UNIVERZA V LJUBLJANI | FFA Fakulteta za farmacijo

POROČILO O DOSEŽKIH

PROGRESS REPORT 2023

Ljubljana 2024

KAZALO / CONTENT

UVODNI POZDRAV

Spoštovani,

Fakulteta za farmacijo Univerze v Ljubljani se je v letu 2023, v času po pandemičnem obdobju, dodobra vrnila v ustaljene tirnice polnega pedagoškega in eksperimentalnega delovanja, ki je pogoj za kakovostno izvajanje aktivnosti naše institucije. Zaradi vpeljave novih stebrov stabilnega financiranja našega dela niso ogrozile povišane cene energentov in stroškov materialov, zato smo se zaposleni lahko ukvarjali s svojim poslanstvom, študentje pa s študijem. Fakulteta za farmacijo Univerze v Ljubljani je leto 2023 zaključila uspešno, tako na pedagoškem, raziskovalnem ter strokovnem področju kot tudi z vidika finančnega poslovanja. Med drugim je to leto zaznamovala menjava vodstvene ekipe fakultete. Predhodno vodstvo s prof. Ireno Mlinarič-Raščan na čelu je v upravljanje predalo fakulteto, ki je v dobri formi, kar je predvsem posledica uspešnega in predanega dela vseh zaposlenih ter študentov, ki gojijo ustrezen odnos do študija ter obštudijskih dejavnosti.

V letu 2023 smo povečali digitalni obseg delovanja fakultete, katerega osrednji namen je bolj učinkovito in transparentno delovanje članic in Univerze. Uvajanje orodij okolja APIS je pomenilo prilagoditev poslovnih procesov na finančnem, kadrovskem ter projektnem področju in pri tem bremenilo predvsem delovanje podpornih služb, kar je ob njihovi siceršnji podhranjenosti pomenilo dodaten in znaten zalogaj v obsegu dela. Za prihodnje poslovanje to pomeni potrebo po kadrovski krepitvi podpornih služb za povečanje stabilnosti in robustnosti delovanja fakultete.

Pomembne so ugotovitve študentskih anket, ki so ocenile primarno poslanstvo fakultete kot ustrezno in kakovostno. To oceno potrjujejo tudi uspešne pretekle eksterne evalvacije študijskih programov (NAKVIS) in fakultete (ASIIN), v letu 2023 pa smo na fakulteti sodelovali tudi v uspešni institucionalni evalvaciji Univerze v Ljubljani, ki jo je izvajal FINEEC. Povečana potreba trga delovne sile po naših diplomantih, zlasti magistrih farmacije, nas je spodbudila k povečanju vpisnih mest na študijskih programih z zaznanim deficitom diplomantov. Tako smo za študijsko leto 2024/25 na EMŠFAR predvideli povečanje vpisnih mest s 165 na 180. Da bi zadostili potrebam po sodobnih kompetencah naših diplomantov, se kontinuirano ukvarjamo s prenovami obstoječih študijskih programov ter snovanjem novih študijskih programov, kar ustvarja vse večji pritisk na obstoječe prostorske zmožnosti in funkcionalne danosti stavbnega fonda fakultete. Tako smo v letu 2023 sprožili začetne aktivnosti za prenovo enovitega magistrskega študijskega programa Farmacija ter v okviru članic Univerze v Ljubljani intenzivirali pripravo interdisciplinarnega strokovnega študijskega programa Biofarmacevtsko inženirstvo.

Na področju raziskovalnega dela je leto 2023 z vidika pridobivanja projektov in programov zaznamovalo znatno povečanje financiranja raziskovalnega dela in investicij v iztrošeno in novo raziskovalno opremo, medtem ko sta bila obseg in kakovost raziskovalnega dela ustrezno visoka, tako na ravni objav v revijah SCI kot po rasti čistih citatov. Kontinuirana uspešnost UL FFA na področju raziskav in inovacij se je v 2023 ponovno potrdila z vlaganjem patentnih prijav ter najvišjimi državnimi nagradami in priznanji na področju znanosti. Zoisovo priznanje za pomembne dosežke na področju farmacevtske kemije in toksikologije je prejela prof. Lucija Peterlin Mašič, Puhovo nagrado za vrhunske dosežke na področju industrijske farmacije pa prof. dr. Zdenko Časar.

Na razpisu 53. Krkinih nagrad so bili med prejemniki velikih Krkinih nagrad kar trije s Fakultete za farmacijo. Naši zaposleni so prav tako aktivno sodelovali pri organizaciji mednarodnih znanstvenih simpozijev (npr. 30. konference PAGE in 9. konference BBBB) ter bili za svoje delo prepoznani kot kongresni ambasadorji Slovenije.

Leto 2023 smo zaključili tudi v luči obeležena več kot 10 let trajajočih fakultetnih aktivnosti, usmerjenih v ustrezno razrešitev prostorske stiske fakultete. Ta se odraža v majhni površini pedagoških in laboratorijskih prostorov na študenta ter zaposlenega in to kljub znatnemu najemu prostorov na trgu. Da bi zagotovili ustrezne prostorske razmere za zaposlene in študente z vidika urnikov dela in študija, ustrezne varnosti pri delu ter omogočili nadaljnji razvoj stroke, razvoja kompetenc diplomantov fakultete ter odgovorili na potrebe družbe z vzpostavitvijo znatnih površin celičnih, GSO, GLP in GMP laboratorijev, smo si kot strateški dolgoročni cilj zastavili projekt novogradnje , v katerega vlagamo tudi znatna lastna finančna sredstva.

V letu 2023 smo aktivno sodelovali pri pripravi podlag za Poročilo o vplivih na okolje in tako junija 2023 skupaj s Fakulteto za strojništvo Univerze v Ljubljani vložili dokumentacijo za pridobitev integralnega gradbenega dovoljenja, katerega odobritve se nadejamo v drugi polovici 2024. Prav tako smo konec 2023 začeli s projektno fazo priprave projektne dokumentacije PZI in bi lahko tako po časovnici projekta pričeli z gradnjo v prvi polovici 2025, kar bi vodilo do dosege cilja začetka uporabe stavbe konec leta 2028. Financiranja investicije se nadejamo prek vloge, ki smo jo na MVZI oddali v okviru poziva, ki temelji na ZZSISZ.

Fakulteta za farmacijo Univerze v Ljubljani je institucija, ki z odličnostjo v izobraževanju ter na znanstveno-raziskovalnem področju zagotavlja dragoceno podporo slovenski družbi tako na področju farmacije, kakor tudi laboratorijske biomedicine in biomedicini sorodnih področjih.

Skrb za kakovost in stremljenje k odličnosti vodita k napredku fakultete. Ponosni smo tudi na številne druge dosežke, predstavljene v nadaljevanju.

prof. dr. Rok Dreu, dekan

INTRODUCTORY GREETING

Dear Sir/Madam

The Faculty of Pharmacy at the University of Ljubljana has, in the post-pandemic year 2023, fully returned to its established operational routines, resuming a full range of pedagogical and experimental activities essential for the high-quality functioning expected of an institution such as the Faculty of Pharmacy. Despite increased energy and material costs, the introduction of new stable funding pillars ensured that faculty operations continued uninterrupted, allowing staff to focus on their mission and students on their studies. The Faculty of Pharmacy concluded 2023 successfully in educational, research, professional, and financial areas. This year was also marked by a leadership transition, with the previous administration, led by Professor Irena Mlinarič-Raščan, handing over a well-positioned institution, thanks to the dedication of all staff and students who diligently approached their studies and extracurricular activities.

In 2023, we expanded the Faculty's digital operations to promote more efficient and transparent functioning across departments and the University. Implementing APIS tools required a redefinition of business processes in finance, human resources, and project management, which significantly impacted our support services. Given their already limited resources, these services faced an additional substantial workload, underscoring the need for future staffing increases to enhance faculty operational stability and robustness.

Student surveys have underscored that the primary mission of the Faculty is both appropriate and of high quality. Successful external evaluations of study programs (NAKVIS) and the Faculty (ASIIN) corroborate this assessment. In 2023, we participated in the University of Ljubljana's successful institutional evaluation conducted by FINEEC. A rising demand for our graduates, particularly those with master's degrees in pharmacy, has motivated us to increase enrolment in programs with identified graduate shortages. Thus, for the 2024/25 academic year, we have raised the enrolment capacity in the uniform master's program in Pharmacy from 165 to 180. To meet the demand for up-to-date competencies in our graduates, we continue to revise existing programs and design new ones, which places increasing pressure on the Faculty's current spatial capacities and functional infrastructure. In 2023, we initiated preliminary activities for revising the uniform master's program in Pharmacy. We intensified the development of the first-cycle university study program Biopharmaceutical Engineering in cooperation with other faculties of the University of Ljubljana.

In the research area, 2023 saw significant funding increases for research projects, programs, and investments in outdated and new research equipment. The scope and quality of research activities remained high, as reflected in publications in SCI journals and an increased number of pure citations. New patent applications and prestigious national awards further evidence the Faculty's continued success in research and innovation in 2023. Professor Lucija Peterlin Mašič received the Zois Award for significant achievements in pharmaceutical chemistry and toxicology, while Professor Zdenko Časar was honored with the Puh Award for outstanding contributions to industrial pharmacy. In the 53rd Krka Awards competition, three recipients of the Grand Krka Award were from the Faculty of Pharmacy. Our staff also organized international scientific symposia (e.g., the 30th PAGE Conference and the 9th BBBB Conference) and were recognized as Congress Ambassadors of Slovenia.

The year 2023 also marked more than a decade of the Faculty's efforts to address its space constraints, as evidenced by limited teaching and laboratory space per student and staff member, despite significant rental of off-campus facilities. To ensure adequate space for work and study schedules, safe working conditions, and facilitate further development in the field, including student competency development and societal needs, the strategic long-term objective of a new building project remains paramount. This project will allow for substantial expansion of cell culture, GMO, GLP, and GMP laboratories, an endeavor to which we have also committed significant internal funds. In 2023, we actively contributed to the preparation of materials for the Environmental Impact Report In June 2023, together with the Faculty of Mechanical Engineering, we submitted the documentation to obtain an integrated construction permit, which we hope to be issued by mid-2024. By the end of 2023, we had also initiated the preparation phase for the PZI project documentation, aiming to begin construction activities in the first half of 2025, with building occupancy targeted for late 2028. We anticipate to finance this investment through a proposal submitted to the Ministry of Higher Education, Science and Innovation, which is in line with the ZZISZ call.

The Faculty of Pharmacy at the University of Ljubljana is an institution that, through excellence in education and scientific research, provides invaluable support to Slovenian society in pharmacy, laboratory biomedicine, and related biomedical disciplines.

The Faculty's progress is driven by a commitment to quality and the pursuit of excellence . We are proud of the many additional achievements which we present in the following sections.

Professor Rok Dreu, Dean of the Faculty

VODSTVO FAKULTETE (mandat od 1. 10. 2023 do 30. 9. 2027)
FACULTY GOVERNANCE (mandate since 1 October to September 2027)

Fotografija: vodstvo UL FFA / Photo: UL FFA governance

prof. dr. Rok Dreu, dekan / Dean

izr. prof. dr. Martina Gobec, prodekanja za mednarodno sodelovanje / Vice-Dean for International Relations
doc. dr. Igor Locatelli, prodekan za znanstveno-raziskovalno področje / Vice-Dean for Scientific Research
prof. dr. Lucija Peterlin Mašič, prodekanja za študijsko področje / Vice-Dean for Education

1 Predstavitev Fakultete za farmacijo
Presentation of the Faculty of Pharmacy

POSLANSTVO, VIZIJA IN ORGANIZIRANOST UL FFA

UL FFA je raziskovalno usmerjena pedagoška ustanova, kar izkazuje tako z objavami raziskovalnih dosežkov svojih zaposlenih v uglednih mednarodnih revijah kot tudi s prenosom teh znanj v pedagoški proces v okviru vseh študijskih programov.

Osnovne naloge so ustvarjanje, prenašanje in ohranjanje znanja, kar ob inovativnosti in raziskavah pomeni tudi učinkovito poučevanje in ohranjanje zgodovinskega spomina, vezanega na stroko. S številom objav v znanstvenih revijah ter številom citatov in projektov, povezanih z gospodarstvom, se UL FFA uvršča v sam vrh Univerze v Ljubljani. Tovrstni način dela in razmišljanja je vpet tudi v študijske programe.

UL FFA kot del Univerze v Ljubljani gradi svoj ugled, integriteto in razvoj na odličnosti, učinkovitosti ter etični drži učiteljev in študentov. Farmacevtske izkušnje temeljijo na dolgoletni tradiciji tako v slovenskem kot širšem prostoru z vizijo usmerjenosti v prihodnost.

Po evropskih merilih je UL FFA srednje velika farmacevtska fakulteta, matična za širše področje farmacije, klinične biokemije in kozmetologije, ki letno sprejme 165 študentov na študijskem programu Farmacija, 90 študentov na programu Laboratorijska biomedicina (50 na 1. stopnji, 40 na 2. stopnji), 40 študentov na programu Kozmetologija, 40 študentov na programu Industrijska farmacija in od 20 do 30 študentov doktorskega študija. V zadnjih letih je na UL FFA skupno s specializanti vpisanih okrog 1550 študentov.

MISSION, VISION, AND ORGANIZATION OF UL FFA

The Faculty of Pharmacy is a research-oriented teaching institution, evidenced by its publications of research achievements in highly esteemed international journals and in the transfer of knowledge in all programs.

The Faculty's primary tasks are creating, transmitting, and retaining knowledge. Therefore, its priority, alongside innovation and research, is effective teaching and maintaining the profession-related historical memory. Its members' number of journal publications, number of citations, and number of projects rank the faculty at the very top of the University of Ljubljana's member institutions. This way of working and thinking is also a core part of our study programs.

As part of the University of Ljubljana, the Faculty of Pharmacy builds its reputation, integrity, and development on excellence, effectiveness, and the ethical stance of its students and teachers. We are building on the long-term tradition of pharmaceutical experience in Slovenia and beyond while always looking toward the future.

According to European criteria, the Faculty is a medium-sized pharmacy educational institution central to the wider field of pharmacy, clinical biochemistry and cosmetology. Each year the Faculty admits 165 students to the Pharmacy program, 90 students to the Laboratory Biomedicine program (50 undergraduate and 40 graduate students), 40 students to the Cosmetology program, 40 students to the Industrial Pharmacy program and 20 to 30 to doctoral studies. In the past years, about 1550 students and specialist trainees have been enrolled in the Faculty of Pharmacy.

UL FFA ima v svoji strukturi naslednje organizacijske enote: vodstvo fakultete, tajništvo fakultete, Inštitut za farmacijo in katedre. Slednjih je šest in predstavljajo osnovne organizacijske enote pedagoškega in znanstvenoraziskovalnega dela. V sklopu Inštituta za farmacijo izvajamo temeljne in razvojne projekte za tekoče potrebe farmacevtske stroke.

Družbena odgovornost UL FFA se kaže v sodelovanju z uporabniki znanja na kulturnih, gospodarskih in socialnih področjih. Tako vlogo želi fakulteta ohraniti in utrditi tudi v prihodnje in stremeti k povečevanju uveljavljenosti in ugledu v mednarodnem prostoru. S tem namenom se vključuje v mednarodna združenja in sklepa mednarodna partnerstva.

Vizija UL FFA je prispevati k sooblikovanju prihodnosti ter ostati v svet odprta, odzivna in odgovorna akademska izobraževalna in raziskovalna ustanova. Obenem stremi k ustvarjanju in širjenju znanstvenih spoznanj in delovanju v dobrobit slovenskih državljanov, s čimer prispeva k povečevanju splošnega razvoja in utrjevanju nacionalne samobitnosti.

Učitelji in visokošolski sodelavci so večinoma registrirani kot raziskovalci pri Javni agenciji za raziskovalno dejavnost (ARIS) in tako poleg raziskovalcev prispevajo k raziskovalno-razvojnemu potencialu fakultete.

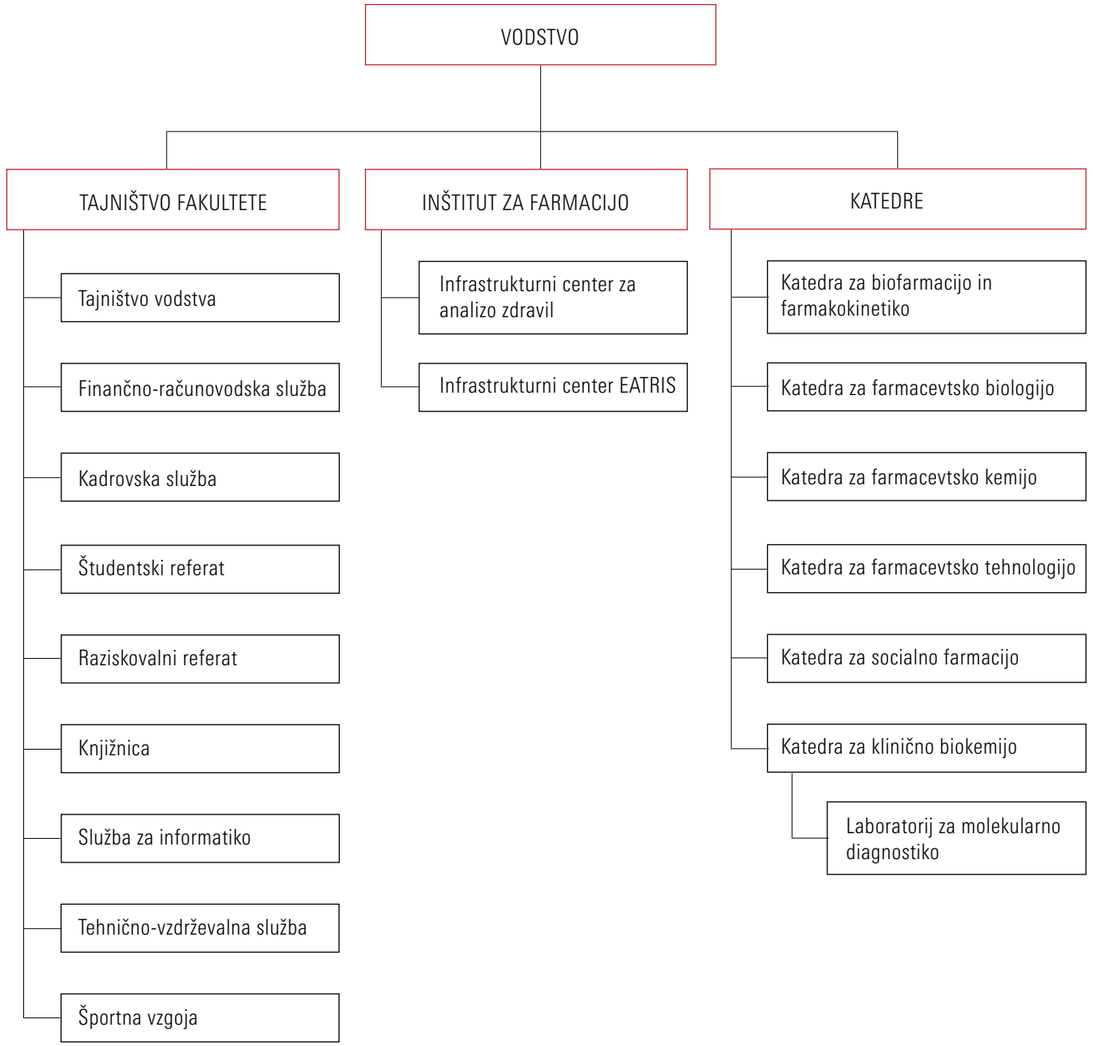
The Faculty of Pharmacy has six departments, which represent the basic organizational units of teaching and scientific research, and the Institute of Pharmacy, which implements basic and developmental projects for the pharmaceutical profession's current needs. In other words, the faculty has the following organizational units: faculty management, faculty secretariat, departments and the Institute of Pharmacy.

Teachers and associates are mostly registered as researchers with the Slovenian Research and Innovation Agency (ARIS) and undoubtedly have excellent research and development potential.

The Faculty of Pharmacy's social responsibility is reflected in the cooperation with users of knowledge in the cultural, economic, and social fields. The faculty wants to maintain and consolidate that role in the future and strive to increase its high standing and reputation in the international arena. To this end, the Faculty joins international associations and makes international partnerships.

The Faculty of Pharmacy's vision is to contribute to creating the future and remain an accessible, responsive and responsible academic educational and research institution. At the same time, it strives to create and disseminate scientific knowledge and work for the benefit of Slovenian citizens, thus contributing to general development and strengthening national identity.

ORGANIZACIJSKE ENOTE / FACULTY OF PHARMACY ORGANISATIONAL UNITS



KATEDRE FAKULTETE ZA FARMACIJO

Katedra za biofarmacijo in farmakokinetiko
predstojnik: izr. prof. dr. Tomaž Vovk, mag. farm.

Katedra za farmacevtsko biologijo
predstojnik: izr. prof. dr. Tomaž Bratkovič, mag. farm.

Katedra za farmacevtsko kemijo
predstojnik: prof. dr. Stanislav Gobec, mag. farm.

Katedra za farmacevtsko tehnologijo
predstojnica: prof. dr. Mirjana Gašperlin, mag. farm.

Katedra za socialno farmacijo
predstojnik: prof. dr. Mitja Kos, mag. farm.

Katedra za klinično biokemijo
predstojnik: prof. dr. Borut Božič, mag. farm., spec. med. biokem.

Laboratorij za molekularno diagnostiko
vodja: prof. dr. Joško Osredkar, mag. farm., spec. med. biokem.

DEPARTMENTS IN THE FACULTY OF PHARMACY

Department of Biopharmaceutics and Pharmacokinetics
Head: Assoc. Prof. Dr. Tomaž Vovk, M. Pharm.

Department of Pharmaceutical Biology
Head: Assoc. Prof. Dr. Tomaž Bratkovič, M. Pharm.

Department of Pharmaceutical Chemistry
Head: Prof. Dr. Stanislav Gobec, M. Pharm.

Department of Pharmaceutical Technology
Head: Prof. Dr. Mirjana Gašperlin, M. Pharm

Department of Social Pharmacy
Head: Prof. Dr. Mitja Kos, M. Pharm.

Department of Clinical Biochemistry
Head: Prof. Dr. Borut Božič, M. Pharm., EuSpLM

Laboratory for Molecular Diagnostics
Head: Prof. Dr. Joško Osredkar, M. Pharm., EuSpLM

INŠTITUT ZA FARMACIJO

predstojnica: prof. dr. Irena Mlinarič-Raščan, mag. farm.

Infrastrukturni center: EATRIS
vodja: prof. dr. Irena Mlinarič-Raščan, mag. farm.

Infrastrukturni center za analizo zdravil
vodja: prof. dr. Anamarija Zega, mag. farm.

ORGANI FAKULTETE

Senat
predsednik: prof. dr. Rok Dreu, mag. farm.

Akademski zbor
predsednica: prof. dr. Marija Sollner Dolenc, mag. farm.

Upravni odbor
predsednik: prof. dr. Matjaž Jeras, mag. farm.

Študentski svet
predsednica: Leonora Prestreši

INSTITUTE OF PHARMACY

Head: Prof. Dr. Irena Mlinarič-Raščan, M. Pharm.

Infrastructural centre: EATRIS
Head: Prof. Dr. Irena Mlinarič-Raščan, M. Pharm.

Infrastructure Centre for Analysis of Medicinal Products
Head: Prof. Dr. Anamarija Zega, M. Pharm.

THE FACULTY'S GOVERNING BODIES

Senate
Chair: Prof. Dr. Rok Dreu, M. Pharm.

Academic Assembly
Chair: Prof. Dr. Marija Sollner Dolenc, M. Pharm.

Managing Board
Chair: Prof. Dr. Matjaž Jeras, M. Pharm.

Student Council
Chair: Leonora Prestreši

TAJNIŠTVO

Tajnica fakultete
Katja Višnjevec Vahčič, univ. dipl. prav.

Tajnici vodstva
Lidija Mataija, mag. posl. ved
Barbara Kosmač Pajntar, univ. dipl. kom.

Finančno-računovodska služba
Saša Kulašić, univ. dipl. ekon., vodja službe

Kadrovska služba
Milena Petek, dipl. ekon., vodja službe

Študentski referat
Tanja Kadunc, dipl. org. tur., vodja referata

Raziskovalni referat
Mateja Terčič, univ. dipl. soc., vodja referata

Knjižnica
Borut Toth, prof. fil. in sociol., vodja knjižnice

Služba za informatiko
Tanja Gregorič, univ. dipl. org. inf., vodja službe

Športna vzgoja
viš. pred. Dušan Videmšek, prof. športne vzgoje

FACULTY SECRETARIAT

Faculty Secretary
Katja Višnjevec Vahčič, LLB

Head Secretary
Lidija Mataija, BS Econ.
Barbara Kosmač Pajntar, BS Comm.

Office for Finance and Accounting
Head: Saša Kulašić, M.Sc.

Human Resources
Head: Milena Petek, BS Econ.

Student Administration
Head: Tanja Kadunc, BSc (Tourism)

Research Administration
Head: Mateja Terčič, BSc Soc.

Library
Head: Borut Toth, Prof. Phil. and Soc.

IT Office
Head: Tanja Gregorič, BSc (Organisational Informatics)

Physical Education
Dušan Videmšek, Sport Education Professor

KOMISIJE SENATA UL FFA

Komisija za študijsko področje
predsednica: prof. dr. Lucija Peterlin Mašič, mag. farm.

Komisija za raziskovalno in razvojno delo
predsednik: doc. dr. Igor Locatelli, mag. farm.

Habilitacijska komisija
predsednica: prof. dr. Marija Bogataj, mag. farm.

Komisija za priznanja in nagrade
predsednica: prof. dr. Marija Sollner Dolenc, mag. farm.

Komisija za priznavanje tuje izobrazbe
predsednica: prof. dr. Lucija Peterlin Mašič, mag. farm.

Komisija za kakovost in akreditacijo
predsednik: izr. prof. dr. Janez Mravljak, mag. farm.

Komisija za strokovna vprašanja
predsednica: prof. dr. Mirjana Gašperlin, mag. farm.

Komisija za internacionalizacijo
predsednica: izr. prof. dr. Martina Gobec, mag. farm.

Komisija fakultete za etična vprašanja
predsednik: izr. prof. dr. Simon Žakelj, mag. farm.

Komisija za doktorski študij
predsednica: prof. dr. Lucija Peterlin Mašič, mag. farm.

SENATE COMMITEES

Study Affairs Committee
Chair: Prof. Dr. Lucija Peterlin Mašič, M. Pharm.

Research and Development Committee
Chair: Assis. Prof. Dr. Igor Locatelli, M. Pharm.

Habilitation Committee
Chair: Prof. Dr. Marija Bogataj, M. Pharm.

Awards and Decorations Committee
Chair: Prof. Dr. Marija Sollner Dolenc, M. Pharm.

Recognition of Foreign Education Committee
Chair: Prof. Dr. Lucija Peterlin Mašič, M. Pharm.

Assurance and Accreditation Committee
Chair: Assoc. Prof. Dr. Janez Mravljak, M. Pharm.

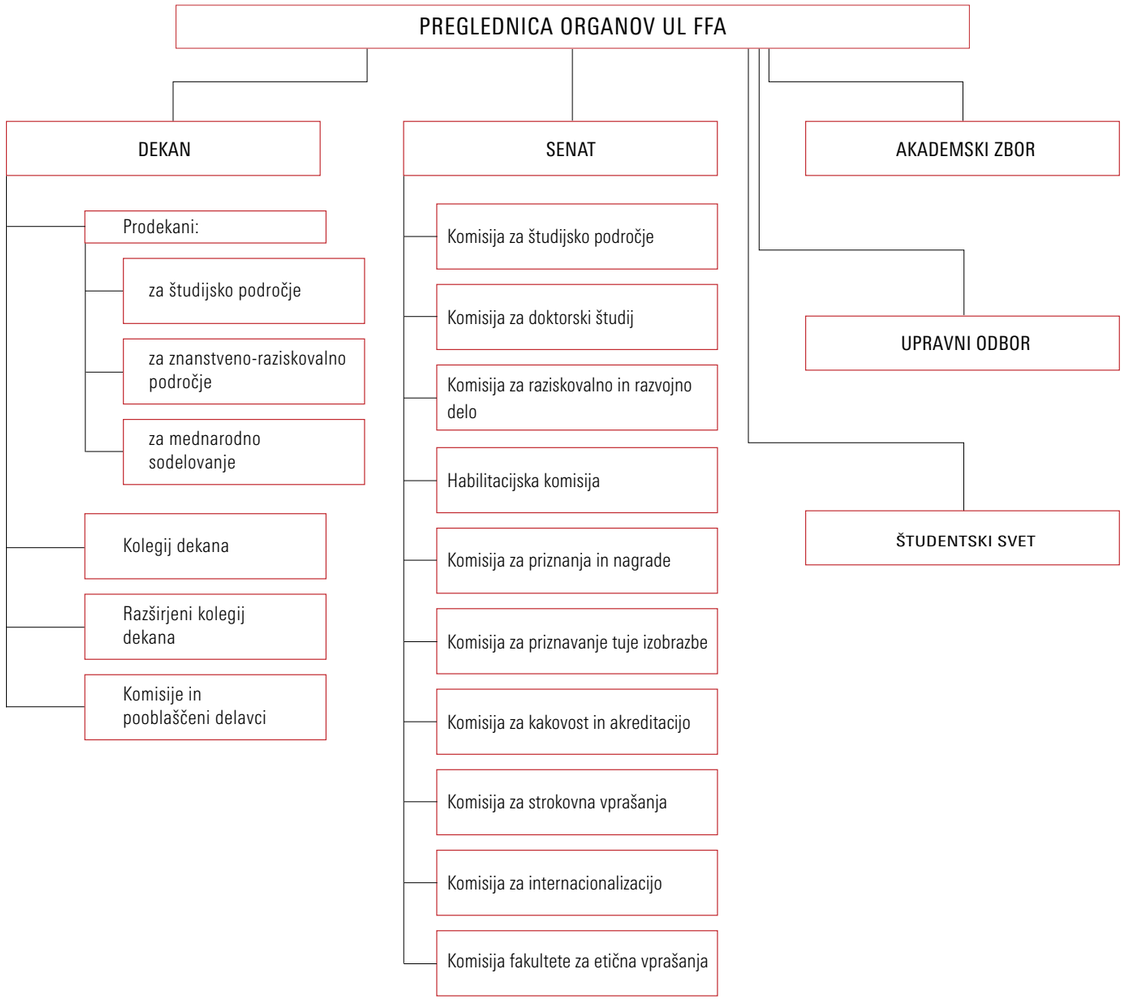
Professional Issues Committee
Chair: Prof. Dr. Mirjana Gašperlin, M. Pharm.

Internationalization Committee
Chair: Assoc. Prof. Dr. Martina Gobec, M. Pharm.

Ethical Issues Committee
Chair: Assoc. Prof. Dr. Simon Žakelj, M. Pharm.

Doctoral Study Committee
Chair: Prof. Dr. Lucija Peterlin Mašič, M. Pharm.

ORGANI UL FFA / GOVERNING OF THE FACULTY OF PHARMACY

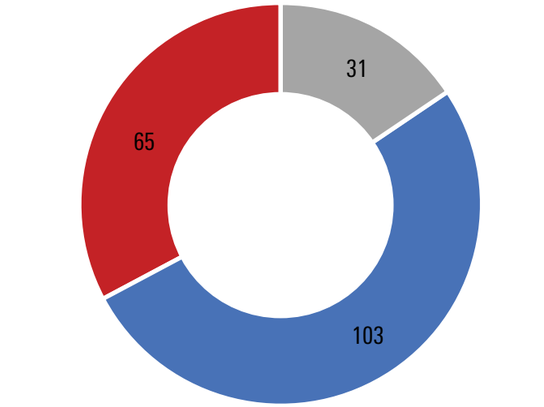


ZAPOSLENI NA FAKULTETI ZA FARMACIJO / FACULTY OF PHARMACY'S EMPLOYEES

Univerzitetni učitelji University Professors	45
Univerzitetni učitelji z delno zaposlitvijo Part-time University Professors	10
Asistenti Assistant Instructors	36
Raziskovalci Researchers	39
Mladi raziskovalci Junior Researchers	23
Predavatelj športne vzgoje Physical Education Teacher	1
Tajnik fakultete Faculty Secretary	1
Strokovne tehnične sodelavke Technical Assistants	17
Strokovni administrativni in tehnični delavci Expert Administrative and Technical Staff	27

Fotografija: Gradimo pripadnost / Photo: Team building event

IZOBRAZBENA STRUKTURA ZAPOSLENIH NA UL FFA / EDUCATIONAL STRUCTURE OF THE EMPLOYEES IN THE FACULTY OF PHARMACY



Doktorat / doctorate
VIII. stopnja izobrazbe (2. bolonjska oz. prejšnja univerzitetna)
Ostali / other

KATEDRA ZA KLINIČNO BIOKEMIJO
DEPARTMENT OF CLINICAL BIOCHEMISTRY

Predstojnik katedre
Head of the Department in 2023

prof. dr. Borut Božič, EuSpLM

Člani katedre v letu 2023
Members of the Department in 2023

- prof. dr. Matjaž Jeras, prof. dr. Janja Marc, EuSpLM. prof. dr. Irena Mlinarič-Raščan, prof. dr. Darko Černe, EuSpLM (dop.), prof. dr. Joško Osredkar, EuSpLM (dop.)
- izr. prof. dr. Martina Gobec, izr. prof. dr. Nataša Karas Kuželički, izr. prof. dr. Barbara Ostanek, izr. prof. dr. Saša Čučnik, EuSpLM (dop.), izr. prof. dr. Helena Podgornik, EuSpLM (dop.), izr. prof. dr. Janja Zupan
- doc. dr. Marija Nika Lovšin, doc. dr. Alenka Šmid, doc. dr. Mojca Božič Mijovski, EuSpLM (dop.), doc. Iztok Urbančič (dop)
- Danijela Herga, asist. Luka Hiti, asist. dr. Tijana Markovič, Ines Medved Palčar, asist. dr. Jasna Omersel, asist. dr. Irena Prodan Žitnik, EuSpLM, Lara Smrdel, asist. dr. Dunja Urbančič, asist. Lucija Ana Vrščaj, Tilen Burnik, asist. Žana Rus, asist. Gašper Tomšič,
- Manja Cedilnik, Petra Ferkov, Majda Sirnik

Fotografija: Katedra za klinično biokemijo / Photo: Department of Clinical Biochemistry

Sodelavci Katedre za klinično biokemijo smo pedagoško, raziskovalno in strokovno aktivni na področju klinične kemije in širše laboratorijske medicine ter na področju naprednih celičnih terapij. Oboje se namreč povezuje z odkrivanjem bioloških označevalcev bolezni, študija mehanizmov bolezni in potencialnih tarč.

Na molekulski in celični ravni v okviru 5 raziskovalnih programov razvijamo pristope bolniku prilagojene laboratorijske medicine za kompleksne bolezni (osteoporoze, osteoartroze, metabolnega sindroma, levkemije, orofacialne shize, rakavih boleznih idr.), osnovane na farmakogenomiki, nutrigenomiki, celičnih kulturah, spremljanju ravni zdravil in bioetiki.

Sodelujemo v vseh študijskih programih UL FFA in smo skrbniki obeh programov Laboratorijska biomedicina ter smeri Klinična biokemija in laboratorijska biomedicina na doktorskem študiju Biomedicina.

Strokovno smo povezani s pedagoškim in raziskovalnim sodelovanjem z UKC Ljubljana, splošnimi bolnišnicami in zdravstvenimi domovi ter delovanjem v RSK za laboratorijsko diagnostiko – medicinsko biokemijo, Zbornici laboratorijske medicine, Slovenskem združenju za klinično kemijo in laboratorijsko medicino ter evropskih strokovnih združenjih.

Prenos znanja izkazujemo tudi s storitvami Laboratorija za molekularno diagnostiko, ki z dovoljenjem Ministrstva za zdravje izvaja preiskave za diferencialno diagnostiko in personalizirano medicino izbranih kroničnih in vrojenih metabolnih motenj ter farmakogenetike.

The members of the Department of Clinical Biochemistry are engaged in educational, research, and professional activities in clinical chemistry and broader laboratory medicine, as well as in advanced cellular therapies. Both these areas involve the discovery of biological markers of diseases, the study of disease mechanisms, and the identification of potential therapeutic targets.

Involved in 5 research programs, we develop patient-tailored approaches of laboratory medicine for complex diseases (e.g., osteoporosis, osteoarthritis, metabolic syndrome, leukemia, orofacial clefts, and various cancers), at the molecular and cellular levels, based on pharmacogenomics, nutrigenomics, cell cultures, drug level monitoring, and bioethics.

We participate in all study programs at the UL FFA and coordinate the Laboratory Biomedicine programs on graduate and postgraduate levels and the Clinical Biochemistry and Laboratory Biomedicine field in the doctoral program in Biomedicine.

We are professionally linked with the UKC Ljubljana, general hospitals, and health centers, collaborating with the RSK for Laboratory Diagnostics - Medical Biochemistry, the Chamber of Laboratory Medicine, the Slovenian Association for Clinical Chemistry and Laboratory Medicine, and various European professional associations. We also offer knowledge transfer through the services of the Molecular Diagnostics Laboratory, which, with approval from the Ministry of Health, conducts tests for differential diagnosis and personalized medicine for selected chronic and congenital metabolic disorders, as well as pharmacogenetics.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Rektorjeva nagrada za naj inovacijo UL v 2023 projektni skupini UL FFA in IJS, v kateri sta bila dva učitelja s KKB, **prof. dr. Matjaž Jeras**, **izr. prof. dr. Martina Gobec**, za inovativni izdelek **nanovlaken s probiotičnimi sevi za zdravljenje parodontalne bolezni**. Inovacija je še posebno obetavna, saj predstavlja platformo z možnostjo prilagajanja za vgradnjo novih natančno karakteriziranih probiotičnih sevov in razširitvijo na področja zdravljenja drugih bolezni.

