



POROČILO O DOSEŽKIH

PROGRESS REPORT 2022

KAZALO / CONTENT

1. Predstavitev Fakultete za farmacijo 013

Presentation of the Faculty of Pharmacy

Organiziranost 014
Organization

Zaposleni 024
Employees

Predstavitev organizacijskih enot 016
Presentation of departments

Študentski svet Fakultete za farmacijo (ŠS FFA), Študentska organizacija Fakultete
za farmacijo Slovenije (ŠOFFA) in Društvo študentov farmacije Slovenije (DŠFS) 058
Student council of the Faculty of Pharmacy (ŠS FFA), Student organization of the
Faculty of Pharmacy (ŠOFFA) and Slovenian pharmacy students' society (DŠFS)

2. Poročilo o delu 061

Activity report

Pregled poslovanja 062
Business overview

Študijsko področje 065
Field of study

Znanstvena, raziskovalna in strokovna dejavnost 069
Scientific, research and professional activities

Projekti in programi 072
Projects and programmes

Prenos znanja in sodelovanje z okoljem 097
Knowledge transfer and cooperation with the environment

Izumi in inovacije 101
Innovations and inventions

Udejstvovanje v stroki 102
Performance in the profession

Mednarodna dejavnost	103
International activity	
Obštudijska dejavnost	106
Extracurricular activities	
Šport	110
Sport	

3. Ponosni smo – priznanja in nagrade **113**

We are proud of – awards and prizes

Slavimo znanost – Raziskovalni dan UL FFA	118
We celebrate science – Faculty of Pharmacy research day	
Novoizvoljeni redni profesorji	124
Newly appointed full professors	
Novoizvoljeni redni profesorji	131
Newly appointed full professors	
Prejemniki dekanovih nagrad	132
Recipients of Dean's awards	
Prejemniki Prešernovih nagrad	134
Recipients of Prešeren awards	
Priznanja fakultete	135
Faculty of Pharmacy recognitions	
Pohvale fakultete	136
Faculty of Pharmacy praise	

4. Seznam diplomantov **139**

List of graduates

5. Znanstvene in strokovne publikacije **149**

Scientific and professional publications

UVODNI POZDRAV



Spoštovani,

z zadovoljstvom lahko povem, da zaključuje Fakulteta za farmacijo Univerze v Ljubljani uspešno leto, ne glede na dejstvo, da je začetek brutalne vojne v Ukrajini vnesel v naša življenja še več negotovosti in da smo se soočili z energetske krizo, še preden smo se izvili iz primeža pandemije.

Vrnili smo se v predavalnice in laboratorije, ki smo jih manj ogrevali, vendar pa je potekal pedagoški proces v živo. Intenzivirali smo raziskovalno delo, v laboratoriju je bilo lahko spet več raziskovalcev, ki so se smeli srečevati in osebno komunicirati. V tem obdobju smo pozornost namenili medosebnim odnosom med zaposlenimi in s študenti ter ustvarjanju kolegialnega vzdušja. Poskrbeli smo za aktiven oddih, druženje in strokovna izobraževanja.

Projekt novogradnje Brdo uspešno napreduje in zavzema poglavitno pozornost širokega kroga sodelavcev. Ključni mejnik v realizaciji projekta predstavljata izdelava investicijskega programa in predložitev vloge na poziv Ministrstva za izobraževanje, znanost in šport za (so) financiranje investicijskih projektov javnih visokošolskih zavodov s

področja zdravstva, kar ima podlago v Zakonu o zagotavljanju finančnih sredstev za investicije v slovensko zdravstvo za obdobje 2021–2031. Projekt novogradnje v celoti odgovarja na potrebe, izražene v pozivu, saj doprinaša h krepitvi operativne zmogljivosti javnih visokošolskih zavodov s področja zdravstva, in sicer zaradi povečanja števila vpisnih mest za redni študij na študijskih programih medicinskega, farmacevtskega in zdravstvenega področja. Kot odgovor na poziv bomo po zaključku investicije vpis na enoviti magistrski študijski program Farmacija (EM FAR) povečali na 185 mest.

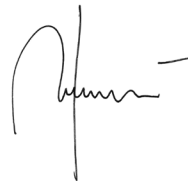
Vzporedno z izdelavo investicijskega projekta so potekale aktivnosti izdelave občinskega podrobnega prostorskega načrta za umestitev novih objektov, in sicer Fakultete za farmacijo in Fakultete za strojništvo, na lokaciji Brdo ter javna razgrnitev dopolnjenega OPPN 65 – gradnja fakultet ob Biotehniškem središču. Projekt novogradnje je bil konec leta 2022 v fazi zaključnega idejnega projekta.

Preteklo leto pa je prineslo tudi številne turbulence, najprej kot posledico uvajanja novega poslovnoinformacijskega sistema SAP in s tem povezanih obremenitev sodelavcev, čemur je sledilo več kadrovskih sprememb. Zapustili so nas dolgoletni sodelavci in medse smo sprejeli nove.

Prav tako smo bili soočeni z uveljavitvijo Pravilnika o pripravnštvu in strokovnih izpitih zdravstvenih delavcev, ki ga je izdalo Ministrstvo za zdravje in je po mnenju FFA posegel v evropsko primerljivost diplomskih listin za magistra farmacije. Uveljavitev pravilnika bi pomenila krčenje pravic za študente farmacije in nepredvidljivost pri zaposlovalcih. UL FFA deluje proaktivno in si skupaj s stroko prizadeva ohraniti študijski program, ki zagotavlja evropsko primerljivost diplomskih listin in nudi študentom vse kompetence, potrebne za pridobitev kvalifikacije farmacevta, ki so skladne z evropsko direktivo. Nenazadnje izobražujemo kompetentnega strokovnjaka, ki deluje v zdravstvenem sektorju, farmacevtski industriji in drugje. Farmacevt skrbi skladno z našim poslanstvom za celotni življenjski cikel zdravila od raziskav, razvoja, proizvodnje do svetovanja pacientom in predstavlja stabilen steber v skrbi za dobrobit pacienta in zdravje v družbi.

Fakulteta za farmacijo Univerze v Ljubljani izpolnjuje poslanstvo institucije, ki z odličnostjo v izobraževanju ter na znanstvenoraziskovalnem področju zagotavlja dragoceno podporo slovenski družbi tako na področju farmacije kakor tudi laboratorijske biomedicine in biomedicini sorodnih področjih.

Odličnost je temelj delovanja Fakultete za farmacijo.



Prof. dr. Irena Mlinarič-Raščan, dekanja

GREETINGS BY THE DEAN



Dear reader,

I am happy to say that the Faculty of Pharmacy, University of Ljubljana (UL FFA) has completed a successful year, regardless of the fact that the start of the brutal war in Ukraine brought into our lives even more uncertainty and that we faced energy crisis even before we got out of the grip of the pandemic.

We witnessed the return of students to the Faculty and pedagogical process took place face to face; however, the lecture halls and laboratories were somewhat chill because of energy savings. The research work intensified, researchers were allowed to occupy the laboratories and to meet and communicate in groups. During this period, we paid special attention to interpersonal relations between employees and students, as well as creating a collegial atmosphere. We made sure that active rest was provided and took care of socializing and professional trainings.

Many colleagues are devoted to the project of setting up a new building in Brdo. The project is progressing successfully. A key milestone in the past year was a creation of an investment program and the submission of an application to the Ministry of

Education, Science and Sport's call for submission of applications for (co)financing investment projects of public higher education institutions in the field of healthcare. The call was based on the Act on Provision of Funds for Investments in Slovenian Healthcare in the Years 2021-2031.

The new building project fully meets the requirements expressed in the call, as it contributes to strengthening the operational capacity of public higher education institutions in the field of healthcare, namely due to the increase in the number of enrollment places for full-time studies in study programs in the medical, pharmaceutical and healthcare fields. In response to the appeal, after the completion of the investment the Faculty of Pharmacy, University of Ljubljana, will increase the enrollment to the unified master's study program in Pharmacy (EM FAR) to 185 places.

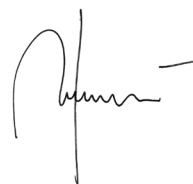
In parallel with the preparation of the investment project, the activities of the preparation of the municipal detailed spatial plan for the location of the new facilities of the faculties of pharmacy and mechanical engineering at the Brdo location took place. The public unveiling of the completed plan also took place. At the end of 2022, the new building project was in the phase of completed conceptual design.

The past year was also turbulent, firstly because of the introduction of the new business information program SAP and related increase of the workload for coworkers. This was followed by several personnel changes; we were sad to see long term coworkers leaving, but happy to welcome new ones.

The Faculty of Pharmacy also dealt with the implementation of the Regulations on Internships and Professional Examinations of Health Workers, issued by the Ministry of Health, which, according to the interpretation of the faculty, interfered with the European recognition of the Masters of Pharmacy degree. The implementation of the Act would decrease rights for pharmacy students and would cause unpredictability for employers. The Faculty of Pharmacy was proactive and together with professional associations strives to maintain a study program that ensures European comparability of certificates and offers students all the competencies necessary to obtain pharmacist qualifications in accordance with the European directive. Last but not least, the Program ensures the training of a competent expert who works in health sector, the pharmaceutical industry and elsewhere. In accordance with the mission, the pharmacist takes care of the entire life cycle of medicines from research, development, production, to patient counseling and represents a stable pillar in the care of the patient's well-being and health.

The Faculty of Pharmacy of the University of Ljubljana is an institution that, with excellence in education and scientific research, provides valuable support to Slovenian society in the field of pharmacy, as well as laboratory biomedicine and biomedicine-related fields.

The excellence is our foundation.



Prof. dr. Irena Mlinarič-Raščan, Dean

POSEBNI DOSEŽKI

Novogradnja BRDO

Izdelava investicijskega programa

Oblikovanje zakona o zagotavljanju sredstev za investicije v slovensko zdravstvo ter znanstvenoizobraževalne zavode s področja zdravstva v letih 2021–2031 (ZZSISZ, Uradni list RS, št. 162/21) je odprl novo možnost za realizacijo projekta novogradnje. Tekom parlamentarne razprave so bile identificirane nujne strateške investicije za zagotavljanje dolgoročne vzdržnosti, operativnosti in učinkovitosti, med katere smo v sodelovanju s partnerji iz stroke in zaposlovalci diplomantov Fakultete za farmacijo uspeli umestiti tudi projekt novogradnje UL FFA.

Na podlagi sprejetega zakona je Ministrstvo za izobraževanje, znanost in šport (MIZŠ) kot ministrstvo, pristojno za področje investicijskih projektov na področju izobraževanja v okviru ZZSISZ na podlagi Sporazuma o prenosu nalog pri izvajanju investicijskih projektov, objavilo Poziv k predložitvi vlog za (so)financiranje investicijskih projektov javnih visokošolskih zavodov s področja zdravstva (4110-216/2022/1, datum 22. 7. 2022).

V ta namen je UL FFA v sodelovanju z JHP, d. o. o. pripravila investicijski program kot ključno prilogo k vlogi na predhodno naveden poziv. V vlogi in v investicijskem programu jasno opredelimo izpolnjevanje pogojev in upravičenost investicije. Izvedba investicije v novogradnjo UL FFA bo odpravila pomanjkljivosti obstoječega stanja, in sicer pomanjkanje prostorov, zlasti laboratorijev in predavalnic ter s tem potrebo po najemanju prostorov, ki dejavnost deli na več lokacij. Investicija bo odpravila tudi težave, ki izvirajo iz nefunkcionalne zasnove obstoječih objektov, ki povzročajo razdrobljenost in nepovezanost posameznih kateder in laboratorijev, in omogočila sodoben način izvajanja študijskega procesa, kar brez zadostnih, tehnično in tehnološko sodobnih ter dobro opremljenih laboratorijev

SPECIAL ACHIEVEMENTS

BRDO Construction project

Development of an investment program

The drafting of legislation on provision for investments in healthcare and in scientific and educational institutions for years 2021 to 2031 (ZZSISZ, Official Gazette of the Republic of Slovenia, No. 162/21) opened a new possibility for the financial implementation of the construction project of the Faculty of Pharmacy, University of Ljubljana (UL FFA). During the parliamentary debate strategic investments to ensure long-term sustainability, operability and efficiency of health sector in Slovenia were identified. We are proud to be able to implement the project of new building in this Act. This was achieved by wide support of the Faculty's partners, stakeholders and alumni.

On the basis of the adopted law the Ministry of Education, Science and Sport published a call for (co)financing investment projects of public higher education institutions in the field of healthcare (4110-216/2022/1, date 22 July 2022).

For this purpose, the Faculty of Pharmacy in cooperation with JHP d.o.o. prepared the Investment Program as a key document of the Application. We clearly outlined the fulfillment of the conditions and the justification of the investment. The implementation of the investment in the new building will abolish the shortcomings of the existing situation, lack of space, especially laboratories and lecture halls, and thus the need to rent premises at several locations in Ljubljana. The investment will also eliminate problems stemming from the dysfunctional design of the existing facilities, which causes fragmentation and disconnection of individual departments and individual laboratories, and will enable a modern way of conducting the study process, which is not possible without the sufficient, technically and technologically advanced and well equipped laboratories. The investment in the new building and equipment of

ni mogoče. Investicija v novogradnjo in opremo UL FFA bo prispevala k povečanju vpisnih mest v študijske programe UL FFA, s čimer bo dosežena okrepitev operativnih zmogljivosti izobraževalnih zavodov s področja zdravstva. Prav tako bo projekt prispeval k rasti blaginje tako skozi povečan BDP zaradi podpore dejavnostim z visoko dodano vrednostjo, zlasti farmacevtski industriji, kakor tudi z zagotavljanjem nematerialnih dobrin, kot je zdravje prebivalstva.

Izdelava prostorskega načrta

Vzporedno z izdelavo investicijskega projekta je potekala izdelava občinskega podrobnega prostorskega načrta za umestitev novih objektov, in sicer Fakultete za farmacijo in Fakultete za strojništvo, na lokaciji Brdo v sodelovanju z urbanizmom Mestne občine Ljubljana in Šabec-Kalan arhitekti ter javna razgrnitev dopolnjenega OPPN 65 – gradnja fakultet ob Biotehniškem središču.

Za investicijska projekta Fakultete za farmacijo in Fakultete za strojništvo se je izdelal Občinski podrobni prostorski načrt 65 – gradnja fakultet ob Biotehničnem središču (OPPN). Območje OPPN sovпада z območjem, ki je na podlagi sklepa vlade RS št. 35000-11/2013/5 zajeto v območje prostorskih ureditev, na katerih se v okviru državnega prostorskega načrta predvideva ena od možnih tras za obvozno železnico ljubljanskega železniška vozlišča. Zaradi navedenega je bilo Ministrstvo za infrastrukturo (MZI), vključno s strokovnimi službami, vključeno v nabor nosilcev urejanja prostora in pozvano, da poda svoje smernice k osnutku, skladno s predpisi, ki urejajo izdelavo in uveljavitev prostorskih izvedbenih aktov. Ker predlog OPPN, ki je bil MZI posredovan v drugo mnenje, tako v grafičnem kot besedilnem delu ni vseboval ustreznih varoval oz. zagotovil, na podlagi katerih bi lahko MZI izvajalo svojo investicijsko namero izgradnje obvozne železnice v prihodnosti, ko bodo projekti pripravljeni, je MZI izdalo negativno drugo mnenje.

the FFA will also allow the increase of enrollment places in study programs, which will strengthen the operational capacities of educational institutions in the field of healthcare. Furthermore, the implementation of the project will contribute to the growth of prosperity both through increased GDP due to the support of activities with high added value, especially the pharmaceutical industry, as well as through the provision of intangible goods, i.e. health of the population.

Special act planning Making of OPPN

In parallel with the preparation of the investment project, the preparation of the municipal detailed spatial plan for the location of the new facilities of the Faculties of Pharmacy and Mechanical Engineering at the Brdo location (OPN65) took place. This was done in close cooperation with Urban Planning Department of the City of Ljubljana and Šabec-Kalan architects.

The public unveiling of the completed OPPN 65 took place during the summer 2022.

For the investment projects of the Faculty of Pharmacy and the Faculty of Mechanical Engineering, the Municipal Detailed Spatial Plan 65 was prepared. The area of the OPPN coincides with the area which, based on the decision of the Government of the Republic of Slovenia No.: 35000-11/2013/5, is included in the area of spatial arrangements, in which meetings within the framework of the State Spatial Plan envisage one of the possible routes for the bypass railway of Ljubljana underground railway junctions. Because of the above, the Ministry of Infrastructure (MZI) was included in the set of spatial planning bodies and asked to give their guidelines in accordance with the regulations, which regulate the creation and enforcement of spatial implementing acts. Because the OPPN proposal, which was forwarded to the MZI for a second opinion, both in the graphic and textual parts, did not contain adequate

Za razrešitev situacije je bil sklenjen sporazum med strokovnimi službami MZI ter UL FFA in UL FS, ki temelji na zavezi, da želita obe strani za realizacijo svojih investicij, ki so širšega javnega interesa, zagotoviti ustrezne izvedbene pogoje in izvesti ukrepe, s katerimi bo vzajemni vpliv vseh investicijskih namer po njihovi izvedbi zanemarljiv. Na podlagi sklenjenega sporazuma je MZI pravočasno izdalo pozitivno drugo mnenje k predlogu OPPN, tako da je bil oddan v postopek sprejemanja v mestnem svetu do konca leta 2022.

