

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Molekularna alergologija
Course title:	Molecular Allergology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biomedicinska tehnologija/Biomedical Technology 3. stopnja/3rd Degree		2	3 ali 4

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. Delo Individ. Work	ECTS
15	20	10			105	5

Nosilec predmeta / Lecturer:

Izr. prof. dr. Peter KOROŠEC

Jeziki /

Predavanja / Lectures:

slovenski/angleški; Slovene / English

Languages:

Vaje / Tutorial:

slovenski/angleški; Slovene / English

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

Prerequisites:

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Graduate degree 300 ECTS

Vsebina:

Content (Syllabus outline):

Predavanja 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
- 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 citometrija (BAT in LAT).
Postavitev individualnega projekta iz tega področja.

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
- 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 / Readings:

- 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
- 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:

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.

Predvideni študijski rezultati:

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)

Prenesljive/ključne spretnosti in drugi atributi:

Metode poučevanja in učenja:

Predavanja in seminarji
Laboratorijske vaje in praktično delo – izvedba samostojnega projekta

Predavanja in seminarji bodo potekali v prostorih Medicinske fakultete Univerze v Mariboru.
Laboratorijske vaje in praktično delo pa v Laboratoriju za klinično imunologijo in molekularno genetiko Bolnišnice Golnik – KOPA.

Objectives and competences:

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.

Intended learning outcomes:

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)

Transferable/Key Skills and other attributes:

Learning and teaching methods:

Lectures and seminars
Laboratory and practical work – individual project

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 %) /

Weight (in %)

Assessment:

– Ustni izpit /	50	– Oral examination /
– Individualni laboratorijsko projekt	50	– Individual laboratory project