University of Gdańsk

Subject card

Subject name and code	Molecular basis of civilization diseases and therapy strategies, PG_00147789						
Field of study	Genetics and Experimental Biology						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	undergraduate 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	6		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Pracownia Molekularnych i Komórkowych Podstaw Strategii Nutr -> Katedra Biologii i Genetyki Medycznej -> Faculty of Biology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Magdalena Gabig-Cimińska				
	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		11.0	24.0	50	
Subject objectives	1. Acquaintance with individual civilization diseases. 2. Familiarization with the molecular mechanisms responsible for the development of civilization diseases. 3. Study of the latest methods of prevention, diagnosis, and treatment of civilization diseases.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, including infectious diseases.	Knows the structure and function of cells at the molecular level in a healthy state and considers the disease process as a disorder of their structure and function, has advanced knowledge in the area of civilization diseases; Understands the factors that influence the frequency and development of civilization diseases related to our daily functioning	[SW4] test/exam - oral or written
[GBEL3_K06] Integrity and honesty in scientific and professional work.	Understands the need for honesty and integrity in scientific and professional work	[SK4] test/exam - oral or written [SK8] observation of student's independent or team work
[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	Understands the need for lifelong learning and updating knowledge in the field of the molecular basis of civilization diseases	[SK4] test/exam - oral or written
[GBEL3_U04] Capable of reading scientific texts in English and Polish with comprehension, synthesizing the knowledge contained within them, preparing well-documented studies on biological issues, as well as those related to research commercialization.	Is able to read and comprehend scientific texts in both English and Polish, synthesizes the knowledge contained within them, and prepares well-documented reports on biological issues	[SU4] test/exam - oral or written
[GBEL3_W06] the development and current state of knowledge, as well as the latest trends in molecular genetics and related fields; indicating their relationship with other disciplines in the natural or medical sciences and the possibilities of their practical application.	Understands the relationship between clinical symptoms of diseases and the dysfunction of organs, cells, and diagnostic strategies; Demonstrates knowledge of the current state of discoveries and their applications in medicine	[SW4] test/exam - oral or written
[GBEL3_W05] the principles of research planning based on achievements in biological sciences and related fields, the potential application of their results in practice, the principles of operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research and practical activities, with consideration for sustainable use of biological diversity.	Has knowledge about the structure and function of the human genome and understands the dysfunctions as a factor in the pathogenesis of selected diseases; Understands the connections between observed clinical symptoms, changes in diagnostic parameters, and their implications at the cellular level	[SW4] test/exam - oral or written

Subject contents

Health and Disease. Civilization Diseases. Types and characteristics of civilization diseases. Civilization diseases and public health. Diseases resulting from disorders of energy metabolism, the digestive system, the cardiovascular system, and immune system imbalances. Additionally, mental illnesses, and in general terms, neurodegenerative diseases, cancer, and infertility. Symptoms of individual diseases and disease syndromes. Functional disorders in humans at the organ, tissue, cellular, or molecular level that lead to the development of civilization diseases. General mechanisms responsible for the development of civilization diseases. Possible prevention and diagnostic strategies. Currently used and potential future treatment methods. The new healthy eating and physical activity pyramid and its impact on reducing the incidence of civilization diseases.

Prerequisites and co-requisites

Basic knowledge of biochemistry, molecular biology, genetics, and vertebrate physiology. Additionally, the student should have fundamental knowledge in pathophysiology, pathology, pharmacology, clinical chemistry, and laboratory diagnostics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam (closed and open questions), covering lecture material, assessed according to the percentage indicator (UG Study Regulations)	51.0%	100.0%

Recommended reading

Basic literature

- Alberts B., Johnson A., Lewis J., Raff M., Roberts K., Walter P., Molecular Biology of the Cell, 2002;
- Angielski S. i wsp., Biochemia kliniczna., Wyd. Perseusz Gdańsk 1996 (i nowsze wydania);
- Czyżewska K., Patofizjologiczne podstawy wybranych chorób: Część I. Miażdżyca, Część II. Nowotwory, Część III. Otyłość. Akademia Medyczna w Poznaniu, Poznań 1998, 2000;
- Epstein R.J., Biologia molekularna człowieka., Wyd. CZELEJ Lublin 2005.

	Supplementary literature	• Specialized medical and scientific journals, both Polish (Postępy Biochemii, Postępy Higieny i Medycyny Doświadczalnej) and English-language (various); • Scientific publications by the research team members of Prof. Magdalena Gabig-Cimińska; • Bartosz G., Druga twarz tlenu wolne rodniki w przyrodzie., PWN Warszawa 2006 (dodruk 2013); • Berg J.M., Tymoczko J.L., Stryer L Biochemia Wydawnictwo Naukowe PWN Warszawa 2009; • Devlin T.M, Textbook of Biochemistry with Clinical Correlations., Willey-Lis NY 2010; • Goździcka-Józefiak i wsp., Genetyka molekularna i biochemia wybranych chorób u ludzi., Wyd. Nauk. UAM Poznań 2001; • Kłyszejko-Stefanowicz L. i wsp., Cytobiochemia., PWN Warszawa 1995; • Moszczyński P, Pyć R., Biochemia witamin., PWN Warszawa 1998 (Tom 1,2); • Murray R.K. i wsp., Biochemia Harpera., PZWL Warszawa 2012.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Diabetes: A. Non-Insulin-Dependent Diabetes Mellitus (NIDDM) is the most common form of diabetes, also known as type 2 diabetes, predisposed by HLA haplotypes. B. Secondary MODY is the most common form of diabetes, also known as type 2 diabetes, predisposed by HLA haplotypes. C. Type 1 diabetes, insulin-dependent, associated with autoimmune destruction of pancreatic beta cells. D. Gestational diabetes, which occurs during pregnancy and usually disappears after its conclusion. List four common genetic risk factors for depression: 1..... 2..... 3..... 4.....	
Work placement	Not applicable	

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