Skupina raziskovalcev s Katedre za klinično biokemijo, ki raziskuje genetske dejavnike pri kostnih boleznih že več kot 20 let, je odkrila, **da genetski dejavniki vplivajo na uspešnost anabolnega zdravljenja s teriparatidom**, eno redkih osteoanabolnih zdravilnih učinkovin, ki omogočajo izgradnjo nove kostnine in s tem izboljšanje zdravja kosti tudi po menopavznem obdobju. Pomen tega odkritja so oktobra 2023 izpostavili na kongresu American Association of Bone and Mineral Research, ki je najodličnejše znanstveno srečanje na področju kostnih bolezni. S pomočjo odkritih farmakogenetskih označevalcev bo mogoče prepoznati bolnike z ustreznim odzivom na teriparatid, kar predstavlja pomemben korak v smeri personalizirane, tj. varnejše in učinkovitejše obravnave osteoporoznih bolnikov. Članek je dosegljiv na povezavi: https://ard.bmj.com/content/annrheumdis/early/2023/03/20/ard-2022-223618.full.pdf

Rector's Award for Best Innovation at the University of Ljubljana in 2023 was awarded to the project team from UL FFA and the Jožef Stefan Institute, which included two faculty members from the Department of Clinical Biochemistry, Prof. Dr. Matjaž Jeras, and Assoc. Prof. Dr. Martina Gobec. The award was for their innovative product - nanofibers with probiotic strains for treating periodontal disease. This innovation is up-and-coming, as it provides a platform that can be customized with new well-characterized probiotic strains, allowing it the potential to expand to other areas of disease treatment.

Discovery in genetic factors Affecting Bone Diseases: A team of researchers from the Department of Clinical Biochemistry, investigating genetic factors in bone diseases for over 20 years, discovered that genetic factors influence the success of anabolic therapy with teriparatide, one of the few osteoanabolic drugs that promote new bone formation, thus improving bone health even in the post-menopausal period. The significance of this discovery was highlighted in October 2023 at the American Association of Bone and Mineral Research's conference, the leading scientific meeting in bone diseases. Using the identified pharmacogenetic markers, it is now possible to identify patients who respond well to teriparatide, representing a crucial step toward personalized, safer, and more effective treatment of osteoporotic patients. You can find the related article on the web address: https://ard.bmj.com/content/annrheumdis/early/2023/03/20/ard-2022-223618.full.pdf.

Dosegli smo podaljšanje **mreže izmenjav** Central European Exchange Program for University Studies (**CEEPUS**) Novel diagnostic and therapeutic approaches to complex genetic disorders (CIII-SI-0611), katere članica je KKB od ustanovitve mreže leta 2011 (koordinatorica prof. dr. Janja Marc).

Tilen Burnik, sedaj mladi raziskovalec na katedri, je prejel Krkino nagrado za svoje magistrsko delo pod mentorstvom prof. dr. Irene Mlinarič-Raščan in dr. Damjana Avsca.

Junija smo organizirali **Mednarodno poletno šolo ADVANCE na temo celičnih in genskih terapij**.

Extension of the Central European Exchange Program for University Studies (CEEPUS): We achieved an extension for the CEEPUS network „Novel Diagnostic and Therapeutic Approaches to Complex Genetic Disorders" (CIII-SI-0611), in which the Department of Clinical Biochemistry has been a member since its establishment in 2011 (coordinated by Prof. Dr. Janja Marc)

Tilen Burnik Receives Krka Award: Tilen Burnik, a young researcher at the department, received the Krka Award for his master's thesis, mentored by Prof. Dr. Irena Mlinarič-Raščan and Dr. Damjan Avsec.

International Summer School: In June, we organized the International Summer School ADVANCE, focused on cellular and gene therapies.

KATEDRA ZA FARMACEVTSKO BIOLOGIJO
DEPARTMENT OF PHARMACETUCAL BIOLOGY

Predstojnik katedre
Head of the Department:

izr. prof. dr. Tomaž Bratkovič

Člani katedre v letu 2023
Members of the Department in 2023

- prof. dr. Janko Kos, prof. dr. Samo Kreft, prof. dr. Mojca Lunder, prof. dr. Borut Štrukelj
- izr. prof. dr. Aleš Berlec, izr. prof. dr. Bojan Doljak, izr. prof. dr. Nina Kočevar Glavač, izr. prof. dr. Anja Pišlar, izr. prof. dr. Urban Švajger
- doc. dr. Ana Mitrović, doc. dr. Urša Pečar Fonović, doc. dr. Eva Tavčar
- asist. dr. Meta Kokalj Ladan, asist. dr. Tina Vida Plavec, asist. dr. Petra Ratajc, asist. dr. Matjaž Ravnikar, asist. Klemen Gnidovec, asist. Selena Horvat, Irena Klančnik Mavec, Mateja Matjaž, asist. Katja Schoss, asist. Ana Zupančič

Fotografija: Katedra za farmacevtsko biologijo / Photo: Department of Pharmaceutical Biology

Na Katedri za farmacevtsko biologijo se v okviru pedagoškega in raziskovalnega dela ukvarjamo z aktualnimi in sodobnimi temami, kot so protitumorni imunski odziv, nastanek in razvoj nevrodegenerativnih bolezni, imunoterapija s peptidnimi mimetiki alergenov, analitiko in biološkim vrednotenjem kanabinoidov in antioksidantov, razvojem postopkov izolacije spojin naravnega izvora s subkritičnimi in superkritičnimi topili, proučujemo vlogo maščobnih olj pri celjenju ran idr.

Pedagoški proces izvajamo na vseh študijskih programih UL FFA, tematike pa vključujejo celično biologijo, genetiko in genska zdravila, biotehnologijo v farmaciji in kozmetologiji, biokemijo in bolj podrobno biokemijo nastanka in napredovanja raka, proteomiko, zdravila iz zdravilnih rastlin, prehranska dopolnila, zdravila v alternativni medicini, kozmetične sestavine naravnega izvora, razvoj in vpeljava diagnostičnih metod ter načrtovanje in zagotavljanje kakovosti v medicinskih laboratorijih.

Sodelavci Katedre za farmacevtsko biologijo smo v okviru različnih projektov sodelovali z raziskovalci na Institutu Jožef Stefan, Nacionalnem inštitutu za biologijo, Inštitutom za patološko fiziologijo Medicinske fakultete, Inštitutu za fizikalno biologijo in Kemijskem inštitutu kot tudi s številnimi raziskovalci iz tujine.

As part of our teaching and research work at the Department of Pharmaceutical Biology, we deal with up-to-date and contemporary topics, such as the antitumor immune response, the origin and development of neurodegenerative diseases, immunotherapy with peptide mimetics of allergens, analytics and biological evaluation of cannabinoids and antioxidants, isolations of natural compounds using subcritical and supercritical agents, the role of vegetable oils in wound healing, etc.

The teaching process is carried throughout all existing UL FFA study programmes. More general subjects include cell biology, genetics and gene therapy, pharmaceutical biotechnology, biotechnology in cosmetology and biochemistry. The more specific courses include biochemistry of cancer, proteomics, herbal medicines, dietary supplements, drugs in alternative medicine, cosmetic ingredients of natural origin, development and implementation of diagnostic methods, and design and quality assurance in medical laboratories.

Employees of the Department of Pharmaceutical Biology have collaborated in various projects with researchers at the Jožef Stefan Institute, the National Institute of Biology, the Institute of Pathophysiology of the Faculty of Medicine, the Institute of Physical Biology and the National Institute of Chemistry, as well as with many researchers from abroad.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

V bazi podatkov COBISS je za leto 2023 vnesenih 111 bibliografskih enot, katerih avtorjev je 19 sodelavcev katedre. Od tega je 16 izvirnih znanstvenih člankov in 7 preglednih znanstvenih člankov.

Sodelavci Katedre za farmacevtsko biologijo so sodelovali pri odmevnih znanstvenih člankih, objavljenih v mednarodnih revijah z visokim faktorjem vpliva. Izr. prof. dr. Anja Pišlar in prof. dr. Janko Kos sta sodelovala pri članku z naslovom *8-Hydroxyquinolylnitrones as multifunctional ligands for the therapy of neurodegenerative diseases* (Acta pharmaceutica sinica B, IF 14.5). Prof. dr. Janko Kos je bil vodilni avtor izvirnega znanstvenega članka z naslovom *Different glycosylation profiles of cystatin F alter the cytotoxic potential of natural killer cells* (Cell Mol Life Sci, IF 9.2). Doc. dr. Ana Mitrović in prof. dr. Janko Kos sta sodelovala z raziskovalci iz tujine pri izvirnem znanstvenem članku z naslovom *Cathepsin inhibitors nitroxoline and its derivatives inhibit SARS-CoV-2 infection* (Antiviral research, IF 7.6). Prof. dr. Mojca Lunder je bila vodilna avtorica pri članku z naslovom *Ara h 2-specific IgE epitope-like peptides inhibit the binding of IgE to Ara h 2 and suppress IgE-dependent effector cell activation* (Clinical & experimental allergy, IF 6.1).

Katja Glinšek je zagovarjala doktorsko disertacijo z naslovom *Razvoj sesalskih celičnih linij za proizvodnjo podobnih bioloških zdravil z uporabo sintetičnih transkripcijskih dejavnikov* (mentor: prof. dr. Borut Štrukelj). Marjeta Eržen je zagovarjala doktorsko disertacijo z naslovom *Določanje kemijske sestave terpenov in kanabinoidov ter genetske raznolikosti odbranih fenotipov navadne konoplje (Cannabis sativa L.)* (somentor: prof. dr. Samo Kreft).

There are 111 bibliographical units from 19 employees of the Department in the COBISS database for 2023. Of these, 16 are original scientific papers and 7 are review papers.

Department of Pharmaceutical Biology members have participated in high-impact factor scientific papers. Assoc. Prof. Dr. Anja Pišlar and Prof. Dr. Janko Kos were co- authors of the original research article entitled *8-Hydroxyquinolylnitrones as multifunctional ligands for the therapy of neurodegenerative diseases* (Acta pharmaceutica sinica B, IF 14.5). Prof. Dr. Janko Kos was the lead author of an original research article titled *Different glycosylation profiles of cystatin F alter the cytotoxic potential of natural killer cells* (Cell Mol Life Sci, IF 9.2). Assist. Prof. Dr. Ana Mitrović and Prof. Dr. Janko Kos collaborated with researchers from abroad on an original research article titled *Cathepsin inhibitors nitroxoline and its derivatives inhibit SARS-CoV-2 infection* (Antiviral research, IF 7.6). Prof. Dr. Mojca Lunder was the lead author of an original research article titled *Ara h 2-specific IgE epitope-like peptides inhibit the binding of IgE to Ara h 2 and suppress IgE-dependent effector cell activation*. (Clinical & experimental allergy, IF = 6.1).

Katja Glinšek defended her doctoral dissertation titled *Development of mammalian cell lines for the production of biosimilars using synthetic transcription factors* (mentor: Prof. Dr. Borut Štrukelj). Marjeta Eržen defended her doctoral dissertation titled *Determination of chemical composition of terpenes and cannabinoids and genetic variability in selected hemp (Cannabis sativa L.) phenotypes* (co-mentor Prof. Dr. Samo Kreft).

Izr. prof. dr. Anja Pišlar je bila mentorica Klari Kovačič pri izdelavi magistrske naloge z naslovom *Vloga cisteinske peptidaze katepsina X pri polarizaciji celic mikroglije*, ki je prejela fakultetno Prešernovo nagrado.

Prof. dr. Borut Štrukelj je v letu 2023 pri mednarodni organizaciji UNIDO postal zdravstveni svetovalec za prenos farmacevtskih tehnologij in pospešitev lokalne proizvodnje zdravil in cepiv na Kubi, v Senegalu, Republiki Slonokoščena obala, Indoneziji in Združenih arabskih emiratih.

Asist. dr. Matjaž Ravnikar je prejel projekt s strani Univerze v Ljubljani z naslovom *Uporaba in razvoj odprtih učnih gradiv na UL v luči spodbujanja njihovega soustvarjanja s študenti* za namen učinkovitejšega izvajanja pedagoškega procesa.

Asist. Selena Horvat je s sliko raziskovalnega dela z naslovom *Dance of dendrites* prejela nagrado za 2. mesto na 2. fotonatečaju Fakultete za farmacijo.

Assoc. Prof. Dr. Anja Pišlar mentored Klara Kovačič in preparing her Master's thesis, *The role of cysteine peptidase cathepsin X in the polarization of microglia cells*, which received the Faculty's Prešeren Award.

Prof. Dr. Borut Štrukelj became a health expert for the transfer of pharmaceutical technologies and the acceleration of local production of medicines and vaccines in Cuba, Senegal, the Republic of Ivory Coast, Indonesia and the United Arab Emirates.at the international organization UNIDO.

Assist. Dr. Matjaž Ravnikar received a project from the University of Ljubljana titled *Use and development of open learning materials at UL in the light of encouraging their co-creation with students* for the purpose of more effective implementation of the pedagogical process.

Assist. Selena Horvat was selected to participate in the international ADVANCE summer school on the topic of cell and gene therapies, which took place in Ljubljana and to participate in the 22nd Young Researchers Forum (YSF) and FEBS Congress, which were held in Tours, France. Assist. Selena Horvat received the prize for 2nd place in the 2nd photo contest organized by the Faculty of Pharmacy with the image of the research work titled *Dance of Dendrites*.

KATEDRA ZA FARMACEVTSKO KEMIJO
DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

Predstojnik katedre
Head of the Department:

prof. dr. Stanislav Gobec

Člani katedre v letu 2023
Members of the Department in 2023

- prof. dr. Marko Anderluh, prof. dr. Janez Ilaš, prof. dr. Žiga Jakopin, prof. dr. Aleš Obreza, prof. dr. Lucija Peterlin Mašič, prof. dr. Marija Sollner Dolenc, prof. dr. Anamarija Zega, prof. dr. Zdenko Časar, prof. dr. Uroš Urleb, prof. Dr. Tihomir Tomašič
- izr. prof. dr. Janez Mravljak, izr. prof. dr. Matej Sova, izr. prof. dr. Nace Zidar, izr. prof. dr. Stane Pajk, izr. prof. dr. Izidor Sosič
- doc. dr. Rok Frlan, doc. dr. Martina Hrast, doc. dr. Damijan Knez, doc. dr. Andrej Emanuel Cotman, doc. dr. Urban Košak
- asist. - raz. dr. Nina Franko, asist. - raz. dr. Alen Krajnc, asist. dr. Mateja Toma, asist. - raz. Peter Peršolja, asist. dr. Aleša Bricelj, asist. Jaka Dernovšek, asist. Martina Durcik, asist. dr. Samo Guzelj, Sandra Cetin, asist. dr. Ana Dolšak, asist. Katarina Grabrijan, Špela Gubič, asist. dr. Maša Kenda, asist. Veronika Weiss, asist. Maša Sterle, asist. dr. Anže Meden, asist. dr. Matic Proj, asist. Peter Mastnak-Sokolov, asist. Nika Strašek Benedik, asist. - raz. dr. Živa Zajec, asist. dr. Doroteja Novak, asist. Svit Ferjančič Benetik, asist. Anja Kodila, Ilaria Brau, Ivan Džajić, Emiliano Paradiso, Marzia Fois, asist. - raz. Špela Janež, asist. - raz. Ana Jug asist. - raz. Vid Kavaš, asist. - raz. Nina Gradišek, asist. Martina Piga, asist. Edvin Purić, asist. - raz. dr. Daniela Secci, Tjaša Slokan, Jernej Cigl, Benjamin Aaron Davis, Boštjan Adamlje, David Lukič
- Martina Tekavec, Damijana Zalar, Katja Perc

Fotografija: Katedra za farmacevtsko kemijo / Photo: Department of Pharmaceutical Chemistry

Na Katedri za farmacevtsko kemijo organiziramo in opravljamo pedagoško, znanstvenoraziskovalno in strokovno delo na širšem področju farmacevtske kemije, farmacevtske analize, toksikologije in zgodovine farmacije. Izvajamo raziskave načrtovanja, sinteze in biološkega vrednotenja spojin in razvoj novih molekulskih orodij za proučevanje interakcij z biološkimi makromolekulami. Glavni raziskovalni poudarki so na razvoju novih učinkovin za naslednje tarče: encimi, ki so udeleženi v sintezi bakterijske stene, encimi, udeleženi v biosintezi mikolnih kislin mikobakterij, encimi, ki so pomembni pri nastanku nevrodegenerativnih obolenj, natrijevi in kalijevi kanali, proteini toplotnega šoka (Hsp90), Tollu podobni receptorji (TLR), NOD- receptorji, lektini (galektini, Siglec, DC-SIGN in FimH), encimi, vpleteni v posttranslacijske modifikacije (OGT: N-acetilglukozaminil transferaza), imunoproteasomi in himerni razgrajevalci. Razvijamo nove sintezne poti, nove separacijske in analizne metode za karakterizacijo spojin, nove metode za biološko karakterizacijo sintetiziranih spojin, nove antioksidante, nove radiofarmake, nove stabilne nitroksidne ter fluorescenčne označevalce.

Glavnina raziskav na katedri poteka v okviru programske skupine Farmacevtska kemija: načrtovanje, sinteza in vrednotenje učinkovin (2022–2027), del v okviru programske skupine Napredna imunološka zdravila in celični pristopi v farmaciji (2022–2027), del pa v povezavi z ostalimi članicami UL, Kemijskim inštitutom in Institutom Jožef Stefan ter v okviru domačih in mednarodnih projektov. Pomemben del raziskovalne dejavnosti poteka v sodelovanju s farmacevtsko industrijo, predvsem Novartisom, Lekom in Krko.

At the Department of Pharmaceutical Chemistry, we engage in a wide range of educational, research, and professional activities within the domains of pharmaceutical chemistry, pharmaceutical analysis, toxicology, and the history of pharmacy. Our research endeavors are dedicated to the design, synthesis, and biological evaluation of novel compounds, alongside developing innovative molecular tools to probe interactions with biological macromolecules. Our focus areas include developing agents targeting enzymes critical to bacterial wall synthesis and key enzymes associated with neurodegenerative diseases. Additionally, we explore targets such as sodium and potassium channels, heat shock proteins (Hsp90), Toll-like receptors (TLRs), NOD receptors, lectins including galectins, Siglec, DC-SIGN, and FimH, enzymes involved in posttranslational modifications (OGT: N-acetylglucosaminyltransferase) and immunoproteasome. We are also at the forefront of developing new synthetic pathways, innovative separation and analytical techniques for compound characterization, advanced methods for biological assessment of synthesized compounds, new antioxidants, radiopharmaceuticals, proteolysis targeting chimeras, and stable nitroxide and fluorescent markers.

Our research primarily unfolds within two program groups: 'Pharmaceutical Chemistry: Design, Synthesis, and Evaluation of Active Compounds' (2022-2027) and 'Advanced Immunological Drugs and Cell-Based Approaches in Pharmacy' (2022-2027). Collaboration extends to the University of Ljubljana's faculties, the Institute of Chemistry, and the Jožef Stefan Institute, engaging in national and international projects. A crucial part of our work involves partnerships with pharmaceutical companies, particularly with Novartis, Lek and Krka, enhancing our research impact and practical applications in the pharmaceutical industry.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

V letu 2023 smo objavili 66 izvirnih in preglednih člankov, med katerimi jih je več kot 50 % v revijah prvega kvartila, nekateri v skupini zgornjih 5 % revij. Posebno izstopa objava v prestižni reviji *Acta Pharmaceutica Sinica B* o 8-hidroksikinolilnitronih kot večtarčnih spojinah za terapijo nevrodegenerativnih obolenj. Izstopajo še tri objave v *Journal of Medicinal Chemistry* o zaviralcih DNA giraze in heterobifunkcionalnih razgrajevalcih ter objava v *ACS Catalysis* o stereoselektivni sintezi CF_3-substituiranih diolov. Med preglednimi članki v letu 2023 izstopa objava v *Pharmacology & Therapeutics* o zaviralcih Hsp90. Na področju toksikologije omenjamo tri odlične objave v reviji *Chemosphere* o učinkih bisfenolov na kardiovaskularni sistem, o endokrinih motilcih v odpadnih vodah in o razvoju *in silico* klasifikacijskih modelov. V letu 2023 smo vložili tudi štiri mednarodne patentne prijave.

Člani katedre so pridobili pet novih projektov, financiranih s strani ARIS. Projekti so s področij asimetrične sinteze fluor-vsebujočih bioizosterov karbonila, razvoja inhibitorjev transpeptidaz, razvoja selektivnih razgrajevalcev CDK1, dvojnih zaviralcev butirilholin esteraze in p38α MAP kinaze ter razvoja zaviralcev bakterijskih biofilmov. Uspešni smo bili tudi na mednarodnih razpisih, kjer smo pridobili CELSA projekta na temo razvoja razgrajevalcev CDK1 in HDAC-jev ter na temo razvoja alosteričnih zaviralcev receptorja IP3. Med mednarodne projekte sodita še BREAKTHROUGH in GlyCanDrug. Prvi se bo osredotočal na razvoj strategij za povečanje občutljivosti bakterij na že obstoječe antibiotike, drugi pa na razvoj novih učinkovin, ki ciljajo glikanske motive, pomembne pri razvoju rakavih obolenj. Na katedri smo v letu 2023 organizirali tudi mini-simpozij Crossing the Boundaries of Medicinal Chemistry.

Med odmevnejšimi nagradami izstopata Zoisovo priznanje prof. dr. Luciji Peterlin Mašič in Puhova nagrada, podeljena prof. dr. Zdenku Časarju. Dr. Martina Durcik in dr. Samo Guzelj sta prejela veliko Krkino nagrado za raziskovalno nalogo.

In 2023, we published 66 original and review scientific articles, over 50% in top-quartile journals and some in the top 5%. Notable publications include an article in *Acta Pharmaceutica Sinica B* on 8-hydroxyquinolinenitrones for neurodegenerative disease therapy, three papers in the *Journal of Medicinal Chemistry* on DNA gyrase inhibitors and heterobifunctional degraders, and one in *ACS Catalysis* on stereoselective synthesis of CF_3-substituted diols. A publication in *Pharmacology & Therapeutics* on Hsp90 inhibitors was prominent among the review articles. In toxicology, we highlight three publications in *Chemosphere* on bisphenols' effects on the cardiovascular system, endocrine disruptors in wastewater, and *in silico* classification models. We also filed four international patent applications in 2023.

Department members have secured five new projects funded by ARIS. These projects focus on the asymmetric synthesis of fluorine-containing carbonyl bioisosteres, the development of transpeptidase inhibitors, selective CDK1 degraders, dual inhibitors of butyrylcholinesterase and p38α MAP kinase, and the development of inhibitors of bacterial biofilms. We were also successful in international calls, securing CELSA developing CDK1 and HDACs degraders and developing allosteric inhibitors of the IP3 receptor. Some of the global projects are projects BREAKTHROUGH and GlyCanDrug. The first is focused on developing strategies to enhance bacterial sensitivity to existing antibiotics and the latter will focus on developing new agents targeting glycan motifs important in cancer development. The department organized a mini-symposium, "Crossing the Boundaries of Medicinal Chemistry," where domestic and foreign scientists presented their research.

Several department members were honored with awards: Prof. Dr. Lucija Peterlin Mašič received the Zois Award, Prof. Dr. Zdenko Časar won the Puh Award, and Dr. Martina Durcik along with Dr. Samo Guzelj were recipients of the Krka Award for their research contributions.

KATEDRA ZA FARMACEVTSKO TEHNOLOGIJO
DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY

Predstojnica katedre
Head of the Department:

prof. dr. Mirjana Gašperlin

Člani katedre v letu 2023
Members of the Department in 2023

- prof. dr. Rok Dreu, prof. dr. Odon Planinšek, prof. dr. Franc Vrečer
- izr. prof. dr. Pegi Ahlin Grabnar, izr. prof. dr. Ilija German Ilić, izr. prof. dr. Petra Kocbek, izr. prof. dr. Alenka Zvonar Pobirk
- doc. dr. Mirjam Gosenca Matjaž, doc. dr. Biljana Janković, doc. dr. Špela Zupančič, doc. dr. Mateja Starbek Zorko, doc. dr. Katarina Bolko Seljak, doc. dr. Jurij Trontelj
- asist. dr. Zoran Lavrič, asist. dr. Barbara Sterle Zorec, asist. Ana Baumgartner, asist. dr. Maja Bjelošević Žiberna, asist. dr. Črt Dragar, asist. Blaž Grilc, asist. Nina Katarina Grilc, asist. dr. Tanja Potrč, asist. Monika Prašnikar, asist. Mercedes Vitek, asist. Anže Zidar, Klemen Kirbus Valerija Garb, Tatjana Hrovatič, Mojca Keržan

Fotografija: Katedra za farmacevtsko tehnologijo / Photo: Department of Pharmaceutical Technology

Na Katedri za farmacevtsko tehnologijo organiziramo in izvajamo pedagoški proces na vseh stopnjah študija ter koordiniramo tri študijske programe. Pedagoško, znanstvenoraziskovalno in strokovno pokrivamo področja farmacevtske tehnologije, nanotehnologije, industrijske farmacije, farmacevtskega inženirstva, fizikalne farmacije, farmacevtsko tehnološke analitike in kozmetologije.

Naš skupni raziskovalni cilj je razvoj in vrednotenje pacientom prijaznih zdravil. Usmerjeni smo v izdelavo klasičnih farmacevtskih oblik in naprednih dostavnih sistemov. Uporabljamo moderne tehnologije, ki omogočajo izdelavo zdravil z vgrajeno kakovostjo. Uspešno sledimo sodobnim trendom tako z razvojem inovativnih nanodostavnih sistemov, (nano)teranostikov in formulacij za biofarmacevtike kot z raziskavami že uveljavljenih farmacevtskih oblik s prirejenim sproščanjem, tekoče kristalnih struktur, orodisperzibilnih in večenotnih farmacevtskih oblik ter s proučevanjem različnih pristopov za izboljšanje topnosti zdravilnih učinkovin. Člani katedre smo strokovnjaki na področju predformulacij, formulacij in njihovega vrednotenja z najsodobnejšimi tehnološko analiznimi tehnikami, vključno z numeričnimi modeli za napovedovanje procesov in formulacij. Svojo strokovnost ves čas nadgrajujemo in tako uspešno sodelujemo tudi pri reševanju perečih izzivov farmacevtske industrije.

Na naše dolgoletno sodelovanje s farmacevtsko industrijo smo zelo ponosni, prav tako na močno vpetost v aktivnosti stroke v domačem in mednarodnem okolju. Sodelujemo pri organizaciji simpozijev, smo člani številnih komisij, uredniških odborov in mednarodnih mrež ter cenjeni recenzenti različnih znanstvenih publikacij.

The Department of Pharmaceutical Technology organises and performs the study activities at all three study levels and coordinates three study programmes. Our pedagogical, scientific, research and professional activities cover the fields of pharmaceutical technology, nanotechnology, industrial pharmacy, pharmaceutical engineering, physical pharmacy, pharmaceutical technological analytics and cosmetology.

Our common research goal is to develop and evaluate patient-friendly medicines. We are focused on the production of conventional dosage forms and advanced delivery systems. We use modern technologies to produce medicines with integrated quality (QbD). We successfully follow contemporary trends in the development of innovative nanodelivery systems, (nano)theranostics and formulations for biopharmaceuticals, as well as conventional formulations of liquid-crystalline, controlled release and solubility enhancing systems, orally disintegrating and multiunit dosage forms. as well as conventional formulations of liquid-crystalline, controlled release and solubility enhancing systems, orally disintegrating and multiunit dosage forms. Members of the Department are experts in preformulation, formulation design and in formulation characterization with state-of-the-art technological analytical techniques, including reliable numerical models for the simulation of processes and formulations. We provide comprehensive and expertise-based solutions for the challenges encountered by our industrial partners.

We are very proud of our long-standing collaboration with the pharmaceutical industry and our strong involvement in professional activities, both domestic and international. We are involved in the organisation of symposia, are members of numerous committees, editorial boards and international networks, and are valued reviewers of various scientific publications.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Znanstvenoraziskovalno odličnost katedre odražajo kakovostne objave, med katerimi izstopa objava o nanovlaknih s probiotiki v reviji *Journal of controlled release* (IF 10,8; A''). Raziskava, v kateri so sodelovali člani katedre N. K. Grilc, A. Zidar, P. Kocbek, M. Gašperlin, Š. Zupančič in J. Kristl, predstavlja celosten interdisciplinarni pristop k razvoju izdelkov s probiotiki, saj z biološkim vrednotenjem *in vitro* odgovarja na vprašanja učinkovitosti in varnosti dostavnega sistema, hkrati pa naslavlja potrebo po tehnoloških rešitvah v razvoju pacientu prijaznega izdelka.

Dekanovo nagrado mlajšim raziskovalcem za leto 2023 sta prejeli dve članici katedre: N. K. Grilc za prej omenjeno objavo o nanovlaknih s probiotiki in dr. T. Potrč za objavo v reviji *Nanoscale* (IF 6,7) o magnetnih nanodelcih za ciljanje rakavih celic.

Projektna skupina, v kateri so sodelovali člani katedre (Š. Zupančič, J. Kristl, P. Kocbek, N. K. Grilc, A. Zidar), je prejela Rektorjevo nagrado za naj inovacijo UL za leto 2023 za 3. mesto z izumom Nanovlakna s probiotičnimi sevi za zdravljenje parodontalne bolezni.

The department's commitment to excellence in scientific research is reflected in the quality of its publications, among which the publication on nanofibres with probiotics in the Journal of Controlled Release (IF 10.8; A'') stands out. The research, in which the members of the department N. K. Grilc, A. Zidar, P. Kocbek, M. Gašperlin, Š. Zupančič and J. Kristl participated, represents a comprehensive interdisciplinary approach to the development of probiotic products, answering the questions of efficacy and safety of the delivery system through its *in vitro* bioevaluation, while addressing the need for technological solutions in the development of a patient-friendly product.

The Dean's Award for 2023 was awarded to two department members, N. K. Grilc for the aforementioned publication on nanofibres with probiotics and Dr. T. Potrč for a publication in the journal Nanoscale (IF 6.7) on magnetic nanoparticles for targeting cancer cells.

The project group where the department members participated (Š. Zupančič, J. Kristl, P. Kocbek, N. K. Grilc, A. Zidar) was awarded the Rector's Award for the best innovation of the UL for 2023 for the third place with the invention 'Nanofibres with probiotic strains for the treatment of periodontal disease'.

Prof. dr. F. Vrečer je prejel priznanje za življenjsko delo za več kot 35-letno udejstvovanje na in za UL FFA, krepitev vezi med akademsko sfero in industrijo ter utrjevanje ugleda UL FFA v farmacevtski industriji. Izr. prof. dr. A. Zvonar Pobirk je postala kongresna ambasadorka za leto 2023 za uspešno organizacijo 9. mednarodne konference BBBB. Skupina raziskovalcev (B. Grilc, M. Bjelošević Žiberna, M. Gašperlin) pri projektu Laktika je prejela bronasto priznanje za inventivno rešitev na področju krožnega gospodarstva za leto 2022.

Uspešno smo zaključili Evropski projekt Horizon 2020 ORBIS (Open Research Biopharmaceutical Internship Support), katerega poudarek je bil na izmenjavi znanja in izkušenj med akademskim okoljem in industrijo. Naši zaposleni so se tako v preteklem letu 10 mesecev izpopolnjevali v tujini (ZDA, Irska), na katedri pa smo na daljših obiskih gostili raziskovalce iz Ukrajine in Poljske.

Prof. Dr. F. Vrečer was honored with the Lifetime Achievement Award in recognition of his more than 35 years of involvement at and for UL FFA, strengthening the vital connections between academia and industry, and consolidating UL FFA's reputation in the pharmaceutical industry. Assoc. Prof. A. Zvonar Pobirk was appointed Congress Ambassador for 2023 for the successful organization of the 9th BBBB International Conference on Pharmaceutical Sciences. A group of researchers (B. Grilc, M. Bjelošević Žiberna, M. Gašperlin) in the Laktika project received the Bronze Award for the inventive solution in the field of circular economy for 2022.

We successfully completed the European Horizon 2020 project ORBIS (Open Research Biopharmaceutical Internship Support), which focused exchanging knowledge and experience between academia and industry. In the past year, our staff members have spent 10 months training abroad (USA, Ireland), and we have hosted researchers from Ukraine and Poland for extended visits to the department.

KATEDRA ZA BIOFARMACIJO IN FARMAKOKINETIKO
DEPARTMENT OF BIOPHARMACEUTICS AND PHARMACOKINETICS

Predstojnik katedre
Head of the Department:

izr. prof. dr. Tomaž Vovk

Člani katedre v letu 2023
Members of the Department in 2023

- prof. dr. Marija Bogataj, prof. dr. Iztok Grabnar, prof. dr. Albin Kristl, prof. dr. Robert Roškar
- izr. prof. dr. Mojca Kerec Kos, izr. prof. dr. Simon Žakelj, izr. prof. dr. Lovro Žiberna
- doc. dr. Igor Locatelli, doc. dr. Žane Temova Rakuša, doc. dr. Tina Trdan Lušin, doc. dr. Jurij Trontelj
- asist. dr. Andrej Grobin, asist. Nika Kržišnik, asist. Timeja Planinšek Parfant, asist. Nina Ravbar, asist. Armando Tratenšek, Tjaša Felicijan
- Margareta Cof, Mihaela Kolarev, Nevenka Lilik

Fotografija: Katedra za biofarmacijo in farmakokinetiko / Photo: Department of Biopharmaceutics and Pharmacokinetics

Na Katedri za biofarmacijo in farmakokinetiko smo aktivni na pedagoškem, znanstvenoraziskovalnem in strokovnem področju. Naše aktivnosti so usmerjene v procese, ki potekajo v človeškem telesu po aplikaciji zdravila in zajemajo sproščanje zdravilne učinkovine iz farmacevtske oblike, njeno absorpcijo, porazdelitev, metabolizem in izločanje (sistem LADME).

V okviru predformulacijskih raziskav proučujemo fizikalno-kemijske lastnosti zdravilnih učinkovin, kot so topnost, hitrost raztapljanja, stabilnost, ionizacija, permeabilnost ter njihove metabolične pretvorbe. Na podlagi teh parametrov in profilov sproščanja *in vitro* napovedujemo lastnosti farmacevtske oblike *in vivo*. Osnovo za proučevanje lastnosti zdravilnih učinkovin in farmacevtskih oblik predstavljajo različne kromatografske metode z UV/VIS, fluorescenčno in MS/MS detekcijo, ki jih na katedri razvijamo v smeri aplikativnosti in ustrezno vrednotimo. Člani katedre uspešno sodelujemo s farmacevtsko industrijo, med drugim tudi pri vrednotenju aktualnih atributov kakovosti in varnosti končnih farmacevtskih oblik, ki predstavljajo svojevrsten izziv farmacevtski industriji.

Na podlagi znanja, pridobljenega v predformulacijskih raziskavah, razvijamo tudi farmakokinetično-farmakodinamične modele, ki omogočajo napovedovanje kliničnih učinkov zdravil in iskanje vzrokov za njihovo variabilnost. Razviti modeli omogočajo uvedbo individualnega odmerjanja zdravil glede na posameznikove genotipske in fenotipske značilnosti.

Raziskave, ki so podprte z vsemi najsodobnejšimi tehnologijami, pripomorejo k učinkovitejšemu in varnejšemu zdravljenju z zdravili. Ker nas zanima tudi nadaljnja usoda zdravilnih učinkovin in njihovih metabolitov, raziskujemo njihovo pojavnost v okoljskih vzorcih odpadnih, površinskih in pitnih vod s pomočjo zelo občutljivih in selektivnih metod LC-MS/MS.

At the Department of Biopharmaceutics and Pharmacokinetics, we are active in educational, scientific research-oriented, and professional fields. Our activities are thus focused on the processes that take place in the human body after the application of the drug and include the release of the active ingredient from the pharmaceutical form, its absorption, distribution, metabolism, and excretion (LADME system).

As part of pre-formulation research, we evaluate the physico-chemical properties of active ingredients, such as solubility, dissolution rate, stability, ionization, permeability, and their metabolic transformations. We further utilize these data, along with the *in vitro* release profiles to predict the *in vivo* properties of the pharmaceutical form. For such purpose, we develop and evaluate various chromatographic methods with UV/VIS, fluorescence, and MS-MS detection, which are the basis for studying the properties of the active ingredients and pharmaceutical forms. In that sense, members of the department successfully cooperate with the pharmaceutical industry in various fields, also including the evaluation of quality and safety attributes of final pharmaceutical forms, which represent a unique industrial challenge.

Such knowledge allows us to develop pharmacokinetic-pharmacodynamic models, which can be used to predict the clinical effects of drugs and explain causes of the underlying variability in the response to treatment. The developed models enable the introduction of individual drug dosing according to the genotypic and phenotypic characteristics of the individual.

