Cytomorphology and Microtechnics (AOK-OAKV211-AOK-KA1891-1)

1. Evolution of cellular organisms. General morphology of the eukaryotic cell: size, shape. Research methods for structural cell biology.
2. Intracellular compartmentalization. Structure of the cell membrane. The endomembranes. Membrane dynamics (membrane fusion and fission).
3. Membrane modifications: cell surface modification (microvillus, stereocilium, cilia), coupling structure (belt-, spot-, hemidesmosome), impermeable junction (tight junction), communication junction (gap junction, chemical synapse).
4. Structure and functions of the extracellular matrix. The lamina basalis. Cell adhesion molecules.
5. Structure and functions of the cytoskeleton I. General characteristics of cytoskeletal proteins. Actin filaments/microfilaments.
6. Structure and functions of the cytoskeleton II. Microtubules and intermedier filaments.
7. Light- and electron microscopic structure of the cell nucleus and nucleolus. Organization of the chromatin. Chromosomes.
8. The cell cycle. Growth and division of the cell. Mitotic and meiotic cell divisions.
9. The endomembranes: endoplasmic reticular systems, Golgi complex. Targeted intracellular transport of ptoteins. The vesicular transport and secretion.
10. Transport across membranes. Internalization of macromolecules and viruses. Phagocytosis. Receptor-indiced endocytosis, exocytosis, transcytosis. The lysosomes.
11. The mitochondrion: general characteristics and types.
12. Cyto- and histotechnics I. Nuclear / chromatin staining methods. Light- and electron microscopic enzyme histochemical methods.
13. Cyto- and histotechnics II. Light- and electron microscopic immunocytochemical and –histochemical methods.
14. Scanning electron microscopic techniques (freeze etching, freeze-fracturing, etc.).
15. Written exam

Követelmény: Oral exam- 5 grades