V skladu z OPPN 65 je predvidena etapnost gradnje. Gradnja posamezne fakultete s pripadajočo ureditvijo se lahko izvede samostojno ali se obe fakulteti gradita sočasno.

Gradnja skupne uvozno-izvozne klančine, skupnega dela kletne etaže ter pripadajočih ureditev mora biti zajeta v dokumentacijo za etapo, ki se izvede najprej in je izvedena sočasno z njo.

Dopolnitev idejnega projekta

Projekt novogradnje je bil konec leta 2022 v fazi zaključnega idejnega projekta, ki ga vodijo projektanti ATELIERarhitekti d. o. o. v skupnem nastopu z ARHEMA d. o. o. ter projektanti družbe ELEA iC. FFA in FS se zavežeta tako v procesu načrtovanja kot izvedbe svojih investicijskih namer (gradnja fakultet na območju OPPN 65) izvesti ukrepe, s katerimi bi po strokovni presoji svojih projektantov in izvajalcev zagotovili čim boljše blažitev vpliva vibracij, ki bi jih lahko povzročala bodoča železniška infrastruktura.

Projekt urejanja širše okolice novogradenj Fakultete za farmacijo in Fakultete za strojništvo ter skupnega uvoza v podzemne garaže vodijo projektanti Sadar in Vuga v sodelovanju z IBE d. o. o. Pri oblikovanju projekta aktivno sodelujeta gradbeni odbor Fakultete za farmacijo in služba za investicije Univerze v Ljubljani.

safeguards or assurances on the basis of which MZI could implement its investment intention to build a bypass railway in the future, when the projects are ready, MZI issued a negative second opinion.

In order to resolve the situation, an agreement was made between the professional services of the MZI and University of Ljubljana, which is based on the commitment that both parties want to ensure adequate implementation conditions and carry out the measures, with which the mutual impact of all investment intentions after their implementation, will be negligible. The investments, however, are of wider public interest. On the basis of the agreement reached, the MZI issued a positive second opinion on the OPPN proposal in a timely manner, so that the OPPN proposal can be submitted to the city council for adoption by the end of 2023 at the latest.

In accordance with OPPN 65, construction is planned in three independent phases. The construction of an individual faculty with its associated arrangement can be carried out independently or both faculties can be built simultaneously.

The construction of the common import-export ramp, the common part of the basement floor and the associated arrangements must be included in the documentation for the stage that is carried out first, and carried out simultaneously with it.

Supplementation to the conceptual project

At the end of 2022, the new building project was in the phase of completed conceptual design, led by the designers ATELIERarhitekti d.o.o. in a joint performance with ARHEMA d.o.o., and the designers of ELEA iC. FS and FFA undertake both in the process of planning and the implementation of their investment intentions (construction of faculties in the area of OPPN 65) to implement measures that, according to the expert judgment of their designers and contractors, would ensure the best possible mitigation of the impact of



Slika: Pogled novogradnja FFA Brdo / Photo: View Brdo
Construction project

vibrations that could potentially be caused by future railway infrastructure.

The project of arranging the wider surroundings of the new buildings of the Faculty of Pharmacy and the Faculty of Mechanical Engineering, as well as the joint import into the underground garages, is led by designers Sadar and Vuga in cooperation with IBE d.o.o. The construction committee of the Faculty of Pharmacy and the investment department of the University of Ljubljana actively participate in the design of the project.



Slika: Tloris pritličja novogradnja FFA Brdo / Photo: Tloris ground floor Bro Construction project

VODSTVO FAKULTETE (mandat od 1. 10. 2019 do 30. 9. 2023)

FACULTY'S GOVERNANCE (mandate since 1 October 2019 to 30 September 2023)





Slika: vodstvo UL FFA / Photo: UL FFA management

prof. dr. Irena Mlinarič-Raščan, dekanja / Dean

prof. dr. Mojca Lunder, prodekanja za mednarodno sodelovanje / Vice-Dean for International Relations

prof. dr. Rok Dreu, prodekan za znanstvenoraziskovalno področje / Vice-Dean for Scientific Research

prof. dr. Marko Anderluh, prodekan za študijsko področje / Vice-Dean for Education

1

Predstavitev Fakultete za farmacijo Presentation of the Faculty of Pharmacy

ORGANIZIRANOST

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 na vseh študijskih programih.

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 s številom citatov in projektov 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 se gradijo 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.

UL FFA ima šest kateder, ki predstavljajo osnovne organizacijske enote pedagoškega in znanstvenoraziskovalnega dela ter Inštitut za farmacijo, ki izvaja temeljne in razvojne projekte za tekoče potrebe farmacevtske stroke. Ima naslednje organizacijske enote: vodstvo fakultete, tajništvo fakultete, katedre in Inštitut za farmacijo.

ORGANIZATION

The Faculty of Pharmacy is a research-oriented teaching institution, evidenced from the publications of research achievements in highly esteemed international journals, as well as in the transfer of knowledge in all programmes.

The faculty's basic 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 entwined in the study programmes.

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 educational institution of the pharmacy that is central to the wider field of pharmacy, clinical biochemistry and cosmetology. Each year the faculty admits 165 students in the Pharmacy programme, 90 students to the Laboratory Biomedicine programme (50 undergraduate and 40 graduate students), 40 students to the Cosmetology programme, 40 students to the Industrial Pharmacy programme and 20 to 30 to doctoral studies. In the past years there have been about 1550 students together with specialist trainees enrolled at the Faculty of Pharmacy.

The Faculty of Pharmacy has six departments, which represent the basic organizational units of teaching and scientific research, and the Institute of Pharmacy, which

Učitelji in sodelavci so večinoma registrirani kot raziskovalci pri Javni agenciji za raziskovalno dejavnost (ARRS) in imajo nedvomno velik raziskovalno-razvojni potencial.

Družbena odgovornost UL FFA se kaže v sodelovanju z uporabniki znanja na kulturnih, gospodarskih in socialnih področjih. Tako vlogo želi 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.

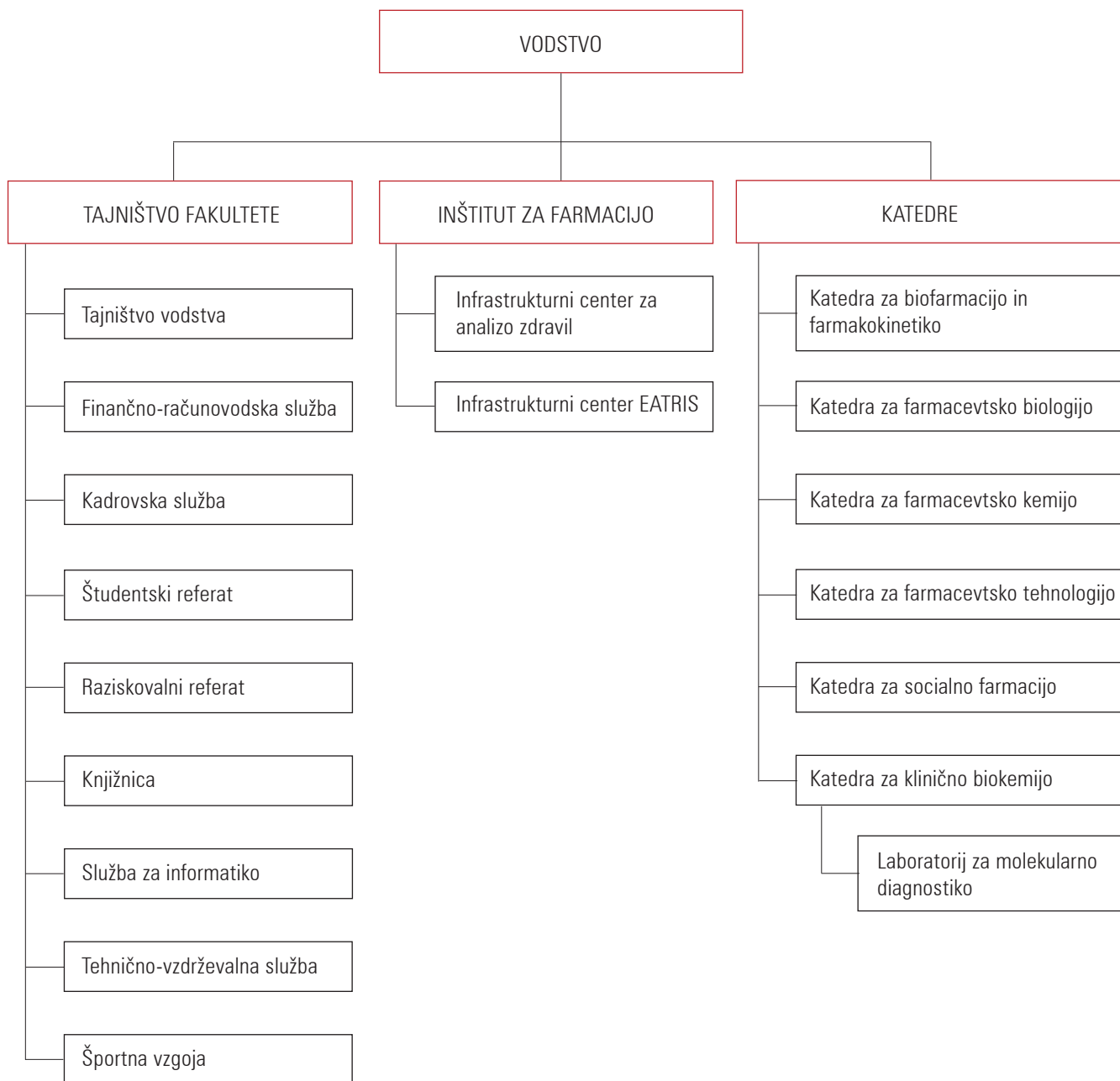
implements basic and development projects for the current needs of the pharmaceutical profession. In other words, the faculty has the following organizational units: faculty management, faculty secretariat, departments and the Institute of Pharmacy.

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

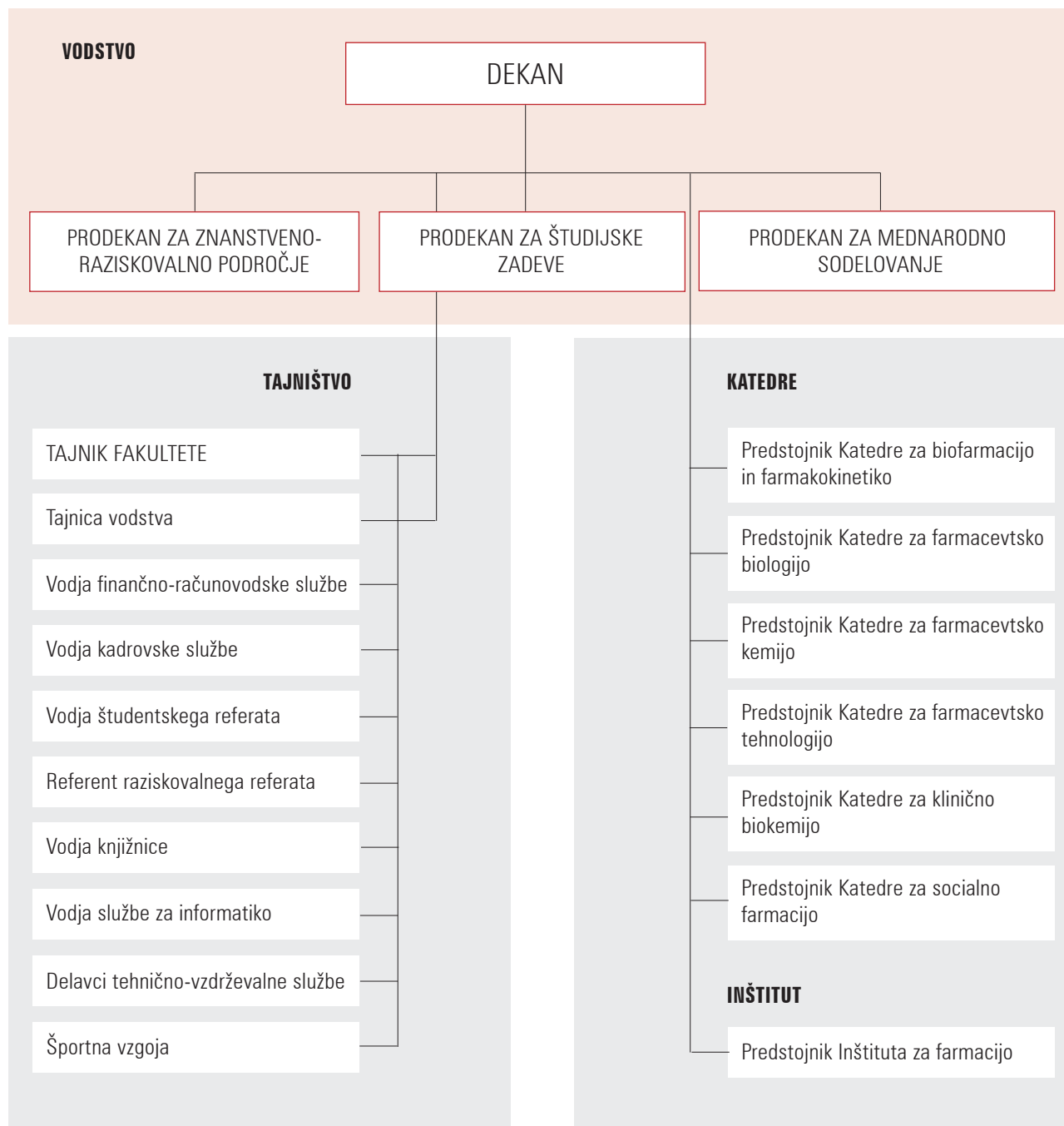
The social responsibility of the Faculty of Pharmacy is reflected in the cooperation with users of knowledge in the cultural, economic and social fields. The faculty wants to maintain and consolidate that role in the future and strive to increase its high standing and reputation in the international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

The vision of the Faculty of Pharmacy is to contribute to creating the future and to 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 the Slovenian citizens, thus contributing to general development and strengthening national identity.

ORGANIZACIJSKE ENOTE / FACULTY OF PHARMACY ORGANISATIONAL UNITS



UL FFA - preglednica nadrejenih / podrejenih delovnih mest



KATEDRE FAKULTETE ZA FARMACIJO

Katedra za biofarmacijo in farmakokinetiko

predstojnik: prof. dr. Albin Kristl, 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: Prof. Dr. Albin Kristl, 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

predstojnik: prof. dr. Rok Dreu, 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.

INSTITUTE OF PHARMACY

Head: Prof. Dr. Rok Dreu, 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.

ORGANI FAKULTETE

Senat

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

Akademski zbor

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

Upravni odbor

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

Študentski svet

predsednica: Marjeta Lipužič

THE FACULTY'S GOVERNING BODIES

Senate

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

Academic Assembly

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

Managing Board

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

Student Council

Chair: Marjeta Lipužič

TAJNIŠTVO

Tajnica fakultete

Katja Višnjevec Vahčič, univ. dipl. prav.

Tajnica vodstva

Lidija Mataija, dipl. ekon.

Finančno-računovodska služba

Marko Ocvirk, univ. dipl. ekon., vodja službe

Kadrovska služba

Milena Petek, univ. dipl. ekon., pomočnica tajnice fakultete

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

pred. Dušan Videmšek, prof. športne vzgoje

FACULTY SECRETARIAT

Faculty Secretary

Katja Višnjevec Vahčič, LLB

Head Secretary

Lidija Mataija, BS Econ.

Office for Finance and Accounting

Head: Marko Ocvirk, BS Econ.

Human Resources

Head: Milena Petek, BS Econ.

Student Administration

Head: Tanja Kadunc, BSc (Tourism)

Research Administration

Head: Mateja Terčič

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

predsednik: prof. dr. Marko Anderluh, mag. farm.

Komisija za raziskovalno in razvojno delo

predsednik: prof. dr. Rok Dreu, 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

predsednik: prof. dr. Marko Anderluh, mag. farm.

Komisija za kakovost in akreditacijo

predsednik: izr. prof. dr. Janez Mravljak, mag. farm.

Komisija za strokovna vprašanja

predsednica: izr. prof. dr. Mojca Kerec Kos, mag. farm.

Komisija za internacionalizacijo

predsednica: prof. dr. Mojca Lunder, 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 COMMITTEES

Study Affairs Committee

Chair: Prof. Dr. Marko Anderluh, M. Pharm.

Research and Development Committee

Chair: Prof. Dr. Rok Dreu, 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. Marko Anderluh, M. Pharm.

Assurance and Accreditation Committee

Chair: Assoc. Prof. Dr. Janez Mravljak, M. Pharm.

Professional Issues Committee

Chair: Assoc. Prof. Dr. Mojca Kerec Kos, M. Pharm.