Research, supported by the latest technologies, contributes to more effective and safer drug treatment. Since we are also interested in the further fate of active pharmaceutical ingredients and their metabolites, we investigate their occurrence in environmental samples of waste, surface, and drinking water using highly sensitive and selective LC-MS/MS methods.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Znanstvenoraziskovalno odličnost katedre v letu 2023 kažejo številne objave člankov, med drugim tudi v uglednih revijah z visokim dejavnikom vpliva. Izstopa predvsem članek: M. Durcik, A. Grobin, R. Roškar, J. Trontelj, L. Peterlin Mašič *Estrogenic potency of endocrine disrupting chemicals and their mixtures detected in environmental waters and wastewaters. Chemosphere* (IF 8,8; A''). V članku smo skupaj s sodelavci s Katedre za farmacevtsko kemijo z *in vitro* testom pokazali, da onesnaževala tudi v koncentracijah, v katerih posamično ne povzročijo odziva modela, v kombinacijah lahko izzovejo njegovo merljivo aktivacijo. S tem smo kot prvi prispevali ključno ugotovitev, da je treba za celovito sliko obremenjenosti okolja spremljati pojavnost več spojin hkrati in to pri koncentracijah, ki so nižje od aktivnih.

Asist. dr. Andrej Grobin je v letu 2023 zagovarjal svoje doktorsko delo pod mentorstvom doc. dr. Jurija Trontlja in somentorstvom prof. dr. Roberta Roškarja z naslovom Vrednotenje obremenitve slovenskih vod s hormoni in izbranimi motilci endokrinega sistema, ki je bilo ocenjeno z oceno ‚opravil z odliko (*cum laude*)'.

The publication of various scientific articles, including publications in high-impact factor (IF) journals reflect the scientific excellence of the department in 2023. The following article stands out: Durcik M., Grobin A., Roškar R., Trontelj J., Peterlin Mašič L. *Estrogenic potency of endocrine disrupting chemicals and their mixtures detected in environmental waters and wastewaters*. Chemosphere (IF 8,8; A''). In this article, in collaboration with colleagues from the Department of Pharmaceutical Chemistry, we showed with an *in vitro* test that pollutants, even in concentrations at which they individually elicit no response in the model, can cause measurable activation in combinations. In doing so, we were the first to contribute to the key finding that for a comprehensive determination of environmental pollution, it is necessary to monitor the simultaneous occurrence of several compounds, even at concentrations lower than the active ones.

Assist. Dr. Andrej Grobin defended his doctoral thesis in 2023 under the supervision of Assist. Prof. Dr. Jurij Trontelj and co-supervision of Prof. Dr. Robert Roškar titled *Evaluation of Slovenian waters´ burden with hormones and selected endocrine disruptors*, which received the grade "passed with honors (cum laude)".

V letu 2023 smo uspešno izvedli projekt Zdravila in mladi, ki je bil financiran s strani UNESCO Slovenske nacionalne komisije. Glavni cilj projekta je bil ozaveščanje mladih o pravilni uporabi zdravil in o nevarnostih njihove neterapevtske uporabe, pri čemer so naši študenti opravili 39 izobraževalnih delavnic na 21 srednjih šolah po Sloveniji, v katere je bilo vključenih 1600 dijakov.

Prof. dr. Iztok Grabnar je prejel častni naziv Kongresni ambasador Slovenije za leto 2023, ki ga Kongresni urad Slovenije podeljuje posameznikom, ki so s svojo predanostjo, zavzetim delom, mednarodno vpetostjo in vztrajnostjo pomembno pripomogli, da je Slovenija gostila mednarodne znanstvene, strokovne in druge poslovne ter športne dogodke. Prof. dr. Grabnar je častni naziv prejel za organizacijo 30. konference PAGE.

In 2023, we completed the "Medicine and Youth" project, which received funding from the Slovenian National Commission for UNESCO. The project's main goal was to raise awareness among young people about the correct use of medicines and the dangers of their non-therapeutic use. Within this project, our students held 39 educational workshops attended by 1600 high school students from 21 secondary schools across Slovenia.

Prof. Dr. Iztok Grabnar received the honorary title "Congress Ambassador of Slovenia for 2023" awarded by the Congress Office of Slovenia to individuals who, with their dedication, hard work, international involvement and perseverance, have significantly contributed to Slovenia hosting international scientific, professional and other business events and sports events. Prof. Dr. Grabnar received the honorary title for organizing the 30th PAGE conference.

KATEDRA ZA SOCIALNO FARMACIJO
DEPARTMENT OF SOCIAL PHARMACY

Predstojnik katedre
Head of the Department:

prof. dr. Mitja Kos

Člani katedre v letu 2023
Members of the Department in 2023

- doc. dr. Nejc Horvat, doc. dr. Lea Knez, doc. dr. Igor Locatelli
- asist. dr. Ana Kodrič, asist. dr. Urška Nabergoj Makovec, asist. dr. Nanča Čebron Lipovec, asist. dr. Janja Jazbar, asist. dr. Andreja Čufar, asist. Nuša Japelj, Rogelj Meljo, Marija Babnik Gatej

Fotografija: Katedra za socialno farmacijo / Photo: Department of Social Pharmacy

Na Katedri za socialno farmacijo proučujemo vpliv zdravil na sodobnega človeka in družbo v mednarodnem in domačem okolju. Osredotočamo se na zdravila po njihovem prihodu na trg oziroma v roke bolnika. Pri svojem delu prepletamo naravoslovne in družboslovne metode raziskovanja. V okviru farmakoepidemiologije spremljamo varnost in učinkovitost zdravil na ravni populacije, s farmakoekonomiko pa osvetlimo stroškovne vidike uporabe zdravil v relaciji do njihovih koristi. Zanima nas vrednotenje storitev farmacevta v lekarni, pri čemer posvečamo posebno pozornost raziskovanju z vidika pacienta. S pomočjo rezultatov raziskav prispevamo h gradnji farmacevtskih storitev. Raziskujemo tudi delovanje zdravstvenega sistema in vlogo pacienta v njem. V tem okviru gradimo in proučujemo storitve, ki jih prinaša sodoben način pristopa k pacientu v obliki eZdravja in mZdravja. Raziskujemo tudi značilnosti domače in mednarodne regulative, ki ureja področje zdravil in farmacevtske stroke. Pri tem prispevamo k nastajanju nove zakonodaje in uvajanju najvišjih standardov v vsakodnevno prakso.

The Department of Social Pharmacy studies the effects of medicines on a modern individual and society in the international and domestic settings. We mainly explore medicines after their arrival on the market - in other words, into the hands of the patients. We combine natural and social sciences research methods. With pharmacoepidemiology approaches, we monitor the medicines' safety and effectiveness at the population level, while in pharmacoeconomics, we address the cost aspect of the medicines' use in relation to their benefits. We are interested in the evaluation of pharmacy services with special attention to the patient's perspective. We also explore the operation of the healthcare system and the patient's role in it. In this context, we build and study the services provided by modern approaches to the patient in the form of eHealth and mHealth. We also explore the properties of domestic and foreign regulations that cover the area of medicines and the pharmaceutical profession. By doing so, we actively contribute to creating new legislation and implementing the highest standards into everyday practice.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Klinična farmacevtka, učiteljica, zaposlena na UL FFA

Na Katedri za socialno farmacijo razvijamo deljene zaposlitve kolegov, ki sočasno delujejo v klinični praksi in pedagoško-raziskovalno na UL FFA. Sodelovanje smo pred leti najprej oblikovali z asistentko dr. Leo Knez, ki smo jo sedaj prvič zaposlili na mesto učitelja, skladno z njenim docentskim nazivom ter delovanjem na Kliniki Golnik. Tovrstno sodelovanje omogoča kakovostnejše izobraževanje študentov ter odlično osnovo za znanstveno-raziskovalno sodelovanje.

Clinical pharmacist, a teacher employed at UL FFA

At the Department of Social Pharmacy, we are creating joint positions for colleagues who work concurrently in clinical practice and teaching and research at UL FFA. Several years ago, we initiated a collaboration with Assist. Dr. Lea Knez, whom we have recently appointed as a teacher, aligning with her associate professorship and her role at the Golnik Clinic. This collaborative model enhances students' education quality and establishes an excellent foundation for scientific research collaboration.

EU PE&PV – Raziskave učinkovitosti in varnosti zdravil

V okviru konzorcija *The European Pharmacoepidemiology and Pharmacovigilance (EU PE&PV) Research Network* smo sodelovali v dveh mednarodnih projektih Evropske agencije za zdravila (EMA). Več o konzorciju: https://www.uu.nl/eupepv. V projektu *RiskAwareTTS* smo ugotavljali vpliv regulatornih priporočil EMA glede tveganja za sindrom tromboze s trombocitopenijo ob cepljenju s SARS-CoV-2 adenovirusnimi vektorskimi cepivi na pogled na vektorska cepiva za preprečevanje COVID-19, tako s strani laične javnosti kot zdravstvenih delavcev. V projektu *EMA IMPACT* smo identificirali ključne deležnike, procese, vloge in odgovornosti pri oblikovanju in posodabljanju kliničnih smernic v šestih evropskih državah, analizirali integracijo specifičnih ukrepov za zmanjšanje tveganja (*Risk Minimisation Measures - RMM*) v klinične smernice ter podali priporočila za EMA-o in druge ključne deležnike glede vloge kliničnih smernic pri implementaciji ukrepov za zmanjšanje tveganja.

EU PE&PV – Real-world effectiveness and safety research on medicines

As part of The European Pharmacoepidemiology and Pharmacovigilance (EU PE&PV) Research Network consortium, we participated in two European Medicines Agency (EMA) international projects. More about the consortium: https://www.uu.nl/eupepv. In the *RiskAwareTTS* project, we investigated the impact of EMA regulatory recommendations regarding the risk of thrombosis with thrombocytopenia syndrome following vaccination with SARS-CoV-2 adenoviral vector vaccines on perceptions of vector vaccines for COVID-19 prevention, both among the general public and healthcare workers. In the *EMA IMPACT* project, we identified key stakeholders, processes, roles, and responsibilities in developing and updating clinical guidelines in six European countries. We analyzed the integration of specific Risk Minimization Measures (RMM) into clinical guidelines and provided recommendations for EMA and other key stakeholders regarding the role of clinical guidelines in implementing risk reduction measures.

Erasmus+ DOMINOS na temo OSCE

Digital OSCE for Medical specialities – INnOvation for Students (DOMINOS) je projekt Erasmus+ partnerskega sodelovanja v visokem šolstvu. Skupaj z učitelji šestih evropskih univerz s področja medicine, zobozdravstva in farmacije razvijamo nova inovativna orodja za usposabljanje študentov na področju zdravstvenega varstva. V okviru projekta smo razvili tudi več digitalnih primerov postaj za t. i. objektivno strukturirano klinično vrednotenje OSCE, skladno s konceptom učenja z igrifikacijo.

Erasmus+ DOMINOS on the topic of OSCE

Digital OSCE for Medical Specialties - INnOvation for Students (DOMINOS) is an Erasmus+ higher education partnership project. Together with teachers from six European universities in medicine, dentistry, and pharmacy, we are developing new innovative tools for training students in healthcare. As part of the project, we have also created several digital station cases for the Objective Structured Clinical Examination (OSCE), in line with the gamification learning concept.

Projekt ULTRA – Komuniciranje znanosti

V sodelovanju s štirimi drugimi članicami Univerze v Ljubljani (FDV, FKKT, NTF in VF) razvijamo transdisciplinarno vseživljenjsko izobraževanje za krepitev komunikacijskih kompetenc v digitalnem okolju, s poudarkom na komuniciranju znanosti za trajnostni razvoj in kriznem komuniciranju.

Project ULTRA - Science Communication

In collaboration with four other faculties of the University of Ljubljana (FDV, FKKT, NTF, and VF), we are developing interdisciplinary lifelong learning programs to enhance communication competencies in the digital environment. The focus is on science communication for sustainable development and crisis communication.

TAJNIŠTVO UL FFA
FACULTY SECRETARIAT UNIT

Tajnica fakultete
Faculty Secretary

Katja Višnjevec Vahčič, univ. dipl. prav.

Strokovni sodelavci
Professional collaborators

Blaž Bajec, Tanja Gregorič, Roberta Ilc, Urban Jernejčič, Nataša Juvan, Tanja Kadunc, Marjetka Kirin, Barbara Kosmač Pajntar, Saša Kulašić, Tomaž Kuštrin, Jelka Lebar, Nataša Marčec, Lidija Mataija, Matic Mrva, Sebina Mujagić, Marko Ocvirk, Teja Pečnik, Milena Petek, Marta Pogačar, Milenka Sojer, Zlatko Stojanovski, Darko Šaša, Polonca Škulj, Špela Šmalc, Darja Šviga, Mateja Terčič, Boris Terobšič, Borut Toth, pred. Dušan Videmšek, Bernarda Žagar

Fotografija: Organizacijska enota Tajništvo / Photo: Faculty Secretariat unit

Tajništvo UL FFA je samostojna organizacijska enota, ki skrbi za administrativno in upravno delovanje fakultete ter nudi podporo pri izvajanju pedagoške in znanstveno-raziskovalne dejavnosti. Poleg tega delavci v službi za tehnično vzdrževanje in recepcijo zagotavljajo varno, čisto in zdravo delovno okolje.

Tajništvo fakultete opravlja upravno administrativne in finančno gospodarske naloge v zvezi z izvajanjem tržne dejavnosti fakultete.

Del tajništva je tudi učitelj športne vzgoje, ki s svojim delom spodbuja študente – in nemalokrat tudi zaposlene – k zdravemu življenjskemu slogu.

Tajništvo sestavljajo podenote: tajništvo vodstva, kadrovska služba, raziskovalni referat, študentski referat, finančno-računovodska služba, služba za informatiko, tehnično-vzdrževalna služba, knjižnica.

The faculty secretariat is an independent organizational unit that provides quality administrative support for professional and scientific research activities. Employees in the technical maintenance and reception service, on the other hand, ensure a safe, clean and healthy working environment.

The secretariat unit also performs administrative and financial-economic tasks related to the faculty's marketing activities.

The physical education teacher is also a member of this organizational unit who encourages students – and often employees – to follow a healthy lifestyle.

The secretariat has the following subunits: governance secretariat, human personnel department, research department, student department, financial accounting services, IT department, technical maintenance services, library.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Na področju strokovno-administrativnega dela opažamo povečanje delovnih obremenitev zaradi različnih zunanjih in notranjih dejavnikov. Prav tako pa je leto 2023 poleg izzivov zaznamoval tudi prihod novih zaposlenih. Poslovno informacijski sistem SAP, kot že v prejšnjih letih, od zaposlenih še vedno zahteva veliko dodatnega dela, predvsem ročnega dela, kontrol in opozarjanja na napake. Kljub vsemu se je fakulteta trudila, da zaposlenim v strokovnih službah zagotovi prijetno delovno okolje, stalno strokovno izobraževanje in aktivnosti v okviru zdravega življenjskega sloga.

In professional and administrative work, we observed an increase in workload due to various external and internal factors. Additionally, 2023 was marked not only by challenges but also by the arrival of new staff members. As in previous years, the SAP business information system continues to require a substantial amount of additional work from employees, primarily involving manual tasks, quality checks, and error monitoring. Despite these challenges, the Facultyattempted to provide a pleasant working environment for staff through professional services, ongoing professional training, and activities that promote a healthy lifestyle.

INŠTITUT ZA FARMACIJO
INSTITUTE OF PHARMACY

Predstojnik/-ica inštituta
Head of the Institute

prof. dr. Rok Dreu/ prof. dr. Irena Mlinarič-Raščan

Člani inštituta v letu 2023
Members of the Institute in 2023

asist. dr. Damjan Avsec, asist. Tilen Burnik, Maja Frelih, asist. Luka Hiti, asist. Tilen Huzjak, znan. sod. dr. Maša Kandušer, asist. Lina Keršmanc, asist. Jaka Kranjc, asist. Klemen Kreft, asist. Blaž Lebar, asist. Matija Pečnik, asist. dr. Dunja Urbančič, mag. Maja Zalokar

Fotografija: Inštitut za farmacijo / Photo: Institute of Pharmacy

V skladu z osnovnim poslanstvom Inštituta za farmacijo (IF) so aktivnosti usmerjene k spremljanju trendov raziskav na širšem farmacevtskem in biomedicinskem področju ter podajanju pobud glede raziskovalnih usmeritev UL FFA. V sodelovanju z ostalimi katedrami izvajamo znanstvenoraziskovalne, razvojno-aplikativne in strokovne projekte ter mednarodne aktivnosti na področju izobraževanja. Povezujemo posamezne infrastrukturne in kadrovske potenciale in skupaj z našim multidisciplinarnim timom sodelavcev omogočamo podporo različnim raziskovalnim in gospodarskim subjektom. V okviru IF delujeta dva infrastrukturna centra (IC), in sicer Infrastrukturni center za analizo zdravil in Infrastrukturni center za translacijske raziskave EATRIS, ki sta tudi del Mreže raziskovalnih infrastrukturnih centrov Univerze v Ljubljani (MRIC UL). IC EATRIS je član mednarodnega konzorcija EATRIS in po sklepu Ministrstva za vzgojo, izobraževanje in šport tudi nacionalno vozlišče povezave EATRIS.SI, ki deluje kot konzorcij partnerjev. Poleg UL FFA so partnerske organizacije še Medicinska Fakulteta Univerze v Mariboru (MF UM), Kemijski inštitut (KI) ter Klinika za nuklearno medicino KC Ljubljana (KNM KC). Poleg dolgoletne vključitve v platforme male molekule (UL FFA), biomarkerji (MF UM) in cepiva (UL FFA) smo v letu 2023 zaprosili še za članstvo v platformi slikovne tehnologije ((KNM KC) in platformi zdravila za napredno zdravljenje (UL FFA).

V letu 2023 smo skladno z zastavljenimi cilji in usmeritvami Ministrstva za visoko šolstvo, znanost in inovacije ter skladno s krovno organizacijo EATRIS ERIC med drugim pripravili strateški načrt delovanja nacionalnega vozlišča in za obdobje 2024–2030.

Sodelujemo z industrijo in zainteresiranimi subjekti s področij farmacije in biomedicine ter omogočamo dostop do infrastrukture. Med poglavitne aktivnosti inštituta spada dolgoletni projekt razvoja kadrov na področju razvoja novih farmacevtskih izdelkov.

By the mission of the Institute of Pharmacy (IF), the activities focused on the following research trends and providing recommendations for the research direction of UL FFA. In collaboration with the other departments, we carry out fundamental and applied research projects, and international training and courses. We integrate research infrastructure and know-how from the different departments and with a multidisciplinary team of associates, enable support for various entities. IF hosts two infrastructural centers (IC), The Infrastructural Centre for Drug Analysis and The Infrastructural Centre for Advanced Translation Researches EATRIS. Both centers are part of the Network of Research and Infrastructural Centres of the University of Ljubljana (MRIC UL). IC EATRIS is also a member of the international EATRIS research infrastructure.

Further, according to the Decision of the Ministry of Education and Sports, it serves as the national node of the EATRIS.SI network, which includes besides, UL FFA, the Faculty of Medicine of the University of Maribor (MF UM), the Institute of Chemistry (KI), and the Clinic for Nuclear Medicine of Clinical center Ljubljana (KNM KC). In addition to our many years of involvement in the platforms of small molecules (UL FFA), biomarkers (MF UM), and vaccines (UL FFA), in 2023, we also applied for membership in the platform of imaging technology (KNM KC) and the platform of drugs for advanced treatment (UL FFA).

In 2023 we prepared a strategic plan for operating the national node for the 2024-2030 period. The plan is in accordance with the goals and guidelines of the Ministry of Higher Education, Science and Innovation and in accordance with the umbrella organization EATRIS ERIC.

We cooperate with industry and interested entities in pharmacy and biomedicine and provide access to the infrastructure. The main activities include a long-term personnel development project in the field of new pharmaceutical product development.

KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

Izobraževalne aktivnosti

V okviru projekta EATRIS-Plus smo omogočili praktično izobraževanje treh raziskovalcev UL FFA na področju prenosa znanja s področja celičnih biobank in slikovne pretočne citometrije. Naše raziskovalce so gostili *Instituto de Investigación Biomédica de Bellvitge – IDIBELL*, Barcelona in *Institute of Health – LIH*, Luksemburg.

EATRIS Slovenija je partner na pilotnem projektu ULTRA, Mikrodokazila in vseživljenjsko učenje. Projekt ULTRA nadaljuje in nadgrajuje delo projekta Erasmus+ ADVANCE na področju izdelave in uporabe zdravil za napredno zdravljenje (ATMP). V letu 2023 smo v Ljubljani organizirali delavnico *Advance Summer School on Cell and Gene Therapies*.

V okviru projekta EATRIS-Plus smo so-organizirali poletno šolo personalizirane medicine v Lizboni na Portugalskem z naslovom *Multimodal Biomarkers & Diagnostics* in mini simpozij v Ljubljani z naslovom *Crossing the Boundaries of Medicinal Chemistry*.

Education and staff training

As part of the EATRIS-Plus project, we facilitated the practical training of three UL FFA researchers in cell biobanks and imaging flow cytometry. Our researchers were hosted by the "Instituto de Investigación Biomédica de Bellvitge" - IDIBELL, Barcelona and the "Institute of Health" - LIH in Luxemburg.

EATRIS Slovenia partners in the pilot project ULTRA, Micro-credentials and lifelong learning. The project continues and builds on the work of the Erasmus+ ADVANCE project in the areas of manufacturing and use of advanced therapy medicines (ATMP). In 2023, we organized the "Advance Summer School on Cell and Gene Therapies" workshop in Ljubljana.

Within the framework of the EATRIS-Plus project, we co-organized a summer school of personalized medicine in Lisbon, Portugal, titled "Multimodal Biomarkers & Diagnostics" and a mini-symposium in Ljubljana named "Crossing the Boundaries of Medicinal Chemistry."

Nagrade in ostali dosežki

Nacionalno vozlišče EATRIS Slovenija je prejelo najvišjo oceno za delo in nagrado s posebnim poudarkom na uspešni organizaciji izobraževanja ADVANCE in delavnice sodelovanja akademskih inštitucij z industrijo.

Uspešno smo zaključili sodelovanje v projektu H2020 EATRIS-Plus (2020–2023), ki je prispeval k boljšemu povezovanju med akademskimi inštitucijami in industrijo. Omogočil je tudi krepitev trajnostnega modela EATRIS in spodbujal aktivno vključevanje zastopnikov pacientov v infrastrukturno delovanje.

Nadalje sodelujemo v projektu HORIZON-RIA REMEDI-4ALL. V okviru projekta smo izvedli interaktivno delavnico z naslovom *In silico tools in drug developement*, ki je bila namenjena izobraževanju in seznanjanju z možnimi dostopi do podatkov, pridobljenih s sodobnimi tehnologijami na področju ponovne uporabe zdravil in sodelovali na rednih sestankih konzorcija.

Novi programi in projekti

Sodelovali smo pri pripravah triletnega projekta HORIZON-RIA SIMPATHIC (2024–2027), ki je namenjen razvoju naprednih strategij za zdravljenje redkih nevroloških, nevrometabolnih in nevromišičnih bolezni.

Sodelovali smo tudi pri pripravi projekta INFRADEV EATRIS CONNECT (2024–2027). Projekt je namenjen digitalni posodobitvi infrastrukture.

Awards and other achievements

The national hub EATRIS Slovenia was awarded recognition and the highest marking of achievements, with particular emphasis on the successful organization of ADVANCE training and the workshop on cooperation between academic institutions and industry.

We have completed our participation in the H2020 EATRIS-Plus project (2020-2023), contributing to a better connection between academic institutions and industry. It also enabled the strengthening of the EATRIS sustainability model and encouraged the active involvement of patient representatives in infrastructure operations.

We continue to participate in the HORIZON-RIA REMEDI-4ALL project. As part of the project, we held an interactive workshop called "In Silico Tools in Drug Development," which was intended for education and the familiarization with possible access to data obtained with modern technologies in the field of drug reuse and participated in regular meetings of the consortium.

New research programs and projects

We participated in preparing the three-year project HORISON-RIA SIMPATHIC, which aims to develop advanced strategies for the treatment of rare neurological, neuro-metabolic and neuro-muscular diseases.

We also participated in preparing the INFRADEV EATRIS CONNECT project, which aims to digitally modernize the infrastructure.

KARIERNI CENTRI UNIVERZE V LJUBLJANI – KARIERNI CENTER UL FFA

Karierni center UL FFA (KC UL FFA)

Karierni centri Univerze v Ljubljani so del Univerzitetne službe za študente in alumne (USŠA) in delujejo na vsaki članici Univerze v Ljubljani. Namen kariernih centrov je izvajanje dogodkov in delavnic na temo vseživljenjske karierne orientacije, povezovanje študentov s trgom dela ter individualno karierno svetovanje. Na UL FFA deluje karierni svetovalec mag. Klemen Marinčič. V okviru KC UL FFA so študentje povezani v digitalni portal POPR (portal osebnega in profesionalnega razvoja), prek katerega se lahko prijavljajo na dogodke, delavnice in individualna karierna svetovanja ter se informirajo o kariernih priložnostih.

UNIVERSITY OF LJUBLJANA CAREER CENTERS – UL FFA CAREER CENTER

The UL FFA Career Center (KC UL FFA)

The career centers of the University of Ljubljana are part of the University Service for Students and Alumni (USŠA) and operate at each faculty of the University of Ljubljana. The purpose of the career centers is to organize events and workshops on lifelong career orientation, connect students with the job market and provide individual career counseling. At UL FFA the career counselor is M. Sc. Klemen Marinčič. Within the KC UL FFA students are connected to the digital portal POPR (Personal and Professional Development Portal), through which they can register for events, workshops and individual counselling sessions, as well as gather information about career opportunities.

Fotografija: Utrinek s Kariernga dne / Photo: Career Day Moment

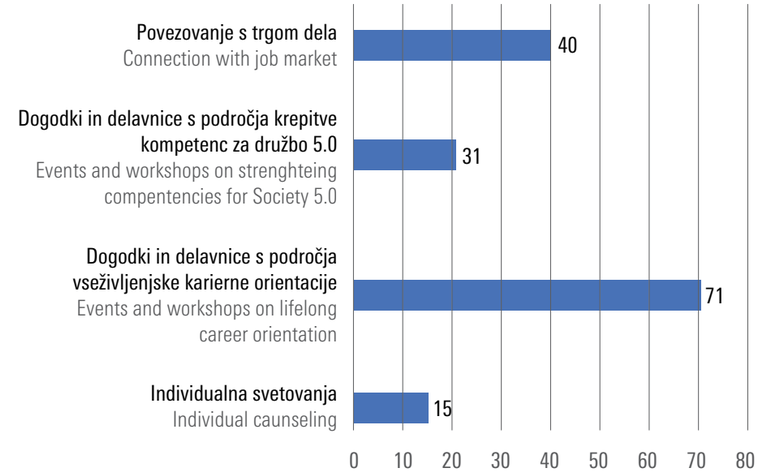
KLJUČNI DOSEŽKI V LETU 2023 / KEY ACHIVEMENTS IN 2023

KC UL FFA povezuje študente s trgom dela, hkrati pa sodeluje z drugimi študentskimi organizacijami na UL FFA. V letu 2023 so bile v okviru KC UL FFA izvedene sledeče aktivnosti:

- **Individualna svetovanja;**
  svetovanja s področja osebnega in kariernega razvoja, podjetništva, pregled življenjepisa in motivacijskega pisma ter profila Linkedin (na svetovanje prihajajo študentje skozi celo leto po predhodni prijavi).
- **Dogodki in delavnice s področja vseživljenjske karierne orientacije;**
  izvedba delavnic na temo samoocena in samoevalvacija, delovno mesto in iskanje zaposlitve (20. in 25. 4. 2023), pisanje življenjepisa in motivacijskega pisma za prakse SEP (14. 12. 2023), priprava na razgovor za zaposlitev ter iskanje zaposlitve (28. 2. 2023), podjetništvo (21. 11. 2023), iskanje kariernih priložnosti v tujini (21. 2. 2023), zaposlitvene veščine (29. 3. 2023), uporaba družbenih omrežij za namen kariernega napredka ter mreženja (30. 5. 2023 in 25. 10. 2023).
- **Dogodki in delavnice s področja krepitve kompetenc za družbo 5.0;**
  izvedba dogodkov in delavnic različnih računalniških programov, tujih jezikov, umetne inteligence ter mehkih veščin – preprečevanje stresa in psihološka odpornost, zmagovalna miselnost in moč ciljev ter osebne finance (v okviru kariernih tednov, julij in september 2023).
- **Povezovanje s trgom dela;**
  karierni dan s hitrimi zmenki (13. 4. 2023), predstavitev in obisk delodajalcev (31. 3. 2023).
- **Izvedba razpisa Srčna UL;**
  poleg aktivnosti, vezanih na vseživljenjsko karierno orientacijo, smo v okviru Kariernih centrov UL v letu 2023 organizirali humanitarno akcijo Srčna UL, v okviru katere smo za študente ter zaposlene na UL, ki so jih prizadele poplave v avgustu 2023, zbirali sredstva za sofinanciranje odpravljanja posledic poplav.

The KC UL FFA connects students with the job market while also collaborating with otherUL FFA student organizations. In 2023, we carried out the following activities at KC UL FFA:

- Individual counselling;
  counselling in personal and career development, entrepreneurship, CV and cover letter review and LinkedIn profile (students attend counselling through the year by prior appointment).
- Events and workshops on lifelong career orientation;
  conducting workshops on self-assessment and self-evaluation, job roles and job search (20 and 25 April 2023), CV and cover letter writing for SEP internship (14 December 2023), job interview preparation and job search (28 February 2023), entrepreneurship (21 November 2023), seeking career opportunities abroad (21 February 2023), employability skills (29 March 2023), use of social networks for career advancement and networking (30 May 2023 and 25 October 2023).
- Events and workshops on strengthening competencies for Society 5.0;
  Conducting events and workshops on various computer programs, fering languages, artificial intelligence and soft skills – stress prevention and psychological resilience, winning mindset and goal power, personal finance (during career weeks, July and September 2023).
- Connection with the job market;
  career speed dating day (13 April 2023), presentation, and employer visit (31 March 2023).
- Implementation of the Heart UL tender;
  In addition to activities related to lifelong career orientation, within the UL Career Centers in 2023, we organized a humanitarian action called Heart UL, through which we collected funds for co-financing the elimination of flood consequences for students and employees at the University of Ljubljana affected by the August 2023 floods.



Slika: Število študentov UL FFA na posameznih aktivnostih Kariernega centra UL FFA v letu 2023 /
Picture: The number of participation of UL FFA students in activities of the KC UL FFA in 2023

ŠTUDENTSKI SVET FAKULTETE ZA FARMACIJO (ŠS FFA), ŠTUDENTSKA ORGANIZACIJA FAKULTETE ZA FARMACIJO (ŠOFFA) IN DRUŠTVO ŠTUDENTOV FARMACIJE SLOVENIJE (DŠFS)

Študentski svet Fakultete za farmacijo (ŠS FFA)

Študentski svet je organ fakultete, katerega člani so predstavniki letnikov, izvoljeni na letnih volitvah. ŠS FFA predstavlja študente UL FFA v organih fakultete (senat UL FFA, upravni odbor UL FFA in različne komisije) in v študentskem svetu Univerze v Ljubljani. ŠS FFA se ukvarja predvsem s študijem na UL FFA ter zagovarjanjem pravic študentov na vseh ravneh zastopanja.

Študentska organizacija Fakultete za farmacijo (ŠOFFA)

ŠOFFA je ena izmed podružnic družine Študentske organizacije Univerze v Ljubljani (ŠOU), kakršno ima vsaka fakulteta Univerze v Ljubljani. ŠOFFA organizira različne dogodke izobraževalnega in družabnega značaja, kot so božična ekskurzija, farmacevtski piknik, farmacevtsko smučanje in druge aktivnosti. Aktivnosti družabnega programa so potrebne za povezovanje mlajših in starejših študentov, kar omogoča izmenjavo znanj in izkušenj.

STUDENT COUNCIL OF THE FACULTY OF PHARMACY (ŠSFFA), THE SLOVENIAN PHARMACY STUDENTS' SOCIETY (DŠFS) AND STUDENTS' SECTION OF THE SLOVENIAN PHARMACEUTICAL SOCIETY (ŠSSFD)

The Student Council UL FFA (ŠSFFA)

is one of the governing bodies of the faculty. Its annually elected members are representatives of each year of their respective programs. The ŠSFFA represents the Faculty of Pharmacy students in other governing bodies of the faculty (the Senate, the Managing Board, and various committees), as well as in the Student Council of the University of Ljubljana. The ŠSFFA mainly deals with the program at the Faculty of Pharmacy and defending students' rights on all levels of representation.

Student Organization of the Faculty of Pharmacy (ŠOFFA)

The ŠOFFA is one of the ŠOU's (the University of Ljubljana Student Organization) branches, which exists at each faculty at the University of Ljubljana. The ŠOFFA holds various educational and social events, such as the Christmas excursion, pharmaceutical picnic, pharmaceutical ski trip, and other activities. Social activities are necessary to connect younger and older students, allowing the exchange of knowledge and experience.

Društvo študentov farmacije Slovenije (DŠFS)

DŠFS in Študentska sekcija Slovenskega farmacevtskega društva (ŠSSFD) delujeta kot ena organizacija z isto ekipo, ki vodi projekte in zastopa naše društvo na nacionalnem in mednarodnem nivoju. S pomočjo članov pod vodstvom koordinatorjev izvajajo različne javne kampanje, humanitarne projekte, mednarodne izmenjave Twinnet in SEP, medštudijske poletne farmacevtske tabore (IPSC), strokovne večere, trikrat letno izide študentsko glasilo Spatula, enkrat letno pa strokovna publikacija Placebo.

Slovenian Pharmacy Students' Society (DŠFS)

The DŠFS and ŠSSFD function as a single organization with the same team that leads projects and represents our society on the national and international levels. With the help of our members and under the guidance of the coordinators, the organization carries out various public campaigns, humanitarian projects, Twinnet and SEP international exchanges, the Interdisciplinary Pharmaceutical Summer Camp (IPSC), and professional training evenings. The organization also publishes the student newsletter Spatula three times a year and the professional newsletter Placebo once a year.

2 Poročilo o delu
Activity report

PREGLED POSLOVANJA

UL FFA je v letu 2023 poslovala uspešno. V letu 2023 je realizirala 14.486 tisoč evrov prihodkov in 14.049 tisoč evrov odhodkov. Obračunski prihodki so v letu 2023 za 14 % oz. 1.830 tisoč evrov višji kot preteklo leto.

Obračunani prihodki iz proračuna RS za financiranje študijskih programov 1. in 2. stopnje s strani MIZŠ so izkazani v višini 7.976 tisoč evrov in predstavljajo 55 % vseh prihodkov. Ta sredstva so se povečala za 3,5 % oz. 272 tisoč evrov.

Obračunani prihodki ARIS v višini 4.515 tisoč evrov so z deležem 31,2 % v prihodkih druga največja skupina prihodkov glede na dejavnost oz. vir financiranja. Ta sredstva so se povečala za 20,5 % oz. za 769 tisoč evrov.

Ostali prihodki so še prihodki EU skladov, prihodki od druge javne službe in prihodki od prodaje storitev na trgu in so znašali skupaj 1.995 tisoč evrov oz. 13,6 % vseh prihodkov. Ostali prihodki javne službe so v letu 2023 znašali 959 tisoč evrov. Prihodki s trga so v letu 2023 znašali 666 tisoč evrov. Prihodki, financirani s strani EU skladov, so v letu 2023 znašali 370 tisoč evrov.

BUSINESS OVERVIEW

UL FFA operated successfully in 2023, generating revenues of 14,486 thousand € and expenses of 14,049 thousand €. The revenues from billing in 2023 were higher in the amount of 1,830 thousand € or 14% higher than the previous year.

The calculated revenues from the budget of the Republic of Slovenia for financing 1st and 2nd degree study programs by the Ministry of Education, Science and Sport (MIZŠ) amounted to 7,976 thousand € and represented 55% of all revenues. These funds increased by 3.5 %, or 272 thousand €.

Calculated revenues from the Slovenian Research and Innovation Agency (ARIS) amounted to 4,515 thousand €, with a 31.2% share of revenues, the second-largest group of revenues in terms of activity or financing source. These funds increased by 20.5% or 769 thousand €.

Other revenues include revenues from EU funds, other public services, and sales of services on the market. In 2023, these revenues totaled 1,995 thousand €, representing a 13.8% share of all revenues. These revenues increased by 783 thousand € compared to 2022.

Celotni odhodki so leta 2023 znašali 14.049 tisoč evrov in so se glede na leto 2022 povečali za 1.737 tisoč evrov oziroma za 14,1 %. **Stroški materiala** so v letu 2023 znašali 1.600 tisoč evrov in so se glede na leto 2022 povečali za 293 tisoč evrov. Delež stroškov materiala predstavlja 11,4 % celotnih odhodkov. **Stroški storitev** so v letu 2023 znašali 2.343 tisoč evrov in so se glede na leto 2022 povečali za 328 tisoč evrov. Delež stroškov storitev predstavlja 16,7 % celotnih odhodkov. **Stroški dela** so v letu 2023 znašali 8.905 tisoč evrov, delež stroškov dela v skupnih odhodkih je bil 63 %. V preteklem letu je bilo 8.048 tisoč evrov stroškov dela, kar je predstavljajo 65 % deleža celotnih odhodkov. Stroški dela predstavljajo največjo kategorijo odhodkov fakultete. Stroški dela so višji za 10,6 % oziroma za 856 tisoč evrov glede na preteklo leto. Stroški dela so se povišali zaradi večjega števila sodelavcev in ukrepov na področju plač za javni sektor, in sicer zaradi vladnega povečanja vrednosti plačnih razredov javnih uslužbencev in prilagoditev napredovanj v plačnih razredih ter višjega regresa za prehrano med delom in zneska regresa za dopust.

