

## I. Dane podstawowe

Nazwa przedmiotu	Metody immunocytochemiczne w biotechnologii i medycynie
Nazwa przedmiotu w języku angielskim	Immunocytochemical methods in biotechnology and medicine
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 Radosław Mencfel
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Forma zajęć ( <i>katalog zamknięty ze słownika</i> )	Liczba godzin	semestr	Punkty ECTS
Wykład	30	VI	2
Konwersatorium			
Ćwiczenia			
Laboratorium			
Warsztaty			
Seminarium			
Proseminarium			
Lektorat			
Praktyki			
zajęcia terenowe			
pracownia dyplomowa			
Translatorium			
wizyta studyjna			

Wymagania wstępne	Knowledge issues of: Immunology, Biochemistry with enzymology, Laboratory techniques
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## II. Cele kształcenia dla przedmiotu

To acquaint the student with techniques of genetic engineering of antibodies and their preparation
To acquaint the student with immunocytochemical techniques used in biological sciences
Explanation of the importance and benefits of using the above techniques in biotechnology and medical sciences - research and practical aspects

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

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	presents basic terminology used in cytochemistry and immunocytochemistry, understands the antigen-antibody reaction and defines immunocytochemical methods based on this phenomenon in biotechnology	K_W01
W_02	presents knowledge about the development of immunocytochemistry and its connections with other sciences and application in scientific research and medicine	K_W02

W_03	has basic knowledge about development of immunocytochemical methods and its relation to other scientific fields	K_W05
<b>KOMPETENCJE SPOŁECZNE</b>		
K_01	understands the need to continuous deepening and updating of knowledge and skills of immunocytochemical methods, is open to the use of new research techniques	K_K01

#### IV. Opis przedmiotu/ treści programowe

Antibody variability. Obtaining and genetic engineering of antibodies. The essence of immunocytochemical methods. Tags in immunocytochemistry. Specificity of the methodology of immunocytochemical tests and reactions. Special enzyme immunoenzymatic, immunofluorescent and immunochemical methods. Immunocytochemistry in the study of apoptosis. Flow cytometry in immunological tests. Immunocytochemistry in various types of cancer.

#### V. Metody realizacji i weryfikacji efektów kształcenia

Symbol efektu	Metody dydaktyczne <i>(lista wyboru)</i>	Metody weryfikacji <i>(lista wyboru)</i>	Sposoby dokumentacji <i>(lista wyboru)</i>
<b>WIEDZA</b>			
W_01	conventional lecture	test	evaluated test
W_02	conventional lecture	test	evaluated test
W_03	conventional lecture	test	evaluated test
<b>KOMPETENCJE SPOŁECZNE</b>			
K_01	conversational lecture, discussion	test	evaluated test

#### VI. Kryteria oceny, wagi

Degree	Degree criteria	
<b>Very good (5)</b>	the student realizes the assumed learning outcomes to a very good degree	Student demonstrates knowledge of the content of education at the level of 91-100 %
<b>More than good (4,5)</b>	the student realizes the assumed learning outcomes to a more than good degree	Student demonstrates knowledge of the content of education at the level of 86-90 %
<b>good (4)</b>	the student realizes the assumed learning outcomes to a good degree	Student demonstrates knowledge of the content of education at the level of 71-85%
<b>Good enough (3,5)</b>	the student realizes the assumed learning outcomes to a good enough degree	Student demonstrates knowledge of the content of education at the level of 66-70%
<b>sufficient (3)</b>	the student realizes the assumed learning outcomes to a sufficient degree	Student demonstrates knowledge of the content of education at the level of 51-65%

<b>unsufficient (2)</b>	the student realizes the assumed learning outcomes to an unsufficient degree	Student demonstrates knowledge of the content of education at the level of 51%
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### VII. Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	30
Liczba godzin indywidualnej pracy studenta	20

### VIII. Literatura

Literatura podstawowa
Immunocytochemical Methods and Protocols, Third Edition, Edited by Constance Oliver and Maria Célia Jamur, Humana Press, 2010
Literatura uzupełniająca
Male D., Brostoff J., Roth D.B., Roit I., Immunologia, Elsevier Urban & Partner, 2008 Abul Abbas, Andrew H. Lichtman, Shiv Pillai, Cellular and Molecular Immunology 8th Edition, Elsevier Saunders, 2014