Internationalization Committee

Chair: Prof. Dr. Mojca Lunder, M. Pharm.

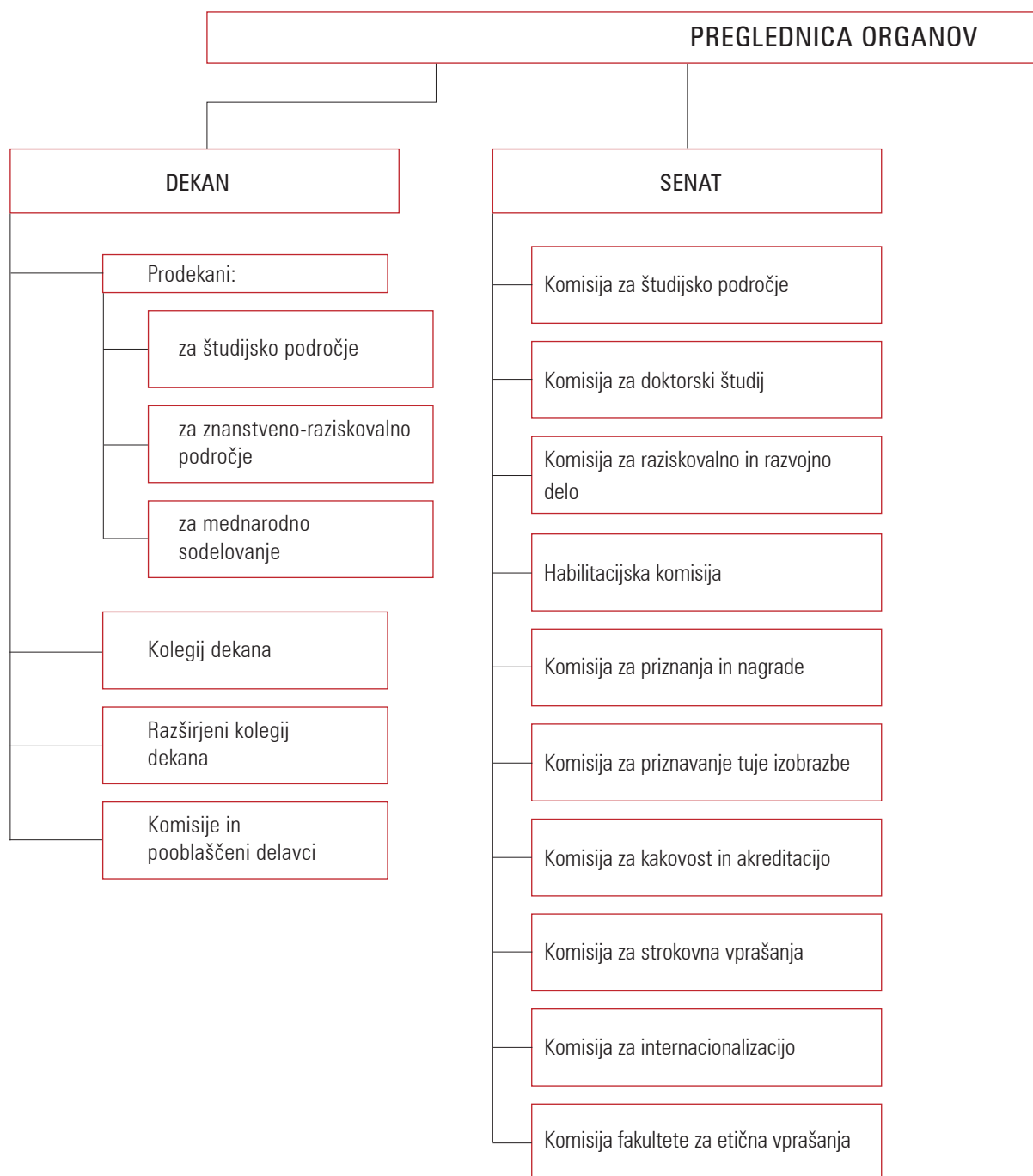
Ethical Issues Committee

Chair: Assoc. Prof. Dr. Simon Žakelj, M. Pharm.

Doctoral Study Committee

Chair: Prof. Dr. Lucija Peterlin Mašič, M. Pharm.

ORGANI UL FFA / GOVERNING BODIES OF THE FACULTY OF PHARMACY



UL FFA

AKADEMSKI ZBOR

UPRAVNI ODBOR

ŠTUDENTSKI SVET



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

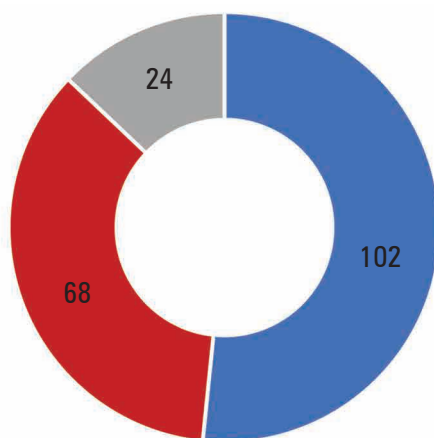
Univerzitetni učitelji University Professors	43
Univerzitetni učitelji z delno zaposlitvijo Part-Time University Professors	9
Asistenti Assistant Instructors	36
Raziskovalci Researchers	34
Mladi raziskovalci Junior Researchers	23

Predavatelj športne vzgoje Physical Education Teacher	1
Tajnik fakultete Faculty Secretary	1
Pomočnik tajnika fakultete Assistant Faculty Secretary	1
Strokovne tehnične sodelavke Technical Assistants	16
Strokovni administrativni in tehnični delavci Expert Administrative And Technical Staff	22



Slika: 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 2022

prof. dr. Borut Božič, EuSpLM

Člani katedre v letu 2022

Members of the Department in 2022

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



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

Sodelavci Katedre za klinično biokemijo (KKB) smo pedagoško, raziskovalno in strokovno aktivni na področju klinične kemije in laboratorijske medicine. Redno zaposleni člani katedre smo vpeti v pet raziskovalnih programov, v okviru katerih iščemo diagnostične kazalce kompleksnih bolezni (osteoporoze, osteoartroze, sarkopenije, metaboličnega sindroma, kronične limfocitne levkemije, prirojene srčne napake, orofacialne shize, ateroskleroze, avtoimunskih bolezni kot npr antifosfolipidni sindrom, ankilozirajoči spondiloarthritis) in raziskujemo mehanizme nastanka bolezni na molekulski in celični ravni. Pri tem razvijamo pristope bolniku prilagojene laboratorijske medicine, osnovane na farmakogenomiki, nutrigenomiki, spremljanju ravni zdravil, celičnem zdravljenju in bioetiki. Smo skrbniki prvo- in drugostopenjskega programa Laboratorijska biomedicina ter področja Klinična biokemija in laboratorijska biomedicina na doktorskem študiju Biomedicina, sodelujemo tudi v programih Farmacija in Kozmetologija. Povezanost s stroko izkazujemo s pedagoškim in raziskovalnim sodelovanjem z UKC Ljubljana, splošnimi bolnišnicami in zdravstvenimi domovi ter z delovanjem v RSK za laboratorijsko diagnostiko – medicinsko biokemijo, Zbornici laboratorijske medicine, Slovenskem združenju za klinično kemijo in laboratorijsko medicino ter evropskih združenjih (EAFP, EFLM, IFCC ...). Prenos znanja KKB se kaže tudi skozi storitve Laboratorija za molekularno diagnostiko KKB, ki izvaja preiskave za diferencialno diagnostiko in personalizirano medicino izbranih kroničnih in vrojenih metabolnih motenj ter farmakogenetike.

The members of Department of Clinical Biochemistry (KKB) are active educationally, in research and professionally in the field of clinical chemistry and laboratory medicine. The members with full time employment are included in 5 research programmes, involved in looking for the diagnostic markers of complex diseases (osteoporosis, of osteoarthritis, sarcopenia, of metabolic syndrome, chronic lymphocytic leukemias, inborn cardiac defects, orofacial shizas, atherosclerosis, of autoimmune diseases as e. g. antiphospholipid syndrome, ankylosing spondylarthrosis) and we are looking into mechanisms of the disease development on molecular and cellular level. We are devising approaches of patient-oriented medicine. We coordinate the university and master programmes such as Laboratory Biomedicine and the field of Clinical Biochemistry and Laboratorial Biomedicine on doctoral study of Biomedicine and cooperate in programmes Pharmacy and Cosmetology. We collaborate on research and pedagogical field with the University Medical Centre Ljubljana, general hospitals, and public health centers; we furthermore deal with the activity in RSK for Laboratorial Diagnostics - Medical Biochemistry, Chamber of Laboratory Medicine, Slovene Association for Clinical Chemistry and Laboratorial Medicine, including various European associations (EAFP, EFLM, IFCC ...). Transfer of knowledge is being showed also via services of Laboratory for Molecular Diagnostics that is carrying out investigations for differential diagnostics and personalized medicine of selected chronic an inborn disease of metabolism and pharmacogenetics.

KLJUČNI DOSEŽKI V LETU 2022

V razmerah pričakovanega konca pandemije smo člani KKB učinkovito izvedli pedagoško delo v študijskem letu 2021-22 ter vstopili v 2022-23 s kombinacijo dela v živo in z uporabo informacijsko- komunikacijskih tehnologij. Na raziskovalnem področju smo podaljšali mrežo izmenjav Central European Exchange Program for University Studies (CEEPUS) (koordinatorica prof. dr. Janja Marc) in pridobili en bilateralni in en temeljni raziskovalni projekt. Skupaj smo redno zaposleni delovali v 13 projektih. Organizirali smo dve odzivni poletni šoli: 7. poletne šole CEEPUS na temo Novel diagnostic and therapeutic approaches to complex genetic disorders (vodila asist. dr. Irena Prodan Žitnik) se je udeležilo 57 udeležencev iz 7 držav. Na tridnevno šolo Osteoblast cell models and functional GWAS hits validation (organizatorke prof. dr. Janja Marc, izr. prof. dr. Barbara Ostanek in doc. dr. Marija Nika Lovšin) v okviru projekta COST GEMSTONE so prišli raziskovalci iz 9 držav. Prof. dr. Joško Osredkar pa je sodeloval pri organizaciji kongresa Mednarodnega združenja za onkologijo in biooznačevalce 46th ISOBM Congress. Odlično delo članov KKB se kaže tudi v prejetih priznanjih in nagradah: asist. dr. Tijana Markovič je prejela nagrado za poster na kongresu ISOBM. Asist. Damjan Avsec, ki je povezoval delo katedre in Inštituta za farmacijo, je prejel dekanovo nagrado za članek v reviji z visokim dejavnikom vpliva ($IF > 9$). Slovenska znanstvena fundacija je podelila priznanje Prometej znanosti za spoštljive in empatične pogovore o spektru problemov pandemije COVID-19 skupini Science Mamas' Vaccine Forum, ki jo sestavljajo sedanje in nekdanja sodelavka KKB: izr. prof. dr. Nataša Karas Kuželički, izr. prof. dr. Martina Gobec, asist. dr. Tijana Markovič, asist. dr. Jasna Omersel, Lucija Ana Vrščaj in doc. dr. Simona Jurkovič Mlakar. Prof. dr. Borut Božič je prejel odličje za zasluge za pomemben prispevek pri nastanku, razvoju ter ugledu Zbornice laboratorijske medicine Slovenije in zlato plaketo Univerze v Ljubljani za izjemne zasluge pri razvijanju znanstvenega in

pedagoškega ustvarjanja ter za krepitev ugleda Univerze. Prof. dr. Joško Osredkar je prejel fakultetno nagrado za svoj življenjski opus dela na ULFFA, za svoj vpliv na kakovost študijskih programov in za prepoznavnost ULFFA.

Katedra za klinično biokemijo je v sklopu 3-dnevne poletne šole z naslovom Osteoblast cell models and functional GWAS hits validation gostila raziskovalce s področja mišično-skeletnih bolezni iz devetih držav. Šolo so v sklopu projekta COST GEMSTONE organizirale prof. Janja Marc, izr. prof. dr. Barbara Ostanek in doc. dr. Marija Nika Lovšin.

CEEPUS poletna šola 2022

V juliju 2022 je v Portorožu potekala 7. mednarodna CEEPUS poletna šola, ki sta jo organizirali CEEPUS mreža SI-0611 »Novel diagnostic and therapeutic approaches to complex genetic disorders« in Fakulteta za Farmacijo Univerze v Ljubljani. Sodelovalo je 54 udeležencev iz 7 držav (Slovenija, Hrvaška, Bosna in Hercegovina, Srbija, Češka, Slovaška in Japonska), od tega 10 učiteljev in 44 dodiplomskih in podiplomskih študentov laboratorijske biomedicine, medicinske biokemije, farmacije in medicine. Glavna tema poletne šole so bile tekočinske biopsije. Šola je vključevala predavanja, projektno delo študentov pod vodstvom tutorjev in delavnico Evidence based laboratory medicine – How to read and understand systemic reviews.

KEY ACCHIVEMENTS IN 2022

The members of KKB did teaching work efficiently in circumstances of the expected end of a pandemic in the academic year 2021-22 and entered 2022-23 with a combination of live classes and use of information-communication technologies. In the field of research we lengthened the network of Central European Exchange Programme for University Studies (CEEPUS) (coordinated by Prof. Dr. Janja Marc) and gained one bilateral and one basic research project. Regularly employed members were involved in 13 research and market projects. We organized two responsive summer schools: there were 57 participants from 7 countries at the 7th Summer schools of CEEPUS on the topic of novel diagnostic and therapeutic approaches to complex genetic disorders (guided by Asist. Dr. Irena Prodan Žitnik). On the Summer school "Osteoblast cell models and functional GWAS hits validation" (organized by Prof. Dr. Janja Marc, Assoc. Prof. Dr. Barbara Ostanek and Assist. Prof. Dr. Marija Nika Lovšin) in the frame of the project of COST GEMSTONE there were researchers from 9 states. Prof. Dr. Joško Osredkar cooperated in the organization of the Congress of International Association of Oncology and Biomarkers (46th ISOBM Congress). Excellent work of the KKB members is also evident from 5 acknowledgements and awards: Assist. Dr. Tijana Markovič received an award for the poster at a ISOBM Congress. Asist. Damjan Avsec who was tying up work of the Department and Institute of Pharmacy, received Dean's award for the article in journal with high impact factor ($IF > 9$). The Slovenian Scientific Foundation awarded the Prometej of Science acknowledgement for respectful and empathetic conversations on the spectrum of problems of a pandemic; it was given to a COVID-19 group "Science Mamas' Vaccine Forum" presently consisting of the former collaborator of a KKB Assoc. Prof. Dr. Nataša Karas Kuželički, Assoc. Prof. Dr. Martina Gobec, Assist. Dr. Tijana Markovič,

Assist. Dr. Jasna Omersel, Lucija Ana Vrščaj and Assist. Prof. Dr. Simona Jurkovič Mlakar. Prof. Dr. Borut Božič received the medal for merits for importantly contributing to creation, development and reputation of Chamber of Laboratory Medicine of Slovenia and the Golden Plaque of the University of Ljubljana for exceptional contribution in developing scientific and pedagogical creation and for the enhancement of reputation of the University. Prof. Dr. Joško Osredkar received the Faculty award for his working opus at the UL FFA, for his influence on the quality of the study programmes and for recognizability of UL FFA.

GEMSTONE Summer School

Department of Clinical Biochemistry hosted researchers from 9 countries in the field of musculoskeletal diseases from during 3 a 3-day summer school entitled: "Osteoblast cell models and functional GWAS hits validation", organized within the framework of COST GEMSTONE project by Prof. Dr. Janja Marc, Assoc. Prof. Dr. Barbara Ostanek and Assist. Prof. Dr. Marija Nika Lovšin.

CEEPUS Summer School

The 7th International CEEPUS Summer School was organized by CEEPUS net SI-0611 and the UL FFA in Portorož in July. Liquid biopsies were the main theme. 54 participants came from 7 states (Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Czech Republic, Slovakia and Japan), 10 of which were the teachers of both 44 undergraduate and postgraduate students of Laboratorial Biomedicine, Medical Biochemistry, Pharmacy and Medicine. The Summer School included lectures, project work of students run by tutors and the workshop, entitled "Evidence-based Laboratory Medicine - How to read and understand systematic reviews".

KATEDRA ZA FARMACEVTSKO BIOLOGIJO DEPARTMENT OF PHARMACETUCAL BIOLOGY

Predstojnik katedre
Head of the Department

izr. prof. dr. Tomaž Bratkovič

Člani katedre v letu 2022
Members of the Department in 2022

- prof. dr. Janko Kos, prof. dr. Samo Kreft, prof. dr. Mojca Lunder, prof. dr. Borut Štrukelj
- izr. prof. dr. Bojan Doljak, izr. prof. dr. Nina Kočever Glavač, izr. prof. dr. Anja Pišlar, izr. prof. dr. Urban Švajger
- doc. dr. Urša Pečar Fonović, doc. dr. Eva Tavčar
- asist. dr. Krištof Bozovičar, asist. dr. Meta Kokalj Ladan, asist. dr. Tina Vida Plavec, asist. dr. Matjaž Ravnikar, Lara Bolčina, Irena Klančnik Mavec, Mateja Matjaž, asist. Selena Pavšič, asist. Katja Schoss



Slika: 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 vpeljavo diagnostičnih metod ter načrtovanje in zagotavljanje kakovosti v medicinskih laboratorijih.

