KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI
Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego
UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Nazwa przedmiotu	Kod ECTS
The molecular basis of the amyloidogenic diseases	13.3.1226

Nazwa jednostki prowadzącej przedmiot

Katedra Chemii Biomedycznej

Studia

wydział	kierunek		
Wydział Chemii	Biznes chemiczny	poziom	drugiego stopnia
		forma	stacjonarne
		moduł specjalnościowy	wszystkie
		specjalizacja	wszystkie
Wydział Chemii	Chemia	poziom	drugiego stopnia
		forma	stacjonarne
		moduł specjalnościowy	wszystkie
		specjalizacja	wszystkie
Wydział Chemii	Ochrona środowiska	poziom	drugiego stopnia
		forma	stacjonarne
		moduł specjalnościowy	wszystkie
		specjalizacja	wszystkie

Nazwisko osoby prowadzącej (osób prowadzących)

prof. dr hab. Sylwia Rodziewicz-Motowidło; dr hab. Aneta Szymańska, profesor uczelni

Formy zajęć, sposób ich realizacji i przypisana im liczba godzin

Formy zajęć

Wykład

Sposób realizacji zajęć

zajęcia w sali dydaktycznej

Liczba godzin

Wykład: 15 godz.

Liczba punktów ECTS

2
classes - 15 h
tutorial classes - 15 h
student's own class - 20 h
TOTAL: 50 h - 2 ECTS

Termin realizacji przedmiotu

2023/2024 zimowy

Status przedmiotu

fakultatywny (do wyboru)

Język wykładowy

angielski

Metody dydaktyczne

Lecture with multimedia presentation of basic issues in the drug discovery process

Forma i sposób zaliczenia oraz podstawowe kryteria oceny lub wymagania egzaminacyjne

Sposób zaliczenia

Zaliczenie na ocenę

Formy zaliczenia

- participation in classes,
- a multimedia presentation prepared (optionally in groups of several people): its content (factual correctness of the presented information) and the manner of presentation (clarity and clarity).

Podstawowe kryteria oceny

Performance of presentation (The topics will be prepared by the academic teacher), positive note from presentation. Assessment criteria in accordance with the University of Gdansk Study Regulations.

Sposób weryfikacji założonych efektów uczenia się

The following will be verified:
- does the student use the vocabulary and knowledge acquired during the lecture in discussions
- does the student work with the group during the final presentation and diligently perform the assigned tasks
- does the student use the acquired knowledge in the prepared presentation, linking the structure and type of protein that creates amyloid fibril with specific amyloidoses
- does the student correctly recognize the role of conformational factors in the development of various types of amyloidosis in the discussions during the lecture as well as in the prepared presentation

Określenie przedmiotów wprowadzających wraz z wymogami wstępnymi

A. Wymagania formalne

lack

B. Wymagania wstępne

– knowledge of basic issues in the field of organic chemistry: functional groups occurring in organic compounds, structure of amino acids, peptides and proteins, influence of external factors on conformational changes of peptides and proteins, knowledge of basic physico-chemical techniques used in peptide and protein chemistry

Cele kształcenia

- To acquaint students with the definition of amyloid and its formation
- To acquaint students with information on the mechanisms of amyloid fibril formation
- To acquaint students with physico-chemical techniques used in research on amyloid fibrils
- The role of amyloid fibrils in the development of amyloid diseases
- Make students aware of the importance of environmental factors in the development of amyloid diseases

Treści programowe

The lecture will cover the following issues: classification of amyloidogenic diseases; structure of amyloid fibril; folding of amyloid proteins; the role of post-translational modifications in the formation of amyloid fibrils; the role of lipid modulators in the formation of amyloid; the mechanism of formation of amyloid fibrils; amyloidogenic proteins, structure and function (eg. b-amyloid, prion protein, immunoglobulin, transthyretin, gelsolin, lysozyme, fibrynogen, b-microglobulin, cystatin C, amyloid-forming hormones), amyloid diseases (amyloidosis).