UL FFA v letu 2023 izkazuje **presežek** 435 tisoč evrov. V letu 2022 je izkazovala presežek v znesku 342 tisoč evrov. Končni doseženi presežek prihodkov v letu 2023 iz dejavnosti javne službe je znašal 299 tisoč evrov, iz dejavnosti prodaje blaga in storitev pa 136 tisoč evrov. UL FFA je velik del tekočega presežka namenila financiranju in sofinanciranju nakupov osnovnih sredstev, v zvezi s katerimi bodo stroški amortizacije nastali v prihodnjih obdobjih. Obračunski presežek povečuje sklad premoženja, ki bo služil kot vir za kritje amortizacije, poleg tega pa ima fakulteta že kar nekaj let večje izdatke za novogradnjo Brdo. S preteklimi presežki akumuliran sklad premoženja bo služil kot vir, s katerim bo fakulteta lahko delno financirala načrtovano investicijo v novo stavbo.

V letu 2023 je bila fakulteta zelo dejavna tudi pri investicijski dejavnosti. V osnovna sredstva je bilo investiranih za 1.978 tisoč evrov, od tega 431 tisoč evrov za novogradnjo Brdo.

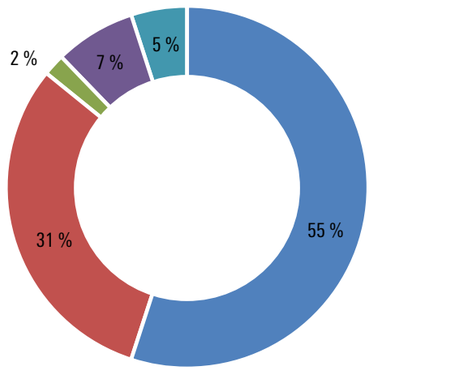
Total expenses in 2023 amounted 14,049 thousand € and were increased by 1,737 thousand € or 14.1% compared to 2022. Material costs in 2023 amounted to 1,600 thousand € and were increased by 293 thousand €. The share of material costs was 11.3% of all expenses in 2023. Services costs in 2023 amounted 2,343 thousand €. The share of services costs was 16.7% of all expenses. Labor costs in 2023 amounted 8,905 thousand €, representing 63% of total expenses. In 2022, labour costs amounted to 8,048 thousand €, representing 65% of total expenses. Labor costs were the largest category of expenses of the faculty. Labor costs were higher by 10.6% or 856 thousand € compared to 2022 due to a higher number of employees, measures in the field of public sector salaries, with the value of salary grades and governmental adjustment of salary grades and higher meal and annual leave allowances.

UL FFA recorded a surplus of 437 thousand € in 2023 higher than in the year 2022 with a surplus of 344 thousand €. The surplus from public services was 299 thousand €, while the surplus from the sale of goods and services was 138 thousand €. UL FFA allocated a large part of the current surplus in financing and co-financing the purchase of fixed assets, in connection with which depreciation costs will be incurred in future periods. The accounting surplus increases the property fund, which will serve as a source to cover depreciation In addition, the Faculty has had larger expenditures for the new Brdo building for several years. The property fund accumulated with past surpluses will serve as a source with which the faculty can partially finance the planned investment in the new building. In 2023, the Faculty was also very active in investment activities. 1,978 thousand € was invested in fixed assets, of which 431 thousand € was invested in the new project, the Brdo building.

Prihodki / Revenues, EUR	2023	2022	Struktura / Shares 2023	Indeks 2023/2022
Prihodki od MIZŠ Ministry of Education, Science, and Sport revenues	7.975.982	7.704.286	55,1 %	104
Prihodki od ARIS Slovenian Research and Innovation Agency revenues	4.514.983	3.739.866	31,2 %	121
EU skladi in mednarodni projekti EU funds and international projects revenues	370.260	329.704	2,6 %	112
Druga javna služba Other public services revenues	959.149	262.852	6,6 %	365
Tržna dejavnost Market revenues	665.830	619.135	4,6 %	108
Skupaj prihodki Total revenues	**14.486.204**	**12.728.577**	**100,0 %**	**114**

STRUKTURA PRIHODKOV V 2023,
PO VIRIH FINANCIRANJA (EUR)

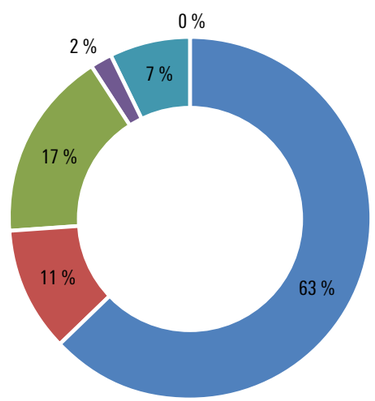
REVENUE STRUCTURE 2023, BY SOURCES (EUR)



Prihodki od MIZŠ / Ministry of Education, Science, and Sport revenues
Prihodki od ARIS / Slovenian Research and Innovation Agency revenues
EU skladi in mednarodni projekti / EU funds and international projects revenues
Druga javna služba / Other public services revenues
Tržna dejavnost / Market recenues

STRUKTURA ODHODKOV V 2023,
PO VRSTAH STROŠKOV (EUR)

EXPENSES STRUCTURE 2023 (EUR)



Delo / Labor
Material / Goods
Storitve / Services
Drugi stroški / Other costs
Amortizacija / Depreciation
Drugi odhodki / Other Expenses

ŠTUDIJSKO PODROČJE

PREDSTAVITEV ŠTUDIJSKIH PROGRAMOV

ENOVITI magistrski študijski program Farmacija

Študij farmacije izobražuje za reguliran poklic farmacevta skladno z evropsko direktivo 2005/36/ES in omogoča pridobitev naziva magister/magistra farmacije, ki je priznan v vseh državah članicah EU. Študij usposobi študenta za izvajanje strokovnih del in nalog na področju farmacije, vključujoč skrb in svetovanje pacientom, izdajo zdravil, proizvodnjo zdravil, razvoj in raziskave ter analizo in nadzor kakovosti zdravil. Obenem nudi osnovo za nadaljevanje študija na doktorski stopnji in je odprt za stalno vseživljenjsko strokovno usposabljanje. Študij traja 5 let in vključuje obvezno polletno praktično usposabljanje v učnih zavodih (lekarnah) in izdelavo magistrske naloge.

UNIVERZITETNI in MAGISTRSKI študijski program Laboratorijska biomedicina

Študent laboratorijske biomedicine pridobi po prvi stopnji študija, ki traja 3 leta, naziv diplomirani inženir/diplomirana inženirka laboratorijske biomedicine (UN), po drugi stopnji, ki traja 2 leti, pa magister/magistrica laboratorijske biomedicine. Po obeh stopnjah je možna zaposlitev v različnih medicinskih laboratorijih in v industriji, po drugi stopnji pa tudi nadaljevanje študija na doktorski stopnji ali specializaciji iz medicinske biokemije.

FIELD OF STUDY

PRESENTATION OF ACADEMIC-PROGRAMMES

Uniform master study programme in Pharmacy
(Single-cycle master study programme in Pharmacy)

In accordance with European Directive 2005/36/ES the pharmacy programme educates students for the regulated profession of pharmacist, through which they obtain their degrees as Masters of Pharmacy, which are recognized by all EU members states. The programme gives the students the skills to carry out professional work and tasks in pharmacy, including counselling patients, dispensing medicines, development and research, analysis and controlling the quality of medicines. The programme provides students with a firm basis to continue their education at the doctoral level and it is open to ongoing lifelong professional training. The five-year programme includes six months of mandatory practical training in pharmacies with the master's thesis research and defence.

The academic bachelor study programme in Laboratory Biomedicine and the master study programme in Laboratory Biomedicine

After the first cycle of study (three years), a laboratory biomedicine student obtains the bachelor's degree in laboratory biomedicine. After the second cycle (additional two years), the student receives the master's degree in laboratory biomedicine. After each of the two cycles students can seek employment in various medical laboratories or in industry. After the end of the second cycle students can also proceed with their education at the doctoral level or with a certificate in medical biochemistry.

UNIVERZITETNI študijski program Kozmetologija

Univerzitetni študijski program traja 3 leta, študent pa po uspešno opravljenem študiju pridobi strokovni naziv diplomirani kozmetolog (UN)/diplomirana kozmetologinja (UN). Glavni namen študija je usposobiti strokovnjake na področju kozmetoloških znanosti. Poleg osnovnih znanj naravoslovne usmeritve nudi program poglobljena znanja iz strokovnih ved kozmetologije.

The academic bachelor study programme in Cosmetology

This university programme lasts for three years and gives its students bachelor's degree in cosmetology. Its main purpose is to provide experts with skills in cosmetic sciences. Alongside basic knowledge of natural sciences the programme offers in-depth study of professional cosmetology sciences.

MAGISTRSKI študijski program Industrijska farmacija

Magistrski študij traja 2 leti in omogoča pridobitev znanj in veščin za delo v farmacevtsko-industrijskem okolju, vendar ne v okviru reguliranega poklica farmacevta. Strokovni naziv, ki ga pridobi diplomant, je magister/magistrica industrijske farmacije.

The master study programme in Industrial Pharmacy

This master's programme (two years) provides students with knowledge and skills needed to work in a pharmaceutical industrial environment, but not in the regulated pharmacist profession. The student receives their professional master's degree in industrial pharmacy.

DOKTORSKI študijski program Biomedicina

Na doktorskem študiju UL FFA izvaja programe Farmacija, Klinična biokemija in laboratorijska biomedicina ter Toksikologija, ki omogočajo pridobitev naziva doktor/doktorica znanosti. Osnovna ideja študija biomedicine in izvajanja na več članicah UL je v veliki izbirnosti, ki bodočim doktorjem znanosti omogoča študij po meri in pridobivanje specifičnih kompetenc, ki jih težko pokriva le ena članica UL.

Značilnosti študija na UL FFA so visoka motiviranost študentov, velika interdisciplinarnost programov, raznolikost študijskih pristopov in dobra povezanost s potencialnimi delodajalci tako v gospodarstvu (farmacevtska industrija, veledrogerije, predstavništva) kot v javnem sektorju (lekarne, bolnišnice, medicinski laboratoriji).

The interdisciplinary doctoral program in Biomedicine

The Faculty of Pharmacy is responsible for pharmacy, clinical biochemistry, laboratory biomedicine, and toxicology. The basic idea for the interdisciplinary program offered by multiple member institutions of the University of Ljubljana lies in the diversity of choices. This way, future doctorate holders can acquire specific skills that would be difficult to acquire at a single faculty.

The characteristics of studying at the UL FFA are high student motivation, high interdisciplinarity of the programm, diversity of study approaches, and good connections with potential employers in the real sector (pharmaceutical industry, wholesalers, representative offices) and in the public sector (pharmacies, hospitals, medical laboratories).

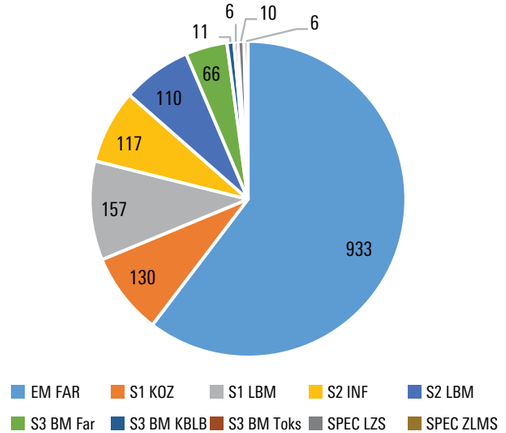
ŠTUDENTI IN DIPLOMANTI 2022/23

ŠTEVILO ŠTUDENTOV

V študijskem letu 2022/23 je bilo na vseh programih dodiplomskega in podiplomskega študija UL FFA vpisanih 1546 študentov.

V študijskem letu 2022/23 je zaključilo študij:
- 306 študentov na 1. in 2. stopnji (155 EM FAR, 29 S1 KOZ, 46 S1 LBM, 39 S2 INF, 37 S2 LBM)
- 22 doktorandov na 3. stopnji

ŠTUDENTI PO ŠTUDIJSKIH PROGRAMIH V 2022/23
STUDENTS BY PROGRAME, 2022/23



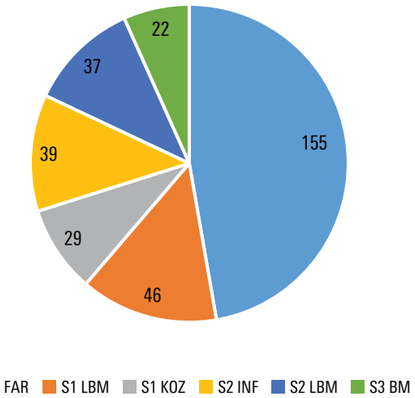
STUDENTS AND GRADUATES IN 2022/2023

NUMBER OF STUDENTS

In the academic year 2022/23, 1530 students were enrolled in the undergraduate and postgraduate programs at the University of Ljubljana's Faculty of Pharmacy.

In the academic year 2022/23, there were:
- 306 graduates in cycles 1 and 2 (155 EM FAR, 29 S1 KOZ, 46 S1 LBM, 39 S2 INF, 37 S2 LBM and
- 22 graduates in cycle 3.

DIPLOMANTI PO ŠTUDIJSKIH PROGRAMIH V 2022/23
GRADUATES BY PROGRAMME 2022/23



EM FAR – enoviti magistrski študijski program Farmacija / Pharmacy (single-cycle master study programme); **S1 LBM – univerzitetni študijski program Laboratorijska biomedicina (1. stopnja) /** Laboratory biomedicine (the academic bachelor study programme); **S1 KOZ – Univerzitetni študijski program Kozmetologija (1. stopnja) /** Cosmetology (the academic bachelor study programme); **S2 INF – magistrski študijski program Industrijska farmacija (2. stopnja) /** Industrial pharmacy (the master study programme); **S2 LBM – magistrski študijski program Laboratorijska biomedicina (2. stopnja) /** Laboratory biomedicine (the master study programme); **S3 BM – Biomedicina (3. stopnja): področja Farmacija, Klinična biokemija in laboratorijska biomedicina ter Toksikologija /** Biomedicine (the interdisciplinary doctoral programme in Biomedicine – scientific fields: Pharmacy, Clinical Biochemistry and Laboratory Biomedicine, and Toxicology; **SPEC – Specializacija v sodelovanju z Lekarniško zbornico Slovenije za področja: Klinična farmacija, Oblikovanje zdravil, Preizkušanje zdravil in Farmakognozija ter v sodelovanju z Zbornico laboratorijske medicine Slovenije za področje Medicinska biokemija /** Certificate in collaboration with the Pharmacy Chamber of Slovenia in Clinical Pharmacy, Medical Design, Medicinal Testing and Pharmacognosy, and in collaboration with the Laboratory Chamber of Slovenia in Medical Biochemistry.

UVELJAVLJANJE PEDAGOŠKE ODLIČNOSTI

Na UL FFA smo tudi v letu 2023 nadaljevali z uveljavljanjem pedagoške odličnosti skozi vrsto inovativnih projektov, ki naslavljajo digitalno preobrazbo izobraževanja, opolnomočenje študentov in povečano mobilnost visokošolskih učiteljev. Te iniciative poudarjajo zavezanost UL FFA k izboljšanju izobraževalnih metod.

Projekt **DOMINOS** (*Digital OSCE for Medical specialities – InnOvatIon for Students*) je mednarodni, multidisciplinarni projekt, financiran s strani Erasmus+. Namen projekta je uvedba objektivnega načina preverjanja kliničnih veščin (*OSCE: objective structured clinical examination*) v digitalno okolje za študente medicine, dentalne medicine in farmacije, s čimer krepi naše vodilne pozicije v digitalni preobrazbi pedagoških aktivnosti.

Projekt **OEMONOM** (*Open access Educational Materials on Naturally Occurring Molecules - sources, biological activity and use*) je prav tako financiran s strani **Erasmus+**. Ta projekt se osredotoča na izgradnjo prostodostopnih izobraževalnih materialov o naravnih spojinah, njihovih pozitivnih in negativnih učinkih, kar študentom omogoča razumevanje kompleksnosti farmakološkega delovanja in uporabe naravnih spojin v terapiji.

Projekt CEEPUS (*Central European Exchange Program for University Studies*) je regionalni program, katerega cilj je vzpostaviti in spodbujati mobilnosti študentov in profesorjev med sodelujočimi državami in ga koordinira Univerza v Zagrebu. V projekt so vključene fakultete iz držav partneric: Avstrija, Bolgarija, Češka, Hrvaška, Madžarska, Poljska, Romunija, Slovaška, Slovenija, Srbija, Albanija, Makedonija in Črna gora.

PROMOTING PEDAGOGICAL EXCELLENCE

In 2023, at UL FFA, we continued to promote pedagogical excellence through a series of innovative projects that address the digital transformation of education, the empowerment of students, and the increased mobility of higher education teachers. These initiatives highlight UL FFA's commitment to improving educational methods.

The DOMINOS project (Digital OSCE for Medical Specialties – InnOvatIon for Students) is an international, multidisciplinary project financed by Erasmus+. The project aimsto introduce an objective way of testing clinical skills (OSCE: objective structured clinical examination) into the digital environment for students of medicine, dental medicine and pharmacy, thereby strengthening our leading positions in the digital transformation of pedagogical activities.

The OEMONOM project (Open access Educational Materials on Naturally Occurring Molecules – sources, biological activity, and use) is also financed by Erasmus+. This project focuses on building open-access educational materials about natural compounds and their positive and negative effects, enabling students to understand the complexities of pharmacological action and the use of natural compounds in therapy.

The CEEPUS Central European Exchange Program for University Studies project is a regional program whose goal is to establish and promote the mobility of students and professors between participating countries. It is coordinated by the University of Zagreb. Faculties from partner countries are involved in the project: Austria, Bulgaria, Czech Republic, Croatia, Hungary, Poland, Romania, Slovakia, Slovenia, Serbia, Albania, Macedonia and Montenegro. The coordinator at UL FFA is Prof. Dr. Janja Marc.

ZNANSTVENA, RAZISKOVALNA IN STROKOVNA DEJAVNOST

UL FFA je na področju raziskav in razvoja v letu 2023 dosegla več uspehov:

- Na podlagi kontinuiranih naporov v raziskovalnem delu zadnjih let in kulture prijavljanja raziskovalnih projektov smo uspeli v letu 2023 pridobiti 9 novih projektov ARIS (7 temeljnih projektov, 1 aplikativni projekt in 1 raziskovalni projekt iz drugih raziskovalnih agencij v EU – tip N) in skupno povečali obseg tovrstnega financiranja raziskovalnega dela za 5,1 FTE
- V letu 2023 smo povečali obseg financiranja iz evropskih mednarodnih projektov, in sicer za 1,8 FTE

Sodelavci UL FFA so raziskovalne dosežke objavljali v prestižnih publikacijah s področja naravoslovja in medicine, s katerimi je fakulteta dosegala znatno družbeno odmevnost. UL FFA je v letu 2023 ohranila sodelovanje s ključnimi gospodarskimi subjekti na področju farmacije doma in v tujini. Število objav znanstvenih del in s tem povezani kazalci so bili v letu 2023 podobni kot v letu 2022, in nižji kot v letih 2018–2021, kar pripisujemo časovnemu zamiku učinka pandemije COVID-19, ko je bilo delo v raziskovalnih laboratorijih onemogočeno ali zelo omejeno. Ne glede na to pa smo še vedno registrirali rast citatov znanstvenih del (14,8 % več kot v 2022).

V letu 2023 smo tudi nadgradili raziskovalno opremo iz naslova Paketa 21 (javni razpis za sofinanciranje nakupov raziskovalne opreme s strani ARIS), ko smo realizirali nakup štirih večjih kosov raziskovalne opreme v višini 800 tisoč EUR.

SCIENTIFIC, RESEARCH AND PROFESSIONAL ACTIVITIES

UL FFA achieved several successes in the field of research and development in 2023:

- Based on continuous efforts in the research activities of recent years and the culture of submitting research projects, in 2023, we managed to acquire nine new projects from ARIS – National Agency for Scientific Research and Innovation Activity of the Republic of Slovenia (seven fundamental projects, one applied project and one research project by other agencies in the EU – type N) and in increased the scope of the total funding of research work by 5.1 FTE.
- In 2023, we increased the financing volume from European international projects by 1.8 FTE.

Researchers from the UL FFA published their research achievements in prestigious publications in natural sciences and medicine, with which the faculty achieved considerable social resonance. In 2023, UL FFA maintained cooperation with key economic entities in pharmacy at home and abroad. The number of publications of scientific activities and related indicators in 2023 was comparable to 2022, and lower than in 2018-2021, which we attribute to the time lag of the effect of the COVID-19 pandemic, when work in research laboratories was impossible or very limited. Regardless, we still registered a moderate growth in citations of scientific works (3.4% more than in 2022).

In 2023, we also upgraded the research equipment within Package 21 (public tender for co-financing the purchase of research equipment by ARIS) when we purchased four larger pieces of research equipment in the amount of 800 thousand €.

OBJAVE IN CITIRANOST DEL

Raziskovalci UL FFA so v letu 2023 objavili 160 znanstvenih člankov, od tega 134 v revijah s faktorjem vpliva (IF). V revijah z IF je bilo objavljenih 116 izvirnih in 13 preglednih znanstvenih člankov ter 5 kratkih znanstvenih prispevkov; 26 prispevkov je bilo objavljenih v revijah brez SCI. V letu 2023 so objavljena dela UL FFA prejela 7980 čistih citatov, kar predstavlja za 14,8 % citatov več kot leto poprej.

Preglednica ponazarja vire financiranja raziskovalne dejavnosti in razmerje znanstvenih člankov glede na FTE, financiranih iz virov ARIS in EU. V letu 2023 je obseg raziskovalne dejavnosti znašal 68,8 FTE, kar je 14 % več v primerjavi z letom poprej. Nadaljuje se trend rasti v zadnjih letih. Kazalnik učinkovitosti števila znanstvenih objav z IF glede na skupne FTE je v letu 2023 znašal 1,9 članka na FTE, kar je nižje od prejšnjih let. To je posledica zmanjšanega števila objavljenih znanstvenih člankov v zadnjih dveh letih in hkratnega povečanja sredstev tako iz vira ARIS kot iz virov EU v zadnjih dveh letih. Zaradi povečanja sredstev se tudi kazalnik število čistih citatov na FTE ni bistveno spremenil v primerjavi z letom 2022.

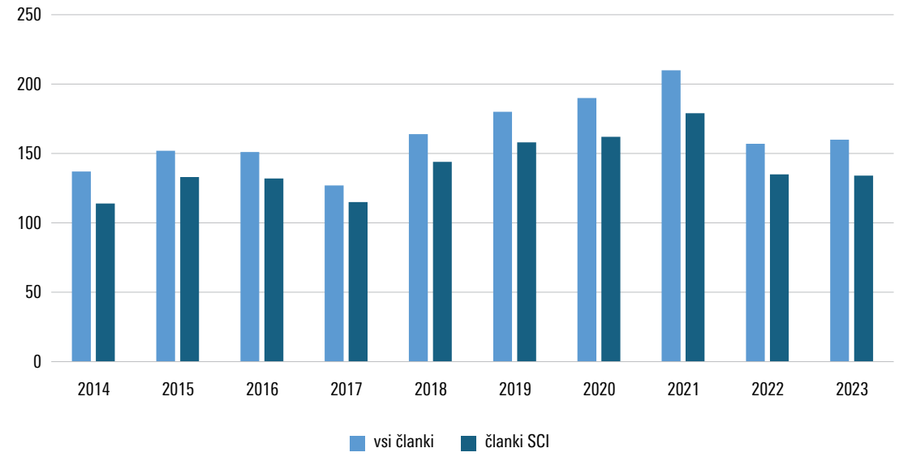
PUBLICATIONS AND CITATION OF WORKS

UL FFA researchers published 160 scientific articles in 2023, of which 134 were in scientific journals with Science Citation Index Impact Factor (SCI-IF). 116 original and 13 review scientific articles and 5 short scientific contributions were published in SCI-IF journals; 26 papers were published in journals without SCI-IF. In 2023, the published works of UL FFA received 13,440 net citations, which is 3.4% more than the year before.

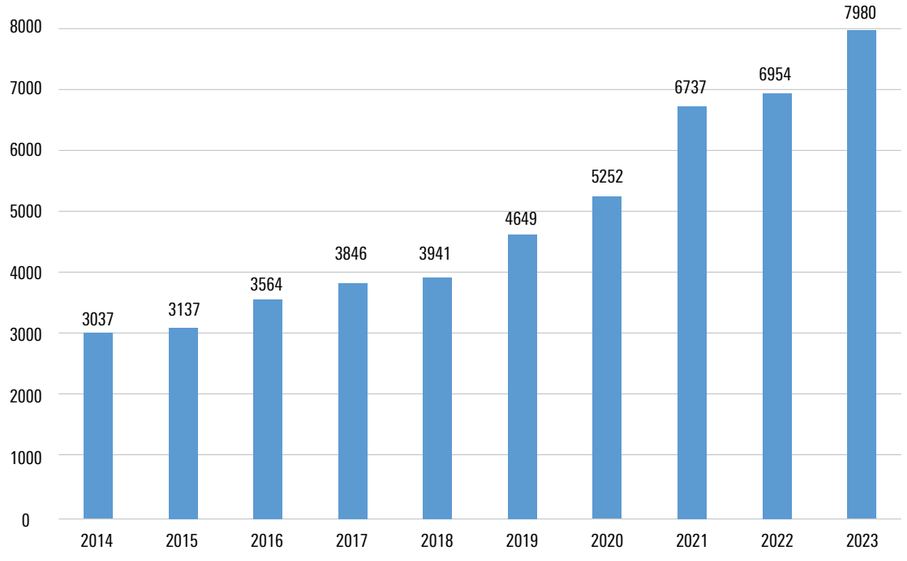
The table below illustrates the funding sources for research activities and the ratio of scientific articles to FTEs financed from ARIS and EU sources. In 2023, the volume of research activity amounted to 68.8 FTE, which is 14% more than the previous year. The growth trend of recent years continues. The efficiency indicator of the number of scientific publications with IF in relation to the total FTE was 1.9 articles per FTE in 2023, which is lower than in previous years. This is the result of a decrease in the number of published scientific articles in the last two years and a simultaneous increase in funds from both ARIS and EU sources in the previous two years.

	Sredstva za raziskovalce (FTE) / Founds for researchers (FTE)				Število vseh znanstvenih člankov na FTE / Number of all research publications FTE	Število vseh znanstvenih člankov z IF na FTE / Number of IF research publications per FTE	Število čistih citatov/FTE / Number of pure citations per FTE
	ARIS / Projects and programmes	EU	MR	Skupaj / Total			
2014	19,8	8,2	16,8	44,8	3,1	2,5	68
2015	19,1	5,5	13,8	38,4	4,0	3,5	82
2016	23,2	2,2	16,8	42,3	3,6	3,1	84
2017	21,5	1,0	15,1	37,6	3,4	3,1	102
2018	24,3	2,3	16,6	43,2	3,8	3,3	91
2019	26,2	2,0	17,3	45,5	4,0	3,5	102
2020	32,3	2,5	19,7	54,5	3,5	3,0	96
2021	33,6	2,5	20,5	56,6	3,7	3,2	119
2022	35,6	3,2	21,8	60,6	2,6	2,2	115
2023	40,7	5,0	23,1	68,8	2,3	1,9	116

Preglednica: Razmerje znanstvenih člankov in citatov na celokupni FTE raziskovalcev, ki so financirani iz virov ARIS (programi in projekti) in EU ter ARIS (mladi raziskovalci) za obdobje zadnjih 10 let / Table: Ratio between research articles and citations and the total FTE of researchers financed by ARIS (programmes and projects) and EU and ARIS (young researchers) sources for the period of the last 10 years



Slika: Število znanstvenih objav UL FFA v zadnjih 10 letih / Figure: Number of scientific publications by UL FFA in the past 10 years



Slika: Število čistih citatov znanstvenih objav UL FFA v zadnjih 10 letih (Scopus/WoS, vir Sicris) / Figure: Number of citations of UL FFA scientific publications in the last 10 years (Scopus/WoS, Source Sicris)

RAZISKOVALNA DEJAVNOST NA UL FFA

Raziskovalno delo na UL FFA je potekalo pod okriljem šestih programskih skupin ter v okviru številnih projektov. V letu 2023 so bili nacionalni raziskovalni programi financirani v obsegu 15,2 FTE (brez sredstev za MR-je). UL FFA je izvajala še 49 raziskovalnih projektov ARIS v obsegu 25,24 FTE (39 temeljnih projektov, 6 aplikativnih projektov, 1 podoktorski projekt in 3 raziskovalni projekti iz drugih raziskovalnih agencij v EU – tip N), 16 bilateralnih projektov ARIS, 7 mednarodnih evropskih projektov iz okvirnega programa Evropske unije za raziskave in inovacije v obsegu 5 FTE (2 projekta Obzorje 2020, 5 projektov Obzorje Evropa), 8 projektov oziroma akcij COST (ang. *European CO-operation in Science and Technology*) in 2 projekta sklada CELSA (ang. *Central Europe Leuven Strategic Alliance*). Poleg tega smo pridobili tudi večje število razvojno-raziskovalnih projektov z gospodarstvom.

Z uspešnimi prijavami programov in projektov na razpisih ARIS se je tudi v letu 2023 povečal obseg financiranja.

V okviru financiranja raziskovalnih programov je UL FFA v letu 2023 pridobila 6 novih mladih raziskovalcev, kar ohranja stopnjo usposabljanja novih znanstvenikov iz tega naslova, značilno za raven zadnjih let: 2022 (5 novih MR-jev), 2021 (6 novih MR-jev), 2020 (6 novih MR-jev), 2019 (5 novih MR-jev) in 2018 (5 novih MR-jev).

RESEARCH ACTIVITIES AT UL FFA

The Faculty carried out research work under the auspices of six research program groups and in the framework of a multitude of projects. In 2023, national research programs were financed to the extent of 15.2 FTE (without funds for young researchers (YR)). UL FFA was took part in 50 ARIS research projects in the amount of 25.2 FTE (40 primaryprojects, 6 applied projects, 1 postdoctoral project and 3 research projects from other research agencies in the EU), 16 bilateral ARIS projects, 7 international European projects from the framework program of the European Union for research and innovation in the scope of 5 FTE (2 Horizon 2020 projects, 5 Horizon Europe projects), 8 COST actions (European CO-operation in Science and Technology) and 2 projects of the CELSA fund (Central Europe Leuven Strategic Alliance). In addition, we also acquired several development and research projects financed by several pharmaceutical companies.

With the successful applications of programs and projects in the tenders by ARIS, the amount of funding increased in 2023 as well.

In the framework of funding research programs, UL FFA acquired 6 new young researchers in 2023, and so maintains the level of training of new scientists from this title, typical of the level of recent years: 2022 (5 new YRs), 2021 (6 new YRs), 2020 (6 new YRs), 2019 (5 new YRs) and 2018 (5 new YRs).

NACIONALNI PROGRAMI IN PROJEKTI
RAZISKOVALNI PROGRAMI NA UL FFA

NATIONAL RESEARCH PROGRAMMES AND PROJECTS
UL FFA RESEARCH PROGRAMMES

Farmacevtska tehnologija: od dostavnih sistemov učinkovin do terapijskih izidov zdravil pri otrocih in starostnikih P1-0189

Raziskovalni program je oktobra 2016 deloval pod vodstvom prof. dr. Albina Kristla; v oktobru 2023 pa je vodenje prevzel prof. dr. Mitja Kos. Program združuje raziskovalce Katedre za biofarmacijo in farmakokinetiko, Katedre za farmacevtsko tehnologijo in Katedre za socialno farmacijo.

Raziskovalni program zajema vse segmente od proučevanja osnovnih lastnosti učinkovin in pomožnih snovi do vrednotenja zdravil kot ekonomske in etične kategorije. Glavni cilj programa je razviti metodologije za prepoznavanje in zmanjšanje interindividualne variabilnosti učinkovin v klinično želenih in neželenih učinkih in tako povečati učinkovitost zdravljenja. V sklopu programa razvijajo postopke za načrtovanje delcev z želenimi lastnostmi, kar se izkorišča pri načrtovanju, izdelavi in vrednotenju sodobnih (nano)dostavnih sistemov, ki omogočajo transport učinkovin na mesto delovanja in/ali znotrajcelični privzem ter zaščito pred proteolitičnimi encimi in nadzorovanim sproščanjem. Proučujejo biofarmacevtske in farmakokinetične procese po aplikaciji omenjenih dostavnih sistemov učinkovin ter stabilnost in bioanalitiko učinkovin s poudarkom na razvoju prijaznejših tehnologij. Razvijajo nove eksperimentalne modele za proučevanje sproščanja in vrednotenje permeabilnosti učinkovin skozi sluznico prebavnega trakta in sečnega mehurja. V okviru programa so razvili tudi več vrst *in vitro* modelov za hkratno proučevanje transporta in metabolizma učinkovin, upoštevajoč tudi farmakogenetske vidike. Razviti farmakokinetični-farmakodinamski modeli omogočajo napovedovanje kliničnih izidov zdravil ter iskanje vzrokov za njihovo variabilnost. Razvijajo metode za vrednotenje sodelovanja pacientov in dostopnosti do zdravil.

Pharmaceutical Technology: from delivery systems for active ingredients to drugs´ therapeutic results in children and older people P1-0189

The research programme operated from October 2016 under the leadership of Prof. Dr. Albin Kristl; from October 2023, Prof. Dr. Mitja Kos. The programme brings together researchers from the Department of Biopharmaceutics and Pharmacokinetics, the Department of Pharmaceutical Technology and the Department of Social Pharmacy.

The research programme covers all segments from the study of the basic properties of active substances and excipients to the evaluation of medicines as economic and ethical category. The main goal of the programme is to develop methodologies for identifying and reducing the interindividual variability of active substances in clinically desirable and adverse effects and thus increase the effectiveness of treatment. They develop procedures for the design of particles with the desired properties and this is used in the design, manufacture and evaluation of modern (nano) delivery systems that enable transport of active ingredients to the site of action and/or intracellular uptake and protection against proteolytic enzymes and controlled release. They study biopharmaceutical and pharmacokinetic processes after the application of the mentioned drug delivery systems, as well as the stability and bioanalytics of active substances, with an emphasis on the development of more friendly technologies. New experimental models are being developed to study the release and to evaluate the permeability of active substances through the mucosa of the gastrointestinal tract and bladder. As part of the programme, several types of *in vitro* models were also developed for the simultaneous study of drug transport and metabolism, taking into account, pharmacogenetic aspects. Developed pharmacokinetic-pharmacodynamic models allow the prediction of clinical outcomes of drugs and the search for causes of their variability. They develop methods to evaluate patient participation and access to medicines.

Farmacevtska kemija: načrtovanje, sinteza in vrednotenje učinkovin P1-0208

Pod vodstvom prof. dr. Stanislava Gobca program združuje raziskovalce Katedre za farmacevtsko kemijo, Katedre za klinično biokemijo in Katedre za farmacevtsko biologijo.

Dolgoročni cilj raziskovalnega programa je odkritje novih biološko aktivnih majhnih molekul z možnostjo razvoja v učinkovine za uporabo na pomembnih terapevtskih področjih. Cilj bo dosežen z uporabo kombinacije različnih farmacevtsko-kemijskih pristopov. V tem obdobju se raziskovalni program osredotoča na odkrivanje, racionalno načrtovanje, sintezo in biološko vrednotenje molekul z delovanjem na validirane tarče. Ta postopek bo ustvaril nove protinevrodegenerativne, protimikrobne, imunomodulatorne in protitumorne spojine, ki so zelo pomembne za javno zdravje. Raziskovalni program obravnava različne tarče učinkovin, ki sodelujejo pri transmembranski in znotrajcelični signalizaciji, kot so npr. bakterijski in človeški encimi, membranski, znotrajcelični in jedrni receptorji ter ionski kanali. Uporabljene so sodobne strategije farmacevtske kemije, vključno z biomimetičnim pristopom in načrtovanjem, ki išče navdih v naravnih produktih, načrtovanju učinkovin na osnovi fragmentov, pristopih za doseganje selektivnosti in učinkovinah podobnih lastnosti. Raziskovalci bodo oblikovali tudi spojine, ki lahko hkrati modulirajo dve ali več tarč hkrati. Glavna področja raziskav vključujejo razvoj novih učinkovin, ki delujejo na (i) nevrodegeneracijo z zaviranjem holin-esteraz, monoamin-oksidaz in kinaz ter modulacijo monoaminergičnih receptorjev in oksidativnih tarč, (ii) na več učinkovin odporne bakterije

Pharmaceutical Chemistry: Planning, synthesis and evaluation of active ingredients P1-0208

Under the leadership of Prof. Dr. Stanislav Gobec, it brings together researchers from the Department of Pharmaceutical Chemistry, the Department of Clinical Biochemistry and the Department of Pharmaceutical Biology.

