

Subject card

Subject name and code	Marine pharmacology - tutorials, PG_00099402						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
Education level	postgraduate studies	Subject group					
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English English		
Semester of study	2	ECTS credits			2.0		
Learning profile	academic	Assessment form					
Conducting unit	Pracownia Biotechnologii Morskiej -> Katedra Biologii Morza i Biotechnologii -> Faculty of Oceanography and Geography						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Hanna Mazur Marzec				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	20.0	0.0	0.0	0.0	20
	E-learning hours included: 0.0						
	Additional information: Auditorium classes						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	20		5.0		20.0	45
Subject objectives	Acquisition by students knowledge on pharmaceutical potential of marine bioproducts and technologies used to evaluate their drugability, including bioassays applied at the research stage as well as in the pre-clinical and clinical trials (KW-02; KW_04).						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MBMU2-KW04] Knows and deeply understands advanced research methods used in marine biotechnology and related sciences	The student will understand and will be able to describe the principles of advanced methods used to evaluate pharmaceutical potential of marine natural products, including toxicity, enzymatic, stability and activity assays, mammalian cell cultures, organoid cultures, nematode <i>C. elegans</i> , animal models and different stages of clinical trials.	[SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report [SW3] text preparation/written work
	[MBMU2-KW02] Has advanced knowledge of the possibilities of biotechnological use of marine resources	The student will possess knowledge about the possible pharmaceutical application of marine natural products. The student will be able to describe the stages of the process of development of marine bioproducts as potential drug, including product isolation, in-vitro assays, preclinical and clinical trials. The student will give and describe examples of marine products successfully developed as therapeutics.	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[MBMU2-KK04] Is ready to assess and understand the risks and dilemmas, including ethical dilemmas associated with conducting scientific research and introduction of advanced technologies; understands and appreciates the importance of intellectual property; acts ethically	The student will be able to evaluate the hazards and ethic dilemmas connected with the development of marine products as bio-pharmaceuticals, including the hazards and ethical considerations of pre-clinical and clinical trials.	[SK1] oral statement/conversation/discussion
Subject contents	Principles of development of marine bioproducts as potential drugs. Rationale, advantages and disadvantages of different in vitro assays, cell-culture assays, organoids and model organisms. Purpose and stages of pre-clinical and clinical trials. Examples of drugs developed from marine bioproducts.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	multimedia presentation	51.0%	35.0%
	group discussion	51.0%	30.0%
	written test	51.0%	35.0%
Recommended reading	Basic literature	Marine Biopharmaceuticals: Scope and prospects, 2024. Editor S. Ramesh, ISBN 9815196499, Bentham Science Publishers	
	Supplementary literature	Wu, Alex & Jeleiek, Karolina & Le, Henry & Butt, Maryam & Newman, David & Glaser, Keith & Pierce, Marsha & Mayer, Alejandro. (2022). The 2021 Marine Pharmacology and Pharmaceuticals Pipeline. The FASEB Journal. 36. 10.1096/fasebj.2022.36.S1.L7586.	
	eResources addresses	Uzupełniające Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Pharmacokinetics and pharmacodynamics of marine drugs Pre-clinical and clinical assays Marine drugs: structure, mechanism of action, development and commercialization		
Work placement	Not applicable		

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