Sodelavci Katedre za farmacevtsko biologijo smo sodelovali v številnih intervjujih in oddajah, kjer smo podajali strokovne in znanstvene odgovore na temo COVID-19. Sodelovali smo tudi v Strateškem svetu za prehrano vlade RS.

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 particular subjects 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 participated in numerous interviews and broadcasts, where we provided professional and scientific answers on the topic of COVID-19. We participated in the Strategic Council for food within the Ministry of Health.

KLJUČNI DOSEŽKI V LETU 2022

V bazi podatkov COBISS je za leto 2022 vnesenih 155 bibliografskih enot, katerih 17 avtorjev je sodelavcev katedre. Od tega je 26 izvirnih znanstvenih člankov, 13 preglednih znanstvenih člankov in eno poglavje v znanstveni monografiji.

Asist. dr. Tina Vida Plavec je prejela veliko Krkino nagrado za raziskovalno delo pod mentorstvom izr. prof. dr. Aleša Berleca in prof. dr. Boruta Štruklja.

Sodelavci katedre so imeli vodilno vlogo pri odmevnem članku z visokim faktorjem vpliva: Ana Mitrović, Janja Završnik, Georgy Mihajlov, Damijan Knez, Urša Pečar Fonović, Petra Matjan-Štefin, Miha Butinar, Stanislav Gobec, Boris Turk, Janko Kos. Evaluation of novel cathepsin-X inhibitors *in vitro* and *in vivo* and their ability to improve cathepsin-B-directed antitumor therapy. Cellular and molecular life sciences. 2022 (IF = 9.2), ki je bil izbran med 21 dosežkov "Odlični v znanosti" s strani ARRS.

Prof. dr. Borut Štrukelj je bil v letu 2022 izbran za finalista izbora komunikator znanosti, ki ga podeljuje Slovenska znanstvena fundacija.

Doc. dr. Ana Mitrović je prejela Lapanjetovo priznanje, prof. dr. Janko Kos pa Lapanjetovo plaketo Slovenskega biokemijskega društva za leto 2022.

Polona Šafarič Tepeš je zagovarjala doktorsko disertacijo z naslovom *Pristop precizne onkologije pri prepoznavanju tarčnih odvisnosti mezenhimskega hondrosarkoma* (mentor: prof. dr. Borut Štrukelj).

Emanuela Senjor je zagovarjala doktorsko disertacijo z naslovom *Cistatin F kot mediator imunske supresije v tumorskem mikrookolju* (mentor: prof. dr. Jano Kos).

Konzorcij, v katerem z raziskovalci iz KU Leuven (Belgija), Univerze Eötvös Loránd (Budimpešta, Madžarska) in UL FKKT sodeluje izr. prof. dr. Tomaž Bratkovič, je pridobil projekt CELSA z naslovom "*Vloga malih nukleolarnih RNA (snoRNA) v etiologiji vnetne črevesne bolezni*". Cilj projekta je najti zanesljive diagnostične biološke označevalce iz skupine snoRNA s funkcionalnim pomenom za kronično vnetno črevesno bolezen.

KEY ACCHIVEMENTS IN 2022

In the COBISS database for 2022, there are 155 bibliographical units from 17 employees of the Department. Out of these, 26 are original scientific articles, 13 are scientific review articles and one chapter in a scientific monograph.

Assist. Dr. Tina Vida Plavec was awarded Krka Grand prize for the research work under the mentorship of Assoc. Prof. Dr. Aleš Berlec and co-mentorship of Prof. Dr. Borut Štrukelj.

Members of the Department of Pharmaceutical Biology were the main authors of the high-impact factor research article: Mitrović Ana, Završnik Janja, Mikhaylov Georgy, Knez Damijan, Pečar Fonović Urša, Matjan-Štefin Petra, Butinar Miha, Gobec Stanislav, Turk Boris, Kos Janko. Evaluation of novel cathepsin-X inhibitors *in vitro* and *in vivo* and their ability to improve cathepsin-B-directed antitumor therapy. Cellular and molecular life sciences. 2022 (IF = 9.2) that was chosen among 21 best research achievements in 2022 by the Slovenian Research Agency (ARRS).

Prof. dr. Borut Štrukelj was a finalist in the “Communicator of Science Award” selection by the Slovenian Science Foundation.

Assoc. Prof. Dr. Ana Mitrović was awarded Lapanje award, and Prof. Dr. Janko Kos was awarded Lapanje Plaque in 2022 by the Slovenian Biochemical Society.

Polona Šafarič Tepeš defended her doctoral dissertation entitled *A precision oncology approach to identify druggable dependencies in mesenchymal chondrosarcoma* (mentor: Prof. Dr. Borut Štrukelj)

Emanuela Senjor defended her doctoral dissertation entitled Cystatin F as a mediator of immune suppression in tumor microenvironment (mentor: Prof. Dr. Janko Kos)

Assist. Prof. Dr. Tomaž Bratkovič was a member of the consortium of researchers from KU Leuven (Belgium), Eötvös Loránd University (Budapest, Hungary), UL FKKT and UL FFA (Slovenia) that acquired a CELSA project: “*The role of small nuclear RNA (snoRNA) in the aetiology of inflammatory bowel disease*”. The goal of the project is to find reliable biological diagnostic markers from the snoRNA group with functional relevance to inflammatory bowel disease.

KATEDRA ZA FARMACEVTSKO KEMIJO DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

Predstojnik katedre

Head of the Department

prof. dr. Stanislav Gobec

Člani katedre v letu 2022

Members of the Department in 2022

- prof. dr. Marko Anderluh, prof. dr. Janez Ilaš, prof. dr. Žiga Jakopin, prof. dr. Danijel Kikelj, 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
- izr. prof. dr. Janez Mravljak, izr. prof. dr. Matej Sova, izr. prof. dr. Tihomir Tomašič, izr. prof. dr. Nace Zidar
- doc. dr. Rok Frlan, doc. dr. Martina Hrast, doc. dr. Damijan Knez, doc. dr. Stane Pajk, doc. dr. Izidor Sosič, doc. dr. Andrej Emanuel Cotman, asist. – raz. dr. Aljoša Bolje, asist. – raz. dr. Nina Franko, asist. dr. Urban Košak, asist. – raz. dr. Alen Krajnc, asist. – raz. dr. Eva Krajnc, asist. – raz. dr. Štefan Možina, asist. Aleša Bricelj, asist. Jaka Dernovšek, Sandra Cetin, asist. dr. Ana Dolšak, asist. Martina Durcik, asist. Katarina Grabrijan, Špela Gubič, asist. dr. Samo Guzelj, asist. dr. Maša Kenda, asist. dr. Mateja Toma, Veronika Klančič, Maria Elena Loi, asist. Anže Meden, asist. Raz. Peter Peršolja, asist. Matic Proj, asist. Maša Sterle, asist. Nika Strašek Benedik, asist. Andrej Šterman, asist. dr. Žan Toplak, Sjors Van Klaveren, asist. Matjaž Weiss, Živa Zajec, asist. dr. Doroteja Novak, asist. – raz. Maša Zorman, Svit Ferjančič Benetik, asist. Anja Kodila, Ilaria Brau, Ivan Džajić, Emiliano Paradiso, Špela Janež, asist. – raz. Ana Jug, asist. – raz. Vid Kavaš, Martina Piga, Edvin Purić, Tjaša Slokan, Martina Tekavec, Damijana Zalar, Katja Perc



Slika: 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, encimi, ki so pomembni pri razmnoževalnem ciklu virusa SARS-CoV-2, natrijevi in kalijeve 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), imunoproteasom, himerni razgrajevalci in tarče v procesu koagulacije krvi. Razvijamo nove sintezne poti, nove separacijske in analize 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 UL FKKT, UL MF, UL VF, Kemijskim inštitutom in Institutom Jožef Stefan ter v okviru domačih in mednarodnih projektov. Nezanemarljiv del raziskovalne dejavnosti Katedre za farmacevtsko kemijo poteka tudi v sodelovanju s farmacevtsko industrijo, predvsem Lekom in Krko.

At the Department of Pharmaceutical Chemistry we organise and carry out educational, research-oriented and professional work in the fields of pharmaceutical chemistry, pharmaceutical analysis, toxicology, and history of pharmacy. We conduct research in the field of design, synthesis, and biological evaluation of compounds, as well as the development of new molecular tools to study interactions with biological macromolecules. Research is focused on the development of new compounds for the following targets: enzymes involved in bacterial wall synthesis, enzymes involved in mycobacterial mycolic acid biosynthesis, enzymes important in the development of neurodegenerative diseases, enzymes, important for the SARS-CoV-2 virus reproductive cycle, sodium and potassium channels, heat shock proteins (Hsp90), Toll-like receptors (TLRs), NOD receptors, lectins (galektins, Siglec, DC-SIGN, and FimH), enzymes involved in posttranslational modifications (OGT: N-acetylglucosaminyltransferase), immunoproteasomes, and targets involved in blood coagulation. We are developing new synthetic routes, new separation and analytical methods for compound characterization, new methods for biological characterization of synthesised compounds, new antioxidants, new radiopharmaceuticals, proteolysis targeting chimera, new stable nitroxide and fluorescent markers. The majority of research at the department takes place within the programme group Pharmaceutical Chemistry: design, synthesis and evaluation of active compounds (2022-2027), the programme group Advanced immunological drugs and cell-based approaches in pharmacy (2022-2027) and partly in collaboration with the UL FKKT, UL MF, UL VF, the Institute of Chemistry and the Jožef Stefan Institute, as well as within national and international projects. A significant part of the research at the Department of Pharmaceutical Chemistry is carried out in collaboration with pharmaceutical companies, especially Lek and Krka.

KLJUČNI DOSEŽKI V LETU 2022

V letu 2022 smo objavili 80 izvirnih in preglednih znanstvenoraziskovalnih člankov, med katerimi jih je skoraj 50 % v revijah prvega kvartila, nekateri tudi v skupini zgornjih 5 % revij na različnih področjih. Posebno izstopa objava v prestižni reviji *Chemical Science* o novem pristopu za sintezo kiralnih α -aminoborovih kislin; za omenjeno objavo so avtorji tudi dobili nagrado *odlični v znanosti 2022*. Izstopata še objavi v *Journal of Medicinal Chemistry* o konjugiranih zaviralcih NOD2 in TLR7 ter objava v *Journal of American Chemical Society* o dinamični kinetični resoluciji β -substituiranih α -diketonov. Med preglednimi članki v letu 2022 izstopa objava v *Chemical Society Reviews* o himernih razgrajevalcih in objava v *Drug Discovery Today* o testih za identifikacijo reaktivnih spojin. Na področju toksikologije omenjamo odlično objavo v reviji *Chemosphere* o metabolizmu bisfenolov. Poleg tega smo predstavili številne novoodkrite bioaktivne molekule, ki zavirajo bakterijske encime, npr. topoizomerase, protimikrobne učinkovine z delovanjem na dve tarči, himerne razgrajevalce, zaviralce O-GlcNAc transferaze, monoamin oksidaz in številnih drugih tarč.

Na katedri smo v letu 2022 uspešno prijavljali projekte, člani katedre so tako pridobili štiri nove projekte ARRS. Velik temeljni projekt je na temo predkliničnega razvoja zaviralcev mitohondrijskih ionskih kanalov za zdravljenje raka. Sledita temeljna projekta na temo adjuvantov za mukozna cepiva in na temo razvoja novih nizkomolekularnih modulatorjev Tollu podobnih receptorjev 7 in 8 za imuno-terapijo raka. Podoktorski projekt pa se navezuje na razvoj novih antibiotikov s sočasnim zaviranjem beta-laktamaz in penicilin-vezočih proteinov. Uspešni smo bili tudi na mednarodnih razpisih, kjer smo pridobili nov projekt, prvi v kooperaciji s poljsko raziskovalno agencijo na temo razvoja učinkovin, ki ciljajo vnetje in holinergični sistem pri Alzheimerjevi bolezni. Tudi sicer je katedra zelo vpeta

v mednarodno okolje, tako se je leta 2022 na podoktorski študij vpisalo kar 50 % tujih študentov. Poleg raziskovalnih projektov pa smo na katedri v letu 2022 pridobili dva projekta, ki ju financira Univerza v Ljubljani, katerih namen je vpeljava informacijsko-komunikacijske tehnologije (IKT) pri izbranih predmetih ter uvajanje pristopov na raziskovanju utemeljenega kurikula. Projekt iz zadnjega sklopa že uspešno teče pod imenom "Sintezni mojster Fakultete za farmacijo".

Med odmevnimi nagradami izstopa nagrada na dogodku BioFIT za inovativno zdravljenje pasje demence, ki jo je prejel doc. dr. Urban Košak. Dr. Ana Dolšak je prejela veliko Krkino nagrado za raziskovalno nalogo. Prof. dr. Aleš Obreza in ostali člani katedre so sodelovali pri izvedbi zelo uspešnega kongresa BBBB, ki je potekal v Ljubljani. V medijih pa smo pomembno prispevali k promociji UL FFA, zlasti z aktivnim sodelovanjem pri Evropski federaciji za farmacevtsko kemijo in kemijsko biologijo EFMC in s sodelovanjem v SFD ter z intervjuji in nastopi v dokumentarnih oddajah.

KEY ACCHIVEMENTS IN 2022

In 2022 we published more than 80 original and review scientific articles, almost 50 % of which appeared in first quarter journals, some also in the group of top 5 % journals in various fields. Particularly notable is also the publication in the prestigious journal *Chemical Science* on a new approach for the synthesis of chiral α -aminoboric acids, for which the authors also received the Excellent in Science 2022 award. Two other publications are also notable: first in the *Journal of Medicinal Chemistry* on covalently conjugated agonists of NOD2 and TLR7, and second in the *Journal of the American Chemical Society* on the dynamic kinetic resolution of β -substituted α -diketones. Among the review articles in 2022 a publication in *Chemical Society Reviews* on chimeric disruptors and a publication in *Drug Discovery Today* on assays to identify reactive compounds are noteworthy. In the area of toxicology an excellent publication in *Chemosphere* on the metabolism of bisphenols should be mentioned. In addition, we have presented several newly discovered bioactive molecules that inhibit bacterial enzymes, such as topoisomerases, dual-target antimicrobials, chimeric degraders, O-GlcNAc transferase inhibitors, monoamine oxidases, and many other targets.

In 2022 we successfully applied for projects; members of the department have received four new projects funded by ARRS. One major research project focuses on the preclinical development of mitochondrial ion channel inhibitors for the treatment of cancer. The two research projects are on the topic of adjuvants for mucosal vaccines and on the development of new small molecule modulators of Toll-like receptors 7 and 8 for cancer immunotherapy. Finally, the postdoctoral project deals with the development of new antibiotics with simultaneous inhibition of beta-lactamases and penicillin-binding proteins. We were also successful in international tenders, where we won

the new project in collaboration with Polish researchers on the topic of developing agents targeting inflammation and the cholinergic system in Alzheimer's disease. The department is very much involved in the international environment, in 2022 50 % of the students enrolled for postdoctoral studies came from abroad. In addition to the research projects, the Department of pharmaceutical chemistry started two projects funded by the University of Ljubljana, aimed at implementing new information and communication technologies and introducing research-based approaches into the curriculum. The format project is already running successfully under the name "Synthesis Master of the Faculty of Pharmacy".

Among the numerous awards, Assist. Prof. Dr. Urban Košak received the award for innovative treatment of dementia in dogs at the BioFIT event. Dr. Ana Dolšak received the Krka Grand Prize for her research project. Prof. Dr. Aleš Obreza and other members of the department participated in the organisation of the very successful BBBB Congress, held in Ljubljana. In the media we have made an important contribution to the promotion of UL FFA, especially through active participation in the European Federation of Medicinal Chemistry and Chemical Biology EFMC, participation in Slovenian pharmaceutical society, interviews, and appearances in documentaries.

KATEDRA ZA FARMACEVTSKO TEHNOLOGIJO

DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY

Predstojnik katedre

Head of the Department

prof. dr. Mirjana Gašperlin

Člani katedre v letu 2022

Members of the Department in 2022

- prof. dr. Rok Dreu, prof. dr. Julijana Kristl, prof. dr. Odon Planinšek, prof. dr. Stanko Srčič, prof. dr. Janez Kerč, 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. Jurij Trontelj
- dr. Katarina Bolko Seljak, dr. Zoran Lavrič, dr. Barbara Sterle Zorec, Ana Baumgartner, asist. dr. Maja Bjelošević Žiberna, Črt Dragar, Valerija Garb, Blaž Grilc, Nina Katarina Grilc, Tatjana Hrovatič, Mojca Keržan, asist. dr. Mitja Pohlen, Tanja Potrč, Monika Prašnikar, Mercedes Vitek, Anže Židar



Slika: 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 večnotnih farmacevtskih oblik ter s proučevanjem različnih pristopov za izboljšanje topnosti učinkovin. Člani katedre smo eksperti na področju predformulacij, formulacij in njihovega vrednotenja z najsodobnejšimi tehnološko analiznimi tehnikami, vključno z numeričnimi modeli za napovedovanje procesov in formulacij. Svojo ekspertizo ves čas nadgrajujemo, zaradi česar lahko uspešno sodelujemo tudi pri reševanju perečih izzivov farmacevtske industrije.