The long-term aim of the research programme is to discover new biologically active small molecules with the possibility of development into active substances for use in important therapeutic areas. The goal will be achieved by using a combination of different pharmaceutical-chemical approaches. During this period, the research programme focuses on the discovery, rational design, synthesis and biological evaluation of molecules by acting on validated targets. This process will generate new anti-neurodegenerative, antimicrobial, immunomodulatory and antitumor compounds of great public health importance. The research programme deals with various targets of active substances that participate in transmembrane and intracellular signaling, such as e.g. bacterial and human enzymes, membrane, intracellular and nuclear receptors and ion channels. Modern pharmaceutical chemistry strategies are used, including a biomimetic approach and design inspired by natural products, fragment-based drug design, approaches to achieve selectivity, and drug-like properties. Researchers will also design compounds that can simultaneously modulate two or more targets simultaneously. The main areas of research include the development of new agents that act on (i) neurodegeneration by inhibiting choline-esterases, monoamine-oxidases and kinases and modulating monoaminergic receptors and oxidative targets, (ii) multi-agent resistant bacteria and

in koronaviruse z zaviranjem DNA giraze, topoizomeraze IV, MurA, D-Ala-D-Ala ligaze B, penicilin vezočih proteinov, proteasoma, reduktaze enoil acil prenašalnega proteina (InhA) in cisteinskih proteaz, (iii) imunski sistem z modulacijo Tollu podobnih receptorjev in galektinov, zaviranjem imunoproteasoma in z O-vezane ß-N-acetilglukozamin transferaze (OGT), (iv) rakava stanja z zaviranjem hERG, kalijevih napetostnih kanalov (Kv1.3), beljakovine toplotnega šoka 90 (Hsp90), DNA topoizomeraze II, in proteasoma ter modulacijo prostaglandinskega E2 receptorja 4 (EP4). Pomemben del raziskovalnega programa bodo tudi toksikološki vidiki pri procesu odkrivanja učinkovin, vključno z določanjem (i) PADMET lastnosti novih spojin, (ii) mehanizma toksičnosti endokrinih motilcev, (iii) vpliva presnove na biološko aktivnost in toksičnost in (iv) učinkov antioksidantov na oksidacijsko stabilnost spojin.

coronaviruses by inhibiting DNA gyrase, topoisomerase IV, MurA, D-Ala-D-Ala ligase B, penicillin-binding proteins, proteasome, enoyl acyl transfer protein (InhA) reductase and cysteine proteases, (iii) the immune system by modulating Toll-like receptors and galectins, inhibiting the immunoproteasome and by O-linked ß-N-acetylglucosamine transferases (OGTs), (iv) cancer states by inhibiting hERG, potassium voltage-gated channels (Kv1.3), heat shock protein 90 (Hsp90), DNA topoisomerase II, and the proteasome and modulating the prostaglandin E2 receptor 4 (EP4). An important part of the research programme will also be toxicological aspects in the process of discovery of active substances, including the determination of (i) PADMET properties of new compounds, (ii) the mechanism of toxicity of endocrine disruptors, (iii) the influence of metabolism on biological activity and toxicity, and (iv) the effects of antioxidants on oxidative stability of compounds.

Napredna imunološka zdravila in celični pristopi v farmaciji P1-0420

Pod vodstvom prof. dr. Žige Jakopina program združuje raziskovalce Katedre za farmacevtsko kemijo, Katedre za farmacevtsko biologijo, Katedre za klinično biokemijo in Katedre za farmacevtsko tehnologijo.

Cilj programa je razvoj varnih in učinkovitih cepiv proti nalezljivim boleznim, razvoj zdravil za imunoterapijo in celično terapijo rakavih obolenj ter imunoterapijo alergij. Program temelji na treh osnovnih platformah: (i) razvoj inovativnih cepiv; (ii) imunoterapija in celična terapija kot napredna pristopa za zdravljenje raka in alergij ter (iii) imunotoksikološko profiliranje. V platformi razvoja inovativnih cepiv (klasična cepiva, cepiva nove generacije, tumorska cepiva, cepiva za imunoterapijo alergij) so zajete vse faze razvoja cepiv: ekspresija proteinov, DNA ali RNA ter njihova izolacija in čiščenje, razvoj sintetičnih adjuvansov, razvoj formulacij oziroma naprednih dostavnih sistemov ter označevanje z ligandi za ciljano dostavo, imunofarmakološko vrednotenje *in vitro* ter vrednotenje učinkovitosti in varnosti cepiv *in vivo*. V drugi platformi, imunoterapija in celična terapija kot napredna pristopa za zdravljenje raka in alergij, so zajeta področja razvoja inovativnih agonistov prirojene imunosti za zdravljenje raka, uporaba mezenhimskih matičnih celic (MSC) kot dostavni sistem za ciljanje rakavih tkiv, proučevanje novih sinergističnih kombinacij ZU s protirakavim delovanjem in uporaba imunoterapije ter imunosupresivnega delovanja MSC pri zdravljenju alergij. V tretjem sklopu je program usmerjen v proučevanje imunotoksičnih učinkov *in vitro* ter vrednotenje imunogenosti.

Advanced immunological medicines and cellular approaches in pharmacy P1-0420

Under the leadership of Prof. Dr. Žiga Jakopin it brings together researchers from the Department of Pharmaceutical Chemistry, the Department of Pharmaceutical Biology, the Department of Clinical Biochemistry and the Department of Pharmaceutical Technology.

The aim of the research programme is the development of safe and effective vaccines against infectious diseases, the development of drugs for immunotherapy and cell therapy of cancer diseases, and immunotherapy of allergies. The programme is based on three basic platforms: (i) Development of innovative vaccines; (ii) Immunotherapy and cell therapy as advanced approaches for the treatment of cancer and allergies and (iii) Immunotoxicological profiling. The innovative vaccine development platform (classic vaccines, new generation vaccines, tumor vaccines, allergy immunotherapy vaccines) covers all phases of vaccine development: expression of proteins, DNA or RNA and their isolation and purification, development of synthetic adjuvants, development of formulations or advanced delivery systems and labeling with ligands for targeted delivery, immunopharmacological evaluation *in vitro*, and evaluation of vaccine efficacy and safety *in vivo*. In the second platform, immunotherapy and cell therapy as advanced approaches for the treatment of cancer and allergies, the areas of development of innovative agonists of innate immunity for the treatment of cancer, the use of mesenchymal stem cells (MSC) as a delivery system for targeting cancer tissues, the study of new synergistic combinations of ZU with anticancer activity and the use of immunotherapy and the immunosuppressive activity of MSCs in the treatment of allergies. In the third part, the programme focuses on the study of immunotoxic effects *in vitro* and the evaluation of immunogenicity.

Klinična biokemija: geni, hormonske in osebnostne spremembe pri metabolnih motnjah P3-0298

Pod vodstvom prof. dr. Andreja Janeža programska skupina deluje na UKC Ljubljana ter na UL FFA, Katedri za klinično biokemijo, koordinatorica na UL FFA je prof. dr. Janja Marc.

Program je zasnovan na lastnih dolgoletnih izkušnjah in dosežkih na področju kliničnih in laboratorijskih raziskav, ki proučujejo kronične presnovne bolezni, osteoporozo, sladkorno bolezen in sindrom policističnih ovarijev. Osteoporozo proučujejo na ravni lokalnih regulatorjev kostne premene. Cilj raziskave je, da osvetlijo pomen lokalnih regulatorjev za etiopatogenezo osteoporoze. Predpostavljajo, da bodo identificirali serumski označevalec, ki bo v korelaciji z dogajanji v samem kostnem tkivu. Načrtujejo tudi raziskavo vpliva zarodnih mutacij nekaterih odgovornih genov na zdravljenje (farmakogenetika) in zgodnje odkrivanje oseb s povečanim tveganjem za osteoporozo. Na področju sladkorne bolezni raziskujejo pojav rezistence celic v perifernih tkivih na inzulin. Pri bolnicah s sindromom policističnih ovarijev jih zanimajo spremembe

Clinical biochemistry: Genes, hormonal and personality changes in metabolic disorders P3-0298

Under the leadership of Prof. Dr. Andrej Janež from Universiy Medical Centre Ljubljana, the programme group works at the University of Ljubljana, Medical faculty and Faculty of Pharmacy, Department of Clinical Biochemistry, the coordinator at UL FFA is Prof. Dr. Janja Marc.

The research programme is based on a long-term experience and achievements in the field of clinical and laboratory research that studies chronic metabolic diseases, osteoporosis, diabetes and polycystic ovary syndrome. Osteoporosis is studied at the level of local regulators of bone turnover. The aim of the studies is to shed light on the importance of local regulators for the etiopathogenesis of osteoporosis. They assume that they will identify a serum marker that will correlate with the events in the bone tissue itself. They are also planning to study the impact of germline mutations of some of the responsible genes on treatment (pharmacogenetics) and on the early detection of people at increased risk for osteoporosis. In the field of diabetes, they are investigating the phenomenon of cell resistance in pe-

mehanizma prenosa glukoze v adipocite po zdravljenju z metforminom ali rosiglitazonom. Predpostavljajo, da bodo pripomogli k razumevanju etiopatogeneze sindroma policističnega ovarija, ki sloni na inzulinski rezistenci.

ripheral tissues to insulin. In patients with polycystic ovary syndrome they are interested in changes in the mechanism of glucose transfer to adipocytes after treatment with metformin or rosiglitazone. They are thought to be of help in understanding the etiopathogenesis of polycystic ovary syndrome based on insulin resistance.

Sistemske avtoimunske bolezni P3-0314

Pod vodstvom doc. dr. Katje Lakota programska skupina deluje na UKC Ljubljana ter na UL FFA, Katedri za klinično biokemijo, koordinator na UL FFA je prof. dr. Borut Božič.

Avtoimunost, vnetje, ateroskleroza in bolezni ožilja so prioritetna področja v medicini razvitih držav. Kljub temu pa so povezave med znanstvenimi področji premalo poznane in še nejasne. Program predstavlja nadaljevanje raziskav programske skupine z močnim poudarkom na 4 P-jih v medicini (preventiva, predikcija, personalizacija in participatorna medicina), vključitvi bioinformatike in podatkovnih baz (kot je Register bolnikov, ki jemljejo biološka zdravila) in razvijanju in uporabi novih *state-of-the-art* sistemov, kot so: a) mikroskopija na atomsko silo za študij patogenih protiteles, b) epigenetika za določanje okoljne regulacije celičnega vnetnega transkriptoma, c) raziskave na nanocevkah iz titanovega dioksida za potencialno uporabo v implantacijskih napravah, d) fagna knjižnica in veliki lipidni vezikli za študij interakcij med antigenom in protitelesi e) celični modeli celjenja ran s prasko in antibakterijski testi za povečanje razumevanja, kako deluje akutno fazni protein serumski amiloid A (SAA) lokalno.

Systemic autoimmune diseases P3-0314

The program group works at the University of Ljubljana, Faculty of Pharmacy, under the guidance of Assoc. Prof. Dr. Katja Lakota Department of Clinical Biochemistry, the coordinator at UL FFA is Prof. Dr. Borut Božič.

Autoimmunity, inflammation, atherosclerosis and vascular diseases are a priority in the medicine of developed countries. Nevertheless, the connections between scientific fields are not well known and are still unclear. The program represents the continuation of the program group's research with a strong emphasis on the 4 P's in medicine (prevention, prediction, personalization and participatory medicine), the inclusion of bioinformatics and databases (such as the Register of patients taking biological drugs) and the development and use of new state-of-the-art systems such as: a) atomic force microscopy for the study of pathogenic antibodies, b) epigenetics for determining environmental regulation of the cellular inflammatory transcriptome, c) research on titanium dioxide nanotubes for potential use in implantable devices, d) phage library and large lipid vesicles to study antigen-antibody interactions e) cellular models of scratch wound healing and antibacterial assays to increase understanding of how the acute phase protein serum amyloid A (SAA) acts locally.

Farmacevtska biotehnologija: znanje za zdravje P4-0127

Pod vodstvom prof. dr. Janka Kosa program združuje raziskovalce Katedre za farmacevtsko biologijo in Katedre za klinično biokemijo na UL FFA ter Odseka za biotehnologijo Instituta Jožef Stefan.

Delo programske skupine se vključuje v sodobne znanstvene trende z namenom povečanja vedenja o življenju, ohranjanja zdravja ljudi in čistega okolja. Poleg poznavanja osnovnih mehanizmov delovanja celic so izpostavljene predvsem študije mehanizmov nastanka in napredovanja določenih bolezni, saj s poznavanjem glavnih dejavnikov v bolezenskih procesih lahko identificirajo nove tarče za uspešnejšo diagnozo in terapijo. Dosedanji dosežki članov programske skupine na tem področju, ki se odražajo v objavah v številnih publikacijah in citiranosti, kažejo, da je doprinos novih znanj k svetovni zakladnici znanja pomemben. Pomembno je tudi delo skupine pri iskanju novih možnih učinkovin in diagnostičnih pristopov ter pri razvoju analitskih in biotehnoloških metod. Skupina pri svojem raziskovalnem delu uporablja in uvaja najsodobnejše znanstvene tehnike in metodologije. Povezanost skupine z drugimi raziskovalci v Sloveniji in mednarodnem prostoru zagotavlja pretok znanja in dobre rezultate tudi v prihodnje.

Pharmaceutical Biotechnology: knowledge for health P4-0127

Under the leadership of Prof. Dr. Janko Kos, the programme brings together the researchers of the Chair of Pharmaceutical Biology, the Chairs for Clinical Biochemistology and the Department of Biotechnology of the Jožef Stefan Institute.

The work of the programme group is involved in modern scientific trends with a view to increasing knowledge of life behaviour, preserving human health and clean environment. In addition to knowledge of the underlying mechanisms of cell function, studies of the mechanisms of formation and progression of certain diseases are mainly highlighted, as knowledge of the main factors in the disease processes can determine new targets for more successful diagnosis and therapy. The achievements of the programme group members in their area of expertise are reflected in articles in numerous publications and citations, making evident the relevance of their contribution of new knowledge to the global treasure trove of knowledge. The group's work in finding new possible active substances and diagnostic approaches and in the development of analytical and biotechnological methods is also significant. The team uses and introduces state-of-the-art scientific techniques and methodologies in its research work. The group's association with other researchers in Slovenia and connections in the international arena ensures the transfer of knowledge and good results in the future.

Sodelovanje v drugih raziskovalnih programih v manjšem obsegu

Zaposleni na UL FFA so v letu 2023 sodelovali tudi v štirih raziskovalnih programih, ki se izvajajo na drugih inštitucijah, in sicer:

- **Farmakologija in farmakogenomika (P3-0067)**; raziskovalni program poteka na Univerzi v Ljubljani, Medicinski fakulteti ter na Univerzi v Mariboru, Medicinski fakulteti, vodja je prof. dr. Mojca Kržan
- **Celostna obravnava alergijskih bolezni in astme v Sloveniji: od epidemiologije do genetike (P3-0360)**; raziskovalni program poteka na Univerzitetni kliniki za pljučne bolezni in alergijo Golnik ter na Univerzi v Mariboru, Medicinski fakulteti, vodja je prof. dr. Mitja Košnik
- **Celična fiziologija (P3-0310)**; raziskovalni program poteka na Univerzi v Ljubljani, Medicinski fakulteti ter na podjetju CELICA, biomedicinski center, d.o.o., vodja je prof. dr. Robert Zorec

Participation in other research programs on a smaller scale

In 2023, UL FFA employees also participated in three research programs carried out at other institutions, namely:

- Pharmacology and pharmacogenomics (P3-0067); the research program takes place at the University of Ljubljana, Faculty of Medicine, and at the University of Maribor, Faculty of Medicine; the program leader is Prof. Dr. Mojca Kržan,
- Comprehensive treatment of allergic diseases and asthma in Slovenia: from epidemiology to genetics (P3-0360); the research program takes place at the Golnik University Clinic for Lung Diseases and Allergy, and at the University of Maribor, Faculty of Medicine; the program leader is Prof. Dr. Mitja Košnik,
- Cell physiology (P3-0310); the research program takes place at the University of Ljubljana, Faculty of Medicine and at the company CELICA, biomedicinski center, d.o.o.; the program leader is Prof. Dr. Robert Zorec.

NACIONALNI RAZISKOVALNI PROJEKTI ARIS na UL FFA
Temeljni raziskovalni projekti ARIS

- J1-1709 – Strukturni vpogled v mehanizem tvorbe površine bakterije *Clostridium difficile* (koordinator na UL FFA: izr. prof. dr. Janez Mravljak, nosilec: prof. dr. Dušan Turk, IJS)
- J1-1717 – Razvoj novih zaviralcev Hsp90 s protitumornim delovanjem (nosilec: prof. dr. Tihomir Tomašič)
- J3-1745 – Vloga imunoproteasoma v oblikovanju imunskega odziva posredovanega s trombociti (nosilka: izr. prof. dr. Martina Gobec)
- J3-1749 – Mezenhimske matične celice – nosilci endogene regenerativne sposobnosti tkiv v boju proti staranju mišično-skeletnega sistema (nosilka: izr. prof. dr. Janja Zupan)
- J1-2483 – Radiofarmaki z antagonističnim delovanjem na CCK2R (nosilec: prof. dr. Marko Anderluh)
- J1-2484 – Razvoj protibakterijskih učinkovin z delovanjem na validirane tarče v biosintezi peptidoglikana (nosilec: prof. dr. Stanislav Gobec)
- J1-2485 – Poljub smrti glavnim dejavnikom apoptoze: razvoj razgrajevalcev proteinov BCL-2 in BAX (nosilec: izr. prof. dr. Izidor Sosič)
- J3-2517 – Razvoj himernih multiplih agonistov receptorjev prirojene imunosti kot učinkovitih adjuvansov za cepiva (nosilec: prof. dr. Žiga Jakopin)
- J3-2518 – Proteini APOBEC in onkogeneza virusov HPV (koordinatorica na UL FFA: doc. dr. Marija Nika Lovšin, nosilka: doc. dr. Martina Bergant Marušič, UNG)
- J3-2521 – Vnetni procesi pri intersticijskem cistitisu in ovrednotenje delovanja agonistov kanabinoidnih receptorjev sečnega mehurja (koordinatorica na UL FFA: prof. dr. Mojca Kerec Kos, nosilec: prof. dr. Peter Veranič, UL MF)

UL FFA RESEARCH PROJECTS

ARIS fundamental research projects

- J1-1709 – Structural insight into the mechanism of surface formation of the bacterium Clostridium difficile (coordinator at UL FFA: Assoc. Prof. Dr. Janez Mravljak, PI: Prof. Dr. Dušan Turk, IJS)
- J1-1717 – Development of new Hsp90 inhibitors with antitumor activity (PI: Prof. Dr. Tihomir Tomašič)
- J3-1745 – The role of the immunoproteasome in the formation of the immune response mediated by platelets (PI: Assoc. Prof. Dr. Martina Gobec)
- J3-1749 – Mesenchymal stem cells – carriers of the endogenous regenerative capacity of tissues in the fight against aging of the musculoskeletal system (PI: Assoc. Prof. Dr. Janja Zupan)
- J1-2483 – Radiopharmaceuticals with antagonistic action on CCK2R (PI: Prof. Dr. Marko Anderluh)
- J1-2484 – Development of antibacterial agents by acting on validated targets in peptidoglycan biosynthesis (PI: Prof. Dr. Stanislav Gobec)
- J1-2485 – Kiss of death to the main factors of apoptosis: development of BCL-2 and BAX protein degraders (PI: Assoc. Prof. Dr. Izidor Sosič)
- J3-2517 – Development of chimeric multiple agonists of innate immunity receptors as effective adjuvants for vaccines (PI: Prof. Dr. Žiga Jakopin)
- J3-2518 – APOBEC proteins and oncogenesis of HPV viruses (coordinator at UL FFA: Assist. Prof. Dr. Marija Nika Lovšin, PI: Assist. Prof. Dr. Martina Bergant Marušič, UNG)
- J3-2521 – Inflammatory processes in interstitial cystitis and evaluation of the action of cannabinoid receptor agonists of the urinary bladder (coordinator at UL FFA: Prof. Dr. Mojca Kerec Kos, PI: Prof. Dr. Peter Veranič, UL MF)

- J7-2603 – Učinkovitost bakteriofagov za zdravljenje ekstracelularnih in intracelularnih bakterijskih okužb implantatov (koordinatorica na UL FFA: izr. prof. dr. Janja Zupan, nosilec: izr. prof. dr. Aleš Podgornik, UL FKKT)
- J1-3018 – Pametne sonde za zgodnjo napoved Alzheimerjeve bolezni z *ex vivo* testom (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilec: prof. dr. Janez Košmrlj, UL FKKT)
- J1-3021 – Platforma osnovana na sintetičnih biofilmih za študij in razvoj novih protimikrobnih pristopov (koordinator na UL FFA: izr. prof. dr. Nace Zidar, nosilec: doc. dr. Iztok Dogša, UL BF)
- J1-3030 – MTAvsAMR: novi večtarčni antibiotiki proti večkratno odpornim bakterijam (nosilka: prof. dr. Lucija Peterlin Mašič)
- J1-3031 – Razvoj novih zaviralcev bakterijskih topoizomeraz za boj proti odpornim infekcijam (nosilec: izr. prof. dr. Nace Zidar)
- J2-3043 Izkoriščanje magneto-mehanskega učinka pri zdravljenju nevrodegenerativnih bolezni (koordinatorica na UL FFA: izr. prof. dr. Petra Kocbek, nosilec: doc. dr. Slavko Kralj, IJS)
- J3-3062 – Avtologni imunohibridomi in napredno zdravljenje trojno negativnega raka dojk stadijev II in III (nosilec: prof. dr. Matjaž Jeras)
- J3-3071 – Katepsina B in X v tumorskih matičnih celicah raka dojke – molekulske tarče in pomen za protitumorno terapijo (koordinator na UL FFA: prof. dr. Janko Kos, nosilka: doc. dr. Ana Mitrović, IJS)
- J3-3079 – Baktericidna nanorezila: preizkus bimodalnega mehanokemijskega odstranjevanja trdovratnih biofilmov (nosilec: izr. prof. dr. Stane Pajk)
- J4-3092 – Razvoj biološko aktivnih in kemijsko obstojnih ksantofilov, temelječ na trajnostnemu estrenju ksantofilov iz obnovljivih naravnih virov (koordinator na UL FFA: izr. prof. dr. Ilija German Ilić, nosilec: doc. dr. Alen Albreht, KI)

- J7-2603 – Effectiveness of bacteriophages for the treatment of extracellular and intracellular bacterial infections of implants (coordinator at UL FFA: Assoc. Prof. Dr. Janja Zupan, PI: Assoc. Prof. Dr. Aleš Podgornik, UL FKKT)
- J1-3018 – Smart probes for early prediction of Alzheimer's disease with an *ex vivo* test (coordinator at UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Janez Košmrlj, UL FKKT)
- J1-3021 – Platform based on synthetic biofilms for the study and development of new antimicrobial approaches (coordinator at UL FFA: Assoc. Prof. Dr. Nace Zidar, PI: Assist. Prof. Dr. Iztok Dogša, UL BF)
- J1-3030 – MTAvsAMR: new multi-target antibiotics against multi-resistant bacteria (PI: Prof. Dr. Lucija Peterlin Mašič)
- J1-3031 – Development of new inhibitors of bacterial topoisomerases to combat resistant infections (PI: Assoc. Prof. Dr. Nace Zidar)
- J2-3043 Utilization of the magneto-mechanical effect in the treatment of neurodegenerative diseases (coordinator at UL FFA: Assoc. Prof. Dr. Petra Kocbek, PI: Assist. Prof. Dr. Slavko Kralj, IJS)
- J3-3062 – Autologous immunohybridomas and advanced treatment of triple-negative breast cancer stages II and III (PI: Prof. Dr. Matjaž Jeras)
- J3-3071 – Cathepsin B and X in tumor stem cells of breast cancer – molecular targets and significance for antitumor therapy (coordinator at UL FFA: Prof. Dr. Janko Kos, PI: Assoc. Dr. Ana Mitrović, IJS)
- J3-3079 – Bactericidal nanoblades: test of bimodal mechanochemical removal of stubborn biofilms (PI: Assoc. Prof. Dr. Stane Pajk)
- J4-3092 – Development of biologically active and chemically stable xanthophylls, based on the sustainable esterification of xanthophylls from renewable natural sources (coordinator at UL FFA: Assoc. Prof. Dr. Ilija German Ilić, PI: Assoc. Dr. Alen Albreht, KI)

- J4-3096 – Rekombinantni probiotiki kot bio-alternativni protimikrobni pristop proti bakteriji Clostridioides difficile (nosilec: prof. dr. Borut Štrukelj)
- J1-4400 – Vrednotenje prehodnih stanj proteinov (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilka: prof. dr. Simona Golič Grdadolnik, KI)
- J1-4402 – Dinamični model molekulskega stroja DNA topoizmeraze tipa II in razvoj katalitičnih inhibitorjev (koordinatorica na UL FFA: prof. dr. Marija Sollner Dolenc, nosilec: izr. prof. dr. Andrej Perdih, KI)
- J1-4414 – ProBiS-Fold pristop za določanje vezavnih mest (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilka: prof. dr. Dušanka Janežič, UP FAMNIT)
- J1-4417 – Razvoj novih nizkomolekularnih modulatorjev Tollu podobnih receptorjev 7 in 8 za imunoterapijo raka (nosilec: izr. prof. dr. Matej Sova)
- J3-4496 – Adjuvansi naslednje generacije za mukozna cepiva (nosilec: prof. dr. Žiga Jakopin)
- J3-4499 – Mehanizmi odziva na IL12/23 zaviralce pri ulceroznem kolitisu (koordinator na UL FFA: prof. dr. Iztok Grabnar, nosilec: doc. dr. David Drobne, UKC)
- J3-4527 – Mišični sekretom in kostne celice – sodelovanje pri osteosarkopeniji (MiKOSA) (nosilka: prof. dr. Janja Marc)
- J4-4556 – Nov pristop za gnojenje rastlin, ki temelji na mikrobnih biokatalitičnih agregatih (koordinator na UL FFA: doc. dr. Špela Zupančič, nosilec: dr. Tomaž Rijavec, IJS)
- J7-4418 – Nanovlakna za sočasno dostavo koktajlov izbrane mikrobiote in protimikrobnih učinkovin za lokalno zdravljenje vaginalnih infekcij (nosilka: doc. dr. Špela Zupančič)
- J7-4420 – Selektivno mehansko odstranjevanje bakterijskih biofilmov s konjugiranimi magnetnimi nanodelci (koordinator na UL FFA: prof. dr. Marko Anderluh, nosilec: izr. prof. dr. Aleš Berlec, IJS)
- J7-4635 – MitoCan – Predklinični razvoj novih zaviralcev mitohondrijskih ionskih kanalov za zdravljenje raka (nosilka: prof. dr. Lucija Peterlin Mašič)

- J4-3096 – Recombinant probiotics as a bio-alternative antimicrobial approach against the bacterium Clostridioides difficile (PI: Prof. Dr. Borut Štrukelj)
- J1-4400 – Evaluation of transition states of proteins (coordinator at UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Simona Golič Grdadolnik, KI)
- J1-4402 – Dynamic model of the DNA topoiserase type II molecular machine and the development of catalytic inhibitors (coordinator at UL FFA: Prof. Dr. Marija Sollner Dolenc, PI: Assoc. Prof. Dr. Andrej Perdih, KI)
- J1-4414 – ProBiS-Fold approach for determining binding sites (coordinator at UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Dušanka Janežič, UP FAMNIT)
- J1-4417 – Development of new low-molecular modulators of Toll-like receptors 7 and 8 for cancer immunotherapy (PI: Assoc. Prof. Dr. Matej Sova)
- J3-4496 – Adjuvants of the next generation for mucosal vaccines (PI: Prof. Dr. Žiga Jakopin)
- J3-4499 – Mechanisms of response to IL12/23 inhibitors in ulcerative colitis (coordinator at UL FFA: Prof. Dr. Iztok Grabnar, PI: Assoc. Prof. Dr. David Drobne, UKC)
- J3-4527 - Muscle secretome and bone cells - cooperation in osteosarcopenia (MiKOSA) (PI: Prof. Dr. Janja Marc)
- J4-4556 – A new approach for plant fertilization based on microbial biocatalytic aggregates (coordinator at UL FFA: Assist. Prof. Dr. Špela Zupančič, PI: Dr. Tomaž Rijavec, IJS)
- J7-4418 – Nanofibers for simultaneous delivery of cocktails of selected microbiota and antimicrobial agents for local treatment of vaginal infections (PI: Assist. Prof. Dr. Špela Zupančič)
- J7-4420 – Selective mechanical removal of bacterial biofilms with conjugated magnetic nanoparticles (coordinator at UL FFA: Prof. Dr. Marko Anderluh, PI: Assoc. Prof. Dr. Aleš Berlec, IJS)
- J7-4635 – MitoCan – Preclinical development of new inhibitors of mitochondrial ion channels for the treatment of cancer (PI: Prof. Dr. Lucija Peterlin Mašič)

- J1-500023 – 3DfluorCO – Tridimenzionalni fluor-vsebujoči bioizosteri karbonila: asimetrična sinteza in validacija (nosilec: doc. dr. Andrej Emanuel Cotman)
- J1-500037 – Razvoj selektivnih razgrajevalcev CDK1 za zdravljenje T-celičnih malignih obolenj
- J1-500039 – Razbijanje sten: razvoj inhibitorjev D,D- in L,D-transpeptidaz
- J3-500099 – Nov terapevtski pristop za zdravljenje alergijskih bolezni, ki temelji na inhibiciji interakcije med epitopi in paratopi
- J3-50116 – Srčne skrbi: osvetlitev mehanizmov kardiotoksičnosti proteasomskih zaviralcev
- J3-50123 – Inhibitorji nastanka bakterijskih biofilmov: nov pristop za obvladovanje bakterijske rezistence
- J4-50139 – Valorizacija odpadkov žlezave nedotike (Impatiens glandulifera Royle) za razvoj bioaktivnih izvlečkov s potencialno zaščitno aktivnostjo na humani žilni sistem.

- J1-500023 - 3DfluorCO - Three-dimensional fluorine-containing carbonyl bioisosteres: asymmetric synthesis and validation (PI: Assist. Prof. Dr. Andrej Emanuel Cotman)
- J1-500037 - Development of selective CDK1 inhibitors for the treatment of T-cell malignancies (PI: Assos. Prof. Dr. Izidor Sosič)
- J1-500039 - Breaking the walls: development of inhibitors of D,D- and L,D-transpeptidases (PI: Prof. Dr. Stanislav Gobec)
- J3-500099 - A new therapeutic approach for the treatment of allergic diseases based on the inhibition of the interaction between epitopes and paratopes (coordinator at UL FFA: Prof. Dr. Mojca Lunder; PI: Assist. Prof. Dr. Viktorija Tomič)
- J3-50116 - Cardiac concerns: elucidating the mechanisms of cardiotoxicity of proteasome inhibitors (PI: Assoc. Prof. Dr. Martina Gobec)
- J3-50123 - Inhibitors of the formation of bacterial biofilms: a new approach for controlling bacterial resistance (PI: Assist. Prof. Dr. Martina Hrast Rambaher)
- J4-50139 - Valorization of impatiens glandulifera Royle (Impatiens glandulifera Royle) waste for the development of bioactive extracts with potential protective activity on the human vascular system (coordinator at UL FFA: Assoc. Prof. Dr. Lovro Žiberna; PI: Assist. Prof. Dr. Alen Albreht).

Aplikativni raziskovalni projekti ARIS

- L1-3160 – Razvoj visokokoncentriranih proteinskih formulacij in vrednotenje kinetike absorpcije po subkutani aplikaciji (nosilec: prof. dr. Iztok Grabnar)
- L3-3176 – Vloga in možna uporaba imunomodulatornih mezenhimskih matičnih celic v zdravljenju bolezni COVID-19 (nosilka: izr. prof. dr. Janja Zupan)
- L3-3177 – Vrednotenje varnosti kanabinoidov in pomen za javno zdravje in vedenje potrošnikov (koordinator na UL FFA: doc. dr. Jurij Trontelj, nosilka: doc. dr. Alja Štern, NIB)
- L2-4455 – Kvantitativna spektroskopija sipajoče svetlobe kot procesno analizna tehnologija v farmacevtski proizvodnji (koordinator na UL FFA: prof. dr. Rok Dreu, nosilec: prof. dr. Franjo Pernuš, FKKT)
- L4-4564 – Biotehnološki potencial izbranih mikroorganizmov iz Sečoveljskih solin za uporabo v kozmetičnih izdelkih (koordinatorica na UL FFA: izr. prof. dr. Alenka Zvonar Pobirk, nosilka: dr. Ana Rotter, NIB)

National applied research projects

- L1-3160 – Development of highly concentrated protein formulations and evaluation of absorption kinetics after subcutaneous administration (PI: Prof. Dr. Iztok Grabnar)
- L3-3176 – The role and possible use of immunomodulatory mesenchymal stem cells in the treatment of the disease COVID-19 (PI: Assoc. Prof. Dr. Janja Zupan)
- L3-3177 – Evaluation of the safety of cannabinoids and their importance for public health and consumer behavior (coordinator at UL FFA: Assist. Prof. Dr. Jurij Trontelj, PI: Assist. Prof. Dr. Alja Štern, NIB)
- L2-4455 – Quantitative scattering light spectroscopy as a process analysis technology in pharmaceutical production (coordinator at UL FFA: Prof. Dr. Rok Dreu, PI: Prof. Dr. Franjo Pernuš, FKKT)
- L4-4564 – Biotechnological potential of selected microorganisms from the Sečovel salt pans for use in cosmetic products (coordinator at UL FFA: Assoc. Prof. Dr. Alenka Zvonar Pobirk, PI: Dr. Ana Rotter, NIB)
- L7-500044 - Efficacy and safety of nutritional supplementation for sleep quality: science-based evidence as a basis for informed decisions (coordinator at UL FFA: Prof. Dr. Mitja Kos; PI: Igor Pravst, Nutrition Institute).

Podoktorski raziskovalni projekt ARIS

- Z1-4405 – Razvoj novih antibiotikov s sočasnim zaviranjem beta-laktamaz in penicilin vezočih proteinov (nosilec: asist. dr. Alen Krajnc)

Postdoctoral research project

- Z1-4405 – Development of new antibiotics with simultaneous inhibition of beta-lactamases and penicillin-binding proteins (PI: Dr. Alen Krajnc)

Raziskovalni projekti ARIS v sodelovanju z drugimi raziskovalnimi agencijami v EU (tip N)[1]

- N1-0169 – Kovalentni pristop k boju proti bakterijski rezistenci (NKFIH) – sofinanciranje slovenskega dela skupnih madžarsko-slovenskih projektov, pri katerih madžarska agencija *National Research, Development and Innovation Office of Hungary* deluje v vlogi vodilne agencije (nosilec: prof. dr. Stanislav Gobec)
- N1-0172 – Fotokemijski pristop za odkrivanje naprednih ATP-kompetitivnih prob z zaviralnim delovanjem na Topoizomerazo Ialfa (NKFIH) – sofinanciranje slovenskega dela skupnih madžarsko slovenskih projektov, pri katerih madžarska raziskovalna agencija *National Research, Development and Innovation Office* deluje v vlogi vodilne agencije (nosilec: prof. dr. Janez Ilaš)
- N1-0277 – Raziskave multifunkcionalnih spojin, usmerjenih proti nevroinflamaciji in holinergičnem pomanjkanju pri Alzheimerjevi bolezni (NCN) – slovenski del dvostranskih ali tristranskih skupnih raziskovalnih projektov CEUS, pri katerih poljska raziskovalna agencija *National Science Centre* deluje v vlogi vodilne agencije (nosilec: prof. dr. Stanislav Gobec)

ARIS research projects in cooperation with other research agencies in the EU (type N)[1]

- N1-0169 – Covalent approach to the fight against bacterial resistance (NKFIH) - co-financing of the Slovenian part of joint Hungarian-Slovenian projects, where the Hungarian agency "National Research, Development and Innovation Office of Hungary" acts as the lead agency (PI: Prof. Dr. Stanislav Gobec)
- N1-0172 - Photochemical approach for the detection of advanced ATP-competitive probes with an inhibitory effect on Topoisomerase Ialpha (NKFIH) - co-financing of the Slovenian part of joint Hungarian-Slovenian projects, where the Hungarian research agency "National Research, Development and Innovation Office" acts as the lead agency (PI: Prof. Dr. Janez Ilaš)
- N1-0277 – Research of multifunctional compounds directed against neuroinflammation and cholinergic deficiency in Alzheimer's disease (NCN) - Slovenian part of CEUS bilateral or tripartite joint research projects, where the Polish research agency "National Science Centre" acts as the leading agency (PI: Prof. Dr. Stanislav Gobec).

BILATERALNI PROJEKTI ARIS na UL FFA

UL FFA je imela v letu 2023 vzpostavljenih 16 bilateralnih projektov, pri katerih sodelujemo z akademskimi institucijami v naslednjih državah: Avstrija, Črna Gora, Francija, Hrvaška, Madžarska, Nemčija, Srbija, Turčija in ZDA.

BILATERAL PROJECTS of ARIS at UL FFA

In 2023, UL FFA established 16 bilateral projects, where we cooperate with academic institutions in the following countries: Austria, Montenegro, France, Croatia, Hungary, Germany, Serbia, Turkey and the USA.