Wykaz literatury

Literature required to pass the course

Monographic materials provided by the teacher

Scientific texts indicated by the teacher

Extracurricular readings

1. Amyloid, prions and other protein aggregates / ed. By Ronald Wetzel. Methods in Enzymology vol. 309, San Diego, Calif.,: Academic Press, cop. 1999
2. Protein misfolding diseases: current and emerging principles and therapies / ed. By Marina Ramirez-Alvarado, Jeffrey W. Kelly, Christopher M. Dobson, Wiley Series in Protein and Peptide Science, Hoboken: Wiley, A. John Wiley & Sons, cop. 2010
3. Studies of human plasma amyloid A protein fibrillization and its short N-terminal fragments / Marta Sosnowska; University of Gdansk. Faculty of Chemistry. Sosnowska, Marta (biochemistry). PhD thesis, Gdańsk, 2015
4. Amyloid structure, function, and molecular mechanisms. Fri. 2 / guest eds .: Sheena Radford and Jonathan Weissman., JMB Journal of Molecular Biology, vol. 421, iss. 4/5, Amsterdam [etc.]: Elsevier, 2012.
5. Amyloid structure, function, and molecular mechanisms. Fri. 1 / guest eds .: Shenna Radford and Jonathan Weissman. JMB Journal of Molecular Biology, vol. 421, iss. 2/3, Amsterdam [etc.]: Elsevier, 2012.
6. Characterization of the complex of human cystatin C (hCC) with serum amyloid A protein (SAA) / Marta Spodzieja; University of Gdansk. The chemistry department. Department of Medical Chemistry Spodzieja, Marta Marcelina. PhD thesis, Gdańsk 2011.
7. Synthesis, studies of conformation and aggregation of ß-amyloid peptides / Paulina Juszczyk. Juszczyk, Paulina. PhD thesis, Gdańsk 2005.
8. Research on ß-amyloid peptide and its fragments / Kornelia Wiśniewska. Wiśniewska, Kornelia. PhD thesis, Gdańsk 2003.

Kierunkowe efekty uczenia się

Chemistry:
K_W05: has extended knowledge in the field of the specialization studied
K_W11: demonstrates in-depth knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field
K_U04: applies acquired knowledge of chemistry and related scientific disciplines
K_U10: reads with understanding scientific and popular

Wiedza

Student:
- knows the mechanisms of the formation of amyloid fibrils
- knows the structure of various amyloid fibrils
- knows the causes of amyloid diseases at the molecular level

Umiejętności

Student:
- uses the acquired knowledge about the molecular basis of the formation of amyloid diseases.

Kompetencje społeczne (postawy)

science chemical texts in English K_K05: understands the need for independent search of information in scientific literature and popular science magazines Chemical Business: K_BChII_W01: knows and understands in-depth complex physicochemical processes and is able to analyse their coursee in connection with other fields of science K_BChII_U03: is able to present, based on the current state of knowledge, scientific discoveries and the results of own research in the field of chemical and economic sciences, through skilful debate and public speeches K_BChII_K03: is willing to critically assess the level of his/her own knowledge in the light of the achievements of the studied scientific discipline K_BChII_K09: is willing to conduct research and develop his/her scientific and creative achievements in the studied field Environmental Protection: K_OŚII_W01: describes in an in-depth manner complex phenomena and processes occurring in nature, including those related to the spread of anthropogenic pollution K_OŚII_U06: defines her/his interests and develops them within the chosen specialisation and themes of her/his master's thesis while implementing the process of self-education and planning of own future career K_OŚII_K05: critically assesses her/his own knowledge and the knowledge of the teams in which s/he works, can critically assess the content received	Student: -understands the role of environmental factors in the development of amyloid diseases and the importance of appropriate pro-health behaviors in reducing the risk of amyloidosis - knows how to work in a group

Kontakt

s.rodziewicz-motowidlo@ug.edu.pl