



Study program: Doctoral Academic Studies in Biomedical Sciences

Name of the subject: MOLECULAR PATHOLOGY OF THE DISEASE

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Status of the subject: elective

Number of ECTS points: 20

Condition: -

Goal of the subject

Gaining knowledge of the molecular basis of various diseases with a particular focus on the most common diseases.

Outcome of the subject

A PhD student should gain knowledge that will enable him to understand how disorders of homeostatic mechanisms, caused by either inherited or environmental factors, act at the molecular level and cause disease.

The student should be familiar with modern laboratory methods used in molecular diagnostics of the disease today.

Content of the subject

Theoretical lectures

1. Disorders of macromolecule structure and function
2. Cell differentiation and regeneration
3. Mechanisms of disease
4. Cell death and inflammation
5. Genetic basis of disease
6. Molecular basis of immune system diseases
7. Molecular basis of infectious diseases
8. Molecular basis of diseases of metabolism and endocrine system
9. Molecular basis of cardiovascular and respiratory diseases
10. Molecular basis of diseases of the urogenital and gastrointestinal tract
11. Molecular basis of nervous system and neuromuscular diseases
12. Molecular origin of cancer
13. Molecular pathology of solid tumors
14. Clinically important mutations in human neoplasms
15. Molecular pathology of hematologic neoplasms
16. Clinically significant mutations in malignant tumors

Practical lectures

Consultation with the mentor, case studies and detailed consideration of the laboratory methods used to demonstrate the disorder at the molecular level.

Recommended literature

Compulsory

1. McCance KL, Huether SE. Pathophysiology: The Biologic Basis for Disease in Adults and Children, 8th Edition. Edinburg: Elsevier; 2018.
2. Norris TL, Lalchandani R. Porth's Pathophysiology: Concepts of Altered Health States. Tenth Edition. Philadelphia: Wolters Kluwer; 2019.
3. Rifai N, Horvath AR, Wittwer CT, eds. Tietz textbook of clinical chemistry and molecular diagnostics. Sixth edition. St Louis, Missouri: Elsevier; 2018.
4. Coleman WB, Tsongalis GJ. Molecular Pathology: The Molecular Basis of Human Disease, 1st Edition. Elsevier Science, 2009.
5. Lakhani SR, Fox S. Molecular pathology of cancer research. Springer New York, 2017.

Additional

1. Coleman WB, Tsongalis GJ. Diagnostic Molecular Pathology A Guide to Applied Molecular Testing, 1st Edition. Elsevier Science, 2016.

Number of active classes

Theory: 60

Practice: 45

Methods of delivering lectures: Consultations and individual work.

Evaluation of knowledge (maximum number of points 100)

lectures: 10
practices: 20
colloquium: 5
essay: 10
oral exam: 55