1 Shema financiranja, pri kateri evropske agencije (so)financirajo znanstvenoraziskovalno dejavnost za podporo odličnim skupnim mednarodnim raziskovalnim projektom

[1] Funding scheme where European agencies (co)finance scientific research activity to support excellent joint international research projects

MEDNARODNI RAZISKOVALNI PROJEKTI

EVROPSKI PROJEKTI – program Obzorje

EATRIS-Plus

V okviru programa **Obzorje 2020** je evropski infrastrukturni center za translacijsko medicino EATRIS (ang. *European Advanced Translational Research Infrastructure in Medicine*) pridobil financiranje Evropske komisije za projekt EATRIS-Plus. Ta je namenjen krepitvi zmogljivosti in zagotavljanju inovativnih znanstvenih orodij za doseganje trajnosti programa EATRIS na področju personalizirane medicine. Specifični cilji projekta vključujejo: utrjevanje zmogljivosti centra EATRIS na področju personalizirane medicine za boljše delovanje akademskih inštitucij in industrije ter povečanje povezovanja centra EATRIS z velikimi farmacevtskimi podjetji; okrepitev trajnostnega finančnega modela EATRIS; spodbujanje deležnikov k aktivnemu vključevanju v infrastrukturno delovanje; in razširitev strateškega partnerstva z raziskovalno infrastrukturo. EATRIS-Plus bo prispeval k združevanju in izkoriščanju translacijske infrastrukturne zmogljivosti akademskih inštitucij na področju različnih tehnologij omik ter priskrbel dostop do podatkov, pridobljenih s tovrstnimi sodobnimi tehnologijami. Projekt bo s tem omogočil lažje reševanje globalnih znanstvenih in družbenih izzivov na področju personalizirane medicine. Koordinatorica projekta na UL FFA je **prof. dr. Irena Mlinarič-Raščan**.

INTERNATIONAL RESEARCH PROJECTS

EUROPEAN PROJECTS – Horizon programme

EATRIS-Plus

Within the context of the Horizon 2020 programme, the European Infrastructure Center for Translational Medicine EATRIS (European Advanced Translational Research Infrastructure in Medicine) gained funding from the European Commission for the EATRIS-Plus project. The project is designed to strengthen the capacity and provide innovative scientific tools to achieve the sustainability of the EATRIS programme in the field of personalized medicine. The specific objectives of the project include: consolidating the capacity of the EATRIS center in the field of personalized medicine to improve the functioning of academic institutions and industry and to enhance the integration of the EATRIS center with large pharmaceutical companies; to strengthen the sustainable EATRIS financial model; to encourage stakeholders to actively integrate into infrastructure operations; and to extend the strategic partnership with research infrastructure. EATRIS-Plus will contribute to combining and exploiting the translational infrastructural capacity of academic institutions in the field of different "omic technologies" and provide access to data obtained through such modern technologies. The project will thereby facilitate the solution of global scientific and social challenges in the field of personalized medicine. The coordinator of the project at UL FFA is **Prof. Dr. Irena Mlinarič-Raščan**.

ORBIS

Open Research Biopharmaceutical Internships Support (ORBIS) je mednarodni projekt v okviru programa **Obzorje 2020**, *Marie Skłodowska-Curie actions and Research and Innovation Staff Exchange* (**MSCA-RISE**). Prvotno šest akademskih ustanov in štiri farmacevtska podjetja iz sedmih držav sodelujejo z namenom izboljšanja predklinične poti razvoja zdravil s povečano produktivnostjo raziskav in razvoja, zlasti z osredotočanjem na postopke in tehnologije, ki obravnavajo slabo biološko uporabnost zdravilnih učinkovin. Shema RISE podpira napotitve raziskovalcev, da se tako mladi kot tudi izkušeni raziskovalci napotijo v konzorcijske partnerske ustanove. Projekt ORBIS raziskovalcem, napotenim na gostujoče institucije, pridobivanje novih veščin in razvijanje kompetenc v mednarodnem in medsektorskem okolju ter omogoča krepitev človeškega kapitala in sinergij znanja v evropskem farmacevtskem raziskovalnem in razvojnem sektorju. V letu 2021 se je konzorciju partnerjev ORBIS med drugimi pridružila tudi UL FFA, ki je v okviru tega projekta znanstveno-raziskovalno usposabljanje omogočila 9 zaposlenim ter gostila 13 tujih raziskovalcev. V 2023 je bil koordinator projekta na UL FFA **prof. dr. Rok Dreu**.

ORBIS

Open Research Biopharmaceutical Internships Support (ORBIS) is an international project within the Horizon 2020 programme, Marie Skłodowska-Curie actions and Research and Innovation Staff Exchange (MSCA-RISE). Originally, six academic institutions and four pharmaceutical companies from seven countries are collaborating to improve the preclinical drug development pathway through increased research and development productivity, particularly by focusing on processes and technologies that address poor drug bioavailability. The RISE scheme supports secondments of both young and experienced researchers to consortium partner institutions. The ORBIS project enables researchers seconded to host institutions to acquire new skills and develop competences in an international and cross-sectoral environment, and to strengthen human capital and knowledge synergies in the European pharmaceutical research and development sector. In 2021 the consortium of ORBIS partners was joined by, among others, UL FFA, which within the framework of this project provided scientific research training to 9 employees and hosted 13 foreign researchers. In 2023, the coordinator at UL FFA was **Prof. Dr. Rok Dreu**.

PROGRAM OBZORJE EVROPA (HORIZON EUROPE 2021–2027)

EVROPSKA NOČ RAZISKOVALCEV

V okviru programa **Obzorje 2020**, *Marie Skłodowska-Curie Actions* (**MSCA**), je 29. septembra 2023 na UL FFA potekala Evropska noč raziskovalcev »Humanistika, to si ti!«, z naslovom »Človek živali in žival človeku«. Za okoli 400 vedoželjnih obiskovalcev je na ta dan skrbela 28-članska ekipa zaposlenih in študentov. Vodilna partnerica projekta je bila Univerza v Ljubljani, Filozofska fakulteta, poleg nje pa je sodelovalo še osem fakultet, med njimi tudi UL FFA. Koordinatorica projekta na UL FFA je bila **izr. prof. dr. Alenka Zvonar Pobirk**.

HORIZON EUROPE PROGRAMME (HORIZON EUROPE 2021–2027)

EUROPEAN RESEARCHERS´ - HUMANITIES ROCK!

Within the framework of the Horizon 2020 program, Marie Skłodowska-Curie Actions (MSCA),, the European researchers´ night - "Humanities, it's you!" was held at UL FFA, with the title "Human(e), animal 22/23," on September 29, 2023. Around 400 curious visitors were looked after by a 28-member team of employees and students of UL FFA during that day. The leading partner of the project is the University of Ljubljana, Faculty of Arts, and eight other faculties are participating, including UL FFA. The coordinator of the project at UL FFA is **Assoc. Prof. Dr. Alenka Zvonar Pobirk**.

PARC

Projekt Partnerstvo za oceno tveganja kemikalij (PARC: *Partnership for the Assessment of Risks from Chemicals*) je projekt, ki ga delno sofinancira Evropska unija v okviru zdravstvenega programa **Obzorje Evropa 2021–2027** (*Horizon Europe*). Glavni namen projekta PARC je spodbujanje inovacij pri procesih ocen tveganja kemikalij, ki bodo prispevale k trajnostni rabi in upravljanju s kemikalijami z namenom zagotavljanja varnega okolja in zdravja ljudi: s krepitvijo znanstvenih podlag za oceno kemičnih tveganj v EU, z združevanjem ocenjevalcev tveganj in upravljavcev s tveganji, z vključevanjem znanstvenikov, da se tako pospeši razvoj metod in orodij za nova znanja in informacije, ki bi omogočale z dokazi podprto pripravo ocen tveganj. PARC je projekt v podporo EU in nacionalnim ustanovam za oceno tveganj, upravljanje tveganj in komunikacijo tveganj v zvezi s kemikalijami, ki zagotavlja nove podatke, znanja, metode, mreže in veščine za naslavljanje obstoječih in novih izzivov na področju kemijske varnosti. Spodbudil bo prehod v naslednjo generacijo ocen tveganja za boljšo zaščito zdravja ljudi in okolja, v skladu z Zelenim dogovorom. Koordinatorica na UL FFA je **prof. dr. Marija Sollner Dolenc**.

PARC

The project Partnership for the Assessment of Risks from Chemicals (PARC: Partnership for the Assessment of Risks from Chemicals) is a project partially co-financed by the European Union within the framework of the Horizon Europe 2021-2027 health program (Horizon Europe). The main purpose of the PARC project is to promote innovation in chemical risk assessment processes that will contribute to the sustainable use and management of chemicals to ensure a safe environment and human health by strengthening the scientific basis for chemical risk assessment in the EU, by bringing together risk assessors and managers with risks, by involving scientists to accelerate the development of methods and tools for new knowledge and information that would enable evidence-based preparation of risk assessments. PARC is a project to support EU and national institutions for risk assessment, risk management, and risk communication related to chemicals by providing new data, knowledge, methods, networks, and skills to address existing and new challenges in chemical safety. It will drive the transition to the next generation of risk assessments to better protect human health and the environment, in line with the Green Deal. The coordinator at UL FFA is Prof. Dr. Marija Sollner Dolenc.

REMEDI4ALL

Projekt za Oblikovanje trajnostne evropske inovacijske platforme za podporo uveljavljanja novih terapevtskih indikacij učinkovin za vse skupine bolnikov (REMEDI4ALL: *Building a sustainable European innovation platform to enhance repurposing of medicines for all*) je projekt, ki ga financira Evropska unija v okviru zdravstvenega programa **Obzorje Evropa 2021–2027** (*Horizon Europe Research & Innovation programme*). Namen projekta je vzpostaviti vodilno vlogo Evrope na področju iskanja in uveljavljanja novih terapevtskih indikacij registriranih učinkovin za vse skupine bolnikov, in sicer z oblikovanjem povezane skupnosti znanstvenikov in izvajalcev raziskovalnih storitev vseh relevantnih področij in disciplin. Deležniki bodo oblikovali raziskovalni in inovacijski ekosistem za hiter, na pacienta usmerjen in cenovno dosegljiv razvoj in dostop do zdravil z novo terapevtsko indikacijo. Projekt torej vzpostavlja na bolnika osredotočeno platformo za uveljavitev novih terapevtskih indikacij zdravil, ki vključuje predklinični in klinični razvoj zdravila na področjih različnih bolezenskih stanj. Aktivnosti so namenjene usposabljanju in izobraževanju naslednjih generacij raziskovalcev, zdravnikov klinične prakse, bolnikov, odločevalcev, regulatorjev in financerjev o mehanizmih in procesih, povezanih z uveljavljanjem novih terapevtskih indikacij zdravil. S pomočjo strojnega učenja in umetne inteligence, odprtih baz podatkov in inovativnih orodij ter znanj bo projekt poglabljal razumevanje mehanizmov delovanja posameznih učinkovin. Vzpostavljena globalna skupnost deležnikov, ki bodo delovali v okolju, delujočem po principu *think-tank*, se bo povezovala v multidisciplinarnih aktivnostih in na srečanjih spodbujala dialog. Projekt bo podprl odločevalce po vsej EU pri zagotavljanju pravičnega dostopa do zdravil z novimi terapevtskimi indikacijami. Koordinatorja na UL FFA sta **prof. dr. Rok Dreu** in **prof. dr. Irena Mlinarič-Raščan**.

REMEDI4ALL

The project for Building a sustainable European innovation platform to support the implementation of new therapeutic indications of active substances for all groups of patients (REMEDI4ALL: Building a sustainable European innovation platform to enhance repurposing of medicines for all) is a project financed by the European Union within the framework of the Horizon Europe 2021 health program 2021-2027 (Horizon Europe Research & Innovation program). The project aims to establish Europe's leading role in the search and enforcement of new therapeutic indications of registered active substances for all groups of patients, namely by creating a connected community of scientists and research service providers of all relevant fields and disciplines. Stakeholders will form a research and innovation ecosystem for rapid, patient-oriented, and affordable development and access to drugs with a new therapeutic indication. The project therefore establishes a patient-centered platform for defining new therapeutic drug indications, which includes preclinical and clinical drug development in of various disease states. The activities aim to train and educate the next generations of researchers, clinical practitioners, patients, decision-makers, regulators and financiers about the mechanisms and processes related to the implementation of new therapeutic indications of drugs. With the help of machine learning and artificial intelligence, open databases, and innovative tools and knowledge, the project will deepen the understanding of the mechanisms of action of individual active substances. The established global community of stakeholders, who will operate in an environment based on the think-tank principle, will connect in multidisciplinary activities and promote dialogue at meetings. The project will support decision-makers across the EU in ensuring equitable access to medicines with new therapeutic indications. The coordinators at UL FFA are Prof. Dr. Rok Dreu and Prof. Dr. Irena Mlinarič-Raščan.

SIMPATHIC

Projekt za pospešeno odkrivanje že obstoječih zdravil, ki bi jih uporabili za zdravljenje redkih nevroloških, nevrometaboličnih in nevromišičnih bolezni z ugotavljanjem podobnosti v klinični in molekularni patologiji (SIMPATHIC – *Accelerating drug repurposing for rare neurological, neurometabolic and neuromuscular disorders by exploiting SIMilarities in clinical and molecular PATHology*) je projekt, ki je financiran iz zdravstvenega programa **Obzorje Evropa 2021–2027** (*Horizon Europe*). Namen projekta je vzpostaviti pospešen razvoj že obstoječih zdravilnih učinkovin v nova zdravila za skupine bolnikov z različnimi genetskimi diagnozami, vendar s prekrivajočimi se nevrološkimi simptomi in molekularnimi patološkimi mehanizmi. Ponovna uporaba zdravilnih učinkovin v novem zdravilu je lahko ključna za bolnike z redkimi boleznimi, ki se soočajo s pomanjkanjem učinkovitega zdravljenja z zdravili. S konceptom pospešenega razvoja ponovno uporabljenih zdravilnih učinkovin za več indikacij odpira pot do razvoja personaliziranih terapevtskih možnosti za skupine bolnikov z redkimi boleznimi, obenem pa bo zdravljenje s takšnimi zdravili bolj dostopno za bolnike in bolj stroškovno učinkovito. Koordinator na UL FFA je **prof. dr. Rok Dreu**.

SIMPATHIC

The project for accelerated discovery of already existing drugs that would be used for the treatment of rare neurological, neurometabolic and neuromuscular diseases by identifying similarities in clinical and molecular pathology (SIMPATHIC – Accelerating drug repurposing for rare neurological, neurometabolic and neuromuscular disorders by exploiting SIMilarities in clinical and molecular PATHology) is a project funded by the Horizon Europe 2021-2027 health program (Horizon Europe). The project endeavors to accelerate the development of existing active substances into new drugs for groups of patients with different genetic diagnoses, but with overlapping neurological symptoms and molecular pathomechanisms. Repurposing active ingredients in a new drug can be crucial for patients with rare diseases who lack effective drug therapy. The accelerated development of re-used active ingredients for multiple indications paves the way for the development of personalized therapeutic options for groups of patients with rare diseases, while making treatment with such drugs more accessible to patients and more cost-effective. The coordinator at UL FFA is **Prof. Dr. Rok Dreu**.

BREAKthrough

Projekt za Preboj pregrad – Celostni multidisciplinarni pristop za uničevanje gramnegativnih bakterij z omogočanjem prepustnosti zunanje celične membrane za že obstoječe antibiotike. BREAKthrough (*Breaking the barrier - An integrated multidisciplinary approach to kill Gram-negative bacteria through existing antibiotics by making their outer membrane permeable*) je projekt, ki ga financira Evropska unija v okviru zdravstvenega programa **Obzorje Evropa 2021–2027** v povezavi s programom *Marie Skłodowska-Curie Actions – Doctoral Network* (**MSCA DN**). Antimikrobna odpornost, povezana z odpornimi patogeni, predstavlja globalen zdravstveni problem. Gramnegativne bakterije so še posebno problematične zaradi neprepustnosti njihove zunanje celične membrane za večino obstoječih antibiotikov. Namen projekta BREAKthrough je povečati občutljivost bakterij na že obstoječe antibiotike s povečanjem prepustnosti zunanje celične membrane. V okviru projekta se bo usposabljajo več raziskovalcev na začetku kariere (*Early Stage Researchers*). Koordinator na UL FFA je **prof. dr. Stanislav Gobec**.

BREAKthrough

Barrier Breakthrough Project – A comprehensive multidisciplinary approach to destroy Gram-negative bacteria by making the outer cell membrane more permeable to pre-existing antibiotics. BREAKthrough (Breaking the barrier – An integrated multidisciplinary approach to kill Gram-negative bacteria through existing antibiotics by making their outer membrane permeable) is a project financed by the European Union within the framework of the Horizon Europe 2021-2027 health program in connection with the Marie Skłodowska program – Curie Actions (MSCA DN) - Doctoral Network. Antimicrobial resistance associated with resistant pathogens represents a global health problem. Gram-negative bacteria are particularly problematic due to the impermeability of their outer cell membrane to most existing antibiotics. The purpose of the BREAKthrough project is to increase the sensitivity of bacteria to existing antibiotics by increasing the permeability of the outer cell membrane. As part of the project, several researchers at the beginning of their careers (Early Stage Researchers) will receive training. The coordinator at UL FFA is **Prof. Dr. Stanislav Gobec**.

CELSA

Namen projektov združenja CELSA (ang. *Central Europe Leuven Strategic Alliance*) je priprava skupne prijave na evropski razpis, iz česar izhaja, da naj bi bila vsaj ena od sodelujočih univerz, KU Leuven ali UL, koordinator prijavljenega projekta.

V letu 2023 so raziskovalci UL FFA pridobili dva projekta v okviru razpisov združenja CELSA:

- *Degradation of CDK1 and HDACs as a strategy to treat T-cell malignancies* (vodja projekta: izr. prof. dr. Izidor Sosič).
- *Exploiting structural insights in IP3 receptor function to develop novel, allosteric inhibitors of IP3 receptor channels: SINFONIC* (vodji projekta prof. dr. Tihomir Tomašič in prof. dr. Lucija Peterlin Mašič).

Poleg dveh novopridobljenih projektov je v letu 2023 potekal tudi projekt v okviru razpisa združenja CELSA, z naslovom ***The role of snoRNAs in the etiology of inflammatory bowel disease***. Kronična vnetna črevesna bolezen (KVČB) predstavlja skupino napredujočih in izčrpavajočih bolezni, za katere je značilno kronično vnetje črevesja s slabo pojasnjeno etiologijo. Osrednji cilj predlaganega projekta je najti zanesljive diagnostične biološke označevalce iz skupine snoRNA s funkcionalnim pomenom za KVČB, ki bi v prihodnosti pomagali pri natančni diagnozi bolezni in s tem omogočili zgodnje in učinkovito zdravljenje. Živalske in celične modele, ustvarjene v tem projektu, bi lahko uporabili za rešetanja učinkovin za odkrivanje novih terapevtikov za KVČB. Vodja projekta na UL FFA je **izr. prof. dr. Tomaž Bratkovič**, na UL FKKT pa prof. dr. Boris Rugelj.

CELSA

The purpose of CELSA (Central Europe Leuven Strategic Alliance) projects is to prepare a joint application for a European tender, from which at least one of the participating universities, KU Leuven or UL, should coordinate the applied project.

In 2023, UL FFA researchers won two projects within the CELSA tenders:

- Degradation of CDK1 and HDACs as a strategy to treat T-cell malignancies (PI: Assoc. Prof. Dr. Izidor Sosič).
- Exploiting structural insights in IP3 receptor function to develop novel, allosteric inhibitors of IP3 receptor channels: SINFONIC (PIs Prof. Dr. Tihomir Tomašič and Prof. Dr. Lucija Peterlin Mašič).

In addition to the two newly acquired projects, in 2023 another project within the framework of the CELSA call, titled: "The role of snoRNAs in the etiology of inflammatory bowel disease" was active. Chronic inflammatory bowel disease (IBD) represents a group of progressive and debilitating diseases characterized by chronic inflammation of the intestine with a poorly explained etiology. The central goal of the proposed project is to find reliable diagnostic biomarkers from the group of snoRNAs with functional significance for IBD, which would help in the accurate diagnosis of the disease in the future and thus enable early and effective treatment. The animal and cellular models generated in this project could be used to screen for agents to discover new therapeutics for IBD. The PIs at UL FFA is Assoc. Prof. Dr. Tomaž Bratkovič, at UL FKKT it is Prof. Dr. Boris Rugelj.

PROJEKTI/AKCIJE COST

COST (ang. *European CO-operation in Science and Technology*) je medvladni okvir za sodelovanje raziskovalnih organizacij iz različnih evropskih držav na področju znanosti in tehnologije, ki omogoča koordinacijo nacionalno financiranih raziskav na evropski ravni s strani raziskovalnih organizacij samih, ki delujejo na istem področju in problemu. COST zagotavlja podporo raziskovalni dejavnosti s spodbujanjem mobilnosti v okviru akcij COST. Namen tovrstnih akcij je, da z inovativnimi, izvirnimi idejami, ki vodijo do novih konceptov in izdelkov, prispevajo h krepitvi evropske raziskovalne in inovacijske zmogljivosti. UL FFA je v letu 2023 sodelovala v 8 projektih (akcijah) COST.

COST ACTIONS

COST – European CO-operation in Science and Technology is an intergovernmental framework for the cooperation of research organizations from different European countries in science and technology, which enables coordination of nationally funded research at European level by research organizations working in the same field. COST supports research activities by promoting mobility within COST actions. Their aim is to contribute in strengthening Europe´s research and innovation capacity through innovative, original ideas that lead to new concepts and products. UL FFA participated in 8 COST projects/actions in 2023.

DRUGI MEDNARODNI PROJEKTI

IMPACT

Projekt o vključevanju novih varnostnih informacij v klinične smernice (IMPACT: *Implementation of EU risk minimisation measures for medicinal products in clinical guidelines*) je projekt, ki ga sofinancira **Evropska agencija za zdravila** (**EMA**). Namen projekta je proučiti vključevanje novih varnostnih informacij, ki nastajajo v okviru regulatornih postopkov, kliničnih praks in raziskav, v klinične smernice zdravljenja. UL FFA sodeluje v konzorciju partnerjev iz šestih držav. Koordinator projekta na UL FFA je **prof. dr. Mitja Kos**.

RiskAwareTTS

V okviru projekta RiskAwareTTS proučujemo vpliv regulatornih odločitev in priporočil, povezanih s tveganjem za sindrom tromboze s trombocitopenijo ob cepljenju s SARS-CoV-2 adenovirusnimi vektorskimi cepivi. Raziskujemo zavedanje in poznavanje tveganja za zaplete tako med zdravstvenimi delavci kot tudi v splošni javnosti ter kako je slednje vplivalo na odnos do cepljenja z izbranimi cepivi. Katedra za socialno farmacijo, UL FFA, sodeluje v konzorciju partnerjev iz šestih držav, ki raziskavo izvajajo za **Evropsko agencijo za zdravila** (**EMA**). Vodja projekta na UL FFA je **prof. dr. Mitja Kos**.

OTHER INTERNATIONAL PROJECTS

IMPACT

The project on including new safety information in clinical guidelines (IMPACT: Implementation of EU risk minimization measures for medicinal products in clinical guidelines) is a project co-financed by the European Medicines Agency (EMA). The project aims to study the integration of new safety information generated in the framework of regulatory procedures, clinical practices and research into clinical treatment guidelines. UL FFA participates in a consortium of partners from six countries. The project coordinator at UL FFA is Prof. Dr. Mitja Kos.

RiskAwareTTS

As part of the RiskAwareTTS project, the impact of regulatory decisions and recommendations related to the risk of thrombosis syndrome with thrombocytopenia after vaccination with SARS-CoV-2 adenoviral vector vaccines is being studied. The project investigates the awareness and knowledge of the risk of complications both among health professionals and the general public, as well as how the latter influenced the attitude towards vaccination with selected vaccines. The Department of Social Pharmacy, UL FFA participates in a consortium of partners from six countries who conduct research for the European Medicines Agency (EMA). The project manager at UL FFA is Prof. Dr. Mitja Kos.

PRENOS ZNANJA IN SODELOVANJE Z OKOLJEM

INOVACIJSKI SKLAD UNIVERZE V LJUBLJANI

Inovacijski sklad Univerze v Ljubljani sofinancira obetavne inovativne projekte in jim pomaga do višje stopnje tehnološke pripravljenosti. Pri tem Pisarna za prenos znanja UL vse projekte strokovno podpira, jih spodbuja in povezuje s podjetji in tudi drugimi organizacijami inovacijskega okolja. Dve ekipi iz prve generacije Inovacijskega sklada, obe iz UL FFA, sta bili izpostavljeni kot navdihujoči uspešni zgodbi, saj sta s pomočjo sredstev sklada izboljšali tehnološki proces in sta sedaj v stiku s podjetji, potencialnimi razvojnimi partnerji. Ti dve ekipi sta **Razvoj novih protibakterijskih učinkovin** pod vodstvom **doc. dr. Martine Hrast Rambaher** ter **Izboljšan proces razvoja bioloških zdravil** pod vodstvom **izr. prof. dr. Tomaža Bratkoviča**.

KNOWLEDGE TRANSFER AND COOPERATION WITH THE ENVIRONMENT

THE UNIVERSITY OF LJUBLJANA INNOVATION FUND

The University of Ljubljana Innovation Fund co-finances promising innovative projects, supporting them in reaching higher technological readiness levels. The Knowledge Transfer Office at UL provides professional support to all projects, promoting and connecting them with companies and other organizations within the innovation ecosystem. Two teams from the first generation of the Innovation Fund, both from UL FFA, were highlighted as inspiring success stories. With the support of the Fund, they enhanced their technological processes and are now in contact with companies and potential development partners. These teams are Development of New Antibacterial Agents, led by Assistant Professor Martina Hrast Rambaher, and Enhanced Process for Biopharmaceutical Development, led by Assoc. Professor Tomaž Bratkovič.

UNI.MINDS 2023

Največji slovenski festival za grajenje inovacijske skupnosti in partnerstev med akademskim okoljem in gospodarstvom je potekal med 16. in 25. oktobrom 2023. V okviru Lekovega dne za raziskovalce, ki je se odvijal na UL FKKT dne 18. 10. 2023, so raziskovalci iz UL FFA predstavili tri prispevke.

V zaključnem delu festivala UNI.MINDS 2023 smo na UL FFA gostili profesorja Williama Douglasa Figg-, Sr, PharmD, MBA, iz Nacionalnega inštituta za rak (NCI) v ZDA. V predavanju z naslovom *Managing an Academic Research Laboratory like it is a Private Sector Business: Metrics for Success* dne 23. 10. 2023 je predstavil svoje raziskave, ki so vodile do ugotovitev o povečanem izražanju OATP1B3 pri rakavih obolenjih prostate ter nato svoj pristop k vodenju skupin znanstvenikov in kliničnih raziskovalcev, ki temelji na spodbujanju sinergije sodelovanja.

UNI.MINDS 2023

The largest Slovenian festival for building an innovation community and partnerships between the academic environment and the economy occurred from October 16 to 25, 2023. During the Lek Day for Researchers held at UL FKKT on October 18, 2023, researchers from UL FFA presented three contributions.

During the conclusion of the UNI.MINDS 2023 festival, we hosted Professor William Douglas Figg Sr., PharmD, MBA, from the National Cancer Institute (NCI) in the USA. In his lecture titled "Managing an Academic Research Laboratory like it is a Private Sector Business: Metrics for Success," delivered on October 23, 2023, he presented his research findings on the increased expression of OATP1B3 in prostate cancer. He also discussed his approach to leading teams of scientists and clinical researchers, which he bases on fostering collaborative synergy.

IZUMI, INTELEKTUALNA LASTNINA

UL FFA je v sodelovanju s Pisarno za prenos znanja na UL v letu 2023 vložila 6 mednarodnih patentnih prijav in tako nadaljevala s prakso zaščite inovacijske dejavnosti:

Prof. dr. Žiga Jakopin in asist. **dr. Samo Guzelj** sta v okviru dunajskega inkubatorja Cebina vložila mednarodno patentno prijavo z naslovom *Conjugated TLR7 and NOD2 agonist*

Izr. prof. Nace Zidar, prof. dr. Tihomir Tomašič, prof. dr. Janez Ilaš, asist. dr. Martina Durcik, prof. dr. Anamarija Zega, prof. dr. Lucija Peterlin Mašič in **prof. dr. Danijel Kikelj** so vložili evropsko patentno prijavo z naslovom *New N-phenylpyrrolamide inhibitors of DNA gyrase and topoisomerase IV with antibacterial activity*

Izr. prof. dr. Mojca Kerec Kos (UL FFA), izr. prof. dr. Andreja Erman iz UL Medicinske fakultete, prof. dr. Peter Veranič iz UL Medicinske fakultete in **doc. dr. Darja Pavlin iz UL Veterinarske fakultete** so vložili patentno prijavo z naslovom *Intravezikalna aplikacija hitozana za pomožno zdravljenje kroničnih bakterijskih cistitisov pri psih*

Prof. dr. Žiga Jakopin, asist. dr. Samo Guzelj in **doktorska študentka Špela Janež** so vložili patentno prijavo z naslovom *Conjugated TLR7 AND RIG-I Agonists*

INVENTIONS, INTELLECTUAL PROPERTY

UL FFA, in cooperation with the Knowledge Transfer Office at UL, filed 6 international patent applications in 2023 and thus continued the practice of protecting innovation activities:

Prof. Dr. Žiga Jakopin and assistant. Dr. Samo Guzelj filed an international patent application under the title "Conjugated TLR7 and NOD2 agonists" within the Viennese incubator Cebina

Assoc. Prof. Nace Zidar, Prof. Dr. Tihomir Tomašič, Prof. Dr. Janez Ilaš, assistant. Dr. Martina Durcik, Prof. Dr. Anamarija Zega, Prof. Dr. Lucija Peterlin Mašič and Prof. Dr. Danijel Kikelj filed a European patent application entitled "New N-phenylpyrrolamide inhibitors of DNA gyrase and topoisomerase IV with antibacterial activity"

Assoc. Prof. Dr. Mojca Kerec Kos (UL FFA), assoc. Prof. Dr. Andreja Erman from UL, Faculty of Medicine, Prof. Dr. Peter Veranič from UL, Faculty of Medicine and Assoc. Dr. Darja Pavlin from UL, Faculty of Veterinary Medicine filed a patent application entitled "Intravesical application of chitosan for adjunctive treatment of chronic bacterial cystitis in dogs"

Prof. Dr. Žiga Jakopin, Asist. Dr. Samo Guzelj and PhD student Špela Janež filed a patent application entitled "Conjugated TLR7 AND RIG-I Agonists"

Prof. dr. Aleš Obreza, prof. dr. Stanislav Gobec, doc. dr. Damijan Knez, doc. dr. Urban Košak, Svit Ferjančič Benetik, dr. Matic Proj in **asist. dr. Anže Meden** so vložili patentno prijavo z naslovom *5,6-disubstituted alkyl 1H and 2H-indazoles as dual butyrylcholinesterase and p38α mitogen-activated protein kinase inhibitors for use in the treatment of neurodegenerative and inflammatory diseases*

Prof. Dr. Aleš Obreza, Prof. Dr. Stanislav Gobec, Assoc. Dr. Damijan Knez, Assoc. Dr. Urban Košak, Svit Ferjančič Benetik, Dr. Matic Proj and Assist. Dr. Anže Meden filed a patent application entitled "5,6-disubstituted alkyl 1H and 2H-indazoles as dual butyrylcholinesterase and p38α mitogen-activated protein kinase inhibitors for use in the treatment of neurodegenerative and inflammatory diseases"

Doc. dr. Špela Zupančič, asist. Anže Zidar in **doktorski študent Blaž Mihelič** so vložili patentno prijavo z naslovom Oralni dostavni sistemi s kurkuminom in omega-3 maščobno kislino za zdravljenje paradontalne bolezni

Assist. Dr. Špela Zupančič, assistant. Anže Zidar and doctoral student Blaž Mihelič filed a patent application entitled "Oral delivery systems with curcumin and omega-3 fatty acid for the treatment of periodontal disease".

UDEJSTVOVANJE V STROKI

- Sodelovanje v organih izven UL (ministrstva, domače in mednarodne organizacije)
- Uredništva (več kot 30 uredništev nacionalnih in mednarodnih revij)
- Javni nastopi (TV in radijski intervjuji ter prispevki)
- Vseživljenjska izobraževanja in usposabljanja – stalni prenos znanja v stroko (tečaji LBM, usposabljanje za farmacevte, poletne šole, mednarodne šole ...)
- Strokovno izpopolnjevanje s področja farmacije
- Neposredni projekti (ekspertize, mnenja) za partnerje iz javnega sektorja in gospodarstva

INVOLVEMENT IN THE PHARMACY PROFESSION

- Participation in bodies outside UL (ministries, national and international organizations).
- Editorial roles (over 30 national and international journal editorial boards).
- Public appearances (TV and radio interviews and segments).
- Lifelong learning and training – continuous knowledge transfer to the profession (LBM courses, professional training for pharmacists, summer schools, international schools, etc.).
- Professional development in the field of pharmacy.
- Direct projects (expert assessments, opinions) for public sector and industry partners.

Poletna šola ADVANCE
(v okviru projekta 8.10 NOO ULTRA)

Poletna šola je potekala od 5. 6. do 9. 6. 2023 v Ljubljani. Na intenzivni enotedenski delavnici z naslovom ADVANCE: razvoj zdravil za napredno zdravljenje (ADVANCE: *Advanced therapy medicinal products development*) so predavali vrhunski strokovnjaki s področja zdravil za napredno zdravljenje, udeleženci pa so lahko pridobili široko znanje o teh zdravilih, in sicer z vidika znanosti, proizvodnje, regulative in trženja. Dogodek je bil izveden pod okriljem UL FFA v sodelovanju z ostalimi partnerji. Skupaj se je izobraževanja udeležilo 34 udeležencev, ki so lahko preko UL FFA za delavnico pridobili tudi 3 ECTS.

ADVANCE summer school
(within the 8.10 NOO ULTRA project)

It took place from June 5-9 2023 in Ljubljana. At the intensive one-week workshop titled "ADVANCE: Advanced therapy medicinal products development," lectures top experts in the field of advanced therapy medicinal products gave lectures, and the participants were able to gain extensive knowledge about these drugs, namely from the point of view science, production, regulation and marketing. The event was held under the auspices of UL FFA in cooperation with other partners. A total of 34 participants took part in the training and were able to obtain 3 ECTS credits for the workshop through UL FFA.

Mini poletna šola za dijake

Mini poletna šola za dijake je potekala na UL FFA 3. avgusta 2023 v sodelovanju s Kemijskim inštitutom. Gostili smo 20 dijakov, ki jih zanima naravoslovje in vede o življenju. Aktivnost je bila izvedena v okviru RSF ukrepa S.B.1.1 – Promocija študija za različne skupine s poudarkom na enaki zastopanosti spolov. S predstavitvami in delavnicami, smo interaktivno prikazali raziskovanje na področju farmacije.

Mini summer school for students

The mini summer school for students was held at UL FFA on August 3, 2023 in cooperation with the Institute of Chemistry. We hosted 20 students interested in natural sciences and life sciences. The activity was carried out within the RSF measure S.B.1.1 – Promotion of studies for different groups with an emphasis on equal gender representation. With presentations and workshops, we interactively showed them research in the field of pharmacy.

MEDNARODNA DEJAVNOST

PROGRAMI MOBILNOSTI

V študijskem letu 2022/23 smo na UL FFA zaznali rahel upad števila študentskih izmenjav, a še vedno v mejah pričakovanih nihanj. V študijskem letu 2022/2023 se je rahlo povečalo število izmenjav učiteljev, raziskovalcev in administrativnih sodelavcev.

V prihodnosti ostaja naš ključni cilj krepiti izmenjave in sodelovanje znotraj partnerstev ter zagotoviti uravnotežen interes za izmenjave iz različnih partnerskih univerz po Evropi. Nadaljevali bomo z ukrepi, ki prispevajo k ustvarjanju vrhunskih pogojev za študij, omogočili kakovostno mobilnost čim večjemu številu študentov UL FFA ter s tem prispevali k razvoju splošnih kompetenc diplomantov.

INTERNATIONAL ACTIVITY

MOBILITY PROGRAMS

In the academic year 2022/23, we observed a slight decrease in the number of student exchanges at UL FFA, which still remained within expected fluctuations. Simultaneously, there was an increase in exchanges of teachers, researchers, and administrative staff compared to the previous academic year.

Our primary goal for the future is to enhance exchanges and collaboration within partnerships, ensuring a balanced interest in exchanges from various partner universities across Europe. We will persist with measures that foster outstanding study conditions, providing high-quality mobility opportunities for as many UL FFA students as possible, thus enhancing the overall competencies of our graduates.

MOBILNOST V ŠTEVILKAH

V okviru programa Erasmus+ imamo na UL FFA sklenjenih 67 medinstitucionalnih sporazumov in dogovorjenih približno 160 mest za mobilnost študentov ter 75 za mobilnost učiteljev. V letu 2023 smo potrdili interes vseh naših dosedanjih Erasmus+ partnerjev za podaljšanje sporazumov v EWP platformi za obdobje 2023–2027. V okviru srednjeevropskega programa za mobilnost študentov in profesorjev CEEPUS še naprej sodelujemo v dveh mrežah. UL FFA je partner v CEEPUS mreži CIII-RS-1113 (*Central European Knowledge Alliance for Teaching, Learning & Research in Pharmaceutical Technology*). UL FFA je koordinator CEEPUS mreže CIII-SI-0611 (*Novel diagnostic and therapeutic approaches to complex genetic disorders*). Študentje pogosto opravljajo izmenjave tudi v okviru programa Mednarodne zveze študentov farmacije (IPSF) in Evropske zveze študentov farmacije (EPSA). Izmenjave študentov in zaposlenih potekajo tudi z drugimi mehanizmi spodbujanja in financiranja.

