Cytology and embryology

1. Cell surface: it’s organization and functions.
2. Projections of the cell surface.
3. Receptive function of cell's plasma membrane.
4. Transport function of cell's plasma membrane.
5. Intercellular junctions.
6. Basic elements of cell's cytoplasm. Hyaloplasm. Cell inclusions.
7. Main cell organelles: classifications, structure and functions.
8. Synthetic apparatus of the cell.
9. Apparatus of the intracellular digestion.
10. Energy apparatus in different cells: structure and functions.
11. Non-membranous organelles. Organization and functions. Cell cytoskeleton.
12. Nucleus. Structure and functions. Cell cycle.
13. Spermatogenesis and oogenesis. Differences between spermatogenesis and oogenesis.
14. Germ cells. Structure and their role in fertilization.
15. Main periods and stages of embryogenesis.
16. Fertilization. Cleavage.
17. Gastrulation.
18. Differentiation of the ectoderm.
19. Differentiation of the entoderm.
20. Differentiation of the mesoderm.
21. Extraembryonic organs. Structure, development and functions of the early extraembryonic organs.
22. Extraembryonic organs. Structure, development and functions of the allantois and umbilical cord.
23. Extraembryonic organs. Placenta. It’s formation, main parts, structures and functions.

Tissue

1. Basic elements of the tissues. Classification of the tissues.
2. Types of epithelia. Characteristic features of epithelia. Functions of epithelia. Regeneration of epithelia.
3. Morphological classification of covering epithelia.

4. Morphological characteristic and functions of glands. Sources of their development. Classification of exocrine glands. Structure of gland as an organ.
5. Ultrastructure of glandular cells. Types of secretion.
6. Connective tissue. General characteristic and classification.
7. The blood as a tissue. Functions. Plasma of blood. Formed elements of the blood. Hemogramm.
8. Erythrocytes. Their structure and functions. Erythrocytopoiesis.
9. Platelets. Their structure and functions. Trombocytopoiesis.
10. Leukocytes. General characteristic and classification. Leukocytic formula.
11. Granulocytes. Their structure and functions. Granulocytopoiesis.
12. Monocytes. Their structure and functions. Mononuclear phagocyte system. Monocytopoiesis.
13. Lymphocytes. Their structure and functions.
14. Lymphocytopoiesis. Antigen-independent differentiation of lymphocytes.
15. Lymphocytopoiesis. Antigen-dependent differentiation of lymphocytes. Cellular immunity.
16. Lymphocytopoiesis. Antigen dependent differentiation of lymphocytes. Humoral immunity.
17. Reticular, myeloid and lymphoid tissues.
18. Hematopoiesis. General characteristics of the embryonic and postembryonic hematopoiesis.
19. Fibrous connective tissues. General characteristic and classification.
20. Loose connective tissue. Morphological characteristic. Its cells: structure and functions.
21. Extracellular substance of fibrous connective tissues. Collagenogenesis.
22. Dense connective tissue. Morphological characteristic. Localization.
23. Special connective tissues.
24. Cartilage tissue. Morphological characteristic. Classification. Development, growth and regeneration of cartilage.
25. Bone tissue. Morphological characteristic. Classification. Bone as an organ. Mechanisms of the bones growth.
26. Formation of bone: intramembranous and endochondral ossification. Cellular mechanisms of bone reorganization.
27. Muscle tissues. Classification and origination of muscles. Morphological characteristic. Regeneration.

28. Smooth muscle tissue. Morphological characteristic. Innervation. Regeneration.
29. Skeletal muscle tissue. Morphological characteristic. Innervation. Mechanism of the contraction.
30. Cardiac muscle tissue. Morphological characteristic. Regeneration.
31. Nervous tissue. Structural components. Origin and regeneration of the nervous tissue. Neurons: cytological features and classification.
32. Neuroglia. Blood-brain and blood-cerebrospinal fluid barriers.
33. Myelinated and unmyelinated nerve fibers.
34. Structure and classification of synapses. Synaptic transmission.
35. Sensory (afferent) nerve endings. Classification and structure.
36. Motor (efferent) nerve endings. Classification and structure.

ORGANS

1. Nervous system. Classifications. Basic structural and functional characteristics. Development.
2. Spinal cord. White and gray matter. Somatic and autonomic reflex arches.
3. Peripheral nervous system. Sensory and autonomic ganglia. Peripheral nerves.
4. Cerebellum. Structure and function.
5. Brain stem and cerebral cortex.
6. Sensory system. Types of receptor cells in sensory organs. Organ of olfaction. Taste organ.
7. Embryogenesis of the eye. Functional apparatuses of the eye.
8. Structure of the eyeball's layers. Characteristic of the retina's neurons.
9. Organs of hearing and equilibrium. Localization, structure and functions of their cells.
10. Blood vessels: development, organization of the vessels walls. Arteries (elastic and muscular types). Veins (muscular and unmuscular types).
11. Microcirculatory bad vessels. Arterioles. Venules. Arterio-venous anastomoses. Blood capillaries. Classification of the capillaries.
12. Heart. Tunics of the heart. Conducting system of the heart. Cardiac valves.
13. Hypothalamo – hypophyseal system. Blood supply of the hypophysis.
14. Hypophysis. Embriogenesis. Histophysiology of the adenohypophysis and neurohypophysis.

15. Thyroid gland: embryogenesis, structure and functions. Molecular mechanism of secretory cycle in follicular cell.
16. Epiphysis: structure, functions. Parathyroid gland: structure, functions.
17. Adrenal gland. Structure, histophysiology.
18. Teeth. Tissues of the tooth. Embryonic development of tooth.
19. Oral cavity organs. Tongue.
22. Large salivary glands: embryogenesis, structures, histophysiology.
20. Esophagus. Structure and function.
21. Stomach: structure and functions. Gastric glands.
22. Histophysiology of the small and large intestines.
23. Liver: structure, functions, features of blood supply. Types of liver cells.
24. Pancreas. Exocrine and endocrine parts of the pancreas.
25. Red bone marrow: structure and functions.
26. Thymus: structure, development and functions.
27. Lymphatic node : structure and functions.
28. Spleen: structure, functions, features of blood supply.
29. Mucosa-associates lymphoid tissue organs of alimentary canal.
30. Kidney. Embryogenesis and structure. Structure and histophysiology of the nephron. Features of blood supply in different types of nephrons.
31. Endocrine functions of kidney. Structure of the urinary passage organs. Urinary bladder.
32. Testis: embryogenesis, structure and functions. Endocrine regulation of the testis.
33. Male reproductive system. Epididymis. Genital duct system. Accessory glands.
34. Female reproductive system. Embryogenesis. Ovary. Ovarian cycle and its hormonal regulation.
35. Uterus. Menstrual cycle and its hormonal regulation. Uterine tubes. Vagina.
36. Skin and its derivates.
37. Mammary gland: structure, hormonal regulation.
38. Nasal cavities, larynx, trachea.
39. Lungs. Structure of the airways of lung. Pleura.
40. Respiratory part of lung. Blood-air barrier.