2016/2017

Univerza v Mariboru

Medicinska fakulteta

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION	
Predmet:	Biologija celice
Subject Title:	Cell Biology

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Splošna medicina General medicine - EMŠP		1	**1**

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45	30	-	45	-	90	**7**

Nosilec predmeta / Lecturer: Izr. prof. dr. Saša Lipovšek

Jeziki / Languages:	**Predavanja / Lecture:**	slovenski / Slovene
	Vaje / Tutorial:	slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisits:

Vsebina:

Razumevanje biologije celice je temeljno za razumevanje drugih področij biologije in medicine.
Pri predmetu se študenti seznanijo s sodobnimi raziskovalnimi metodami. Študenti spoznajo kemijsko sestavo celic, značilnosti prokariotskih in evkariotskih celic. Poudarek je na študiju struktur in organelov evkariotskih celic ter njihovih funkcijah.
Kratek povzetek vsebin:

1. Organizacija evkariotske in prokariotske celice; celice kot eksperimentalni modeli
2. Molekularna sestava celic
3. Metode proučevanja celic
4. Celične membrane in transport snovi Receptorji
5. Ekstracelularni matriks
6. Mitohondriji in mehanizem oksidativne fosforilacije
7. Endoplazemski retikulum in Golgijev aparat
8. Lizosomi in peroksisomi
9. Citoskelet in gibanje celice
10. Jedro, kromatin in kromosomi
11. Celični ciklus, mitoza in mejoza
12. Medcelične komunikacije
13. Apoptoza in nekroza
14. Celice imunskega sistema
15. Maligno transformirane celice
16. Razmnoževanje in razvoj

Content (Syllabus outline):

Understanding of the cell biology is an area of research that is fundamental to all of the biological and medical sciences. This subject provides an introduction to the methods for studying cells. It focuses on the chemical structure of the cells, main characteristics of the prokaryotic and the eukaryotic cells, especially structures and organelles of the eukaryotic cells and their function.
Short abstract of contents:

1. Organisation of eukaryotic and prokaryotic cell; cells as experimental models
2. The molecular composition of cells
3. Tools of cell biology
4. Cell membranes and membrane transport
5. Receptors
6. Extracellular matrix
7. Mitochondria and the mechanism of oxidative phosphorylation
8. Endoplasmic reticulum and Golgi Complex
9. Lysosomes and peroxisomes
10. The cytoskeleton and cell movement
11. The nucleus, chromatin and chromosomes
12. Cell cycle, mitosis and meiosis
13. Cell to cell interaction
14. Apoptosis and necrosis
15. Cells of the immune system
16. Malignant transformation
17. Reproduction and development

Temeljni literatura in viri / Textbooks:

- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., Walter, P., 2011: Molecular Biology of the Cell 7th Ed.. Garland Science, Taylor & Francis Group, New York.
- Becker, M. W., Kleinsmith, L. J., Hardin, J., 2004: The World of the Cell (5th Ed.). The Benjamin/Cummings Publishing Company, San Francisco.
- Cooper, G. M., R. F. Hausman, 2009: The Cell: a molecular approach (5th Ed.). ASM Press, Washington, D. C.
- Junqueira, L. C. and Carneiro, J., 1996: Histologie – Zytologie, Histologie und mikroskopische Anatomie des Menschen. Springer-Verlag Berlin, Heidelberg.
- Lodish, H., Berk, A., Matsudaira, P., Kaiser, C. A., Krieger, M., Scott, M. P., Zipursky, S. L., Darnell, J., 2010: Molecular Cell Biology6th Ed.). W. H. Freeman and Company, New York.

Cilji:

- Študenti razumejo strukturo, funkcijo in molekularno organizacijo celice.
- Pridobijo poglobljena znanja na specifičnih področjih biologije celice.

Objectives:

- Students understand the structure, the function and the molecular organisation of the cell.
- Students acquire advanced knowledge in specific fields in cell biology.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Študenti razumejo dosežke s področja biologije celice, ki so nujno potrebni na drugih področjih biologije in medicine.
- Študenti spoznajo nekatera področja medicine, kjer uporabljamo znanja biologije celice.

Prenesljive/ključne spretnosti in drugi atributi:

- Študenti pridobijo izkušnje in laboratorijske spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu.
- Znajo uporabljati znanstvene prispevke in zahtevnejšo študijsko literaturo.

Intended learning outcomes:

Knowledge and Understanding:

- Students understand achievements in cell biology which is essential for other fields of biology and medicine.
- Students get acquainted with the areas of medicine in which cell biology is applied.