MOBILITY IN NUMBERS

Within the Erasmus+ program, UL FFA has 67 interinstitutional agreements, providing approximately 160 places for student mobility and 75 for teacher mobility. In 2023, we confirmed the interest of all our current Erasmus+ partners to extend agreements in the EWP platform for 2023–2027. We remain active in two networks under the Central European Exchange Program for University Studies (CEEPUS). UL FFA is a partner in the CEEPUS network CIII-RS-1113 (Central European Knowledge Alliance for Teaching, Learning & Research in Pharmaceutical Technology) and coordinates the CEEPUS network CIII-SI-0611 (Novel diagnostic and therapeutic approaches to complex genetic disorders). Students also frequently exchange through the International Pharmaceutical Students' Federation (IPSF) and the European Pharmaceutical Students' Association (EPSA) programs. Additionally, exchanges of students and staff occur through various other promotional and funding mechanisms.

Naši študenti na mednarodnih inštitucijah

40 študentov se je udeležilo mednarodne mobilnosti v okviru programa Erasmus+, od tega 29 za študij, 11 za praktično usposabljanje, od teh 3 diplomanti. Največ študentov je bilo na študijski izmenjavi v Španiji (10), na Portugalskem (6), v Nemčiji in na Češkem (5), v Italiji (3), Estoniji, na Finskem, Poljskem (2) ter v Franciji, na Nizozemskem in Norveškem (1). 25 študentov je opravilo krajšo mobilnost za praktično usposabljanje v trajanju do enega meseca v okviru IPSF.

Gostujoči študenti na UL FFA

68 mednarodnih študentov je opravilo del svojih študijskih obveznosti na UL FFA predvsem v okviru programa Erasmus+ in CEEPUS (40 jih je opravljalo predmete, 16 samo raziskovalno delo za magistrsko nalogo in 12 raziskovalno delo v laboratoriju). 22 študentov je opravilo krajšo mobilnost za praktično usposabljanje v trajanju do enega meseca v okviru IPSF.

Izmenjave učiteljev, raziskovalcev in administrativnih sodelavcev

V letu 2022/23 so bili na izmenjavi v tujini 3 visokošolski učitelji ali znanstveni sodelavci za obdobje do 1 meseca, 4 so bili na gostovanju za obdobje od 3 do 6 mesecev, izmenjave so se udeležili tudi 3 administrativni delavci, in sicer za obdobje do 1 meseca. Na UL FFA je v letu 2022/23 gostovalo 27 mednarodnih znanstvenih delavcev in raziskovalnih sodelavcev, ki so sodelovali v pedagoškem in znanstvenoraziskovalnem procesu. Pri tem smo do enega meseca v okviru bilateralnih sporazumov in drugih projektov gostili 6 pedagogov in 15 raziskovalcev s tujih univerz ter 4 raziskovalce iz industrije. V okviru projekta ORBIS smo od 3 do 6 mesecev gostili še 5 raziskovalce iz industrije.

Our students at international institutions

40 students participated in international mobility through the Erasmus+ program, with 29 for studies and 11 for practical training, including 3 graduates. Most students participated in study exchanges in Spain (10), Portugal (6), Germany, and the Czech Republic (5 each), Italy (3), Estonia, Finland, and Poland (2 each), and in France, the Netherlands, and Norway (1 each). Additionally, 25 students completed shorter practical training mobilities lasting up to 1 month under the IPSF program.

Visiting students at the UL FFA

68 international students fulfilled a portion of their academic requirements at UL FFA, primarily through the Erasmus+ and CEEPUS programs. Among them, 40 attended courses, 16 conducted research for their master's thesis, and 12 engaged in laboratory research. Furthermore, 22 students completed short-term practical training lasting up to 1 month under the IPSF program.

Exchanges of teachers, researchers, and administrative staff

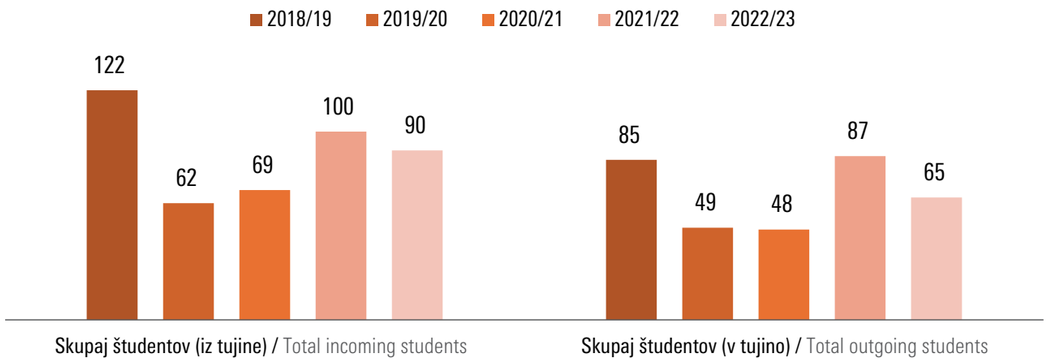
In the academic year 2022/23, 3 university teachers or research staff members from UL FFA went on short-term exchanges abroad, lasting up to 1 month, while 4 were on more extended stays, ranging from 3 to 6 months. Additionally, 3 administrative staff members participated in exchanges, for up to 1 month. We hosted 27 international academic staff and research associates who participated in teaching and research activities. As part of bilateral agreements and other projects, we hosted six educators and fifteen researchers from foreign universities, as well as four researchers from industry, for up to one month. Additionally, through the ORBIS project, we hosted five industry researchers for a period of three to six months.

KLJUČNI DOSEŽKI V LETU 2023

Potrdili smo interes vseh naših dosedanjih Erasmus+ partnerjev za podaljšanje sporazumov v EWP platformi za obdobje 2021–2027. V 2022/23 je bilo na UL FFA mednarodnim študentom na voljo 15 učnih enot v angleškem jeziku. Na ta način želimo krepiti interes in ustvariti boljše pogoje študija za mednarodne študente. V jeseni 2023 smo prav tako prvič pričeli z izvajanjem študijskega progama S2 Industrijska farmacija, ki poteka v hibridni obliki in v angleškem jeziku.

KEY ACHIEVEMENTS IN 2023

We have confirmed the interest of all our current Erasmus+ partners in extending agreements on the EWP platform for the period 2021–2027. During the academic year 2022/23, 15 courses taught in English were made available to international students. This portfolio aims to strengthen interest and improve study conditions for international students. Additionally, in autumn 2023, we successfully launched the S2 Industrial Pharmacy study program for the first time, conducted in a hybrid format and in English.



Slika: Število študentov UL FFA na izmenjavi v tujini in število mednarodnih študentov na izmenjavi na UL FFA (zadnjih pet študijskih let). / Graph: The number of the UL FFA students in the exchange programme abroad and the number of foreign students in the exchange programme at the faculty (data for the last five years).

OBŠTUDIJSKA DEJAVNOST

Študentska organiziranost na UL FFA je specifična in študentom omogoča velik spekter delovanja tako na strokovnih področjih kot obštudijskem delovanju in mednarodnem udejstvovanju.

Študentski svet UL FFA (ŠS FFA) je organ študentov UL FFA. Že vrsto let uspešno deluje, uveljavil pa se je kot zelo konstruktiven sogovornik pri vprašanjih, vezanih na študijski proces in kakovost UL FFA. Ena izmed številnih nalog ŠS FFA je ustvarjanje ter oblikovanje mnenj o pedagoških delavcih, s čimer slednjim omogoča izvolitev v zahtevane nazive. ŠS FFA je uradni zastopnik študentov UL FFA na vseh organizacijskih ravneh in uspešno sodeluje v sklopu drugih organov fakultete (Senat, Upravni odbor, Komisija za študijsko področje, Akademski zbor, Komisija za kakovost, Disciplinska komisija). Svoje študente prav tako zastopa v okviru Univerze v Ljubljani na sejah ŠS UL.

Poleg omenjenih nalog in aktivnosti je ŠS FFA 2023 že četrto leto zapored uspešno organiziral Uvodni dan za bruce (UDB). Gre za dogodek, namenjen študentom prvih letnikov študijskih programov Kozmetologija, EMŠ Farmacija in prve stopnje programa Laboratorijska biomedicina, katerega namen je novim študentom olajšati prehod iz srednješolskega v univerzitetno okolje ter jih podrobneje seznaniti z UL FFA. Pod okriljem ŠS FFA pa prav tako že od leta 2020 deluje pevski zbor UL FFA.

EXTRACURRICULAR ACTIVITIES

The student organisation at UL FFA is specific and allows students to engage in a wide range of activities, both in professional fields, extracurricular activities, and international engagement.

The UL FFA Student Council (UL FFA Student Council) is a body of UL FFA students. It has been functioning successfully for many years and has established itself as a very constructive interlocutor on issues related to the study process and the quality of the UL FFA. One of the many tasks of the UL FFA Student Council is to create and form opinions on teaching staff, thus enabling them to be elected to the required titles. The FFA Student Council is the official representative of UL FFA students at all organizational levels and successfully participates in other faculty bodies (Senate, Management Board, Study Area Commission, Academic Assembly, Quality Commission, Disciplinary Commission). It also represents its students in the University of Ljubljana at the UL FFA Student Council meetings.

In addition to the above-mentioned tasks and activities, for the fourth consecutive year, the FFA 2023 Student Council has successfully organized the Orientation Day for Freshers (UDB), an event aimed at first-year students of the Cosmetology, Pharmacy and Laboratory Biomedicine programs. The aim is to facilitate the transition of new students from the secondary school to the university environment and to familiarize them with the UL FFA. Under the auspices of the FFA Student Council, the UL FFA Choir has been operating since 2020.

Na UL FFA poleg ŠS FFA delujejo tudi Društvo študentov farmacije Slovenije (DŠFS), Društvo študentov farmacevtskih ved (DŠFV) in Študentska sekcija Slovenskega farmacevtskega društva (ŠSSFD) – v sklopu prvega študenti tudi zelo aktivno sodelujejo v svetovnem in evropskem okolju. Skupaj s ŠS FFA in Študentsko organizacijo Fakultete za farmacijo so uspešno sodelovali pri organizaciji strokovnih in družabnih projektov, kot so IPSC, EPSA (European Pharmaceutical Students' Association) letni kongres, strokovni večeri in okrogle mize.

Študentska organizacija Fakultete za farmacijo (ŠOFFA) je ena izmed podružnic ŠOU v Ljubljani. Organizacija je tudi v letu 2023 organizirala različne dogodke, ki pomagajo študentom v prostem času bolje spoznati svoje sošolce in druge študente UL FFA ter ostalih članic UL.

At UL FFA, in addition to the FFA Student Council, there is also the Slovenian Pharmaceutical Students' Association (DŠFS), the Association of Students of Pharmaceutical Sciences (DŠFV), and the Student Section of the Slovenian Pharmaceutical Society (ŠSSFD) – through the first, students are also very actively involved in the global and European environment. Together with the FFA Student Union and the Student Organisation of the Faculty of Pharmacy, they have successfully participated in the organization of professional and social projects such as IPSC, EPSA (European Pharmaceutical Students' Association) Annual Congress, professional evenings, and round tables.

The Student Organisation of the Faculty of Pharmacy (SOPFD) is one of the branches of the School of Pharmacy in Ljubljana. In 2023, the organization prepared various events that helped students get to know their fellow students, other students from UL FFA, and other UL members better in their free time.

Informativni dnevi

Študenti UL FFA predstavljajo fakulteto, študijske programe in obštudijske aktivnosti na vsakoletnih informativnih dogodkih za dijake srednjih šol.

Information days

UL FFA students present the faculty, study programs and extracurricular activities at annual information events for secondary school students.

Spatula in Placebo

Spatula je glasilo Študentske sekcije Slovenskega farmacevtskega društva, s katerim se študente UL FFA seznanja o aktualnih obštudijskih dogodkih in novostih na področju farmacije, kozmetologije in laboratorijske biomedicine. Izhaja periodično. V letu 2023 je bila objavljena tudi strokovna revija Placebo, ki je bila v obliki strokovnih prispevkov posvečena temi rakavih obolenj.

Spatula and Placebo

Spatula is the newsletter of the Student Section of the Slovenian Pharmaceutical Society. It is published periodically and informs UL FFA students about current extracurricular events and updates in the fields of pharmacy, cosmetology sciences, and laboratory biomedicine. In 2023, the professional journal Placebo was also published, featuring articles dedicated to the topic of cancer.

9. simpozij Študentske sekcije Slovenskega farmacevtskega društva:

14. oktobra 2023 se je na 9. simpoziju ŠSSFD zvrstilo šest predavanj strokovnjakov z različnih področij, ki so predavali o bolečini, eno satelitsko predavanje in okrogla miza na temo interdisciplinarnega pristopa k celostni obravnavi pacientov z bolečino. Simpozij je potekal na Pravni fakulteti Univerze v Ljubljani, udeležilo pa se ga je okoli 170 študentov UL FFA in nekaj študentov drugih fakultet.

9th Symposium of the Student Section of the Slovenian Pharmaceutical Society

On October 14 2023, the 9th symposium of the Student Section of the Slovenian Pharmaceutical Society featured six lectures by experts from various fields, addressing pain management, one satellite lecture, and a roundtable discussion on the topic of an interdisciplinary approach to comprehensive patient care in pain management. The symposium took place at the Faculty of Law, University of Ljubljana, and was attended by approximately 170 students from UL FFA and several students from other faculties.

Strokovni dogodki

V letu 2023 je društvo izpeljalo številne strokovne večere z naslovi Radiofarmaki, Multipla skleroza, InterAKCIJA: *Study drugs*, Rak, tihi ubijalec, *Let's talk about STD* ter strokovni večer Astma in KOPB.

Professional events

In 2023, DŠFS held numerous professional events on topics such as Radiopharmaceuticals, Multiple sclerosis, InterACTION: Study drugs, Cancer, the silent killer, Let's talk about STDs, and an expert evening on Asthma and COPD.

Javne kampanje

Študenti so v letu 2023 organizirali in izvedli naslednje javne kampanje: *Vampire cup* – krvodajalska akcija, Varno se STIsn ter Me se ne bojimo cepiv!.

Public campaigns

In 2023 students organized the following public campaigns: Vampire Cup – a blood donation drive, Stay Safe from STIs, and We're Not Afraid of Vaccines!

Humanitarna dejavnost

V 2023 sta pod okriljem humanitarne skupine društva potekala spomladanski in božični bazar, na katerih so lahko študenti in zaposleni UL FFA kupili ročno izdelane kozmetične izdelke, voščilnice in druga darilca, ki so jih pripravili študentje. Izkupiček od nakupa je bil podarjen humanitarni organizaciji za pomoč družinam v stiski. Decembra so izvedli tudi obdarovanje starostnikov, in sicer so obiskali Dom starejših občanov Hoče-Slivnica. Skozi leto smo sodelovali pri projektu Medimedo in ambulanti Pro Bono.

Humanitarian activities

In 2023, spring and Christmas bazaars were held under the auspices of the DŠFS humanitarian group, where students and employees of UL FFA could purchase handmade cosmetic products, greeting cards, and other gifts prepared by students. The proceeds from the purchases were donated to a humanitarian organisation to help families in need. In December, there was also a gift-giving event for the elderly, specifically visiting the Hoče-Slivnica Nursing Home. Throughout the year, we collaborated with the Medimedo project and Pro Bono Clinic.

Fotografija: Obštudijske dejavnosti UL FFA /
Extracurricular activities

ŠPORT NA UL FFA
SPORT AT UL FFA

ORGANIZACIJA ŠPORTNE VZGOJE NA UL FFA V LETU 2023
ORGANIZATION OF SPORTS EDUCATION AT UL FFA IN 2023

1. ŠPORTNE DEJAVNOSTI ZA ŠTUDENTE NA UL FFA
SPORTS ACTIVITIES FOR STUDENTS AT FFA UL

- **Odbojka /** Volleyball
- **Plavanje /** Swimming
- **Pohodništvo /** Hiking
- **Planinski izleti /** Mountain excursions
- **Nordijska hoja /** Nordic walking
- **Dvoranski nogomet /** Futsal
- **Košarka /** Basketball
- **Fitnes /** Fitness
- **Joga /** Yoga
- **Aerobika /** Aerobics
- **Alpsko smučanje /** Alpine skiing
- **Deskanje na snegu /** Snowboarding
- **Tek na smučeh /** Cross-country skiing

2. ŠTUDENTI S STATUSOM VRHUNSKEGA ŠPORTNIKA 2023
STUDENTS WITH THE STATUS OF A TOP ATHLETE 2023

Bergant Rok – Vaterpolo / Water polo
Berus Špela – Košarka 3x3 / Basketball 3x3
Ermenc Ines – Dvoranski nogomet / Futsal
Drobnič Nina – Alpsko smučanje / Alpine skiing
Gradišek Sara – Nogomet / Football
Haler Lea – Atletika / Atletics
Janža Maj – Atletika / Atletics
Koren Nika – Judo / Judo
Kovačič Špela – Twirling / Twirling
Krumpak Jan – Badminton / Badminton
Sedmak Anica – Karate / Karate
Mandeljc Anja – Tek na smučeh / Cross-country skiing
Prezelj Anja – Strelstvo / Shooting
Radman Eva – Karate / Karate
Simšič Nika – Rokomet / Handball
Solina Ema Lora – Ples / Dance
Vidmar Lana – Jadranje / Sailing

3. UNIVERZITETNA LIGAŠKA TEKMOVANJA – SESTAVA EKIP 2023
UNIVERSITY LEAGUE COMPETITIONS – TEAM 2023

ODBOJKA – ŽENSKE
VOLLEYBALL – WOMEN

Berglez Pia (kapetan)
Medved Mia (kapetan)
Kranjc Ema
Pibernik Ana
Tomšič Lara
Slatinek Vesna
Topič Tina
Jarnovič Tiana
Kovjanič Lara
Crnec Lara
Pušnik Gaja
Šoba Laura
Škerl Rifelj Tjaša
Zupan Lana
Pavlova Ljubka
Venek Eva
Morgan Špela
Svetanič Nuša

ODBOJKA – MOŠKI
VOLLEYBALL – MEN

Vuk David (kapetan)
Bojnec Žiga
Jelenko Tit
Travnik Toni
Rožič Miha
Lebar Mihael
Štampar Staš Juliano
Grabnar Lev

KOŠARKA – MOŠKI
BASKETBALL – MEN

Horvat Luka (kapetan)
Vodopivc Žan
Tement Vid
Sotlar Tine
Herman Andraž
Rotman Jaka
Garb Luka
Štiftar Nejc
Peterka Jan
Mrcina Tilen
Črnič Jaka

DVORANSKI NOGOMET – MOŠKI
FUTSAL – MEN

Bele Klemen (kapetan)
Boršič Gaj
Grušovnik Vid
Kralj Tilen
Dobrijevič Zlatoper Filip
Bulajič Arne
Bojnec Jaša
Pipp Jan
Križnik Jaka
Podkrajšek Nik
Štampar Staš Juliano
Novak Jaka
Roth Matija
Strmšnik Tilen
Perčič Drejc
Bratož Gaber

KOŠARKA 3 x 3 – ŽENSKE
BASKETBALL 3 x 3 - WOMEN

Berus Špela (kapetan)
Prelog Tinkara
Sever Katja (Pravna fakulteta)
Rak Pia

ODBOJKA NA MIVKI – MOŠKI
BEACH VOLLEYBALL - MEN

Vuk David (kapetan)
Travnik Toni
Jelenko Tit

3 Ponosni smo – priznanja in nagrade
We are proud - recognitions and awards

Ob pregledu dosežkov 2023 lahko ugotovimo, da smo na UL FFA objavljali družbeno relevantne raziskave v revijah s faktorji vpliva. Analiza objav raziskovalnega dela v revijah SCI kaže v letih 2022 in 2023 v primerjavi s predhodnim obdobjem manjši upad objav v revijah SCI, vendar smo hkrati obdržali trend rasti objav v najkakovostnejših revijah prvih dveh četrtin. Relevantnost objavljenih raziskav se kaže tudi skozi konstantno rast čistih citatov.

Da uspešno vzgajamo tudi mlajši raziskovalni kader, dokazujejo dekanovi nagrajenci za leto 2023. To so študentje in doktorandi do dveh let po zagovoru, ki so objavljali v revijah z visokim faktorjem vpliva, dve nagrajeni objavi za leto 2023 pa sta na posameznem področju bili rangirani znotraj 5 % najboljših revij. Že uveljavljeni raziskovalci objavljajo raziskave samostojno ali z vpetostjo v mednarodna sodelovanja, kar prav tako botruje visokokakovostnim dosežkom in prispeva k internacionalizaciji delovanja fakultete. Tako so raziskovalci UL FFA s sodelavci z ICGEB iz Trsta objavili raziskavo, katere rezultati potrjujejo, da zaviralci katepsinov, nitroksolin in njegovi derivati zavirajo okužbo z virusom SARS-CoV-2, v drugi mednarodni raziskavi pa so bile npr. postavljene osnove za personalizirano zdravljenje s teriparitidom kot osteoanabolno zdravilno učinkovino. Zaposleni UL FFA za svoje raziskovalno delo tudi na državnem nivoju prejemajo najvišje nagrade, Zoisove nagrade in priznanja. V zadnjih treh letih so naši zaposleni prejeli kar dve Zoisovi nagradi, od tega eno za življenjsko delo, ter dve Zoisovi priznanji. Uspešnost študentov UL FFA in njihovih mentorjev dokazuje tudi uspeh fakultete na razpisu 53. Krkinih nagrad, na katerem so bili med letošnjimi prejemniki velikih Krkinih nagrad kar trije s Fakultete za farmacijo. Zaposleni so prav tako aktivni pri organizaciji mednarodnih znanstvenih simpozijev (30. konferenca PAGE in 9. konference BBBB) in so bili za svoje delo prepoznani kot kongresni ambasadorji.

Upon reviewing the achievements of 2023, it is evident that UL FFA has published societally relevant research in high-impact journals. An analysis of research publications in SCI journals for 2022 and 2023, relative to prior periods, shows a slight decrease in SCI publications overall, yet we maintained a growth trend in publications in the top two quartiles. A steady increase in pure citations further underscores the relevance of our published research.

Our commitment to nurturing young researchers is demonstrated by the Dean's Award recipients for 2023, students and PhD candidates who published in high-impact journals within two years of their defence,. Notably, two publications awarded in 2023 ranked within the top 5% of journals in their respective fields. Established researchers at UL FFA publish independently or as part of international collaborations, contributing to high-quality achievements and enhancing the faculty's global engagement. For instance, in collaboration with colleagues from ICGEB in Trieste, UL FFA researchers published research confirming that cathepsin inhibitors, nitroxoline, and its derivatives inhibit SARS-CoV-2 infection. Another international study establisher the foundations were established for personalized treatment with teriparatide as an osteoanabolic therapeutic agent.

UL FFA researchers are also recognized nationally, receiving top awards, including the Zois Awards and Recognitions. Over the past three years, our faculty received two Zois Awards, one for lifetime achievement, and two Zois Prizes. The success of UL FFA students and their mentors is further evidenced by the faculty's performance in the 53rd Krka Awards, where three of this year's Grand Krka Award recipients were from the Faculty of Pharmacy. Our faculty also actively contribute to organizing international scientific symposia (e.g., the 30th PAGE conference and the 9th BBBB conference), with many recognized as Congress Ambassadors for their contributions.

IZJEMNI DOSEŽKI UL FFA 2023

Prof. dr. Lucija Peterlin Mašič, prejemnica Zoisove nagrade za pomembne dosežke na področju farmacevtske kemije in toksikologije

Prof. dr. Lucija Peterlin Mašič na Fakulteti za farmacijo Univerze v Ljubljani v zadnjem obdobju deluje na področjih farmacevtske kemije in toksikologije. Na področju farmacevtske kemije naslavlja pomemben globalni problem odpornosti bakterij proti antibiotikom. S sodelavci je odkrila nove protibakterijske učinkovine, ki v bakterijah učinkovito zavirajo dva encima hkrati in imajo potencial za zdravljenje okužb z bakterijami, za katere trenutno ni učinkovite terapije. Na področju toksikologije raziskuje nadomestke motilca endokrinega sistema bisfenola A, ki ga zaradi toksičnosti omejujejo za uporabo v industriji in nadomeščajo z drugimi spojinami.

EXCEPTIONAL ACHIEVEMENTS OF UL FFA IN 2023

Professor Lucija Peterlin Mašič, Recipient of the Zois Award for Significant Achievements in Pharmaceutical Chemistry and Toxicology

Professor Lucija Peterlin Mašič at the Faculty of Pharmacy, University of Ljubljana, conducts research in pharmaceutical chemistry and toxicology. In pharmaceutical chemistry, she addresses the critical global issue of bacterial resistance to antibiotics. Together with her colleagues, she has discovered new antibacterial agents that effectively inhibit two bacterial enzymes simultaneously, showing potential for treating infections caused by bacteria for which no effective therapy currently exists. In toxicology, she investigates alternatives to the endocrine disruptor bisphenol A, a compound increasingly restricted in industry due to its toxicity and being replaced by other substances.

Slika: prof. dr. Lucija Peterlin Mašič, prejemnica Zoisove (na sredini) /
Photo: prof. dr. Lucija Peterlin Mašič, recipient of the Zois award (in the middle)

Prof. dr. Zdenko Časar, prejemnik Puhove nagrade za vrhunske dosežke v industrijski farmaciji

Prof. dr. Zdenko Časar je zaposlen v podjetju Lek in dopolnilno tudi na Fakulteti za farmacijo Univerze v Ljubljani. V podjetju Lek je v splošno uporabo vpeljal številne nove znanstvene koncepte, tehnologije in inovacije, ki se nanašajo na sintezo, analitiko, polimorfizem in stabilnost zdravilnih učinkovin in zdravil. Z novimi odkritji na področju mehanizmov razkroja zdravilnih učinkovin prispeva k razumevanju njihove kemijske in fizikalne stabilnosti, pa tudi k boljšemu napovedovanju njihovega roka uporabe. Je prejemnik nagrade Odlični v znanosti 2022 na področju farmacije, ki jo podeljuje ARIS, in treh zlatih priznanj Gospodarske Zbornice Slovenije za najboljšo inovacijo.

Professor Zdenko Časar, Recipient of the Puh Award for Outstanding Achievements in Industrial Pharmacy

Professor Zdenko Časar is employed at Lek and partly at the Faculty of Pharmacy, University of Ljubljana. At Lek, he has implemented numerous new scientific concepts, technologies, and innovations related to synthesis, analytics, polymorphism, and the stability of active pharmaceutical ingredients (APIs) and drugs. His discoveries in drug degradation mechanisms contribute to a deeper understanding of their chemical and physical stability, and to improved predictions of shelf life. He is the recipient of the Excellence in Science 2022 award in pharmacy, presented by ARIS. He has also received three gold awards from the Chamber of Commerce and Industry of Slovenia for top innovations.

Izr. prof. dr. Alenka Zvonar Pobirk in prof. dr. Iztok Grabnar, prejemnika naslova Kongresna ambasadorja Slovenije na področju znanstveno-strokovnih dogodkov

Izr. prof. dr. Alenka Zvonar Pobirk in prof. dr. Iztok Grabnar sta bila imenovana za Kongresna ambasadorja Slovenije na področju znanstveno-strokovnih dogodkov, kar priznava njuno predanost organizaciji znanstveno-strokovnih dogodkov in promociji Slovenije kot pomembnega središča za znanstvena srečanja. Izr. prof. dr. Alenka Zvonar Pobirk je naziv prejela za uspešno koordiniranje organizacije 9. mednarodne konference farmacevtskih znanosti BBBB (Balaton, Baltik, Bled, Bospor), prof. dr. Iztok Grabnar pa za koordiniranje organizacije 30. srečanja združenja PAGE (*Population Approach Group Europe*).

Associate Professor Alenka Zvonar Pobirk and Professor Iztok Grabnar, Recipients of the Title: Slovenian Congress Ambassador in the Category of Scientific and Professional Events

Associate Professor Alenka Zvonar Pobirk and Professor Iztok Grabnar have been awarded the title of Slovenian Congress Ambassador in the field of scientific and professional events, recognizing their dedication to organizing scientific conferences and promoting Slovenia as a crucial center for scientific gatherings. Assocciate Professor Alenka Zvonar Pobirk received this honor for her successful coordination of the 9th International Conference on Pharmaceutical Sciences (BBBB – Balaton, Baltic, Bled, Bosphorus), while Professor Iztok Grabnar was recognized for his coordination of the 30th Meeting of the Population Approach Group Europe (PAGE).

Rektorjeva nagrada za najboljšo inovacijo na Univerzi v Ljubljani

Rektorjevo nagrado za naj inovacijo Univerze v Ljubljani so iz UL FFA prejeli: doc. dr. Špela Zupančič, zasl. prof. dr. Julijana Kristl, izr. prof. dr. Petra Kocbek, asist. Nina Katarina Grilc, asist. Anže Zidar, prof. dr. Matjaž Jeras in izr. prof. dr. Martina Gobec. Nagrado so prejeli za projekt *GumGuardian* – nanovlakna s probiotičnimi sevi za zdravljenje parodontalne bolezni. Ta inovacija, ki je plod sodelovanja z Institutom Jožef Stefan, poudarja pomen multidisciplinarnega povezovanja za razvoj rešitev, ki naslavljajo kompleksne zdravstvene izzive.

Rector's Award for Best Innovation at the University of Ljubljana

The Rector's Award for Best Innovation at the University of Ljubljana was awarded to the team from UL FFA: Associate Professor Špela Zupančič, Professor Emeritus Julijana Kristl, Associcate Professor Petra Kocbek, Nina Katarina Grilc, Anže Zidar, Professor Matjaž Jeras, and Associate Professor Martina Gobec. They were recognized for their project "GumGuardian" – probiotic-loaded nanofibers for the treatment of periodontal disease. This innovation, developed in collaboration with the Jožef Stefan Institute, underscores the importance of multidisciplinary collaboration in creating solutions for complex healthcare challenges.

Nacionalno vozlišča EATRIS Slovenija, prejemnik nagrade *European Infrastructure for Translational Medicine National Node Reward*

Nacionalno vozlišče je prejelo najvišjo oceno za delo in nagrado s posebnim poudarkom na uspešni organizaciji izobraževanja ADVANCE in delavnice sodelovanja akademskih inštitucij z industrijo. Nagrado sta sprejeli koordinatorica in direktorica nacionalnega vozlišča EATRIS Slovenija, asist. dr. Dunja Urbančič in prof. dr. Irena Mlinarič Raščan.

EATRIS Slovenia National Node, Recipient of the European Infrastructure for Translational Medicine National Node Award

The national node received the highest commendation for its work, earning the award with special recognition for the successful organization of the ADVANCE training program and the workshop on collaboration between academic institutions and industry. The coordinator and director of EATRIS Slovenia National Node, Assistant Professor Dunja Urbančič and Professor Irena Mlinarič raščan accepted the award.

Doc. dr. Urban Košak, prejemnik mednarodnega priznanja na področju zdravja živali (Biofit)

Doc. dr. Urban Košak je na prestižnem dogodku Biofit s svojo ekipo prejel prvo nagrado za razvoj inovativnega zdravljenja simptomov demence pri psih, kar kaže na širino raziskovalnih interesov in inovacijskih pristopov zaposlenih na UL FFA.

Assistant Professor Urban Košak, Recipient of the International Award in Animal Health (Biofit)

At the prestigious Biofit event, Assistant Professor Urban Košak and his team received first prize for developing an innovative treatment for dementia symptoms in dogs. This recognition highlights the breadth of research interests and innovative approaches of UL FFA staff.

Dr. Samo Guzelj, prejemnik velike Krkine nagrade za raziskovalno delo, 53. Krkine nagrade

Dr. Samo Guzelj je za svoje doktorsko delo z naslovom: Razvoj novih agonistov NOD2 in dvojnih agonistov NOD2 in TLR7 kot novih adjuvansov za cepiva, ki ga je opravljal pod mentorstvom prof. dr. Žige Jakopina, prejel veliko Krkino nagrado na razpisu za 53. Krkine nagrade.

Dr. Samo Guzelj, Recipient of the Grand Krka Award for Research, 53rd Krka Awards

Dr. Samo Guzelj received the Grand Krka Award for his doctoral research titled "Development of New NOD2 Agonists and Dual NOD2 and TLR7 Agonists as Novel Vaccine Adjuvants," conducted under the mentorship of Professor Žiga Jakopin.

Dr. Martina Durcik, prejemnica velike Krkine nagrade za raziskovalno delo, 53. Krkine nagrade

Dr. Martina Durcik je za svoje doktorsko delo z naslovom: Novi dvojni zaviralci DNA-giraze in topoizomeraze IV z delovanjem na odporne bakterijske seve in z nizkim tveganjem za razvoj odpornosti, ki ga je opravljala pod mentorstvom prof. dr. Lucije Peterlin Mašič in prof. dr. Tihomirja Tomašiča, prejela veliko Krkino nagrado na razpisu za 53. Krkine nagrade.

Dr. Martina Durcik, Recipient of the Grand Krka Award for Research, 53rd Krka Awards

Dr. Martina Durcik received the Grand Krka Award for her doctoral research titled "New Dual Inhibitors of DNA Gyrase and Topoisomerase IV Targeting Resistant Bacterial Strains with Low Risk of Resistance Development," completed under the mentorship of Professor Lucija Peterlin Mašič and Professor Tihomir Tomašič.

Dr. Aleša Dular Vovko, prejemnica velike Krkine nagrade za raziskovalno delo, 53. Krkine nagrade

Dr. Aleša Dular Vovko je za svoje doktorsko delo z naslovom: Študij vpliva formulacijskih in procesnih parametrov kompaktiranja na kritične atribute kakovosti granulatov in tablet, ki ga je opravljala pod mentorstvom prof. dr. Franca Vrečerja in dr. Grege Hudovornika, prejela veliko Krkino nagrado na razpisu za 53. Krkine nagrade.

Dr. Aleša Dular Vovko, Recipient of the Grand Krka Award for Research, 53rd Krka Awards

Dr. Aleša Dular Vovko received the Grand Krka Award for her doctoral research titled "Study of the Influence of Formulation and Process Parameters of Compaction on Critical Quality Attributes of Granules and Tablets," conducted under the mentorship of Professor Franc Vrečer and Dr. Grega Hudovornik.

SLAVIMO ZNANOST – RAZISKOVALNI DAN UL FFA

V okviru Tedna Univerze smo 29. 11. 2023 organizirali Raziskovalni dan UL FFA. Dogodek je bil namenjen osvetlitvi in počastitvi izjemnih dosežkov fakultete. Dopoldanski del se je pričel z uvodnim predavanjem prof. dr. Irene Mlinarič-Raščan z naslovom Farmakogenomski pristopi v terapiji levkemij, v nadaljevanju pa so dekanovi nagrajenci predstavili svoje izjemne dosežke. Popoldne je potekal svečani del, ki so se ga udeležili gostje iz gospodarstva, javnih zavodov, društev in drugih ustanov. Po slavnostnih predavanjih nagrajencev za življenjsko delo, prof. dr. Matjaža Jerasa in prof. dr. Franca Vrečerja, je sledila podelitev nagrad, priznanj in pohval UL FFA, ki jih fakulteta podeljuje izstopajočim posameznikom, katerih delo pomembno zaznamuje znanstveni prostor ali vpliva na ugled in kakovost fakultete.

CELEBRATING SCIENCE – UL FFA RESEARCH DAY

As part of the University of Ljubljana Week, the UL FFA Research Day was organized on November 29, 2023. The event intended to illuminate and honor the outstanding achievements of the faculty. The morning part started with the introductory lecture by Prof. Dr. Irena Mlinarič-Raščan with the title "Pharmacogenomic approaches in leukemia therapy,"after which the dean's laureates presented their outstanding achievements. In the afternoon, a ceremonial part was held, which was attended by guests from business, public institutions, societies, and other institutions. Following the celebratory lectures of the lifetime achievement awardees, Prof. Dr. Matjaž Jeras and Prof. Dr. Franc Vrečer, was the awarding of UL FFA awards, recognitions and commendations, which the faculty awards to outstanding individuals whose work significantly marks the scientific space or affects the reputation and quality of the faculty.

Fotografija: Prejemnika nagrade za življenjsko delo prof. dr. Matjaž Jeras in prof. dr. Franc Vrečar / Photo: Recipient of the Lifetime Achievement Award Prof. Dr. Matjaž Jeras in prof. Dr. Franc Vrečar

Priznanje UL FFA za življenjsko delo je prejel prof. dr. Matjaž Jeras

Prof. dr. Matjaž Jeras je svojo znanstvenoraziskovalno pot začel na Zavodu za farmacijo, kasneje na Centru za tipizacijo tkiv v okviru Zavoda za transfuzijo krvi, kjer je kot direktor centra vzpostavil celični laboratorij za izvajanje funkcijskih preskusov tkivne skladnosti pred presaditvijo kostnega mozga in soustanovil nacionalni register darovalcev kostnega mozga Slovenija-Donor. V tem času je tesno sodeloval z Univerzo v Ljubljani, Fakulteto za farmacijo, kjer se je leta 2010 zaposlil kot visokošolski učitelj na Katedri za klinično biokemijo. Raziskovalno delo mu je prineslo številna priznanja, vključno z Rektorjevo nagrado za inovacijo leta 2021. S svojo ekspertizo na področju imunogenetike in naprednih terapij je pomembno prispeval k uvedbi tovrstnih vsebin v študijske programe.

The recognition of UL FFA for lifetime achievement was received by Prof. Dr. Matjaž Jeras

Prof. Dr. Matjaž Jeras began his scientific research career at the Institute of Pharmacy, later at the Center for Tissue Typing within the Institute for Blood Transfusion, where, as the center's director, he established a cell laboratory for performing functional tests of tissue compatibility before bone marrow transplantations and co-founded the national register of bone marrow donors "Slovenia-Donor". During this time, he worked closely with the UL FFA, where in 2010 he was employed as a university teacher at the Department of Clinical Biochemistry. His research work brought him numerous awards, including the Rector's Award for Innovation in 2021. With his expertise in immunogenetics and advanced therapies, he made a significant contribution to the introduction of such content into study programs.

