

Course code	IRL102		
Course title	METHODS IN DNA TECHNOLOGIES		
General information			
Study programme	Graduate study „Drug research and development“, Graduate study „Biotechnology in medicine“	Academic year	
Lecturer	Doc. Dr. Sc. Kristina Grabušić	Lecturer	
Status			Required
ECTS system			
Course objectives			
<p>Recombinant DNA technologies allowed dramatic advances of biomedical research in the last few decades. These advances led to discovery of new targets for therapeutic manipulation as well as development of modern medicines.</p> <p>Students will learn principles and protocols of a number of basic methods in recombinant DNA technology. During seminars students will be stimulated to prepare different subjects, search the literature and use bioinformatic tools.</p>			
Course description			
<ol style="list-style-type: none"> 1. basics in recombinant DNA methods: enzymes for nucleic acid manipulation: DNA polymerases, restriction enzymes, ligase, alkaline phosphatase, reverse transcriptase, plasmids, gene cloning, transformation and selection of bacteria; polymerase chain reaction; in vitro mutagenesis: production of mutants and chimeric proteins, reverse transcription; DNA sequencing 2. usage of recombinant DNA methods in research of cell functions: Southern and Northern blot, quantitative PCR, promoter analysis, analysis of DNA-protein complexes, analysis of chromatin-protein complexes; DNA microarrays; usage of antisense oligonucleotides, transient and stable gene expression, inducible gene expression systems, usage of dominant negative mutants 3. gene manipulation in multicellular organisms: production of transgenic plants and animals 4. production of recombinant proteins in bacteria, eukaryotic cells and plants 5. DNK vaccines 			
Learning outcomes			