University of Gdańsk

Subject card

Subject name and code	Molecular basis of civilization diseases and therapy strategies, PG_00090772						
Field of study	Molekularne podstawy chorób cywilizacyjnych i strategie terapii (Wykład)						
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 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	3		Language of instruction	Polish			
Semester of study	6		ECTS credits	2.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Department of Medical Biology and Genetics -> Faculty of Biology -> Rector						
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		0.0		0.0	15
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_W05] A graduate has an advanced knowledge and understanding of: principles for planning research based on the achievements of biological sciences and related disciplines and the possibility of putting their results into practice, principles for the 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 work and practical action, taking into account the sustainable use of biodiversity	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/egzamin - ustny lub pisemny
[GBEL3_K07] The graduate is prepared to: lifelong learning and updating of knowledge in molecular genetics and other fields	Understands the need for lifelong learning and updating knowledge in the field of the molecular basis of civilization diseases	[SK4] test/egzamin - ustny lub pisemny
[GBEL3_K06] The graduate is prepared to: honesty and integrity in scientific and professional work	Understands the need for honesty and integrity in scientific and professional work	[SK4] test/egzamin - ustny lub pisemny [SK8] obserwacja samodzielnej lub zespołowej pracy studenta
[GBEL3_U04] The graduate is able to: read scientific texts in English and Polish with comprehension, synthesise the knowledge they contain, prepare well-documented papers on biological problems and on the commercialisation of research	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/egzamin - ustny lub pisemny
[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 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/egzamin - ustny lub pisemny
[GBEL3_W06] A graduate has an advanced knowledge and understanding of: the development and current state of knowledge and the latest trends in molecular genetics and related fields; indicates their relationship to other disciplines in the life sciences or medical sciences and their potential for use in practice	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/egzamin - ustny lub pisemny

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%

<table>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>• 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.</td></tr>
<tr><td>Supplementary literature</td><td>• 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.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">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.....</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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