Transferable/Key Skills and other attributes:

- Students acquire experience and laboratory skills which are essential for an autonomous laboratory work.
- They understand articles in scientific journals and advanced text-books.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Seminar

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Seminar

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
Pisni praktični kolokvij	**30 %**	Written practical examination Seminar
Seminar	**10 %**	Written final examination
Pisni izpit	**60 %**	
ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV Prisotnost na vajah Napisani protokoli Opravljen kolokvij, seminar in izpit		ACADEMIC OBLIGATIONS OF STUDENTS: Each student has to: - be present on each practical course; - write down the protocol on each practical course; - pass written practical examination, written seminar and written final examination.
POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA Pogoj za pristop h kolokviju: -opravljene vaje; -napisani protokoli. Pogoji za pristop k izpitu: -opravljen kolokvij, seminar		REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING: - performed practical courses; -written protocols. CONDITIONS FOR WRITTEN FINAL EXAM: -performed written practical exam and seminar.
Pozitivna ocena: doseženih 50 % in več		

		Passed written final exam: achived 50%

Reference nosilca / Lecturer's references:

LIPOVŠEK, Saška, JANŽEKOVIČ, Franc, NOVAK, Tone. **Autophagic activity in the midgut gland of the overwintering harvestmen *Gyas annulatus* (Phalangiidae, Opiliones)** Arthropod Structure & Development, Available online 11 June 2014, In Press, DOI: 10.1016/j.asd.2014.06.001.

LIPOVŠEK DELAKORDA, Saška, LEITINGER, Gerd, RUPNIK, Maja. Ultrastructure of Clostridium difficile colonies. Anaerobe, ISSN 1075-9964, 2013, vol. 24, str. 66-70, ilustr., doi: 10.1016/j.anaerobe.2013.09.014. [COBISS.SI-ID 20178184], [JCR, SNIP]

LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIČ, Franc, LEITINGER, Gerd, RUPNIK, Marjan. Rab3a ablation related changes in morphology of secretory vesicles in major endocrine pancreatic cells, pituitary melanotroph cells and adrenal gland chromaffin cells in mice. General and comparative endocrinology, ISSN 0016-6480, 2013, vol. 185, str. 67-79. http://dx.doi.org/10.1016/j.ygcen.2013.01.007. [COBISS.SI-ID 19733768], [JCR, SNIP, WoS do 27. 11. 2013: št. citatov (TC): 1, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0, Scopus do 20. 11. 2013: št. citatov (TC): 1, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]

LIPOVŠEK DELAKORDA, Saška, LETOFSKY-PAPST, Ilse, HOFER, Ferdinand, LEITINGER, Gerd, DEVETAK, Dušan. The evidence on the degradation processes in the midgut epithelial cells of the larval antlion Euroleon nostras (Geoffroy in Fourcroy, 1785) (Myrmeleontidae, Neuroptera). Micron, ISSN 0968-4328. [Print ed.], 2012, vol. 43, iss. 5, str. 651-665, ilustr., doi: 10.1016/j.micron.2011.11.012. [COBISS.SI-ID 18855176], [JCR, SNIP, WoS do 11. 3. 2013: št. citatov (TC): 2, čistih citatov (CI): 2, normirano št. čistih citatov (NC): 1, Scopus do 30. 1. 2013: št. citatov (TC): 2, čistih citatov (CI): 2, normirano št. čistih citatov (NC): 1]

LIPOVŠEK DELAKORDA, Saška, LETOFSKY-PAPST, Ilse, HOFER, Ferdinand, PABST, Maria Anna, DEVETAK, Dušan. Application of analytical electron microscopic methods to investigate the function of spherites in the midgut of the larval antlion Euroleon nostras (Neuroptera: Myrmeleontidae). Microscopy research and technique, ISSN 1059-910X, 2012, vol. 75, iss. 4, str. 397-407, ilustr., doi: 10.1002/jemt.21069. [COBISS.SI-ID 18638856], [JCR, SNIP, WoS do 15. 2. 2013: št. citatov (TC): 1, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0, Scopus do 4. 12. 2013: št. citatov (TC): 1, čistih citatov (CI): 1, normirano št. čistih citatov (NC): 1]

NYQVIST, Daniel, SPEIER, Stephan, RODRIGUEZ-DIAZ, Rayner, MOLANO, R. Damaris, LIPOVŠEK DELAKORDA, Saška, RUPNIK, Marjan, DICKER, Andrea, ILEGEMS, Erwin, ZAHR-AKRAWI, Elsie, MOLINA, Judith, LOPEZ-CABEZA, Maite, VILLATE, Susana, ABDULREDA, Midhat, RICORDI, Camillo, CAICEDO, Alejandro, PILEGGI, Antonello, BERGGREN, Per-Olof. Donor islet endothelial cells in pancreatic islet revascularization. Diabetes, ISSN 0012-1797, 2011, vol. 60, no. 10, str. 2571-2577, ilustr., doi: 10.2337/db10-1711. [COBISS.SI-ID 18639624], [JCR, SNIP, WoS do 14. 1. 2014: št. citatov (TC): 11, čistih citatov (CI): 11, normirano št. čistih citatov (NC): 3, Scopus do 23. 10. 2013: št. citatov (TC): 9, čistih citatov (CI): 9, normirano št. čistih citatov (NC): 3]