Level: Master

Course title: Structure and function of nucleic acid (IB-504)

Status: Elective

ECTS: 6

Requirements: Completed experimental exercises and courses Basis of biochemistry and Intermediary metabolism.

Learning objectives

Deepening on theoretical and experimental knowledge in the field of structure and function of nucleic acids, genetic basis of modern biology. Amplification of critical awareness about novelty in this field and qualifying students to independently plan and conduct experiments using the appropriate methodology in resolving unknown problems. Preparing students to work successfully in this profession or continue studying for PhD studies in the field of biochemistry and related fields.

Learning outcomes

Upon successful completion of this course, students should be able to: 1. Compare different types of mutations and predict how each of them could affect the genes, mRNA and proteins. 2. Predict different mechanisms that could be responsible for control in gene expression. 3. Discuss biological functions on a level of individual molecular interactions, and on a level of a complex process 4. Analyze interaction between disorders in biochemical pathways and etiology of human disease, and potential use in therapy. 5. Critically follow literature, present scientific information orally or in a form of written report and upgrade biochemical experiments in this field.

Syllabus

Theoretical instruction

Structure and function of nucleic acids: structure and properties of RNA, DNA and chromatin, experimental methods for studying DNA and RNA, recombinant DNA techniques, mutagenesis, protein-nucleic acids interaction, the molecular basis of replication, transcription, translation and their regulation.

Practical instruction

Experimental and computer exercises in accordance with theoretical program of the course.

Weekly teaching load				Other:
Lectures: 1	Exercises: 2	Other forms of teaching: 1	Student research:	