Sodelujemo v dveh programskih skupinah: Farmacevtska tehnologija – od dostavnih sistemov učinkovin do terapijskih izidov zdravil pri otrocih in starostnikih ter Napredna imunološka zdravila in celični pristopi v farmaciji. Včlanjeni smo v različne mednarodne mreže, kot so CEEPUS, PSSRC, ORBIS, RISE. Ponosni smo na naše dolgoletno sodelovanje s farmacevtsko industrijo ter močno vpetost v aktivnosti stroke v domačem in mednarodnem okolju, kjer sodelujemo pri organizaciji simpozijev, smo člani številnih komisij in uredniških odborov, ocenjevalci doktorskih nalog na tujih univerzah, cenjeni recenzenti in drugo.

At the Department of Pharmaceutical Technology we organize and perform study activities at all three levels and coordinate three study programmes. Our pedagogical, research-oriented and professional work covers the fields of pharmaceutical technology, nanotechnology, industrial pharmacy, pharmaceutical engineering, physical pharmacy, pharmaceutical technological analysis, and cosmetology.

Our main research focus is developing and evaluating of patient-friendly medicines, based on conventional dosage forms and innovative delivery systems combined with implementation of modern technologies in manufacturing medicines with integrated quality (QbD). We successfully follow the contemporary trends in the development of innovative nanodelivery systems, biopharmaceuticals, and (nano)theranostics, as well as conventional formulations of liquid-crystalline, controlled release and solubility enhancing systems, orally disintegrating and multiunit dosage forms. We are experts in preformulation and 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.

The department is involved in 2 research programmes: "Pharmaceutical technology: from drug delivery systems to therapeutic outcomes of medicines in children and elderly" and "Advanced immunological drugs and cell-based approaches in pharmacy". We are partners in many international networks (e.g. CEEPUS, PSSRC, ORBIS, and RISE). We are proud of our long-term cooperation with the pharmaceutical industry and our intense professional activities on a national and international level, being involved as members of many (inter)national committees and editorial boards, assessors of doctoral theses at foreign universities, recognised reviewers and other.

KLJUČNI DOSEŽKI V LETU 2022

Člani katedre smo odigrali ključno vlogo pri organizaciji 9. mednarodne konference farmacevtskih znanosti BBBB v Ljubljani. Konferenca je bila zelo uspešna, saj ji je prisostvovalo skoraj 250 udeležencev iz 19 različnih evropskih držav in ZDA. V okviru konference smo na katedri organizirali še praktično delavnico o elektrostatskem sukanju za mlade raziskovalce ter simpozij v čast prof. dr. Julijani Kristl in prof. dr. Stanetu Srčiču ob njuni upokojitvi. Eden od odmevnejših rezultatov pa bo nedvomno izid posebne številke revije *European Journal of Pharmaceutical Sciences* z izbranimi znanstveni prispevki udeležencev, ki je v nastajanju pod budnim očesom naših sodelavcev kot gostujočih urednikov.



Slika: Udeleženci UL FFA na 9. mednarodni konferenci BBBB v Ljubljani / Photo: UL FFA participants at the 9th BBBB International Conference in Ljubljana

Z namenom popularizirati kozmetologijo kot znanstveno vedo smo za študente v okviru projekta RSF prvič organizirali poletno šolo z naslovom Kozmetologija danes in jutri. Obsegala je teoretična znanja, praktične delavnice in obisk Krajinskega parka Sečoveljske soline.

Na katedri smo bili uspešni pri prijavi raziskovalnih projektov ARRS, in sicer je bil za financiranje odobren projekt na temo nanovlaken za sočasno dostavo mikrobiote in protimikrobnih učinkovin za zdravljenje vaginalnih infekcij, poleg tega pa smo pomembni partnerji še v štirih novih raziskovalnih projektih.

Veliko energije smo vložili tudi v mednarodne izmenjave zlasti v okviru projektov ORBIS in CEEPUS, s čimer smo v tujini promovirali ljubljansko šolo tehnologije. Skupaj so naši zaposleni gostovali 12 mesecev na Češkem, v Hrvaški in v ZDA ter na daljših obiskih gostili raziskovalce iz Češke in Poljske.

Med odmevnejšimi nagradami v preteklem letu je velika Krkina nagrada za raziskovalne dosežke, ki jo je prejela **dr. Maja Bjelošević Žiberna za doktorsko delo**, usmerjeno v razvoj in vrednotenje formulacij biofarmacevtikov. Prof. dr. Julijani Kristl je rektor podelil naziv zaslužna profesorica za pomemben prispevek k razvoju farmacevtske znanosti ter za predano pedagoško in mentorsko delo. Doc. dr. Špela Zupančič se je udeležila 71. srečanja Nobelovih nagrajencev z mladimi znanstveniki s področja kemije, ki je edinstvena priložnost za osebno spoznavanje vrhunskih znanstvenikov, ki so mladim navdih z njihovimi zanimivimi življenjskimi zgodbami in prebojnimi odkritji

KEY ACCHIVEMENTS IN 2022

The members of the department played a key role in the organization of the 9th international BBBB conference of pharmaceutical sciences, which was held in Ljubljana. The conference was very successful, as it was attended by almost 250 participants from 19 different European countries and the USA. Within the conference, the department organized a practical workshop on electrostatic spinning for young researchers and a symposium in honor of professors Julijana Kristl and Stanko Srčič upon their retirement. One of the more resounding achievements will undoubtedly be the publication of a special issue of the European Journal of Pharmaceutical Sciences with the nominated scientific contributions of the participants selected by our colleagues as guest editors.

To popularize cosmetology as a scientific discipline, we organized the first summer school for students entitled "Cosmetology Today and Tomorrow" within the framework of the RSF project. It included theoretical knowledge, practical workshops, and a visit to the Sečovlje Salina Natural Park.

At the department, we were successful in applying for ARRS research projects, namely, a project on nanofibers for the simultaneous delivery of microbiota and antimicrobial agents for the treatment of vaginal infections, which was approved for funding. Additionally, we are participating as important partners in four new research projects.

A lot of energy was invested in international mobility, especially within the framework of the ORBIS and CEEPUS networks, with which we promoted the expertise in pharmaceutical technology at the UL FFA abroad. Together, our employees visited the Czech Republic, Croatia, and the USA for 12 months and hosted researchers from the Czech Republic and Poland on longer visits.

Among the notable awards was the Velika Krkina Nagrada, which was given to Assist. Dr. Maja Bjelošević Žiberna for her doctoral dissertation on the development and evaluation of biopharmaceuticals. Prof. Dr. Julijana Kristl was awarded the title of professor emeritus for her significant contribution to the development of pharmaceutical science and for her dedicated teaching and mentoring work. Assist. Prof. Dr. Špela Zupančič attended the Young Researchers at 71st Lindau Nobel Laureate Meeting - Chemistry, which was a unique opportunity to meet in person top scientists who are an inspiration to young people with their interesting life stories and breakthrough discoveries.

KATEDRA ZA BIOFARMACIJO IN FARMAKOKINETIKO DEPARTMENT OF BIOPHARMACEUTICS AND PHARMACOKINETICS

Predstojnik katedre
Head of the Department

prof. dr. Albin Kristl

Člani katedre v letu 2022
Members of the Department in 2022

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



Slika: Katedra za biofarmacijo / Photo: Department of Biopharmacy

Na Katedri za biofarmacijo in farmakokinetiko raziskujemo procese, ki potekajo v človeškem telesu po aplikaciji zdravila. Te procese lahko razdelimo na sproščanje zdravilne učinkovine iz farmacevtske oblike, njeno absorpcijo, porazdelitev, metabolizem in izločanje (sistem LADME).

Za vrednotenje farmakokinetike spojin razvijamo različne kromatografske metode z UV/VIS, EC, fluorescenčno in MS-MS detekcijo. V okviru predformulacijskih raziskav proučujemo njihove fizikalno-kemijske lastnosti, kot so topnost, hitrost raztapljanja, stabilnost, ionizacija, permeabilnost ter metabolične pretvorbe. Na osnovi teh parametrov in profilov sproščanja in vitro napovedujemo lastnosti farmacevtske oblike in vivo.

S tako pridobljenim znanjem razvijamo tudi farmakokinetično-farmakodinamične modele, ki omogočajo napovedovanje kliničnih učinkov zdravil ter iskanje vzrokov za njihovo variabilnost. Ti 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 LC-MS/MS metod.

At the Department of Biopharmaceutics and Pharmacokinetics we study the processes taking place in the human body after the drug application. These processes comprise the liberation of the active substance from the pharmaceutical formulation, drug absorption, distribution, metabolism, and excretion (the LADME system).

To evaluate the pharmacokinetics of substances, we develop various chromatographic methods using UV/VIS, EC, fluorescent and MS-MS detection. As part of preformulation studies we assess physico-chemical properties such as solubility, dissolution rate, stability, ionization, permeability, and metabolic conversion. Based on these parameters and in vitro release profiles, we predict the in vivo properties of a pharmaceutical form.

Such knowledge allows us to develop pharmacokinetic and pharmacodynamic models, which can be used to predict the clinical effects of drugs and to explain the underlying variability in the response to treatment. By studying and accounting for the effects of an individual patient's characteristics (e.g. genotype, phenotype), these models enable more personalized dosing. Studies supported by these kinds of modern technologies contribute to more effective and safer drug treatment. In addition, we further study the fate of active pharmaceutical ingredients and their metabolites by investigating their occurrence in environmental samples of waste, surface and drinking water using highly sensitive and selective LC-MS/MS methods.

KLJUČNI DOSEŽKI V LETU 2022

Znanstvenoraziskovalno odličnost katedre v letu 2022 kažejo številne objave člankov, med drugim tudi v uglednih revijah z visokim dejavnikom vpliva. Izstopa predvsem članek: GROBIN, Andrej, ROŠKAR, Robert, TRONTELJ, Jurij. Multi-parameter risk assessment of forty-one selected substances with endocrine disruptive properties in surface waters worldwide. *Chemosphere* (IF 8,9; A⁺). V tem članku smo vzpostavili prioritetni sistem za razvrščanje toksikološko pomembnih kemikalij v okolju, med katere spadajo tudi številne učinkovine (farmacevtiki).

Med 28. 6. in 1. 7. 2022 je bila v Ljubljani 30. konferenca Evropskega združenja za farmakometriko – PAGE (Population Approach Group Europe, www.page-meeting.org). Konferenco s 700 udeleženci je spremljalo tudi 15 satelitskih simpozijev, med njimi tudi eden na FFA. Lokalni organizatorji so bili člani Katedre za biofarmacijo in farmakokinetiko: Iztok Grabnar, Mojca Kerec Kos, Tomaž Vovk in Jurij Aguiar Zdovc.

UL FFA je sodelovala z NTF kot enim izmed partnerjev v okviru evropskega Interreg projekta z naslovom Board for Detection and assessment of pharmaceutical drug Residues in drinking water - Capacity building for water management in Central Europe (boDEREC-CE). (<https://www.interreg-central.eu/Content.Node/boDEREC-CE.html>). Naše meritve okoljskih onesnažil so predstavljale ključno podlago za modeliranje njihovega gibanja od izvora, prek odpadnih in površinskih do podzemnih voda, skupni izsledki pa so objavljeni v več člankih in monografijah.

Doc. dr. Žane Temova Rakuša je kot edina predstavnica Slovenije prejela prestižno mednarodno nagrado Danubius Young Scientist Award, ki jo Avstrijsko ministrstvo za izobraževanje, znanost in raziskave ter Inštitut za podonavsko regijo in centralno Evropo podelujeta mlajšim znanstvenikom z izjemnimi dosežki v njihovi znanstveni

dejavnosti in rezultatih, ki se povezujejo s podonavsko regijo.

Izr. prof. dr. Mojci Kerec Kos je Slovensko farmacevtsko društvo (SFD) maja 2022 podelilo Minařikovo priznanje za njene zasluge pri razvoju farmacevtske stroke. Uspešno deluje na raziskovalnem in pedagoškem področju, sodeluje pri organizaciji strokovnih dogodkov društva, je gostujoča urednica več števil Farmaceutskega vestnika ter recenzentka knjižic O pravilni in varni uporabi zdravil. Je tudi predsednica Razširjenega strokovnega kolegija za lekarniško farmacijo na Ministrstvu za zdravje RS.

Prof. dr. Albin Kristl je dobil priznanje UL FFA za življenjsko delo zaradi več kot 30-letnega prizadevanja k znanstvenemu napredku, inovacijam, ugledu ter dobremu poslovanju FFA.

V letu 2022 se nam je pridružil izr. prof. dr. Lovro Žiberna, kar pomeni, da bo predmet farmakologija za študente farmacije sedaj potekal v okviru FFA.

KEY ACCHIVEMENTS IN 2022

1. Scientific excellence of the department in 2022 is reflected in many scientific articles, including publications in high impact factor (IF) journals. With the highest IF value is the paper:

GROBIN, Andrej, ROŠKAR, Robert, TRONTELJ, Jurij. Multi-parameter risk assessment of forty-one selected substances with endocrine disruptive properties in surface waters worldwide. *Chemosphere* (IF 8,9; A''). In this article, we present a prioritization system for toxicologically important chemicals found in the environmental samples, which also include numerous pharmaceuticals.

2. Between 28 June and 1 July 2022, the 30th PAGE (Population Approach Group Europe, www.page-meeting.org) conference was held in Ljubljana. The conference with 700 participants was accompanied by 15 satellite symposia, including one held at the FFA. The local organizers were members of the Department of Biopharmaceutics and Pharmacokinetics Iztok Grabnar, Mojca Kerec Kos, Tomaž Vovk and Jurij Aguiar Zdovc.

3. Faculty of Pharmacy (UL FFA) cooperated with the Faculty of Natural Sciences (UL NTF), both University of Ljubljana, as one of the partners in the European Interreg project named BOard for DEtection and assessment of pharmaceutical drug RESidues in drinking water - Capacity building for water management in Central Europe (bODEREC-CE). (web link: <https://www.interreg-central.eu/Content.Node/boDEREC-CE.html>). Our measurements of environmental pollutants formed an important foundation for the modeling of their transfer from the origin, through waste-, surface-, and groundwaters. Our results were published in a number of articles and monographs.

4. a) Assist. Prof. Dr. Žane Temova Rakuša is the only representative of Slovenia who received the prestigious

international Danubius Young Scientist Award, which is awarded by the The Austrian Federal Ministry for Education, Science and Research and the Institute for Danube Region and Central Europe to honor young scientists with outstanding achievements in their scientific activity and and output in relation to the Danube region.

b) Assoc. Prof. Dr. Mojca Kerec Kos was awarded the Minařik Award by the Slovenian Pharmaceutical Society (SFD) in May 2022 for her recognition in the development of the pharmaceutical profession. She is successful in research and pedagogical work, participates in the organisation of professional events of the society, is a guest editor of several issues of the *Farmaceutski Vestnik* journal and a reviewer of booklets on the correct and safe use of medicines. She is also president of the Professional College of Community Pharmacy at the Ministry of Health of the Republic of Slovenia.

c) Prof. dr. Albin Kristl was given the lifetime achievement award of UL FFA for his more than 30-years of efforts for scientific progress, innovations, reputation and good operations of FFA.

5. In 2022 Assist. Prof. Dr. Lovro Źibera joined the Chair of biopharmacy and pharmacokinetics which means that the subject pharmacology for pharmacy students will now be held by FFA.

KATEDRA ZA SOCIALNO FARMACIJO DEPARTMENT OF SOCIAL PHARMACY

Predstojnik katedre
Head of the Department

prof. dr. Mitja Kos

Člani katedre v letu 2022
Members of the Department in 2022

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



Slika: 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 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 setting. 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 healthcare system and the patient's role in it. In this context we build and study the services provided by modern approach 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 pharmaceutical profession. By doing so, we actively contribute to creating new legislation and implementation of the highest standards into everyday practice.

KLJUČNI DOSEŽKI V LETU 2022

Prof. dr. Mitja Kos in doc. dr. Nejc Horvat sta prejela posebno pohvalo Sekcije farmacevtskih znanosti SFD za angažma na temo digitalne preobrazbe v farmaciji ter organizacijo strokovnih večerov na to temo – *Digitalne srede*.

