

KARTA PRZEDMIOTU**IMMUNOLOGY – EXTENDED COURSE****I. Dane podstawowe**

Nazwa przedmiotu	Immunologia - kurs rozszerzony
Nazwa przedmiotu w języku angielskim	Immunology – extended course
Kierunek studiów	Biotechnologia
Poziom studiów (I, II, jednolite magisterskie)	I
Forma studiów (stacjonarne, niestacjonarne)	stacjonarne
Dyscyplina	nauki biologiczne
Język wykładowy	język angielski

Koordinator przedmiotu/osoba odpowiedzialna	Dr hab. hab. Anna Rymuszka
---	----------------------------

Forma zajęć (<i>katalog zamknięty ze słownika</i>)	Liczba godzin	semestr	Punkty ECTS
lecture	30	VI	7
classes	30	VI	

Wymagania wstępne	basics of: cytophysiology and ontogenesis, biochemistry, general microbiology
-------------------	---

II. Cele kształcenia dla przedmiotu

To get to know the basic terms related to immunological reactions, cells involved in immunological responses and their cooperation. Understand the mechanisms of immune reactions, immunomodulation and immunohomeostasis.
Knowing and presentation of the research tools used to analyze the mechanisms of immune response.

III. Efekty kształcenia dla przedmiotu wraz z odniesieniem do efektów kierunkowych

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
KNOWLEDGE		
W_01	is able to define basic immunological concepts, explain the functioning of immune cells and their interactions, the mechanisms of action of the immune system;	K_W01,
W_02	identifies the main research methods used to assess the innate and adaptive immune responses;	K_W06,
W_03	knows the safety principles associated with working in a biological laboratory;	K_W09,
SKILLS		
U_01	applies basic methods and techniques to assess the mechanisms of specific and nonspecific immune response;	K_U01,
U_02	carry out the analysis to assess the basic parameters of cell-mediated immunity and humoral immunity;	K_U06,
U_03	designs and performs the isolation of immune cells;	K_U05,

U_04	independently verifies the obtained results with the reference values on the basis of the current literature and available databases;	K_U07,
U_05	prepares a written elaboration on issues related with the functioning of immune cells, mechanisms of specific and nonspecific immunity;	K_U10,
SOCIAL COMPETENCES		
K_01	is open and understands the need to continuous learning and updating the knowledge and skills; learns new research techniques associated with immunobiotechnology;	K_K01,
K_02	takes care of entrusted equipment; is able to cooperate in the group;	K_K02,
K_03	possesses appropriate habits required to the work in scientific laboratories especially in aseptic conditions, proceeds according to work safety regulations, knows about behaviour in danger	K_K03,

IV. Opis przedmiotu/ treści programowe

Lectures include:

an overview of the immune system, including activation, effector mechanisms, and regulation of antigen-antibody reactions;
the MHC molecules and peptide antigens on the target cell, the antigen specific T and B cell receptors and other immunologically important cell surface receptors;
cell-cell interactions, cell-mediated and humoral immunity;
regulation of immune responses and differentiation of leukocytes modulated by proteins (cytokines) secreted by both immune and non-immune cells;
examination of the function, expression, gene organization, structure, receptors, and intracellular signaling of cytokines;
regulatory and inflammatory cytokines, colony stimulating factors, chemokines, cytokine and cytokine receptor gene families, intracellular signaling through STAT proteins and tyrosine phosphorylation;
hypersensitivity reactions;
mechanisms of allergic reactions;
immune response to allergens;
immunodeficiency and autoimmune phenomena

Classes include:

Structure and functions of the major lymphatic organs.
Isolation of immune cells, assessment of viability and purity of cells.

Assessment :

- activity of phagocyte cells (phagocytosis, metabolic activity),
- functional activity of complement system
- the level of acute phase proteins,
- lymphocyte functions (proliferative activity, the production of antibodies, the activity of various subpopulations of lymphocytes).

Identification of blood groups using monoclonal antibodies.

V. Metody realizacji i weryfikacji efektów kształcenia

Symbol efektu	Metody dydaktyczne (lista wyboru)	Metody weryfikacji (lista wyboru)	Sposoby dokumentacji (lista wyboru)
KNOWLEDGE			
W_01	Conventional lecture, Work with text, Laboratory analysis, Discussion, Guided practice	Report, Written test, Exam/Written test	Report file, Evaluated written test, Evaluated written exam,
W_02	Conventional lecture, Work with text, Laboratory analysis, Discussion, Guided practice	Report, Written test, Exam/Written test	Report file, Evaluated written test, Evaluated written exam,
W_03	Conventional lecture, Work with text, Laboratory analysis, Discussion, Guided practice	Report, Written test, Exam/Written test	Report file, Evaluated written test, Evaluated written exam,
SKILLS			
U_01	Laboratory classes, Practical classes, Group Work, Socratic method	Report, Written test,	Report file, Evaluated written test,
U_02	Laboratory classes, Practical classes, Group Work, Socratic method	Report, Written test,	Report file, Evaluated written test,
U_03	Laboratory classes, Practical classes, Group Work, Socratic method	Report, Written test,	Report file, Evaluated written test,
U_04	Laboratory classes, Practical classes, Group Work, Socratic method	Report, Written test,	Report file, Evaluated written test,
U_05	Laboratory classes, Practical classes, Group Work, Socratic method	Report, Written test,	Report file, Evaluated written test,
SOCIAL COMPETENCES			
K_01	Laboratory classes, Socratic method	Report, Written test,	Report file, Evaluated written test,
K_02	Laboratory classes, Socratic method	Report, Written test,	Report file, Evaluated written test,
K_03	Laboratory classes, Socratic method	Report, Written test,	Report file, Evaluated written test,

VI. Kryteria oceny, wagi...

Grades from the written examination, colloquium and reports are taken into account. The indicated level of knowledge of the educational content applies to each of the assessed elements.

Ocena	Kryteria oceny	
Note (5)	student accomplishes the assumed learning outcomes to a very good degree	demonstrates knowledge of the education content at the level of 91-100%

Note (4,5)	student accomplishes the assumed learning outcomes to an extent over good	demonstrates knowledge of the education content at the level of 86-90 %
Note(4)	student accomplishes the assumed learning outcomes to a good degree	demonstrates knowledge of the education content at the level of 71-85%
Note (3,5)	student accomplishes the assumed learning outcomes to a quite good degree	demonstrates knowledge of the education content at the level of 66-70%
Note (3)	the student accomplishes the assumed learning outcomes to a sufficient degree	demonstrates knowledge of the education content at the level of 51-65%
Note (2)	the student accomplishes the assumed learning outcomes to an insufficient degree	demonstrates knowledge of the education content at the level below of 51%

VII. Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	60
Liczba godzin indywidualnej pracy studenta	115

VIII. Literatura

Literatura podstawowa
1. Delves P.J., Martin S.J., Burton D.R., Roitt I.M.: Roitt's Essential Immunology, Wiley-Blackwell, 2011
Literatura uzupełniająca
Abbas A.K., Lichtman A.H.H., Pillai S.: Cellular and molecular immunology, Elsevier/Saunders, 2015