University of Gdańsk

Subject card

Subject name and code	Protein conformation - medical aspects, PG_00207340						
Field of study	Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2026/2027			
Education level	Master's studies		Subject group	Obligatory subject group in the field of study Optional subject group 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	Polish			
Semester of study	2		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						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	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		3.0	7.0	25	
Subject objectives	Expanding knowledge on the structure and function of proteins, presenting the latest literature data on diseases related to abnormal protein conformation and the mechanisms responsible for proteostasis in the cell.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMU2_W05] has an in-depth knowledge and understanding of the dynamic development of the biological sciences and is well versed in new research trends and disciplines	Recognizes the dynamic development of biological sciences, particularly new techniques and research strategies related to proteins.	[SW4] test/exam - oral or written
[BIOLMU2_W04] has in-depth knowledge of the chosen specialization in the biological sciences	Has in-depth knowledge of protein structure and function.	[SW4] test/exam - oral or written
[BIOLMU2_W01] has a deep knowledge and understanding of natural phenomena and processes at various levels of complexity	Understands the complex phenomena and processes that are the basis for the proper functioning of proteins.	[SW4] test/exam - oral or written
[BIOLMU2_U02] is able to proficiently use the scientific literature of the biological speciality studied	He fluently uses scientific literature in the field of protein structure and function.	[SU4] test/exam - oral or written
[BIOLMU2_K07] is ready to systematically update biological knowledge and information on its practical applications	Is able to systematically update his/her knowledge on the structure and function of proteins.	[SK4] test/exam - oral or written
[BIOLMU2_K05] is ready to use recognized sources of scientific and popular information in the field of biological sciences in order to deepen his/her knowledge	Is ready to use recognized sources of scientific and popular science information concerning the structure and function of proteins.	[SK4] test/exam - oral or written

Subject contents

Protein structure and folding. Protein-based biomaterials. Molecular basis of diseases associated with abnormal protein structure and aggregation (cataracts, Alzheimer's, Parkinson's, Huntington's diseases; amyotrophic lateral sclerosis, prion diseases).

Prerequisites and co-requisites

Basic knowledge about protein structure and synthesis.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test witk closed and open-ended questions	51.0%	100.0%

Recommended reading

Basic literature

C. Branden, J Tooze, Introduction to Protein Structure, Garland Publishing, 2nd ed.

L. Stryer, J.M. Berg, J. L. Tymoczko, G. J. Gatto. Biochemia, PWN, 2019

Jayaraj GG, Hipp MS, Hartl FU. Functional Modules of the Proteostasis Network. Cold Spring Harb Perspect Biol. 2020 Jan 2;12(1):a033951. doi:10.1101/cshperspect.a033951.

Dobson CM, Knowles TPJ, Vendruscolo M. The Amyloid Phenomenon and Its Significance in Biology and Medicine. Cold Spring Harb Perspect Biol. 2020 Feb 3;12(2):a033878. doi: 10.1101/cshperspect.a033878

	Supplementary literature	Hipp MS, Kasturi P, Hartl FU. The proteostasis network and its decline in ageing. Nat Rev Mol Cell Biol. 2019 Jul;20(7):421-435. doi:10.1038/s41580-019-0101-y. Balchin D, Hayer-Hartl M, Hartl FU. In vivo aspects of protein folding and quality control. Science. 2016 Jul 1;353(6294):aac4354. doi: 10.1126/science.aac4354. Mogk A, Bukau B, Kampinga HH. Cellular Handling of Protein Aggregates by Disaggregation Machines. Mol Cell. 2018 Jan 18;69(2): 214-226. doi:10.1016/j.molcel.2018.01.004. PMID Mannini B, Chiti F. Chaperones as Suppressors of Protein Misfolded Oligomer Toxicity. Front Mol Neurosci. 2017 Apr 5;10:98. doi: 10.3389/fnmol.2017.00098 Dobson CM, Knowles TPJ, Vendruscolo M. The Amyloid Phenomenon and Its Significance in Biology and Medicine. Cold Spring Harb Perspect Biol. 2020 Feb 3;12(2):a033878. doi: 10.1101/cshperspect.a033878
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Work placement	Not applicable	

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