

Study programme(s): PhD in Biology				
Level: Doctoral degree				
Course title: MOLECULAR & CELLULAR IMMUNOLOGY				
Lecturers: Prof. Dr Tatjana Kostic, Prof. Dr Silvana Andric				
Status: Elective				
ECTS: 15				
Requirements: -				
Learning objectives Objective of this course is acquisition of the mechanisms describing the functions of the immune system on the levels of cells and molecules, as well as ability of scientific-based interpretation of the experimental data from the field of molecular and cellular immunology.				
Learning outcomes At the end of this course students will be able to understand and describe mechanisms of the immune system functions on the levels of cells and molecules. In addition, students will have ability to critically analyze scientific papers, scientific hypothesis and the experimental data in the immunological investigations, and to perform experiment form the field of molecular and cellular immunology.				
Syllabus <i>Theoretical instruction</i> Functional organization of the immune system. Recognition of antigens. Maturation, activation and regulation of lymphocytes. Effective mechanisms of the innate and adaptive immune response. Immune system in disease (immune response against tumors and against diseases which are caused by immune response). <i>Practical instruction</i> Isolation and cultivation of the lymphocytes. Immunization. Determination of the ABO-Rh blood groups. Quantitative analysis of antigens. Antigen detection in cells and tissues. Work on the short scientific project in the field of molecular and cellular immunology. <i>Seminars.</i> Short presentation of the specified topics connected with the subject of student's PhD thesis. <i>Journal Club.</i> Presentation of the original peer-review scientific paper from the field of molecular and cellular immunology.				
Recommended Literature: Abbas AK & Lichtman AH (2005): <i>Cellular and Molecular Immunology</i> . WB Saunders Company Edgar JDM (2006): <i>Master Medicine: Immunology</i> . Elsevier Churchill Livingstone. Janeway CA, Travers P, Walport M, Shlomchik MJ (2005): <i>Immunobiology 6ed</i> : Churchill Livingstone. Mahon RC & Tice D (2006): <i>Clinical Laboratory Immunology</i> . Pearson Prentice Hall. Paul EW (2003): <i>Fundamental Immunology</i> . Lippincott Williams & Wilkins Rott IM & Delves PJ (2001): <i>Essential Immunology</i> . Blackwell Publishing. Sompayrac L (2003): <i>How the Immune System Works</i> . Blackwell Publishing. Wood P (2006): <i>Understanding Immunology 2ed</i> . Pearson Prentice Hall. Review peer-review scientific paper from the field of molecular and cellular immunology.				
Weekly teaching load				Other:
Lectures: 2	Exercises:	Other forms of teaching: 3	Student research: 5	
Teaching methodology <i>Theoretical part</i> – Lectures/Consultative discussions. <i>Practical part</i> – Combination of laboratory work and computer simulations. <i>Seminars</i> - Short presentation of the specified topics connected with the subject of student's PhD thesis. <i>Journal Club.</i> Presentation of the original peer-review scientific paper from the field of molecular and cellular immunology.				
Grading method (total number of points 100)				
<i>Scientific project problem</i> – up to 30; <i>Seminar</i> – up to 5; <i>Presentation of the original scientific paper (Journal club)</i> – up to 20; <i>Oral exam</i> – up to 45.				