15. Semen passage ways. Epididymis: morphology and function.
16. Prostate gland: zones, morphological characteristic of the stroma and parenchyma.
17. Ovary: general morphology and functional significance.
18. Types of follicles: their morphological characteristic. Atretic follicles.
19. Ovulation: mechanism, regulation, biological significance. Corpus luteum: phases of its development and functions. Atretic follicle.
20. Uterine tubes: parts, morphology and functions, peculiarities of the epithelial cellular composition.
21. Uterus: general morphology of its wall.
22. Menstrual cycle: phases, hypothalamic-pituitary-ovarian system of its regulation. Morphological changes of an endometrium during different phases of the cycle, regulation and biological significance.
23. Myometrium: tunics, tissue composition, functions.
24. Mammary gland: morphology, functional significance, neuroendocrinal regulation.