

Subject card

Subject name and code	Marine natural products - laboratory, PG_00054200						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		English		
Semester of study	1		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Marine Biotechnology -> Department of Marine Biology and Biotechnology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Robert Konkelt				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	E-learning hours included: 0.0						
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	15		2.0		10.0	27
Subject objectives	Acquiring knowledge on the pharmacological potential of marine bioproducts and technologies used to assess their medicinal properties, including: research biological tests, preclinical tests, and clinical trials. Understanding the ethical challenges and dilemmas associated with in vivo research						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MBMU2-KU01] Can plan and carry out tests in the laboratory and at sea, and document activities and results; can use laboratory equipment under the guidance of a tutor; applies principles of occupational health and safety	The student will acquire knowledge about the potential pharmacological use of natural marine products. They will be able to describe the stages of development of marine bioproducts as potential drugs, including product acquisition, in vitro tests, preclinical and clinical trials. The student will be able to list examples of marine-derived drugs. They will understand and be able to describe the operation of advanced methods used to assess the pharmacological potential of natural marine products, including toxicity tests, stability tests, activity assays, enzymatic tests, cell culture techniques, organoid culture, work with C. elegans, and various stages of preclinical and clinical trials.	[SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[MBMU2-KK03] Is ready to apply the principles of occupational health and safety, especially in the laboratory and at sea; is responsible for their own and others' safety; can recognize hazards and take appropriate action	The student will be able to discuss and evaluate the ethical risks and dilemmas associated with the pharmacological development of marine products, including ethical risks and dilemmas related to preclinical and clinical trials.	[SK1] oral statement/conversation/discussion [SK8] observation of student's independent or team work
Subject contents	Basics of marine bioproduct development as potential drugs. Justification for the use, advantages, and disadvantages of various in vitro tests, cell culture tests, organoids, and model organisms. Objectives and stages of preclinical tests and clinical trials. Examples of marine-derived drugs.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report	51.0%	20.0%
	The written response.	51.0%	80.0%
Recommended reading	Basic literature	Schumacher Alexander, Hinder Markus, Gassmann Oliver, 2016. Value Creation in the Pharmaceutical Industry: The Critical Path to Innovation, Wiley-VCH, ISBN-10: 3527339132; ISBN-13: 9783527339132; Graham Patric., 2018. An Introduction to medicinal chemistry. Oxford University Press, UK, ISBN: 9780198796589	
	Supplementary literature	Selected scientific articles, for example: Marine Drugs (MDPI), Marine Biotechnology (Springer)	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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