Histology, cytology, embryology

Fundamentals of the cell theory, peculiarities of organization of animal cells at the light and ultrastructural levels. Determination and differentiation of cells, somatic cell genetics. Development, structure and functioning of the body based on the structural organization of cells, tissues and organs. Histogenesis, structural organization, life functions of main types of tissue and their functional features, ability to regenerate and methods of research. Mechanisms of histogenesis and organogenesis, tissue homeostasis, limits of tissue variability. Prenatal and postnatal development of an organism and cells, tissues and organs composing it. Principles of organization and histologic structure of organs and systems, tissular and cellular composition of their structural and functional units, relationship of various tissues in organs. General regularities of the reaction of tissues and organs to external influences, particularly their radiosensitivity and radioresistance. Structural basis of homeostasis.

Students should

know:

- general laws and stages of embryonal human development;
- sources of development, peculiarities of structure and functions, age-related changes in main types of tissue;
- peculiarities of tissular structure of human body organs; spatial relationships between tissues in organs;
- peculiarities of structure, functions and age-related changes in cells structure in a living organism;
- general laws of tissue regeneration and limits of their variability;
- peculiarities of obtaining the material for histological investigation, methods of tissue fixation.

be able to:

- differentiate a structural elements of cells and tissues in organs during microscopic invesigation of bioptic and operational material;
- recognize an electron micrographs of cells and non-cellular structures of organs and tissues.

to manage:

- microscopy technique;
- safe work skills in the histology laboratory;
- histological terminology.