V lanskem letu smo se vključili v mednarodna konzorcija dveh projektov pod okriljem Evropske agencije za zdravila (EMA), in sicer RiskAwareTTS, v sklopu katerega smo izvedli raziskavo med laiki in zdravstvenimi delavci z namenom ugotavljanja vpliva regulatornih priporočil glede tveganja za sindrom tromboze s trombocitopenijo ob cepljenju s SARS-CoV-2 adenovirusnimi vektorskimi cepivi, ter IMPACT, v okviru katerega proučujemo vključevanje novih varnostnih informacij v klinične smernice.

Vključili smo se v mednarodni multidisciplinarni projekt Erasmus Dominos, v okviru katerega skušamo spodbuditi razvoj digitalnih zmogljivosti visokošolskega sektorja z načrtovanjem in testiranjem digitalnega preverjanja na način OSCE (*objective structured clinical examination*).

Uspešno smo zaključili s sodelovanjem v mednarodnem projektu MINERVA, prav tako financiran s strani EMA. Skupaj s štirinajstimi partnerji smo opredelili katalog metapodatkov o zbirkah zdravstvenih podatkov različnih držav, ki bo v pomoč pri izvajanju poenotenih opazovalnih raziskav za spremljanje varnosti in učinkovitosti zdravil v rutinski klinični praksi.

Sodelovali smo v raziskavah in prvih objavah v okviru projekta COST ENABLE, katerega cilj je spodbujanje znanja o sodelovanju pri zdravljenju ter implementacija novih tehnologij za izboljšanje sodelovanja v sistemih zdravstvenega varstva.

Na katedri smo kredibilen partner naročnikom v več aplikativnih projektih s področja farmakoepidemiologije,

farmakoenomike ter načrtovanja in vrednotenja kliničnih preskušanj.

Oblikovali smo prve raziskave na temo sodelovanja pri zdravljenju z novim pristopom, tj. uporabo orodja AdhereR. V okviru tega so potekale doktorska in dve magistrski nalogi, in sicer na temo sladkorne bolezni tipa 2 pri zdravljenju z zaviralci dipeptidil peptidaze-4 in na temo sodelovanja pri zdravljenju multiple skleroze.

Asist. dr. Špela Žerovnik je zagovarjala svoje doktorsko delo pod mentorstvom izr. prof. dr. Igorja Locatellija in somentorstvom prof. dr. Mitje Kosa z naslovom *Dolgoročni klinični izidi zdravil za zdravljenje bolnikov s sladkorno boleznijo tipa 2*.

V okviru Evropske noči raziskovalcev, ki je potekala pod naslovom *Človek, žival*, smo v sodelovanju z lekarno Mirje predstavili vlogo lekarniških farmacevtov pri varni in učinkoviti uporabi (veterinarskih) zdravil.

KEY ACCHIVEMENTS IN 2022

Prof. dr. Mitja Kos and Assoc. Prof. dr. Nejc Horvat received a commendation from the Pharmaceutical Sciences Section of the Slovenian Pharmaceutical Society for their engagement on the topic of digital transformation in pharmacy and the organization of events on this topic - *Digital Wednesdays*.

We joined the international consortium of two projects under the auspices of the European Medicines Agency (EMA), i.e. RiskAwareTTS, as part of which we conducted a survey among lay people and healthcare professionals, with the aim of determining the impact of regulatory recommendations regarding the risk of thrombotic syndrome with thrombocytopenia vaccination with adenoviral vector viruses SARS-CoV-2, and IMPACT, in which we study the inclusion of risk minimization measures related to medicines' use in the clinical guidelines.

We have joined the international multidisciplinary project Erasmus Dominos, which aims at promoting the development of digital capabilities of the higher education sector, by planning and testing a digital examination using OSCE (*objective structured clinical examination*).

We successfully concluded our participation in the international MINERVA project, also financed by the EMA. Together with fourteen partners, we have defined a catalogue of metadata about the health data bases in different countries, which will help in the implementation of uniform observational studies to monitor the safety and effectiveness of drugs in routine clinical practice.

We participated in research and first publications within the COST ENABLE project, the goal of which is to promote knowledge about medication adherence and the implementation of new technologies to improve medication adherence in healthcare practice.

At the department, we are a credible partner to the clients in several application projects in the field of pharmacoepidemiology, pharmacoconomics and clinical trials planning and evaluation.

We designed the first research on the topic of medication adherence using a new method, i.e. the AdhereR tool. Using this novel approach, the doctoral and two master's theses were being conducted on the topic of treatment of type 2 diabetes with dipeptidyl peptidase-4 inhibitors and on the topic of medication adherence in the treatment of multiple sclerosis.

Assist. dr. Špela Žerovnik defended her doctoral thesis under the mentorship of Assoc. Prof. dr. Igor Locatelli and the co-mentorship of Prof. dr. Mitja Kos entitled *Long-term clinical outcomes of medicines for patients with type 2 diabetes*.

As part of the *European Researchers' Night*, which took place under the title *Human, animal*, in cooperation with Lekarna Mirje, we presented the role of pharmacy pharmacists in the safe and effective use of (veterinary) medicines.

TAJNIŠTVO UL FFA FACULTY SECRETARIAT UNIT

Tajnica fakultete
Faculty Secretary

Katja Višnjevec Vahčič, univ. dipl. prav.

Strokovni sodelavci
Professional collaborators

Zdenka Gantar, Tanja Gregorič, Urban Jernejčič, Nataša Juvan, Tanja Kadunc, Marjetka Kirin, Tomaž Kuštrin, Jelka Lebar, Tinka Leskovec, Nataša Marčec, Lidija Mataija, Sebina Mujagić, Marko Ocvirk, Teja Pečnik, Milena Petek, Marta Pogačar, Milenka Sojer, Darko Šaša, Polonca Škulj, Darja Šviga, Mateja Terčič, Boris Terobšič, Borut Toth, pred. Dušan Videmšek, Bernarda Žagar



Slika: 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 znanstvenoraziskovalne 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 unit is an independent organizational unit that provides quality administrative support for performing 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 carrying out the faculty's marketing activities.

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

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

KLJUČNI DOSEŽKI V LETU 2022

Ga. Bernarda Žagar je v okviru Tedna Univerze prejela priznanje strokovnim delavcem UL. Ga. Žagar je v finančno-računovodski službi zaposlena že od leta 1996. Vsa leta svoje delo opravlja zavzeto, strokovno in natančno. Odlikuje jo spoštljiv in razumevajoč odnos do sodelavcev.

V letu 2022 se je upokojila vodja kadrovske službe, ga. Zdenka Gantar. Na UL FFA je bila zaposlena več kot 30 let, kar si štejemo v posebno čast. Ga. Gantar je zagotovo pustila velik pečat.

UL FFA je v letu 2022, v okviru projekta APIS, implementirala nov poslovno-informacijski sistem SAP. Vloga strokovnih služb fakultete pri tem je nepogrešljiva in ob tej priložnosti gre zahvala vsem sodelujočim na projektu, ki so se in se še vedno uspešno spopadajo z vsemi izzivi novega delovnega okolja.

KEY ACCHIVEMENTS IN 2022

Ms. Bernarda Žagar received a University professional staff award during University Week. Ms. Žagar has been employed in the Finance and Accounting Department since 1996. During all these years she has performed her work with enthusiasm, professionalism and accuracy. She stands out for her respectful and understanding attitude towards her colleagues.

In 2022 the Head of the Human Resources Department, Ms. Zdenka Gantar, retired. She was employed at the UL FFA for more than 30 years, which we consider a special honor. Ms. Gantar has certainly left a great mark.

UL FFA launched a new SAP business information system in 2022 as part of the APIS project. The role of faculty professional services has been indispensable in this process, and we would like to take this opportunity to thank all project participants who have successfully met all the challenges of the new work environment.

INŠTITUT ZA FARMACIJO INSTITUTE OF PHARMACY

Predstojnik inštituta
Head of the Institute

prof. dr. Rok Dreu

Člani inštituta v letu 2022
Members of the Institute in 2022

- znan. Sod. dr. Maša Kandušer, asist. dr. Dunja Urbančič, asist. Damjan Avsec, Maja Frelih, asist. Luka Hiti, asist. Tilen Huzjak, asist. Lina Keršmanc, asist. Jaka Kranjc, asist. Klemen Kreft, asist. Blaž Lebar, Ernest Šprager



Slika: Inštitut za farmacijo / Photo: Institute of Pharmacy

V skladu z osnovnim poslanstvom Inštituta za farmacijo so bile izvedene aktivnosti v letu 2022 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, kot so mednarodna podiplomska izobraževanja. Povezujemo posamezne infrastrukturne in kadrovske potenciale in skupaj z našim multidisciplinarnim timom sodelavcev omogočamo podporo različnim raziskovalnim in gospodarskim subjektom. Zato sta nam na razpolago oba infrastrukturna centra, ki delujeta v sklopu Inštituta: Infrastrukturni center za analizo zdravil, kot del Mreže raziskovalnih infrastrukturnih centrov Univerze v Ljubljani (MRIC UL) in Infrastrukturni center za translacijske raziskave EATRIS (European Advanced Translation Research InfraStructure in medicine, član mednarodnega konzorcija EATRIS).

Sodelujemo z industrijo in zainteresiranimi subjekti s področij farmacije in biomedicine ter jim pomagamo pri ustvarjanju kadrov glede na specifične delovnega procesa. Pri tem jim omogočamo dostop do naše infrastrukture in vključitev v naše aplikativne projekte na področju razvoja novih farmacevtskih izdelkov, analitskih metod vrednotenja (geno)toksičnosti učinkovin, registracije novih zdravil in regulativ pod mentorstvom naših strokovnjakov.

In accordance with the primary mission of the Institute of Pharmacy, the activities conducted in 2022 were focused to follow the research trends in the larger pharmaceutical and biomedical area and to provide recommendations for the research direction of UL FFA. In collaboration with the other departments, we carry out scientific research, development-applications and professional projects, as well as international activities, such as international postgraduate education. We integrate individual research infrastructure and personnel potentials from the different departments and together with our multidisciplinary team of associates, enable support for various research and economic entities. For research purposes, we provide access to both of our infrastructural centres: The Infrastructural Centre for Drug Analysis, which is part of the Network of Research and Infrastructural Centres of the University of Ljubljana (MRIC UL) and Infrastructural Centre for Advanced Translation Researches EATRIS (European Advanced Translation Research Infrastructure in medicine), member of the international consortium EATRIS ERIC.

We collaborate with industry and other interested organizations in the field of pharmacy and biomedicine to help them develop professional staff that is tailored to their work process. Under the mentorship of our experts, we provide access to our infrastructure and include industry and other interested organizations in our applicative projects related to the development of new pharmaceutical products, analytical methods for evaluation of (geno)toxicity of active substances, and registration of new drugs and regulations.

KLJUČNI DOSEŽKI V LETU 2022

Izobraževalne aktivnosti

Sodelovali smo pri organizaciji EATRIS Plus poletne šole Personalizirane medicine od 23. do 26. 5. 2022 v Lizboni, Portugalska, na temo »Razvoj biomarkerjev« in Erasmus + ADVANCE delavnice na temo razvoja zdravil za napredno zdravljenje od 20. do 24. 6. 2022 v Rimu, Italija.

V okviru projekta EATRIS Plus smo organizirali mednarodno delavnico na temo »Krepitev sodelovanja med malimi in srednje velikimi podjetji in akademsko sfero«. Dogodek se je odvijal na UL FFA od 29. do 30. 9. 2022.

13. 12. 2022 smo bili gostitelji zaključnega sestanka projekta Erasmus + ADVANCE.

KEY ACCHIVEMENTS IN 2022

Education and staff training

We participated in the organization of the EATRIS-Plus Summer School of Personalized Medicine (from 23 to 26 May 2022) in Lisbon, Portugal, on "Biomarker development" and the Erasmus + ADVANCE workshop on Advanced Therapy Medicinal Products (from 20 to 24 June 2022). in Rome, Italy.

Within the project EATRIS Plus we were organizers of the international workshop with topic »Building strong partnership between industry and academia«. The event took place at the UL FFA from 29 to 30. September 2022.

At 13 December 2022 we hosted the final meeting of the project Erasmus + ADVANCE.



Slika: Udeleženci delavnice EATRIS Plus / Photo: Participants of the EATRIS Plus workshop

Širitev raziskovalne infrastrukture

Prejeli smo pozitivno mnenje znanstvenega odbora za delo z GSO v zaprtem sistemu in dovoljenje za delo z naslovom »Uporaba induciranih pluripotentnih matičnih celic (iPSC) za razvoj zdravil v personalizirani medicini«. S tem smo uspešno zaključili urejanje laboratorija za delo z GSO VR 2. Na priporočilo znanstvenega odbora smo pripravili tudi ločeno oceno tveganja za delo z limfoblastoidnimi celičnimi linijami LCL, ki ne sodijo med GSO.

Nagrade in ostali dosežki

Damjan Avsec je sprejel dekanovo nagrado za leto 2022 za objavo znanstvenega članka »Zaviranje p38 MAPK ali imunoproteasoma premosti odpornosti celic kronične limfocitne levkemije na antagonist Bcl-2-venetoklaks« v reviji *Cell death & disease*.

Skupina Blaža Lebarja, doktorskega študenta iz programa za usposabljanje kadrov v sodelovanju z Novartisom, je zmagala na poletni šoli EIT Digital 2022 s predlogom »Kampus prihodnosti«, ki ponuja nove tehnološke in digitalne rešitve za bolj sodelovalno in učinkovito delo v hibridnem delovnem okolju prihodnosti.

Jaka Kranjc se je udeležil Novartisovega dogodka Open Academia Day in predstavil svoj projekt »Modulatorji glikozilacije za razvoj bioprocsov«.

Expanding the research infrastructure

We received a positive opinion from the Scientific committee for work with GMO in closed system and permit for work entitled named »Use of induced pluripotent stem cells (iPSCs) for medicinal products development in personalized medicine«. That was the final step for successful completion of the laboratory setup for work with GMO BSL2. Considering the recommendation of the Scientific committee we also prepared a separate risk assessment for work with lymphoblastoid LCL cell lines that are not GMO.

Awards and other achievements

Damjan Avsec received the Dean's Award for Scientific Article Publication in 2022 for the article »Inhibition of p38 MAPK or immunoproteasome overcomes resistance of chronic lymphocytic leukemia cells to Bcl-2 antagonist venetoclax«, published in the scientific journal *Cell death & disease*.

The group of Blaž Lebar, our PhD student from the Novartis Human Resources Training Programme, won at the EIT Digital Summer School 2022 with the proposal project "Campus of the Future," which offers new technological and digital solutions for more collaborative and efficient work in the future hybrid work environment. Jaka Kranjc attended the Novartis Open Academia Day and presented his project »Glycosylation modulators for USP development«.

Novi programi in projekti

Na področju novih raziskovalnih programov in projektov beležimo naslednje uspehe:

Dr. Maša Kandušer je nominirana za predstavnico Slovenije v Cost akciji CA21151 – Generation of Human Induced Pluripotent Stem Cells From Haplo-Selected Cord Blood Samples (HAPLO-iPS).

Začeli smo z izvedbo projekta REMEDi4ALL (Building a sustainable European innovation platform to enhance the repurposing of medicines for all) v okviru programa Horizon Europe. Koordinator projekta je EATRIS ERIC, odgovorna nosilca na UL FFA sta prof. dr. Irena Mlinarič-Raščan in prof. dr. Rok Dreu.

Uspešni smo bili tudi pri prijavi za projekt SIMPATHIC (Accelerating drug repurposing for rare neurological, neurometabolic and neuromuscular disorders by exploiting SIMilarities in clinical and molecular PATHology). Projekt bo potekal v okviru programa HORIZON-RIA, odgovorni nosilec na UL FFA pa je prof. dr. Rok Dreu.

New research programmes and projects

We have accomplished the following results within new research programmes and projects:

- Dr. Maša Kandušer was nominated as representative from Slovenia in Cost action CA21151 - Generation of Human Induced Pluripotent Stem Cells From Haplo-Selected Cord Blood Samples (HAPLO-iPS).
- We have started the implementation of the project REMEDi4ALL (Building a sustainable European innovation platform to enhance the repurposing of medicines for all) within Horizon Europe programme. Coordinator of the project is EATRIS ERIC, responsible persons at the UL FFA are Prof. Dr. Irena Mlinarič - Raščan and Prof. Dr. Rok Dreu.
- We were also successful with the application for the project SIMPATHIC (Accelerating drug repurposing for rare neurological, neurometabolic and neuromuscular disorders by exploiting SIMilarities in clinical and molecular PATHology). The project will be carried out under the the programme HORIZON-RIA, responsible person at the UL FFA is Prof. Dr. Rok Dreu.

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 pa 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.

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, mednarodne poletne farmacevtske taborne (IPSC), strokovne večere, trikrat letno pa izide študentsko glasilo Spatula.

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

The Student Council UL FFA, University of Ljubljana (ŠSFFA)

is one of the governing bodies of the faculty. Its members, who are elected annually, are representatives of each year of their respective programmes. The ŠSFFA represents 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 programme 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, which in turn allows exchange of knowledge and experience.

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 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 International Pharmaceutical Summer Camp (IPSC) and professional training evenings. The organization also publishes the student newsletter Spatula three times a year.



