

Level: master				
Course title: Human genome and epigenetics				
Status: elective				
ECTS: 5				
Requirements: -				
Learning objectives Learning objective is to introduce students to organisation of human genome, distribution and function of genes and genetic mechanisms of monogenic and complex diseases. During the course the students will obtain knowledge on technological achievements and inventions in human genome research, mechanisms of epigenetic control of human genome expression by means of laboratory activities and searching available databases.				
Learning outcomes Upon successful completion of pre-examination and examination tasks a student will be able to: <ul style="list-style-type: none"> - successfully differentiate levels of structure and functional organisation of human genome - understand mechanisms of pathogenic mutations - explain identification methodology of the gene which causes monogenic and complex diseases - understand epigenetic phenomena of human genome expression control - use Internet resources and scientific literature and to conclude clearly 				
Syllabus <i>Theoretical instruction</i> Organisation of human genome. Organisation, distribution and function of RNA genes in human genome. Organisation, distribution and function of protein coding genes in human genome. Non-coding regions of human genome. Mitochondrial human genome. Pathogenic mutations. Identification of genes which causes monogenic diseases. Identification of genes which causes complex diseases. Molecular pathology. Genetics of cancer. Epigenetic mechanisms for gene expression. Epigenetic reprogramming at early embrional stages. <i>Practical instruction</i> Pedigree analyses. Molecular markers: selection of marker system in diagnostics, population genetics and forensics. Laboratory work – amplification of gene which causes complex diseases and analysis of polymorphism features by restriction fragment length polymorphism. Introduction and use of Internet resources containing information on organisation and function of human genome: NCBI, OMIM, GENOME.				
Weekly teaching load				Other:-
Lectures: 2	Exercises: -	Other forms of teaching: 3	Student research:-	