University of Gdańsk

Subject card

Subject name and code	Biochemical basis of the genes' function, PG_00196860						
Field of study	Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	6		ECTS credits	1.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Laboratory of Protein and Nucleic Acid Biochemistry -> Department of General and Medical Biochemistry -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Dorota Żurawa-Janicka					
	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		2.0	8.0	25	
Subject objectives	Understanding the processes that proteins undergo after they are synthesized in the cell (modifications, transport, formation of the correct spatial structure)						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLL3_U05] The graduate is able to synthesise data from a variety of sources and draw appropriate conclusions	- synthesizes data from various sources and draws conclusions based on them based on adequate conclusions (B_U05)	[SU1] oral statement/conversation/ discussion
[BIOLL3_K03] The graduate is able to organise the work of a small team and work effectively as part of a team	- can organize the work of a small team and demonstrates the ability to work effectively in a team (B_K03) - effect of education implemented during auditorium classes	[SK8] observation of student's independent or team work
[BIOLL3_W14] The graduate has an advanced understanding of experimental methods and the most important techniques used in the biological sciences	- explains the theoretical basis of experimental methods and list the most important techniques used to study the structure and function of proteins and interactions between proteins (B_W14) - effect of education implemented during auditorium classes	[SW1] oral statement/ conversation/discussion
[BIOLL3_W02] The graduate knows and uderstands at an advanced level the structure and properties of biological macromolecules, molecular mechanisms of basal metabolic pathways and the flow of genetic information, as well as the sources of variation in organisms; the rules of inheritance	- describes the biochemical processes that are the basis for the functioning of organisms and indicates their relationship with other biological sciences (B_W02)	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[BIOLL3_K06] The graduate is prepared to take responsibility for the entrusted equipment/materials and for his/her own work and the work of others	- is responsible for his work and respects the work of others (B_K06) - effect of education implemented during auditorium classes	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work

Subject contents

Posttranslational modification of proteins (proteolytic cleavage, phosphorylation, glycosylation, methylation, acetylation) and related changes in structure and functions (modulation of enzyme activity, influence on gene expression). Regulation of biochemical processes and their interconnections. Defects in metabolic pathways, their impact on the functioning of the body and human health (selected diseases related to congenital errors in metabolism). Biochemical basis of civilization diseases of the 21st century (diabetes, atherosclerosis, lipid disorders, obesity).

Prerequisites and co-requisites

Comletion of courses: Biochemistry, Molecular biology with biotechnology or Organic chemistry and biochemistry, molecular biology and genetics. Knowledge of the structure and properties of basic types of biological macromolecules, molecular mechanisms of the flow of genetic information and the regulation of its expression.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
final test exam	51.0%	100.0%

Recommended reading

Basic literature	Lecture prepared on the basis of articles from scientific journals and: Lieberman & Peet. Mark's Basic Biochemistry: A Clinical Approach. 6th Ed. Wolters Kluwer. 2022. Janson & Tischler. The Big Picture: Medical Biochemistry. The McGrew-Hill Companies, Inc. 2012. Rodwell et al. Harper's Illustrated Biochemistry. 30th Ed. McGraw-Hill Education. 2015. Literature for self-learning: Ferrier. Biochemia (Lippincott Illustrated Reviews. 7th Ed.). wyd. pol. pod red. D. Chlubek. Edra Urban & Partner. 2017.
Supplementary literature	Review articles form scientific journals
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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