Slika: Predstavitev ŠSFF-a / Photo: Presentation ŠSFF



2

Poročilo o delu Activity report

PREGLED POSLOVANJA

UL FFA je v letu 2022 poslovala uspešno. V letu 2022 je realizirala 12.656 tisoč evrov prihodkov in 12.312 tisoč evrov odhodkov. Obračunski prihodki so v letu 2022 znašali 12.656 tisoč evrov in so za 0,6 % oz. 73 tisoč € nižji kot preteklo leto.

Obračunani prihodki iz proračuna RS za financiranje študijskih programov 1. in 2. stopnje s strani MIZŠ so izkazana v višini 7.704 tisoč € in predstavljajo 61 % vseh prihodkov. Ta sredstva so se povečala za 3 % oz. 256 tisoč €.

Obračunani prihodki ARRS v višini 3.740 tisoč € so s 30 % deležem v prihodkih, druga največja skupina prihodkov glede na dejavnost oz. vir financiranja. V letu 2022 je sredstva poleg bilateral prinašalo predvsem 50 projektov, 6 programov, 23 mladih raziskovalcev ter novi institucionalni steber stabilnega financiranja.

Ostali prihodki so še prihodki EU skladov, prihodki od druge javne službe in prihodki od prodaje storitev na trgu. V letu 2022 je bilo teh prihodkov skupno 1.212 tisoč €, kar v letu 2022 predstavlja 10 % delež od vseh prihodkov. Ti prihodki so se glede na leto 2021 zmanjšali za 755 tisoč €, ko je bilo teh prihodkov za 1.967 tisoč € in so predstavljali 10 % celotnih prihodkov UL FFA.

Celotni odhodki leta 2022 so 12.312 tisoč €. Celotni odhodki leta 2021 so bili 12.349 tisoč €. Odhodki so se zmanjšali za 38 tisoč € oz. so 0,3 % nižji kot leta 2021. Celotni odhodki so ostali na podobni ravni kot preteklo leto, povečali so se stroški dela, ostali prihodki kot je strošek material in storitev pa so se znižali.

Stroški materiala v letu 2022 znašajo 1.306 tisoč €. V letu 2021 so bili ti stroški 1.330 tisoč €. Zmanjšali so se za 23 tisoč €. V letu 2022 je bil delež materialnih stroškov 10 % vseh odhodkov.

BUSINESS OVERVIEW

UL FFA operated successfully in 2022, generating revenues 12,656 thousand EUR and expenses 12,312 thousand of EUR. The revenue from billing in 2022 was 12,656 thousand EUR, which is 0,6% or 73 thousand EUR less than the previous year.

The calculated revenues from the budget of the Republic of Slovenia for financing 1st and 2nd degree study program by the Ministry of Education, Science and Sport (MIZŠ) amounted to 7,704 thousand EUR and represented 61% of all revenues. These funds increased by 3%, or 256 thousand EUR.

Calculated revenues from the Slovenian Research Agency (ARRS) amounted to 3,740 thousand EUR, with a 30% share of revenues, the second-largest group of revenues in terms of activity or financing source. In 2022, in addition to bilateral funding, 50 projects, 6 programs, 23 young researchers, and a new institutional pillar of stable financing.

Other revenues include EU fund revenues, revenues from other public services, and revenues from sales of services on the market. In 2022, these revenues totaled 1,212 thousand EUR, representing a 10% share of all revenues in 2022. These revenues decreased by 755 thousand EUR compared to 2021 when they amounted to 1,967 thousand EUR and represented 10% of the total revenues of UL FFA.

Total expenses in 2022 amounted to 12,312 thousand EUR. Total expenses in 2021 were 12,349 thousand EUR. Expenses decreased by 38 thousand EUR or 0.3% compared to 2021. Total expenses remained at a similar level as the previous year, with an increase in labor costs, while other expenses such as material and service costs decreased.

Material costs in 2022 amounted to 1,306 thousand EUR, which is 23 thousand EUR less than in 2021. The share of material costs was 10% of all expenses in 2022.

Stroški storitev v letu 2022 predstavljajo v deležu 16 % vseh odhodkov. Stroški storitev so v letu 2022 znašali 2.015 tisoč €. V letu 2021 so znašali 2.145 tisoč €.

Stroški dela so v letu 2022 znašali 8.048 tisoč evrov, delež stroškov dela v skupnih odhodkih je 65 %. V preteklem letu je bilo 7.868 tisoč evrov stroškov dela, kar je predstavljalo 63% delež od celotnih odhodkov. Stroški dela predstavljajo največjo kategorijo odhodkov fakultete. Stroški dela so višji za 2 % oziroma so večji za 180 tisoč evrov napram preteklemu letu. Zaradi ukrepov na področju plač za javni sektor so se v letu 2022 povečali stroški dela, in sicer zaradi povečanja vrednosti plačnih razredov za 4,5% za vse javne uslužbenke, izplačan je bil tudi višji regres za prehrano med delom in višji so bili zneski regresa.

UL FFA v letu 2022 izkazuje presežek 344 tisoč €. V letu 2021 je izkazovala presežek 379 tisoč €. Končni doseženi presežek prihodkov v letu 2022 iz vira javne službe je 245 tisoč €, iz prodaje blaga in storitev pa 97 tisoč €. V letu 2022 so se znižali stroški storitev in materiala. UL FFA je sicer 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 fakulteta ima 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 2022 je bila fakulteta zelo dejavna tudi pri investicijski dejavnosti. V osnovna sredstva je bilo investirano za 628 tisoč evrov, od tega 21 tisoč evrov za programsko opremo, 379 tisoč evrov v opremo in 228 tisoč evrov v novogradnjo Brdo.

Service costs in 2022 accounted for 16% of all expenses. Service costs amounted to 2,015 thousand EUR in 2022, compared to 2,145 thousand EUR in 2021.

Labor costs in 2022 amounted to 8,048 thousand EUR, representing 65% of total expenses. In the previous year, labor costs were 7,868 thousand EUR, representing 63% of total expenses. Labor costs represent the largest category of expenses for the faculty. Labor costs were higher by 2%, or 180 thousand EUR, compared to the previous year. Due to measures in the field of public sector salaries, labor costs increased in 2022, with the value of pay grades increasing by 4.5% for all public employees, and higher meal allowances and amounts of annual leave were paid.

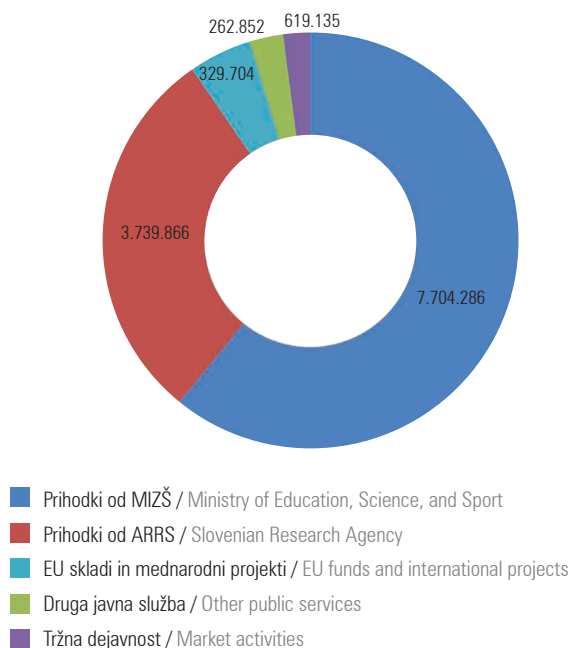
UL FFA recorded a surplus of 344 thousand EUR in year 2022. In year 2021, it had a surplus of 379 thousand EUR. The final achieved surplus of revenue from public services was EUR 245 thousand, while the surplus from the sale of goods and services was 97 thousand EUR.

Within the framework of the public service, UL FFA has a surplus of 245 thousand EUR in 2022. In year 2022, the costs of services and materials were reduced. UL FFA allocated a large part of the current surplus to 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, and 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 will be able to partially finance the planned investment in the new building.

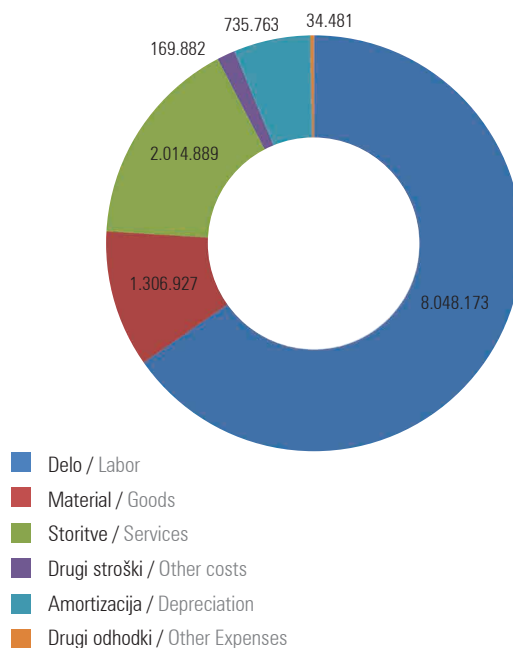
In 2022, the faculty was also very active in investment activities. EUR 628,000 was invested in fixed assets, of which EUR 21,000 for software, EUR 379,000 for equipment and EUR 228,000 for the new project Brdo building.

Prihodki v EUR Revenues, EUR	2021	2020	Struktura 2021 / 2020 Structure	Indeks 21/20
Prihodki od MIZŠ Ministry of Education, Science, and Sport	7.448.698	6.691.052	58,5 %	111,3
Prihodki od ARRS Slovenian Research Agency	3.312.267	2.591.668	26,0 %	127,8
EU skladi in mednarodni projekti EU funds and international projects	588.600	741.665	4,6 %	79,4
Druga javna služba Other public services	531.051	569.828	4,2 %	93,2
Prodaja storitev na trgu Market sales of services	847.960	578.955	6,7 %	146,5
Skupaj prihodki Total revenues	12.728.577	11.173.168	100,0 %	113,9

STRUKTURA PRIHODKOV V 2022,
PO VIRU FINANCIRANJA V EUR
REVENUE STRUCTURE IN 2022, EUR



STRUKTURA ODHODKOV V 2022,
PO VRSTAH STROŠKOV V EUR
REVENUE STRUCTURE IN 2022, EUR



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 možnost zaposlitve 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.

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.

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 izbirlivosti, 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, veletrgovalništvo, predstavništva) kot v javnem sektorju (lekarne, bolnišnice, medicinski laboratoriji).

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.

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.

The interdisciplinary doctoral programme in Biomedicine

The Faculty of Pharmacy is responsible for pharmacy, clinical biochemistry and laboratory biomedicine, and toxicology. The basic idea for the interdisciplinary programme offered by multiple member institutions of the University of Ljubljana lies in the multiplicity of choices. This way future doctorate holders 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 programmes, 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 2021/22

ŠTEVILO ŠTUDENTOV

V študijskem letu 2021/22 je bilo na vseh programih dodiplomskega in podiplomskega študija UL FFA vpisanih 1542 študentov.

V študijskem letu 2021/22 je zaključilo študij:

- 301 na 1. in 2. stopnji (155 EM FAR, 27 S1 KOZ, 55 S1 LBM, 33 S2 INF, 31 S2 LBM)
- 18 doktorandov na 3. stopnji.

STUDENTS AND GRADUATES IN 2021/2022

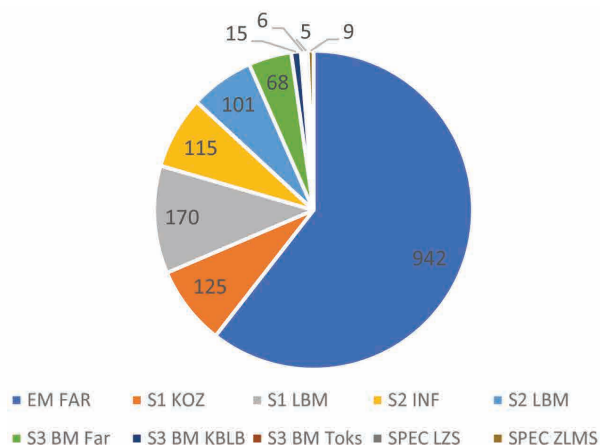
NUMBER OF STUDENTS

In the academic year 2021/22 - 1542 students were enrolled in the undergraduate and postgraduate programmes at the University of Ljubljana's Faculty of Pharmacy.

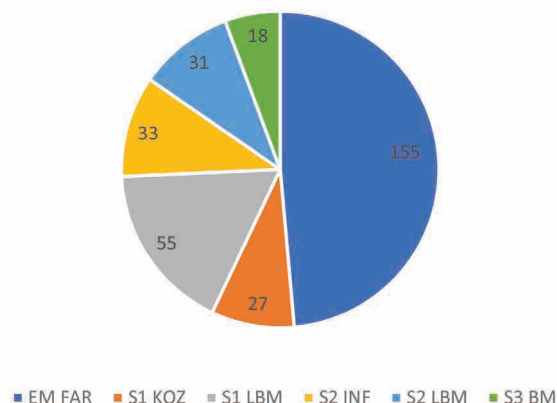
In the academic year 2021/22 there were:

- 301 graduates in cycles 1 and 2 (155 EM FAR, 27 S1 KOZ, 55 S1 LBM, 33 S2 INF, 31 S2 LBM and
- 18 graduates in cycle 3.

ŠTUDENTI PO ŠTUDIJSKIH PROGRAMIH V 2021/22
STUDENTS BY PROGRAMME, 2021/22



DIPLOMANTI PO ŠTUDIJSKIH PROGRAMIH V 2021/22
GRADUATES BY PROGRAMME 2022/22



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.

ZNANSTVENA, RAZISKOVALNA IN STROKOVNA DEJAVNOST

UL FFA je na področju raziskav in razvoja tudi v letu 2022 dosegla več uspehov:

- Na podlagi kontinuiranih naporov v raziskovalnem delu zadnjih let in kulture prijavljanja raziskovalnih projektov je glede na preteklo leto v letu 2022 dodatno uspela pridobiti en velik ARRS projekt in skupno povečati obseg tovrstnega financiranja raziskovalnega dela za 2,83 FTE.
- Zaposleni UL FFA so v 2022 prejeli vidna priznanja (Prometej znanosti za leto 2021, Danubius Young Scientist Award 2022, Lapanjetovo plaketo 2022).
- Raziskovalec UL FFA s Katedre za klinično biokemijo je s soavtorji prejel priznanje za najodličnejši raziskovalni dosežek Univerze v Ljubljani v letu 2022.

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 2022 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 2022 glede na predhodna štiri leta nekoliko nižji, kar pripisujemo časovnemu zamiku efekta pandemije COVID-19, ko je bilo delo v raziskovalnih laboratorijih onemogočeno ali zelo omejeno. Ne glede na to pa smo še vedno registrirali zmerno rast citatov znanstvenih del in bili uspešni pri pridobivanju novih raziskovalnih sredstev iz nacionalnih in EU virov, vključno s tistimi, namenjenimi vlaganju v raziskovalno opremo.

RESEARCH AND PROFESSIONAL ACTIVITIES

The UL FFA' has achieved several successes also in 2022 in the field of RRI:

- Based on the continuous efforts at the research work of recent years and the culture of reporting research projects, compared to the previous year the UL FFA in 2022 has succeeded in obtaining one major ARRS project and in total increasing the amount of such funding for research work by 2.83 FTE.
- FFA UL employees received distinguished awards in 2022 (Prometheus Science 2021, Danubius Young Scientist Award 2022, Lapanje Plaque 2022).
- UL FFA researcher from the Katedre for Clinical Biochemistry, with co-authors, has been awarded for the most excellent research achievement of the University of Ljubljana in 2022.

Colleagues published their research achievements in prestigious science and medicine publications, with which the faculty achieved significant social recognition. In 2022 UL FFA has maintained cooperation with key operators in the field of pharmacy at home and abroad. The number of publications of scientific works and related indicators were slightly lower compared to the previous four years, which is attributed to the suspended effect of the COVID-19 pandemic, during which work in research laboratories has been inactive or very limited. Regardless, we have still registered moderate growth in scientific work citations and have been successful in obtaining new research funding from national and EU sources, including those earmarked for investment in research equipment.

OBJAVE IN CITIRANOST DEL V LETU 2022

Raziskovalci UL FFA so v letu 2022 objavili 157 znanstvenih člankov, od tega 135 v revijah s faktorjem vpliva (SCI). V revijah s SCI je bilo objavljenih 120 izvirnih in 14 preglednih znanstvenih člankov ter 1 kratek znanstveni prispevek; 22 prispevkov je bilo objavljenih v revijah brez SCI.

V letu 2022 so objavljena dela UL FFA prejela 6954 čistih citatov. Število čistih citatov/FTE se je v letu 2022 v primerjavi z letom prej povečalo za 3,22 %.