Priznanje UL FFA za življenjsko delo je prejel prof. dr. Franc Vrečer

Prof. dr. Franc Vrečer je začel svojo kariero na Fakulteti za naravoslovje in tehnologijo (Oddelek za farmacijo), leta 1991 pa se je preusmeril v farmacevtsko industrijo, na področju katere je še danes zaposlen v podjetju Krka, Novo mesto. V tem času je ohranjal tesno povezavo z Univerzo v Ljubljani, Fakulteto za farmacijo kot dopolnilno zaposleni učitelj. Od leta 2015 je pomočnik direktorja za razvoj in raziskave zdravil ter vodja Krkinih raziskovalnih simpozijev. Je redni profesor za farmacevtsko tehnologijo in deluje na področju predformulacij in razvoja trdnih farmacevtskih oblik tako na laboratorijskem, kot tudi v industrijskem merilu. Objavil je več kot 90 znanstvenih člankov in je soavtor 29 mednarodnih patentov. Zaradi svojega kakovostnega in poglobljenega pristopa k vsakemu izzivu, tako na znanstvenoraziskovalnem, kot pedagoškem področju, je cenjen sogovornik doma in v tujini.

The recognition of UL FFA for lifetime achievement was received by Prof. Dr. Franc Vrečer

Prof. Dr. Franc Vrečer started his career at the Faculty of Natural Sciences and Technology, Department of Pharmacy and in 1991 he switched to the pharmaceutical industry, where he is still works at the company Krka, Novo mesto. During this time, he maintained a close connection with the UL FFA as a part-time teacher. Since 2015 he has been assistant to the director for drug development and research and head of Krka's research symposia. He is a full professor of pharmaceutical technology and works in preformulations and the development of solid pharmaceutical forms both on a laboratory and industrial scale. He has published more than 90 scientific articles and is the co-author of 29 international patents. Due to his high-quality and in-depth approach to every challenge, both in the scientific research and pedagogical fields, he is a valued interlocutor at home and abroad.

Priznanje UL FFA za izjemne rezultate pri delu je prejela prof. dr. Janja Marc

Prof. dr. Janja Marc je redna profesorica za klinično biokemijo in laboratorijsko medicino. Na raziskovalnem področju se je ukvarjala z analitiko dializnih izpirkov, presnovkov vitamina D in genetskimi ozadji kostnih bolezni, njene raziskave pa so se kasneje razširile na metabolni sindrom, inzulinsko rezistenco in pljučni rak. Več kot desetletje vodi skupino, ki proučuje hormonske in metabolne motnje, genetske vplive na farmakokinetiko zdravil, razvija teste funkcijske genomike in proučuje epigenetske dejavnike. Sodelovala je v 19 projektih in objavila več kot 150 znanstvenih člankov.

Prof. Dr. Janja Marc received the recognition of UL FFA for exceptional work results

Prof. Dr. Janja Marc is a fullclinical biochemistry and laboratory medicine professor. In the research field she dealt with the analysis of dialysis fluids, vitamin D metabolites and the genetic background of bone diseases, and her research later expanded to metabolic syndrome, insulin resistance and lung cancer. For over a decade, she has been leading a group that studies hormonal and metabolic disorders, genetic influences on drug pharmacokinetics, develops functional genomics tests, and studies epigenetic factors. She participated in 19 projects and published more than 150 scientific articles.

Priznanje zunanjemu sodelavcu ali poslovnemu partnerju je prejel Jurij Ule

Vse od uvedbe univerzitetnega študijskega programa Kozmetologija na Fakulteti za farmacijo poteka uspešno sodelovanje z gospodom Jurijem Uletom iz podjetja Ilirija, obrat Lendava. Vsako leto za študente drugega letnika organizira strokovni ogled proizvodnje, ki študentom omogoča vpogled v celoten proces izdelave kozmetike, od proizvodnje do pakiranja. Takšno sodelovanje pomembno prispeva k razvoju kozmetologije kot znanosti in njene vloge v družbi.

Jurij Ule received recognition for external collaborator or business partner

Ever since the introduction of the Cosmetology university study program at the Faculty of Pharmacy, there has been a successful collaboration with Mr. Jurij Ule from Ilirija, Lendava plant. Every year, he organizes a professional production tour for second-year Cosmetology students, which gives them an insight into the entire process of making cosmetics, from production to packaging. Such a cooperation contributes significantly to the development of cosmetology as a science and its role in society.

Priznanje študentom za izjemne dosežke je prejela Melanie Jozić

Melanie Jozić, študentka 5. letnika EM FAR. Med študijem je bila predstavnica letnika, članica Disciplinske komisije in predstavnica študentov v Akademskem zboru. Je avtorica več člankov v Spatuli in članica uredništva Placeba, aktivno sodeluje tudi v Društvu študentov farmacije Slovenije. Poleg vzporednega študija na Ekonomski fakulteti UL uspešno usklajuje študijske obveznosti z delom v farmacevtski industriji in drugimi aktivnostmi.

Melanie Jozić received recognition of students for outstanding achievements

Melanie Jozić is a 5th year EM FAR student. During her studies she was a year representative, a member of the Disciplinary Committee, and a student representative in the Academic Assembly. She is the author of several articles in Spatula and a member of the editorial board of Placebo. She also actively participates in the Society of Pharmacy Students of Slovenia. In addition to parallel studies at the UL Faculty of Economics, she successfully balances her study obligations with work in the pharmaceutical industry and other activities.

PREJEMNIKI DEKANOVIH NAGRAD

Dekanove nagrade podelimo študentom, raziskovalcem ali doktorandom UL FFA, ki so v preteklem obdobju kot prvi ali vodilni avtorji objavili delo v reviji z visokim faktorjem vpliva s posameznega področja in s tem doprinesli k razvoju farmacevtske znanosti in stroke.

Prejemniki dekanovih nagrad 2023 so:

Dr. Aleša Bricelj za znanstveni članek z naslovom: Boj ligaz E3: heterobifunkcionalne molekule PROTAC za razgradnjo proteinov družine zaviralcev apoptoze, objavljen v reviji *Journal of medicinal chemistry*. Mentor: izr. prof. dr. Izidor Sosič, somentor: prof. dr. Marko Anderluh.

Nina Katarina Grilc za znanstveni članek z naslovom: Nanovlakna z genotipiziranimi sevi Bacillus, ki izkazujejo protibakterijsko in imunomodulatorno delovanje, objavljen v reviji *Journal of controlled release*. Članek spada med izjemne dosežke (kategorija ARIS: A''). Mentorica: doc. dr. Špela Zupančič, somentorica prof. dr. Julijana Kristl.

Dr. Tanja Potrč za znanstveni članek z naslovom: Anizotropija oblike magnetnih nanodelcev: pristop za ciljanje celic in izboljšan privzem v celice, objavljen v reviji *Nanoscale*. Mentorica: izr. prof. dr. Petra Kocbek.

Dr. Lara Slavec Janev za znanstveni članek z naslovom: Celovita genetska analiza slovenskih družin z orofacialnimi shizami, objavljen v reviji *International journal of molecular sciences*. Mentorica: prof. dr. Ksenija Geršak, somentorica: izr. prof. dr. Nataša Karas Kuželički.

RECIPIENTS OF DEAN'S AWARDS

The dean's awards are given to UL FFA students, researchers or doctoral students who in the past period as the first or leading author, published a work in a journal with a high impact factor from an individual field and thereby contributed to the development of pharmaceutical science and the profession.

The recipients of the 2023 Dean's Awards are:

Dr. Aleša Bricelj for the scientific article entitled: "Fight of E3 ligases: PROTAC heterobifunctional molecules for the degradation of proteins of the apoptosis inhibitor family", published in the journal Journal of medicinal chemistry. Mentor: Assoc. Prof. Dr. Izidor Sosič, mentor: Prof. Dr. Marko Anderluh.

Nina Katarina Grilc for the scientific article entitled: "Nanofibers with genotyped Bacillus strains that exhibit antibacterial and immunomodulatory activity", published in the journal Journal of controlled release. The article belongs to exceptional achievements (ARIS category: A''). Mentor: Assist. Prof. Dr. Špela Zupančič, co-mentor Prof. Dr. Juliana Kristl.

Dr. Tanja Potrč for the scientific article entitled: "Shape anisotropy of magnetic nanoparticles: an approach for targeting cells and improved uptake into cells", published in the journal Nanoscale. Mentor: Assoc. Prof. Dr. Petra Kocbek.

Dr. Lara Slavec Janev for the scientific article entitled: "Comprehensive genetic analysis of Slovenian families with orofacial schizoma", published in the International journal of molecular sciences. Mentor Prof. Dr. Ksenija Geršak, co-mentor: Assoc. Prof. Dr. Nataša Karas Kuželički.

Dr. Maša Sterle za znanstveni članek naslovom: Vodikova vez v prehodnem stanju omogoča z rutenijem katalizirano stereoselektivno sintezo CF3-substituiranih syn-1,2-diolov preko dinamične kinetične resolucije, objavljen v reviji *ACS Catalysis*. Članek spada med izjemne dosežke (kategorija ARIS: A''). Mentorica: prof. dr. Anamarija Zega, somentor: doc. dr. Andrej Emanuel Cotman.

Dr. Maša Sterle for the scientific article titled: "Transition-state hydrogen bonding enables ruthenium-catalyzed stereoselective synthesis of CF3-substituted syn-1,2-diols via dynamic kinetic resolution", published in the journal ACS Catalysis. The article belongs to the exceptional achievements (ARIS category: A''). Mentor: Prof. Dr. Anamarija Zega, co-mentor: Assist. Prof. Dr. Andrej Emanuel Cotman.

PREJEMNIKI FAKULTETNIH PREŠERNOVIH NAGRAD 2023

Burnik Tilen: Sinergistično delovanje zaviralcev proteasoma in imunoproteasoma z zaviralci receptorske poti limfocitov B na celicah kronične limfocitne levkemije

Mentorica: prof. dr. Irena Mlinarič-Raščan, somentor: asist. dr. Damjan Avsec

Faganeli Dan: Vpliv ketamina in midazolama na viabilnost astrocitov možganske skorje podgane

Mentorica: prof. dr. Metoda Lipnik Štangelj

Kovačič (roj. Verbič) Klara: Vloga cisteinske peptidaze katepsina X pri polarizaciji celic mikroglije

Mentorica: izr. prof. dr. Anja Pišlar, somentorica: asist. Lara Vogrinčič, mag. farm.

Polajžer Sara: Vpliv spremenjenega izražanja genov za *FUBP3* in *ANAPC1* na diferenciacijo osteosarkomskih celic HOS in mezenhimskih matičnih celic

Mentorica: doc. dr. Marija Nika Lovšin

Rozman Iza: Preučevanje citotoksičnosti in genotoksičnosti polisaharidnih nanokapsul na osnovi alginata v pogojih in vitro

Mentorica: prof. dr. Marija Sollner Dolenc, somentorica: doc. dr. Alja Štern

FACULTY OF PHARMACY PREŠEREN AWARDS

Burnik Tilen: Synergistic activity of proteasome and immunoproteasome inhibitors with B-cell receptor pathway inhibitors in chronic lymphocytic leukemia cells.

Supevisor: Prof. Dr. Irena Mlinarič-Raščan, co-supervisor Assist. Dr. Damjan Avsec.

Faganeli Dan: The effect of ketamine and midazolam on rat cortical astrocyte viability.

Supevisor: Prof. Dr. Metoda Lipnik Štangelj.

Kovačič Klara: The role of cysteine peptidase cathepsin X in microglia polarization.

Supevisor: Assoc. Prof. Dr. Anja Pišlar, co-supervisor: Assist. Lara Vogrinčič.

Polajžer Sara: The effect of modified *FUBP3* in *ANAPC1* gene expression on the differentiation of HOS osteosarcoma and mesenchymal stem cells.

Supervisor: Assist. Prof. Dr. Marija Nika Lovšin.

Rozman Iza: Evaluation of polysaccharide alginate nanocapsules cytotoxicity and genotoxicity in vitro.

Supevisor: Prof. Dr. Marija Sollner Dolenc, co-supervisor: Assist. Prof. Dr. Alja Štern.

PRIZNANJA FAKULTETE

FACULTY OF PHARMACY RECOGNITIONS

Priznanja fakultete prejmejo absolventi, ki so v času študija tekoče napredovali (niso pavzirali ali ponavljali letnika) ter pri vseh študijskih obveznostih (razen diplomi), opravljenih najpozneje v obdobju enega leta od vpisa absolventskega staža, dosegli povprečno oceno 9,00 ali več.

Faculty of Pharmacy Awards are given to graduates, who have shown significant progress and completed all their study obligations (except graduation) with an average mark of 9.00 or more (out of 10) within one year after enrolling into the extra year of studying.

Ahdali Hana
Ahlin Taja
Artnjak Diana
Berglez Pia
Boštic Nika
Bračko Tine
Budisavljević Barbara
Čuš Tilen
Gartnar Tanja
Jenko Vita
Jeram Ema
Ježek Barbara
Keber Lara
Kirbus Klemen
Kočivnik Nina
Kovačič Romi Lea
Kovše Kaja
Kurent Ema
Kuster Tamara Picaboo
Leban Marta
Ledinek Anja
Marovič Astrid
Mencin Amadeja
Navratil Juš
Novak Leja
Oberč Rok
Oberstar Sara
Pačnik Nejc
Petančič Žiga
Repar Lara
Roglič Mitja
Rojc Eva
Roškarič Damijana
Šenk Anja
Šimnovec Leja
Stanko Sara
Števančec Nuša
Šuštaršič Teja
Trunkelj Natalija
Tuškei Kaja
Vehar Mateja
Veljanovska Melisa
Vetrih Manca
Voga Lucija
Založnik Neža
Žižek Pia

POHVALE FAKULTETE ZA ŠTUDIJSKO LETO 2022/2023

FACULTY OF PHARMACY PRAISE

Adamič Lara
Artnjak Diana
Balaško Kaja
Biškup Nika
Bizjak Taja
Blažič Maj
Boštic Nika
Bračič Manca
Bratec Živa
Brumat Eva
Budisavljević Barbara
Dedič Ajda
Doberšek Zarja
Dolar Bratuša Alisa
Dremelj Nika
Ferjančič Eva
Gartnar Tanja
Gradišek Sara
Habič Vid
Haler Lea
Hočevar Neža
Horvat Nika
Horvat Tjaša
Hrovat Lučka
Ivanuša Nuša
Jankovič Katja
Jenko Vita
Jeram Ema
Jerina Megi
Ježek Barbara
Kalan Rebeka
Kejžar Zara
Kern Sara
Klavžar Lonja
Kočivnik Nina
Kopač Lina
Košir Katja
Kovač Nuša
Kovšca Živa
Kovše Kaja
Kozina Bubnič Lara
Križnik Jaka
Kumer Karin
Kuster Tamara Picaboo
Ledinek Anja
Mencin Amadeja
Mesarič Maša
Murovec Anika
Nahtigal David
Novak Leja
Pavlin Tajda
Poljanec Meta
Pollak Sicherl Pika
Pušnik Gaja
Resnik Katarina
Romič Lana
Ropič Bizjak Lara
Roškarič Damijana
Sedej Neža
Šenica Ana
Serianz Ema
Šimnovec Leja
Simonič Sara
Škof Maja
Škufca Valentina
Slatnar Manca
Sunesko Monika
Šuštaršič Teja
Tabaković Aleksander
Vaupotič Tinkara
Vehar Mateja
Veljanovska Melisa
Vencelj Ana
Verdnik Katja
Verk Zala
Vukelić Eva
Zakrajšek Patricija
Založnik Eva
Založnik Neža
Žibert Patricia
Žirovnik Tija
Žižek Pia
Zupan Ana
Zupanič Kaja

NOVOIZVOLJENI REDNI PROFESORJI UL FFA V LETU 2023

prof. dr. Tihomir Tomašič

Prof. dr. Tihomir Tomašič je diplomiral leta 2006 in doktoriral leta 2011 na Fakulteti za farmacijo Univerze v Ljubljani. Od leta 2006 raziskovalno in pedagoško deluje na Katedri za farmacevtsko kemijo.

Raziskovalno je aktiven na področju farmacevtske kemije. Njegova ekspertiza vključuje molekulsko modeliranje, načrtovanje, sintezo in biološko vrednotenje novih spojin, predvsem s protibakterijskim in protirakavim delovanjem. Svojo znanstveno-raziskovalno usposobljenost izkazuje s številnimi znanstvenimi publikacijami (>110), njihovo mednarodno odmevnost pa s citati (več kot 2900 citatov, h indeks 29, Google Scholar). Strokovno se udejstvuje kot recenzent številnih mednarodnih znanstvenih revij in kot član uredniških odborov revij, hkrati pa deluje tudi kot ekspertni ocenjevalec projektov tujih raziskovalnih organizacij. Do sedaj je na razpisih ARIS pridobil en temeljni raziskovalni projekt, sodeluje pa tudi pri več drugih projektih s številnimi priznanimi raziskovalnimi skupinami po svetu. V sodelovanju z univerzo in fakulteto skrbi za zaščito intelektualne lastnine pri obetavnih izumih s področja protibakterijskih in protirakavih spojin. Leta 2019 je sodeloval v skupini, ki je prejela 2. nagrado za inovacijo *Nove protibakterijske spojine za zdravljenje infekcij z odpornimi bakterijami* na razpisu za Rektorjevo nagrado za naj inovacijo Univerze v Ljubljani 2019.

Od leta 2006 sodeluje pri izvedbi vaj in predavanj pri predmetih s področja farmacevtske kemije na Enovitem magistrskem programu Farmacija, magistrskem programu Industrijska farmacija, univerzitetnem programu Kozmetologija in podiplomskem programu Biomedicina, smer farmacija.

Do tega trenutka je bil mentor pri več kot 60 diplomskih oziroma magistrskih nalogah na programih EMŠ Farmacija in UŠP Industrijska farmacija ter mentor in somentor pri 4 doktoratih znanosti. Pod njegovim mentorstvom so študenti prejeli Prešernovo nagrado in Krkine nagrade.

Mednarodno je gostoval na Univerzi v Marburgu v Nemčiji in v podjetju InteLigand v Avstriji, kjer je opravljal raziskovalno delo s področja molekulskega modeliranja, kot vabljeni predavatelj pa je sodeloval na več domačih in mednarodnih konferencah ter univerzah. Sodeloval je tudi pri organizaciji domačih in mednarodnih konferenc, strokovnih izobraževanj ter delavnic. Je tudi aktivni član Slovenskega farmacevtskega društva.

Leta 2008 je bil prvič in 2011 drugič izvoljen v naziv asistenta, leta 2013 v naziv docenta in leta 2018 v naziv izrednega profesorja za področje farmacevtske kemije. Habilitacijska komisija UL je v marcu 2023 podala soglasje k njegovi izvolitvi v naziv rednega profesorja za področje farmacevtske kemije.

NEWLY APPOINTED FULL PROFESSORS AT UL FFA IN 2023

Professor Tihomir Tomašič

Professor Tihomir Tomašič graduated in 2006 and received his PhD in 2011 from the Faculty of Pharmacy, University of Ljubljana. Since 2006, he has been researching and teaching at the Department of Pharmaceutical Chemistry.

His research focuses on pharmaceutical chemistry, specializing in molecular modeling, design, synthesis, and biological evaluation of new compounds, primarily with antibacterial and anticancer properties. He has authored over 110 scientific publications, demonstrating significant international impact with more than 2,900 citations and an h-index of 29 (Google Scholar). Professor Tomašič is also active as a reviewer for various international scientific journals and serves on editorial boards. Additionally, he evaluates projects for foreign research organizations and has successfully obtained one basic research project through ARIS while collaborating on several other projects with recognized research teams worldwide. In partnership with the University and Faculty, he ensures intellectual property protection for promising discoveries, particularly in antibacterial and anticancer compounds. In 2019, he was part of a team awarded second place in the University of Ljubljana Rector's Award for Best Innovation with the project "New Antibacterial Compounds for Treating Infections Caused by Resistant Bacteria."

Since 2006, he has contributed to the laboratory practicals and lectures of pharmaceutical chemistry courses within the integrated master's program in Pharmacy, the master's program in Industrial Pharmacy, the university program in Cosmetology, and the postgraduate Biomedical Sciences program, field Pharmacy. He has supervised over 60 undergraduate and master's theses in the Pharmacy and Industrial Pharmacy programs, and four doctoral dissertations. His mentorship has been recognized through the Prešeren Awards and Krka Awards won by his students.

Internationally, he has conducted research in molecular modeling at the University of Marburg in Germany and with InteLigand in Austria, where he also lectured as an invited speaker at multiple conferences and universities, both in Slovenia and internationally. He has helped organize national and international conferences, professional education sessions, and workshops and is an active member of the Slovenian Pharmaceutical Society.

He was appointed as an assistant in 2008 and again in 2011, promoted to assistant professor in 2013, and to associate professor in 2018 in pharmaceutical chemistry. In March 2023, the University of Ljubljana's Habilitation Committee approved his appointment to full professor in pharmaceutical chemistry.

Fotografija: novoizvoljeni redni profesor / Photo: newly appointed full professors
prof. dr. Tihomir Tomašič (na levi / on the left) in dekan / dean prof. dr. Rok Dreu (na desni / on the right)

4 Seznam diplomantov
List of graduates

DIPLOMANTI NA FAKULTETI ZA FARMACIJO V LETU 2023
2023 GRADUATES AT THE FACULTY OF PHARMACY

UNIVERZITETNI ŠTUDIJSKI PROGRAM KOZMETOLOGIJA
THE ACADEMIC BACHELOR STUDY PROGRAMME COSMETOLOGY

Balantič Valentina
Brilej Žana
Brodnik Mihela Rafaela
Celan Zala
Ciglenečki Zoja
Ciraj Vita Marta
Čater Demšar Špela
Ćosić Marijana
Dremelj Nika
Durnik Rebeka
Eržen Kaja
Furman Nina
Klemenčič Lana Ana
Krištofelc Melanie
Marinič Nina
Medvešek Maruša
Mendaš Nuša
Mikić Sandra
Močnik Urša
Pregl Karolina
Ribič Klara
Sazonov Lana
Špindler Žana
Tušar Teja
Urbančič Nina
Vlahovič Laura Andrea
Zakrajšek Patricija
Žirovnik Tija
Županc Žana

ENOVITI MAGISTRSKI ŠTUDIJSKI PROGRAM FARMACIJA
UNIFORM MASTER STUDY PROGRAMME PHARMACY
(SINGLE-CYCLE MASTER STUDY PROGRAMME PHARMACY)

Adamlje Boštjan
Amon Klavdija
Anđelković Marija
Arko Klara
Aubreht Gašper
Baruca Anamarija
Beguš Mihelič Rok
Bejek Nastja
Belina Janta
Bergant Kristan
Bergles Petra
Bezjak Alen
Bezjak Taja
Blagajac Iza
Blanc Maja
Blatnik Anja
Bračko Tine
Branković Tamara
Bukovec Eva
Cej Kaja
Cingl Jernej
Černe Anja
Červ Karla
Češek Tjaša
Čuš Tilen
Dolžan Ajda
Dragović Anđela
Faganeli Dan
Femc Tjaša
Furjanič Lara
Gal Dea
Gnidovec Klemen
Golčer Zala
Gorišek Andraž
Gornik Nika
Gošnjak Teja
Grabnar Andreja
Gradišek Nina
Grošelj Gašper
Gruden Staš
Herakovič Lea
Hladnik Katarina
Hlupić Ines
Hostar Katja
Jakič Urška
Janežič Urška
Jarc Manja
Jurič Anita
Karner Gašper
Keber Žiga
Kemperle Žiga
Kirbus Klemen

Kitak Tajda
Kladnik Jana
Klemenčič Kaja
Klobučar Lovro
Knavs Naomi
Kokalj Saša
Koletnik Tanja
Kolman Nina
Kop Eva
Koretič Jasmina
Kosirnik Neja
Kovačič Maja
Kozole Tilen
Krajšek Katja
Kuzma Jure
Kvartuh Anja
Lipovnik Lana
Ljepojević Tamara
Lombergar Ina
Lorbek Maja
Majcenovič Nuša
Malavašič Vita
Malič Manca
Marovič Astrid
Mastnak-Sokolov Peter
Matjašec Nuša
Meglen Lara
Meško Tamara
Mihelič Blaž
Mihelič Lara
Mikuž Lara
Močnik Anže
Morić Ariana
Motaln Mirjam
Murn Neža
Murovec Jakob
Mušić Ajla
Oberč Rok
Olenik Katja
Oman Katja
Ošlak Maša
Pečnik Matija
Pelc Anamarija
Pirc Meta
Pirman Anja
Podgoršek Eva
Potočnik Luka
Povše Rebeka
Prus Barbara
Pruš Mima
Ramšak Helena
Rebernik Žiga
Renner Rok
Ribo Aldina
Roblek Nika
Romšak Gal
Rotar Pucko Eva
Rovis Renata
Rus Žana
Stegne Luka
Stolnik Eva
Šadl Sandra
Šarkanj Saša
Škratek Mojca
Štante Amadej
Ševančec Jan
Štumberger Rok
Šturm Lea
Šulek Katarina
Tasič Jaka
Tomšič Gašper
Topalov Kristijan
Trnovec Lara
Tuškei Kaja
Valič Tjaša
Videčnik Blaž
Vojska Sara
Voljkar Špela
Vrhovnik Lea
Zupančič Nika
Zupanič Eva

MAGISTRSKI ŠTUDIJSKI PROGRAM INDUSTRIJSKA FARMACIJA
THE MASTER STUDY PROGRAMME INDUSTRIAL PHARMACY

Avdičević Amela
Bele Teja
Bellaadem Assya
Bijek Klavdija
Bitenc Anamarija
Bukovec Simon
Curk Blaž
Durić Ines
File Tina
Gošek Teja
Gracar Klavdija
Hočevar Maja
Janežič Nina
Kavalič Tadej
Klemenčič Pocajt Tjaša
Končan Blaž
Kovačič Eva
Kozar Laura
Lavrič Jure
Lipovnik Anja
Matko Klemen
Müller Ana
Pačnik Nejc
Ramšak Urška
Rogelj Meljo Neža
Ror Dominik
Rugelj Ana
Ruparčič Katja
Selan Tajka
Sluga Selestina
Staniša Nika
Stenšak Vanesa
Strle Lucija
Šibal Klara
Šifrer Nina
Šuklje Nataša
Tomšič Rok
Urbanček Alja
Zaplatar Valerija
Zupančič Tina
Žabota Urška

MAGISTRSKI ŠTUDIJSKI PROGRAM LABORATORIJSKA BIOMEDICINA
THE MASTER STUDY PROGRAMME LABORATORY BIOMEDICINE

Bernard Špela
Bogovčič Rupnik Ana
Bohinc Klara
Breznik Nika
Buhin Ana
Frlic Tjaša
Gerhold Petra
Globokar Barbara
Gojko Klara
Gosheva Gordana
Halilović Edin
Ježek Barbara
Kocijančič Anja
Koroševič Koser Benjamin
Lavrič Suzana
Leban Marta
Levačić Patrik
Ličen Anja
Mahorič Maja
Markelj Bogataj Neža
Medvešček Neža
Milanović Saša
Mužina Karolina
Osmani-Idrizi Anida
Polajžer Sara
Potisk Katja
Roškarič Damijana
Rozman Iza
Sebanc Natalija
Snoj Lara
Strojan Anja
Štojs Denis
Tot Zoja
Trošt Lah Eva
Trstenjak Ana
Trstenjak Staša
Turkalj Iris
Velkovski Lucija
Vrevc Žlajpah Jaka
Zadravec Anja
Zavec Sara
Zupanc Maja

DOKTORSKI ŠTUDIJSKI PROGRAM BIOMEDICINA
DOCTORAL STUDY PROGRAMME OF BIOMEDICINE

Doktorati s področja farmacevtskih znanosti / Doctors of Pharmaceutical Sciences

Cvetka Bačar Bole (mentor Tomaž Vovk): Analiza farmakoterapije hospitaliziranih bolnikov s shizofrenijo in podobnimi psihozami = Analysis of pharmacotherapy in hospitalized patients with schizophrenia spectrum disorders, COBISS.SI-ID: 153300483.

Teja Brezovar (mentor Rok Dreu): Vpliv variabilnosti debeline obloge in segregacije pelet na zagotavljanje ponovljivosti izbranih parametrov lastnosti kapsul s podaljšanim sproščanjem = Influence of coating thickness variability and segregation of pellets on assurance of repeatability of selected sustained-release capsule properties, COBISS.SI-ID: 157981187.

Aleša Bricelj (mentor Izidor Sosič, somentor Marko Anderluh): Načrtovanje, sinteza in vrednotenje himernih molekul za inducirano razgradnjo proteinov, vpletenih v patogenezo malignih obolenj = Design, synthesis and evaluation of chimeric molecules for induced degradation of proteins involved in pathogenesis of malignancies, COBISS.SI-ID: 166399747.

Mateja Črček (mentorica Mojca Kerec Kos, somentor Štefan Grosek): Razvoj in validacija populacijskega farmakokinetičnega modela za optimizacijo odmerjanja gentamicina pri otrocih = Development and validation of a population pharmacokinetic model of gentamycine for dosing optimisation in children, COBISS.SI-ID: 157945091.

Črt Dragar (mentorica Petra Kocbek, somentor Slavko Kralj): Razvoj nanovlaken z magnetnimi nanodelci za uporabo v biomedicini = Development of nanofibers with magnetic nanoparticles for biomedical applications, COBISS.SI-ID: 173589251.

Aleša Dular Vovko (mentor Franc Vrečer): Študij vpliva formulacijskih in procesnih parametrov kompaktiranja na kritične atribute kakovosti granulatov in tablet = Investigation of influence of roller compaction formulation and process parameters on critical quality attributes of granules and tablets, COBISS.SI-ID: 146708483.

Martina Durcik (mentorica Lucija Peterlin Mašič, somentor Tihomir Tomašič): Novi dvojni zaviralci DNA-giraze in topoizomeraze IV z delovanjem na odporne bakterijske seve in z nizkim tveganjem za razvoj odpornosti = New dual DNA gyrase and topoisomerase IV inhibitors active against resistant bacterial strains and with low potential for resistance development, COBISS.SI-ID: 148165379.

Katja Glinšek (mentor Borut Štrukelj): Razvoj sesalskih celičnih linij za proizvodnjo podobnih bioloških zdravil z uporabo sintetičnih transkripcijskih dejavnikov = Development of mammalian cell lines for the production of biosimilars using synthetic transcription factors, COBISS.SI-ID: 167109891.

Katarina Grabrijan (mentor Stanislav Gobec, somentorica Martina Hrast Rambaher): Načrtovanje, sinteza in vrednotenje novih kovalentnih zaviralcev encimov MurA in penicilin vezočih proteinov = Design, synthesis and evaluation of novel covalent inhibitors of MurA and penicillin-binding proteins, COBISS.SI-ID: 194552067.

Andrej Grobin (mentor Jurij Trontelj, somentor Robert Roškar): Vrednotenje obremenitve slovenskih vod s hormoni in izbranimi motilci endokrinega sistema = Evaluation of Slovenian waters´ burden with hormones and selected endocrine disruptors, COBISS.SI-ID: 166406403.

Maj Jožef (mentor Uroš Rot, somentor Mitja Kos): Vpliv sodelovanja bolnikov pri zdravljenju z dimetilfumaratom na zdravstvene izide pri multipli sklerozi = Impact of medication adherence on health outcomes in patients with multiple sclerosis treated with dimethyl fumarate, COBISS.SI-ID: 178472451.

Lidija Kovač (mentor Robert Roškar, somentor Zdenko Časar): Preučevanje razgradnih poti zdravilnih učinkovin iz skupine zaviralcev virusne integraze s pomočjo in vitro in in silico orodij = Study of degradation pathways of active substances from the group of viral integrase inhibitors using in vitro and in silico tools, COBISS.SI-ID: 173587203.

Mila Kovačević (mentorica Alenka Zvonar Pobirk, somentor Ilija German Ilić): Razvoj na lipidih in talinah osnovanih sistemov polnjenih v mezoporozne nosilce za izboljšanje topnosti karvedilola = Development of lipid and melt based systems loaded into mesoporous carriers for improved solubility of carvedilol, COBISS.SI-ID: 179379203.

Klemen Kreft (mentor Rok Dreu): Optimizacija procesov in formulacij pri 3D tiskanju tablet = Optimization of process and formulations in 3D tablet printing, COBISS.SI-ID: 173770243.

Elena Maria Loi (mentor Marko Anderluh, somentor Roland J. Pieters): Strukturno podprto načrtovanje, sinteza in biološko vrednotenje novih zaviralcev O-β-N-acetilglukozaminil transferaze = Structure-Based Design, Synthesis and Biological Evaluation of Novel O-β-N-acetylglucosaminyltransferase Inhibitors, COBISS.SI-ID: 146223619.

Anže Meden (mentor Stanislav Gobec, somentor Damijan Knez): Strukturno podprto načrtovanje, sinteza in vrednotenje reverzibilnih in ireverzibilnih zaviralcev butirilholin esteraze = Structure-based design, synthesis, and evaluation of reversible and irreversible butyrylcholinesterase inhibitors, COBISS.SI-ID: 166674691.

Sebastjan Nemec (mentor Slavko Kralj, somentorica Petra Kocbek): Razvoj anizotropnih magnetnih nanodelcev in njihovi magnetno-mehanski učinki v biomedicini = Development of anisotropic magnetic nanoparticles and their magneto-mechanical effects in biomedicine, COBISS.SI-ID: 156167171.

Matic Proj (mentor Rok Frlan): Vrednotenje knjižnic fragmentov in njihova uporaba za odkrivanje obetavnih spojin zadetkov na encimskih tarčah = Evaluation of Fragment Libraries and Their Use for the Discovery of Promising Hit Compounds on Enzyme Targets, COBISS.SI-ID: 158004995.

Marko Sever (mentor Franci Merzel, somentor Janez Mravljak): Dinamično induciran transport vode preko membranskih koprenašalcev = Dynamically induced water transport through membrane cotransporters, COBISS.SI-ID: 179812867.

Maša Sterle (mentorica Anamarija Zeg, somentor Andrej Emanuel Cotman): Načrtovanje, sinteza in vrednotenje neplanarnih benzotiazolnih zaviralcev bakterijskih topoizomeraz z razširjenim spektrom delovanja = Design, synthesis and evaluation of non-planar benzothiazole-cored bacterial topoisomerase inhibitors with broadened antibacterial spectrum, COBISS.SI-ID: 176629763.

Živa Zajec (mentor Tihomir Tomašič, somentorica Martina Gobec): Načrtovanje, sinteza in biološko vrednotenje novih alosteričnih zaviralcev Hsp90 s protitumornim delovanjem = Design, synthesis and biological evaluation of new allosteric Hsp90 inhibitors with anticancer activity, COBISS.SI-ID: 179579907.

Doktorati s področja klinične biokemije in laboratorijske biomedicine / Doctors in the field of Clinical Biochemistry and Laboratory Biomedicine

Damjan Avsec (mentorica Irena Mlinarič-Raščan somentorica Helena Podgornik): Vloga proteasoma, imunoproteasoma in avtofagije v terapiji kronične limfocitne levkemije = The role of proteasome, immunoproteasome and autophagy in the therapy of chronic lymphocytic leukemia, COBISS.SI-ID: 167069187.

Neža Brezovec (mentorica Saša Čučnik, somentorica Katja Lakota): Vloga monocitov in poškodbe DNA v vnetnih procesih pri bolnikih s sistemsko sklerozo ter vpletenost adiponektina in resolvina v razvoj fibroze = The role of monocytes and DNA damage in inflammation of patients with systematic sclerosis and involvement of adiponectina and resolvin in fibrotic development, COBISS.SI-ID: 146318339.

Diana Cviič (mentor. Joško Osredkar): Timidin kinaza 1 kot diagnostični tumorski označevalec pri bolnicah z rakom jajčnikov = Thymidine kinase 1 as a diagnostic tumor marker in patients with ovarian cancer, COBISS.SI-ID: 176823555.

Lara Slavec Janev (mentorica Ksenija Geršak, somentorica Nataša Karas Kuželički): Genetske spremembe, povezane z orofacialnimi shizami v slovenski populaciji = Genetic variants associated with orofacial clefts in the Slovenian population, COBISS.SI-ID: 166678019.

Ula Štok (mentorica Polona Žigon, somentorica Saša Čučnik): Molekulsko profiliranje majhnih zunajceličnih veziklov in njihovih izvornih celic pri antifosfolipidnem sindromu = Molecular profiling of small extracellular vesicles and their originating cells in antiphospholipid syndome, COBISS.SI-ID: 138274051.

5 Znanstvene in strokovne publikacije Scientific and professional publications

RAZISKOVALNA ORGANIZACIJA / RESEARCH ORGANIZATION

Univerza v Ljubljani, Fakulteta za farmacijo, 2023

University of Ljubljana, Faculty of Pharmacy, 2023

ZNANSTVENI ČLANKI / SCIENTIFIC ARTICLES

BAČAR, Cvetka, NAGODE, Katja, PIŠLAR, Mitja, MRHAR, Aleš, GRABNAR, Iztok, VOVK, Tomaž. Potential drug-drug interactions among patients with schizophrenia spectrum disorders : prevalence, association with risk factors, and replicate analysis in 2021. *Medicina*. 2023, vol. 59, iss. 2, art. 284, 13 str., [COBISS.SI-ID 140427011]

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