Cytology-as a scientific direction. Levels of organization of the living. The structure of the cell-general information.

Cell structure of prokaryotes and eukaryotes.

Similarity and difference in the cell structure of prokaryotes and eukaryotes.

Cell structure of bacteria, fungi, plants and animals.

Cell organelles. Cell wall: structure, purpose, biology.

Membrane: structure, purpose, biology, biochemical aspects.

The structure of the cell wall of bacteria, plants, fungi, animals.

Cytoplasm: structure, purpose, biology, biochemical aspects.

Endoplasmic reticulum: structure, purpose, biology, biochemical aspects.

Golgi apparatus: structure, purpose, biology, biochemical aspects

Mitochondria: structure, purpose, biology, biochemical aspects.

Cell nucleus: structure, purpose, biology, biochemical aspects.

Ribosomes: structure, purpose, biology, biochemical aspects.

Cell division: mitosis

Cell division: meiosis.

Non-cellular life forms and cell division.

The role of viruses in cell biology.

The role of viruses in the evolution of the organic world.

Cellular inclusions.

Methods of cell research.

Applied aspects of cell biology.

Viruses. Cellular inclusions.

Histology-as a scientific direction.

The relationship of histology with other disciplines.

Levels of organization of the living.

The concept of tissues.

The origin and development of tissues in the evolution of multicellular organisms. T

he theory of I. I. Mechnikov's phagocytella. E. Haeckel's theory of gastritis.

Classification of tissues. Morphofunctional and histogenetic principles of tissue classification.

Divergent theory of N. G. Khlopin and the theory of parallelisms of academician A. A. Zavarzin.

Modern methods of histological studies: autoradiography, electron microscopy, cloning method, method of preparation of a permanent histological preparation, histochemistry, immunocytochemistry.

Epithelial tissue: structural features, classification, functional significance.

Skin epithelium.

Secretory (glandular) epithelium.

Intestinal epithelium.

Types of digestion: intracellular, cavity and membrane.

Histological organization of the mucous membrane of the digestive tract (esophagus, stomach, small and large intestines).

Osmoregulatory and excretory epithelium.

Connective tissue: general typical features, functions, classification. Loose unformed connective tissue. Blood. Hematopoiesis.

Connective tissue.

Characteristics of stem cells, progenitor cells, colony-forming units, blast forms and differentiated (mature) shaped blood elements.

 Blood and its analogues in invertebrates. Hemolymph.

Dense fibrous connective tissues: classification, structure.

The structure of the tendon, ligament and dermis of the skin.

Cartilage, bone tissue.

Muscle tissue.

Nerve tissue.

Sensor systems. Characteristics of interoreceptors, exteroreceptors.