

## HISTOLOGY AND CELL BIOLOGY (the 2<sup>nd</sup> year of study)

### 1. The general purpose of teaching

During the course of histology students should know:

- the basic techniques used in basic morphologic studies,
- the basic structure and function of the cell; structure and function of the cell organelles; structure and function of most important specialized cells,
- the classification, characteristic, origin, arrangement and the role of tissues,
- the histologic organization of systems and organs, their role and basic mechanisms of regulation.

During the course of cell biology students should know:

- methods used to study the cell functioning,
- mechanisms of regulation of organelles function,
- mechanisms of cell cycle and differentiation; cell aging and apoptosis,
- intercellular signaling,
- the most important processes associated with immune response, cancer development, cell adhesion.

### 2. The histology course detailed program

#### Lectures

Lecture on the subject precede exercise

#### Exercises

- Digestive system: liver and pancreas.
- Endocrine system: hypothalamus, hypophysis, thyroid, parathyroid, adrenals, pancreas, ovary and testis, the dispersed neuroendocrine system.
- Respiratory system: upper and distal respiratory tract.
- Urinary system: kidney, nephron's structure and function, lower urinary tract.
- Male and female reproductive system: testes and epididymis, ovary and uterus, endocrine control.
- Nervous system: neuron's structure and function, neuroglia, central and peripheral nervous system.
- Skin and breast.
- Sense organs: eye and ear.
- Repetitory course – individual work with slides and microscope.

### 3. The cell biology course detailed program

#### Seminars

- Mechanisms of cell growth and differentiation.
- Methods used for studying the cell morphology and functioning.
- Cell nucleus structure and function.
- Genes – localization, structure, function, inheritance, genetical engineering.
- Cell cycle and cell aging. Apoptosis.
- Cell membranes and transport across membranes.
- Cytoskeleton.
- Selected cytoplasmatic processes.
- Intercellular signaling.
- Cell adhesion and extracellular matrix.
- Base of immune response.
- Carcinogenesis.

### 4. The range skills in practice:

Recognizing of histologic appearance of main organs and their typical structures.

**5. The final examination:** test form exam

**6. The teacher responsible:** Prof. Maciej Zabel

**7. Required text:**

1. Zabel M. *Histologia*, Urban & Partner, Wrocław 2002
2. Sobotta/Hammersen *Histologia Atlas cytologii i histologii* (tłum. M. Zabel), Urban & Partner, Wrocław 2002
3. Kawiak J., Zabel M. *Seminaria z cytofizjologii* Urban & Partner, Wrocław 2002

**8. Supplement texts:**

1. Cichocki T. *Kompendium histologii*, Collegium Medicum UJ, Kraków 1996
2. Sawicki W. *Histologia*, PZWL, Warszawa 2000
3. Stevens A., Lowe F. J. *Histologia człowieka* (tłum. M. Zabel), PZWL, Warszawa 2000
4. Alberts B. *Podstawy biologii komórki* (tłum. J. Michejda I J. Augustyniak) PWN, Warszawa 1999
5. Fuller G., Shields D. *Podstawy molekularne biologii komórki*, PZWL, Warszawa 1999