

Study program: Integrated Academic Studies in Medicine
Course title: Immunogenetic Testing
Teacher: Svetlana I. Vojvodić, Zorana P. Budakov Obradović, Jasmina N. Grujić
Course status: elective
ECTS Credits: 3
Condition: -
<p>Course aim</p> <p>Introducing students to the methods of immunogenetic testing of modern transfusion medicine. For their application in diagnosis of diseases and the association of immunogenic markers with disease, pretransplant and posttransplant testing, the selection of the proper blood component for transplanted patients, monitoring of posttransplant chimerism, the prediction of graft rejection.</p>
<p>Expected outcome of the course:</p> <p>Gaining knowledge about the immunogenicity markers, their importance in transfusion and their relationship and the importance in other branches of medicine. Acquiring knowledge of the immunogenic testing methods: serological method for detection of an HLA (Human Leucocyte Antigens) antigen, the molecular detection methods of the HLA (Human Leucocyte Antigens) genes, methods for detecting anti-HLA antibodies, methods of detecting donor-specific anti-HLA antibodies, related methods (isolation of lymphocytes (T / mixture, B) and isolation of the genomic DNA, isolation of fetal free DNA, methods of detection of HPA (Human Platelet Antigens) genes, methods of detecting HNA gene (Human Neutrophil Antigens), methods for detection of natural killer cell's receptor- KIR genes, methods for detection of minor histocompatibility genes, methods for detection of cytokine genes, methods for detection of MICA genes, methods for detection of anti-HPA, -HNA, -MICA antibodies.</p> <p>Training students to: - the isolation of cells as the basis of HLA typing serological methods, the isolation of genomic DNA as a basis for the molecular detection technique of immunogenetic markers.</p>
<p>Course description</p> <p><i>Theoretical education</i></p> <p>An immunogenic testing:</p> <ul style="list-style-type: none"> – isolation T and B lymphocytes from the peripheral blood; – isolation of genomic DNA from peripheral blood; – isolation of genomic DNA from saliva / mouth rinse; – isolating genomic DNA from the hair; isolation of the free fetal DNA from maternal peripheral blood (pregnant women); – Polymerase Chain Reaction-PCR; HLA genotyping by PCR-SSP (Sequence Specific Primers); – by PCR -SSO (Sequence Specific Olygonucleotides), by PCR-SBT (Sequence Based Typing); – genotyping the red blood cells genes, genes of natural killer cells's receptor- KIR; – genotyping of the HPA (Human Platelet Antigens) gene, HNA gene (Human Neutrophil Antigens). <p>Detection of anti-HLA antibody assay by complement dependent cytotoxicity (CDC) and the bead array method (Luminex). Detection of anti-HPA and the anti-HNA antibody assay by flow cytometry. The detection of donor-specific anti-HLA antibodies (CROSS MATCH) assay by complement dependent cytotoxicity (CDC), the bead array method (Luminex) and the flow cytometry method. Place, role and importance of immunogenetic testing in transplantation medicine, studies of the association between the disease and in reproductive medicine. Place, role and importance of immunogenetic tests in prenatal care and posttransfusion reactions.</p> <p><i>Practical education</i></p> <p>Students are expected to be trained to:</p> <ol style="list-style-type: none"> 1. isolation of lymphocytes from the peripheral blood, the isolation of genomic DNA from peripheral blood; 2. basic of polymerase chain reaction (Polymerase Chain Reaction-PCR); 3. HLA genotyping by PCR-SSP (Sequence Specific Primers); 4. introduction to the other methods of genotyping, detection of antibodies and detection of donor-specific antibodies (CROSS MATCH)
<p>Literature</p> <ol style="list-style-type: none"> 1. Christiansen, F.T., Tait, B. D. Immunogenetics-Methods and Applications in Clinical Practice. New York: Springer-Human Press, 2012. 2. Material from the lectures

Number of active classes	Theoretical classes: 15	Practical classes: 30	
Teaching methods: lectures and practical work			
Student activity assessment (maximally 100 points)			
Pre-exam activities	points	Final exam	points
Lectures	25	Written	50
Practices	25	Oral	
Colloquium		
Essay			