Univerza v Mariboru

UČNI NAČRT PREDMETA / COURSE SYLLABUS			
Ime predmeta:	**Molekularna alergologija**		
Course title:	**Molecular Allergology**		
Študijski program in stopnja Study programme and cycle	**Študijska smer Study option**	**Letnik Year of study**	**Semester Semester**
Biomedicinska tehnologija/3. stopnja		**2**	**3 ali 4**
Biomedical Technology/3rd Degree			

Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)	Izbirni Elective
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	**Seminar Seminar**	**Vaje Tutorial**			**Klinične vaje Clinical training**	**Druge oblike študija Other forms of study**	**Samost. delo Individual work**	**ECTS**
15	**20**	**10**					**135**	**6**
		AV	**LV**	**RV**				

Nosilec predmeta / Course coordinator:	Izr. prof. dr. Peter KOROŠEC

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites for enrolling in the course or for performing study obligations:**

Vsebina (kratek pregled učnega načrta):	**Content (syllabus outline):**
Predavanje in seminarji: Tipi preobčutljivosti s poudarkom na tipu I in IV Molekularna osnova alergijskega odgovora - alergeni (struktura, skupine, epitopi, navzkrižnost, CCD) - IgE protitelesa - efektorske celice (bazofilci, mastociti, eozinofilci) - mediatorji - T limfocit (Th2, Treg, alergen spec. T celice) In vitro testiranje - IgE reaktivnost (FEIA, ECLIA, imunski odtis, ELISA) - celični testi (BAT, LAT) - mikromreže Rekombinantni alergeni - neglikozilirani iz prokariontskih sistemov	Lectures and seminars: Hypersensitivity reactions (Type I and IV) Molecular basis of the allergic response - allergens (structure, groups, epitops, cross-reactivity, CCDs) - IgE antibodies - effector cells (basophils, mast cells, eosinophils) - mediators - T Ly (Th2, Treg, allergen spec. T cells) Allergy in vitro tests - IgE reactivity (FEIA, ECLIA, immunoblots, ELISA) - cellular test (BAT, LAT) - microarrays Recombinant allergens - non-glycosylated from bacterial expression systems

- glikozilirani z bakulovirusom okuženih celičnih linij insektov z ali brez N-glikozirajočega vezavnega mesta - uporaba v diagnostiki modifikacije za uporabo v terapiji -zniževanje IgE in višanje IgG aktivnosti Laboratorijske vaje: Praktična uporaba rekombinatnih alergenov, ugotavljanje IgE reaktivnosti in alergogenosti, imunski odtis, mikromreže in pretočna citometrije (BAT in LAT). Postavitev individualnega projekta iz tega področja.	- glycosylated from baculovirus-infected insect cells with or without N-linked glycosylation sites - diagnostic use modification for immunotherapy – recombinant hypoallergenic derivatives Laboratory work Practical work concerning recombinant allergens, IgE reactivity, allergenic activity, immunoblots, microarrays and flow cytometry (BAT in LAT). Setting up an individual project in this particular field.
Temeljni literatura in viri / Reading materials:	
Allergy and Allergic Diseases, 2 Volume Set, 2nd Edition Barry Kay (Editor), Allen P. Kaplan (Editor), Jean Bousquet (Editor), Patrick G. Holt (Editor) ISBN: 978-1-4051-5720-9 Hardcover 2184 pages July 2008, Wiley-Blackwell MATRICARDI, P. M., KLEINE-TEBB, J., HOFFMANN, H. J., VALENTA, Rudolf, HILGER, C., HOFMAJER, S., AALBERSE, R. C., AGACHE, I., ASERO, R., KOROŠEC, Peter, et al. EAACI molecular allergology user's guide. Pediatric allergy and immunology, Supplement., ISSN 1600-5562, May 2016, vol. 27, suppl. S23, str. 1-250. Znanstvena periodika / Scientific periodicals (J Allergy Clin Immunol, Allergy, Clin Exp Allergy, Int Arch Allergy Immunol, J Immunol, Curr Opin Allergy Clin Immunol, Curr Top Microbiol Immunol)	
Cilji in kompetence:	**Objectives and competences:**
Poglobljeno znanje in razumevanje molekularne osnova alergijskega odgovora s posebnim poudarkom na pomenu in uporabnosti rekombinantnih alergenov v diagnostiki in terapiji. Kompetence: Uporaba teoretičnega in praktičnega znanja pri znanstveno-raziskovalnem in terciarnem laboratorijskem delu na področju imunologije in alergologije.	To provide a deep understanding of the molecular basis of the allergic response with special emphasis on the recombinant allergens and their use in diagnostic procedures and treatment. Competences: Significant ability of a student to be involved in development, research and high skill laboratory work in the field of immunology and allergology.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: strukture alergenov, vzroka za navzkrižnost, vloga CCD razlike med IgE senzibilizacijo, alergogeno aktivnostjo pomen odgovora efektorskih celic in T celične regulacije in vitro testov pridobivanje, terciarna struktura in modifikacije rekombinantnih alergenov modeli uporabe rekombinantnih alergenov (diagnostika in terapija)	**Knowledge and understanding:** allergen structure, cross-reactivity, CCDs difference between IgE sensitization and allergenic activity the role of effector cell response and T cell regulation production, folding and modification of recombinant allergens use of recombinant allergens (diagnosis and therapy)
Prenosljive/ključne spretnosti in drugi atributi: Razumevanje mehanizmov navzkrižne alergije, rekombinantne senzibilizacija povezane s težjimi anfilaktičnimi reakcijami (predvsem za hrano), neučinkovitosti imunoterapije pri določenih	**Transferable/key competences and other abilities:** Understanding of mechanisms of cross-reactive allergy, understanding of sensitization recombinant profiles related to severe anaphylaxis (especially to

