University of Gdańsk

Subject card

Subject name and code	Protein phosphorylation in bacteria, PG_00153681		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	academic	Assessment form	
Conducting unit	Dziekanat MW Biotechnologii -> Intercollegiate Faculty of Biotechnology UG-MUG		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Michał Obuchowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	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	6.0	25.0	46

Subject objectives

Student has knowledge about the chemistry of protein phosphorylation and its importance for all living organisms. Student knows and is able to describe selected protein phosphorylation systems functioning in various species of bacteria at the molecular level (BIOTECHL3_W01). Is able to demonstrate the relationship between the described protein phosphorylation system and the behavior of the entire microorganism in the environment. Is able to predict the effects of disruption of the described systems on the physiology of a bacterial cell and its interaction with living organisms (BIOTECHL3_W03).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_W01] The graduate knows and understands basic biological phenomena at the molecular level, he/she is familiar with their significance for biotechnology.	The student knows the mechanism of basic biological processes at the molecular level. He knows their usefulness in biotechnology.	[SW4] test/exam - oral or written
[BIOTECHL3_W03] The graduate knows and understands selected issues of organism-environment interdependence	The student knows how the environment influences microorganisms locally.	[SW4] test/exam - oral or written

Subject contents

General concept of regulation of protein activity by phosphorylation. Structure and function of protein kinases and phosphatases. Selected examples of systems using protein phosphorylation such as: regulation of the chemotactic response in bacteria (E. coli), operation of the general stress response mechanism (B. subtilis), control of the absorption of bioavailable nitrogen (E. coli), regulation of virulence (V. cholerae and P aeruginosa), formation of bacterial spores (B. subtilis), regulation of bacterial bioluminescence (V. fisheri, V. harveyi), mechanism of acquiring natural genetic competence (B. subtilis), regulation of phosphorylation-coupled sugar transport into the cell (B. subtilis) .

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final colloquium	51.0%	100.0%

Recommended reading

Basic literature	"Protein phosphorylation in bacteria" script, literature indicated by the lecturer.
Supplementary literature	None

	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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