University of Gdańsk

Subject card

Subject name and code	Preparation of biomolecules. Structure and function of proteins, PG_00053209		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	1.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Microbial Biochemistry -> Department of General and Medical Biochemistry -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Ewa Laskowska	
	Teachers	prof. dr hab. Ewa Laskowska	

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	0.0	0.0	15

Subject objectives

Expanding knowledge in the field of protein biochemistry, presenting the latest literature data on proteostasis, conformational diseases and the use of proteins as biomaterials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_W03] A graduate has an advanced knowledge and understanding of: molecular mechanisms of genetic information transfer and gene expression and the molecular and genetic basis of human physiology and disease, including infectious diseases	Knows and understands at an advanced level the mechanisms of protein synthesis and folding and the molecular basis of human diseases related to proteostasis disorders.	[SW4] test/exam - oral or written

Subject contents

Protein structure (secondary, tertiary and quaternary, inherently disordered proteins), mechanisms protecting cells against proteostasis disorders, use of proteins as biomaterials, diseases related to abnormal conformation and aggregation of proteins.

Prerequisites and co-requisites

Passing the subjects biochemistry and molecular biology. Knowledge of basic information about the structure and synthesis of proteins

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written test with test questions and open questions (tasks)	51.0%	100.0%

Recommended reading	Basic literature	1. Original source works from scientific journals 2. Introduction to protein structure (C. Branden, J. Tooze, Garland Publ. Inc. NY, 1999) 3. Protein folding in the cell (A. Horwich, San Diego Academic Press, 2002) 4. Protein misfolding and disease: principles and protocols (P. Bross, N. Gregersen, Humana Press, 2003) 5. Krótkie wykłady: biochemia (Hames, B.D. i Hooper, N.M. PWN, Warszawa 2007)
	Supplementary literature	• J.M. Berg, J.L. Tymoczko, L. Stryer, Biochemia, 2009, PWN, Warszawa • Laskowska E., Kuczyńska-Wiśnik D., Lipińska B. (2019) Proteomic analysis of protein homeostasis and aggregation J Proteomics 30 : 98-112 • Kuczynska-Wisnik D., Stojowska-Swędrzynska K., Laskowska E. (2024) Intracellular protective functions and therapeutical potential of trehalose Molecules 29; 2088
	eResources addresses	
Example issues/ example questions/ tasks being completed	Complete the diagram showing the main components of the metabolic system/pathway/reaction that ensures proper folding/removal/autophagy/degradation of damaged proteins.	
Work placement	Not applicable	

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