bolnikih, visok nivo asimptomatske senzibilizacije v splošni populaciji.	food), immunotherapy failure, high level of asymptomatic sensitization in general population.
Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja Seminarji Vaje (laboratorijske vaje in praktično delo – izvedba samostojnega projekta) Samostojno delo Predavanja in seminarji bodo potekala v prostorih Medicinske fakultete Univerze v Mariboru. Laboratorijske vaje in praktično delo pa v Laboratoriju za klinično imunologijo in molekularno genetiko Bolnišnice Golnik – KOPA.	Lectures Seminars Tutorial (laboratory and practical work – individual project) Individual work Lectures and seminars will be held in Medical Faculty, University of Maribor. Laboratory and practical work will be done in Laboratory for Clinical Immunology & Molecular Genetics of University Clinic of Respiratory and Allergic Diseases, Golnik, Slovenia.

Načini ocenjevanja:	**Delež (v %) / Share (in %)**	**Assessment methods:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Ustni izpit /	**50 %**	Oral examination /
Individualni laboratorijsko projekt	**50 %**	Individual laboratory project

Reference nosilca / Course coordinator's references:

"KOREN, Ana, ŠILAR, Mira, RUPNIK, Helena, ZIDARN, Mihaela, KOROŠEC, Peter. Quantitative, absolute count-based T cell analysis of CD69 upregulation as a new methodology for in vitro diagnosis of delayed-type nickel hypersensitivity. Journal of investigational allergology & clinical immunology, ISSN 1698-0808. [Online ed.], 2019, vol. 29, iss. 4, str. 1-23, ilustr. http://www.jiaci. org/ahead-of-print/quantitative--absolute-count-based-t-cell-analysis-of-cd69-upregulation-as-a-new-methodology-for-in-vitro-diagnosis-of-de layed-type-nickel-hypersensitivity, doi: 10.18176/jiaci.0331. [COBISS.SI-ID 2048400753], [JCR, SNIP, WoS do 20. 9. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 17. 9. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A2 (Z, A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 17.62, št. avtorjev: 5"

"RIJAVEC, Matija, ŽAVBI, Mateja, LOPERT, Anton, FLEŽAR, Matjaž, KOROŠEC, Peter. GLCCI1 polymorphism rs37973 and asthma treatment response to inhaled corticosteroids. Journal of investigational allergology & clinical immunology, ISSN 1698-0808. [Online ed.], 2018, vol. 28, iss. 3, str. 165-171, ilustr. http://www.jiaci.org/revistas/vol28issue3_3.pdf, doi: 10.18176/jiaci.0229. [COBISS.SI-ID 2048262769], [JCR, SNIP, WoS do 13. 10. 2019: št. citatov (TC): 5, čistih citatov (CI): 5, čistih citatov na avtorja (CIAu): 1.00, Scopus do 29. 8. 2019: št. citatov (TC): 4, čistih citatov (CI): 4, čistih citatov na avtorja (CIAu): 0.80] kategorija: 1A2 (Z, A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 17.62, št. avtorjev: 5"

"SOKLIČ, Tanja, ŠILAR, Mira, RIJAVEC, Matija, KOREN, Ana, KERN, Izidor, HOČEVAR-BOLTEŽAR, Irena, KOROŠEC, Peter. CD3+CD4-CD8- mucosal T cells are associated with uncontrolled chronic rhinosinusitis with nasal polyps. The journal of allergy and clinical immunology, ISSN 1097-6825. [Online ed.], Mar. 2019, vol. 143, iss. 3, str. 1235-1237.e5, graf. prikazi, tabele. https://www.jacionline.org/article/S0091-6749(18)31589-6/pdf, doi: 10.1016/j.jaci.2018.10.045. [COBISS.SI-ID 2048419441], [JCR, SNIP, WoS do 22. 3. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 22. 12. 2018: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A1 (Z, A'', A', A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 26.71, št. avtorjev: 7"