Preglednica spodaj ponazarja vire financiranja raziskovalne dejavnosti in razmerje znanstvenih člankov glede na FTE, financiranih iz virov ARRS in EU. V letu 2022 je število FTE 60.57, kar je 7 % več v primerjavi z letom prej. Kazalnik učinkovitosti števila znanstvenih objav s SCI glede na FTE (ARRS in EU) je v letu 2022 znašal 2,2 članka s SCI/FTE, kar je nekoliko nižje od prejšnjih let, ko je bilo zaradi izrednih razmer, povezanih s COVID-19, onemogočeno delo v laboratoriju, zato pa so bili raziskovalci bolj usmerjeni v objavljanje znanstvenih člankov.

PUBLICATIONS AND CITATION OF WORKS IN 2022

Researchers of UL FFA published 157 scientific papers, including 135 in impact factor (SCI) journals. 120 research and 14 review scientific articles and 1 brief scientific paper were published in SCI journals; 22 articles were published in non-SCI journals.

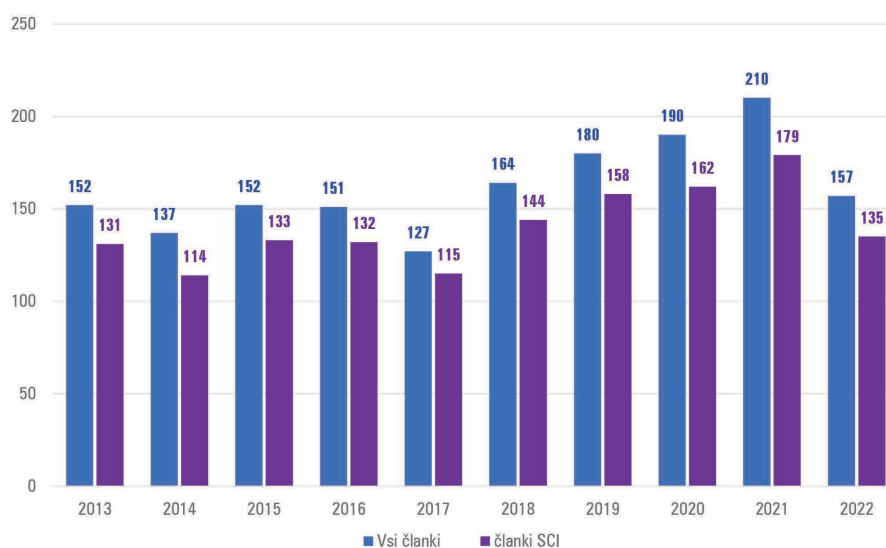
UL FFA's published works in 2022 received 6954 pure citations. In 2022 the number of pure citations/FTE increased by 3.22% compared to the previous year.

The table below illustrates the sources of funding for research activities in correlation to scientific articles according to FTE funded by ARRS and EU resources. In 2022 the number of FTE is 60.57, which is 7% more than the year before. In 2022 the efficiency indicator of the number of scientific publications with SCI by FTE (ARRS and EU) was 2.2 articles with SCI/FTE, which is slightly below results of previous years, when COVID-19 prevented working in the laboratory due to emergencies, while making researchers more focused on publishing scientific papers.

Razmerje objavljenih znanstvenih člankov raziskovalcev in višina financiranja iz virov ARRS in EU
Ratio between research articles and FTE researchers financed by EU/ARRS

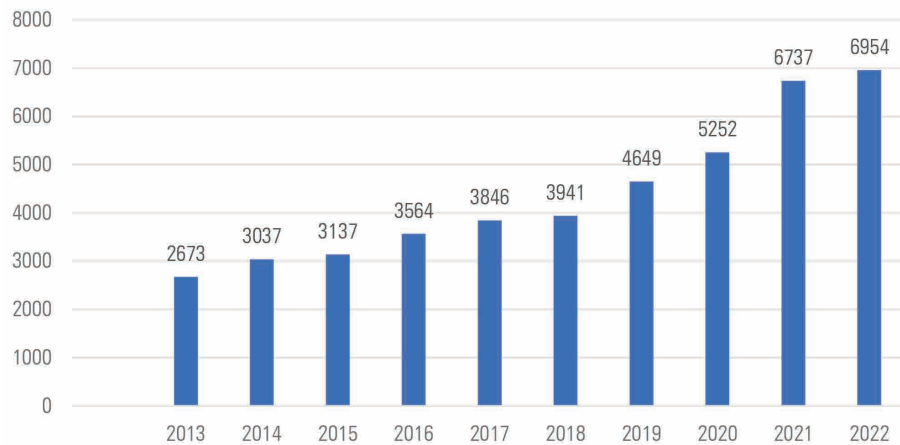
Leto / Year	Sredstva za raziskovalce (FTE) / Funds for researchers (FTE)				Število vseh znanstvenih člankov/FTE Number of all research publications/FTE	Število člankov v revijah s SCI/FTE Number of publications with SCI/FTE
	ARRS Projekti in programi / Projects and programmes	MR	EU	Skupa / Total		
2013	17.96	18.28	8.20	44.44	3.4	3.0
2014	19.80	16.80	8.20	44.80	3.2	2.7
2015	19.06	13.80	5.50	38.36	4.0	3.5
2016	23.22	16.83	2.24	42.29	3.6	2.9
2017	21.49	15.10	1.00	37.59	3.4	3.1
2018	24.31	16.6	2.3	43.21	3.8	3.3
2019	26.20	17.25	2.00	45.45	4.0	3.5
2020	32.31	19.65	2.50	54.46	3.5	3.0
2021	33.61	20.50	2.50	56.61	3.7	3.2
2022	35.61	21.75	3.21	60.57	2.6	2.2

Število znanstvenih objav UL FFA zadnjih 10 let
Number of UL FFA scientific publications over the last 10 years



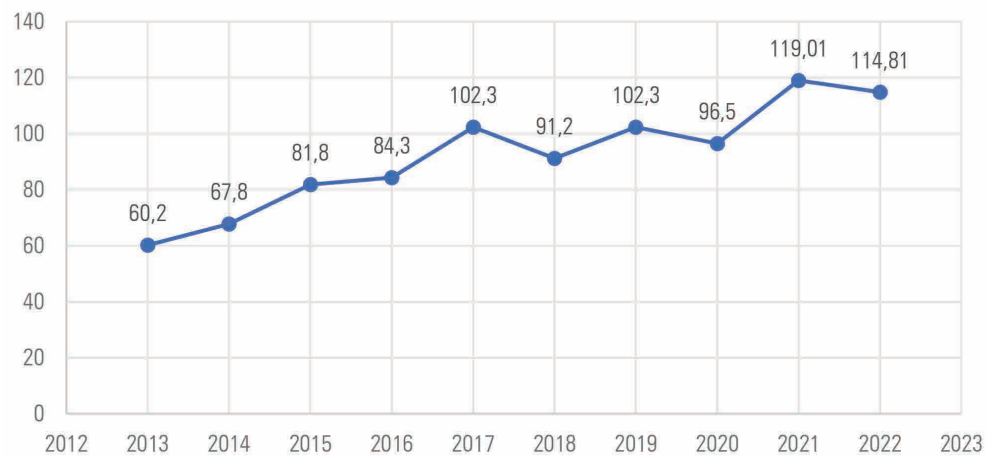
Število čistih citatov znanstvenih objav UL FFA zadnjih 10 let

The number of pure citations of UL FFA scientific publications of the last 10 years



Število čistih citatov FTE od 2013 do 2022

Number of pure citations/FTE from 2013 to 2022



PROGRAMI IN PROJEKTI

Raziskovalno delo na UL FFA je prvič potekalo pod okriljem šestih programskih skupin (prej so bile štiri) ter v okviru številnih projektov. V letu 2022 so bili nacionalni raziskovalni programi ARRS financirani v obsegu 15,23 FTE. UL FFA je izvajala še 50 raziskovalnih projektov v obsegu 20,38 FTE, večje število razvojno-raziskovalnih projektov z gospodarstvom, druge nacionalne in evropske projekte (po 3 projekte iz programov Erasmus+, Obzorje 2020 in Obzorje Evropa) v obsegu 3,21 FTE, druge EU projekte: CELSA, COST, CEEPUS, 2 podoktorska projekta Raziskovalci na začetku kariere 2.1 v obsegu 0,5 FTE ter druge mednarodne in bilateralne projekte. Z uspešnimi prijavi programov in projektov na razpisih ARRS se je tudi v letu 2022 povečal obseg financiranja.

UL FFA je v letu 2022 pridobila pet (5) novih mladih raziskovalcev. To je dosežek, ki ohranja visoko stopnjo usposabljanja novih znanstvenikov, kar je trend zadnjih let: 2022 (5), 2021 (6), 2020 (6), 2019 (5), 2018 (5), 2017 (4), 2016 (5), 2015 (4), 2014 (3), 2013 (4).

PROJECTS AND PROGRAMMES

For the first time, research work at the UL FFA was carried out under the auspices of six programme groups (formerly four) and involved several projects. In 2022 national research programmes of the ARRS were financed in the amount equal to 15.23 FTE. UL FFA has carried out 50 more research projects of value of 20.38 FTE, several R&D projects in cooperation with the industry, other national and European projects (3 projects within the Erasmus+, Horizon 2020 and Horizon Europe) of extent of 3,21 FTE and also other EU projects: CELSA, COST, CEEPUS, 2 postdoctoral projects Early-career 2.1 researchers in the scope of 0.5 FTE and other international and bilateral projects. Successful applications for programmes and projects in ARRS calls also increased the scope of funding in 2022.

The UL FFA has acquired five (5) new young researchers in 2022. This is an achievement that maintains a high level of training for new scientists, which is a trend of the recent years: 2022 (5), 2021 (6), 2020 (6), 2019 (5), 2018 (5), 2017 (4), 2016 (5), 2015 (4), 2014 (3), 2013 (4).

NACIONALNI PROGRAMI IN PROJEKTI

RAZISKOVALNI PROGRAMI NA UL FFA

Farmacevtska tehnologija: od dostavnih sistemov učinkovin do terapijskih izidov zdravil pri otrocih in starostnikih P1-0189 (letni obseg 3,93 FTE)

Pod vodstvom prof. dr. Albina Kristla združuje raziskovalce Katedre za biofarmacijo in farmakokinetiko, Katedre za farmacevtsko tehnologijo in Katedre za socialno farmacijo.

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. 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 za 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.

NATIONAL PROGRAMMES AND PROJECTS

RESEARCH PROGRAMMES AT THE UL FFA

Pharmaceutical technology: from delivery systems of active substances to drug therapeutic results in children and elderly P1-0189 (annual range 3.93 FTE)

Under the leadership of Prof. Dr. Albin Kristl, the programme brings together researchers from the Department of Biopharmacy and Pharmacokinetics, the Department of Pharmaceutical Technology and the Department of Social Pharmacy. The 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 categories. The main goal of the programme is to develop methodologies for identifying and reducing interindividual variability of active substances in clinically desirable and adverse effects and thus increase the effectiveness of treatment. Researchers develop procedures for the design of particles with the desired properties, which 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. They are developing new experimental models to study the release and to evaluate the permeability of active substances through the mucosa of the gastrointestinal tract and bladder. The programme also developed several types of *in vitro* models for the simultaneous study of drug transport and metabolism, considering pharmacogenetic aspects. Developed pharmacokinetic-pharmacodynamic models allow the prediction of clinical outcomes of drugs and the search for causes of their variability.

Farmacevtska kemija: načrtovanje, sinteza in vrednotenje učinkovin P1-0208 (letni obseg: 6,19 FTE)

Pod vodstvom prof. dr. Stanislava Gobca v novem šestletnem obdobju še naprej 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 z 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 v programskem obdobju od 2022 do 2027 vključujejo razvoj novih učinkovin, ki delujejo na (i) nevrodegeneracijo z zaviranjem holin-esteraz, monoaminoksidaz in kinaz ter modulacijo monoaminergičnih receptorjev in oksidativnih tarč, (ii) na več učinkovin odporne bakterije in koronavirusne z zaviranjem DNA giraze, topoizomeraze IV, MurA, D-Ala-D-Ala ligaze B, penicilinvezočih proteinov, proteasoma, reduktaze enoil acil prenašalnega proteina (InhA) in cisteinskih proteaz, (iii) imunski sistem z modulacijo Tollu podobnih

Pharmaceutical chemistry: Planning, synthesis and evaluation of active ingredients P1-0208 (annual range: 6,19 FTE)

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

The long-term goal of the research programme is to discover new biologically active small molecules with the potential to develop into active substances for use in important therapeutic areas. The objective will be achieved by using a combination of different pharmaceutical and chemical approaches. During this period, the research programme focuses on the detection, rational planning, synthesis and biological evaluation of molecules with impact on validated targets. This procedure will create new anti-neurodegenerative, antimicrobial, immunomodulatory and antitumor compounds that are highly significant for public health.

The research programme addresses various target substances involved in transmembrane and intracellular signalling, such as bacterial and human enzymes, membrane, intracellular and nuclear receptors and ion channels. Modern pharmaceutical chemistry strategies are used, including a biomimetic approach and design that seeks inspiration in natural products, fragment-based active ingredients, approaches to achieve selectivity and substance-like properties. The researchers will also design compounds that can simultaneously modulate two or more targets at once. The main areas of research in the 2022 to 2027 programming period include the development of new active substances that act on (i) neurodegeneration by inhibiting choline-esterase, monoamine oxidase and kinase, and modulation of monoaminergic receptors and oxidative targets, (ii) to several substance-resistant bacteria and coronaviruses by inhibiting gyrase DNA, topoisomerase

receptorjev in galektinov, zaviranjem imunoproteasoma in z O-vezane β -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.

Napredna imunološka zdravila in celični pristopi v farmaciji P1-0420 (letni obseg: 2,5 FTE)

Pod vodstvom prof. dr. Žige Jakopina 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 ciljno dostavo, imunofarmakološko vrednotenje *in vitro* ter vrednotenje učinkovitosti in varnosti cepiv *in vivo*. V drugi platformi,

IV, Mura, D-Ala-D-Ala ligaze S B, penicillin-binding proteins, proteases, enoyl acil transport protein (InhA) and cysteine proteases, (iii) immune system by modulation of Toll-like receptors and galectins, inhibition of immunoproteasoma and O-bound β -N-acetylglucosamine transferase (OGT), (iv) cancerous conditions by inhibiting hERG, potassium tension channels (Kv1.3), heat shock protein 90 (Hsp90), DNA topoisomerase II, and proteasomeoma, and modulation of prostaglandin E2 receptor 4 (EP4). Significant aspect of research programme includes toxicological aspects in the substance detection process, including the determination of (i) PADMET properties of new compounds, (ii) endocrine disruptor toxicity mechanism, (iii) the effect of metabolism on biological activity and toxicity, and (iv) effects of antioxidants on oxidation stability of compounds.

Advanced immunological drugs and cellular approaches in pharmacy P1-0420 (annual range: 2.5 FTE)

Under the leadership of Prof. Dr. Žiga Jakopin, the programme brings together the researchers of the Cadre Pharmaceutical Chemistry, the Chairs of Pharmaceutical Biology, the Chairs of Clinical Biochemistry and the Chairs of Pharmaceutical Technology. The programme aims at developing safe and effective vaccines against infectious diseases, developing medicines for immunotherapy and cell therapy for cancer, and immunotherapy 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 platform for the development of innovative vaccines (classic vaccines, new generation vaccines, tumour vaccines, vaccines for immunotherapy allergies) covers all stages of vaccine development: protein expression, DNA or RNA and their isolation and purification, development of synthetic adjuvants, development of formulations or advanced delivery systems, and ligand marking for targeted delivery, immunopharmacological evaluation *in vitro* and

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.

Klinična biokemija: geni, hormonske in osebne spremembe pri metabolnih motnjah P3-0298 (letni obseg na UL FFA: 1,06 FTE)

Pod vodstvom prof. dr. Andreja Janeža deluje na UKC Ljubljana ter na UL FFA, Katedra za klinično biokemijo, koordinatorica 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 dogajanjem 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 insulin. Pri bolnicah s sindromom policističnih ovarijev jih zanimajo spremembe mehanizma prenosa glukoze v adipocite po zdravljenju z metforminom ali rosiglitazonom. Predpostavljajo se, da bodo pripomogli k razumevanju etiopatogeneze

evaluation of the efficacy and safety of vaccines *in vivo*. The second platform, immunotherapy and cell therapy as an advanced approach to the treatment of cancer and allergies, covers the areas of development of innovative innate immunity agonists for cancer treatment, the use of mesenchymal stem cells (MSC) as a delivery system for targeting cancerous tissues, studying new synergistic ZU combinations of anti-cancerous activity and the use of immunotherapy and immunosuppressive MSC activity in the treatment of allergies. The third set of the programme is aimed at examining immunotoxic effects *in vitro* and immunogenicity evaluation.

Clinical Biochemistry: genes, hormonal and personality changes in metabolic disorders P3-0298 (annual range for UL FFA: 1.06 FTE)

Under the leadership of Prof. Dr. Andrej Janež, employed at UKC Ljubljana and for UL FFA, Chair of Clinical Biochemistry, coordinator is Prof. Dr. Janja Marc.

The programme is based on its own years of experience and achievements in clinical and laboratory research, which examine chronic metabolic diseases, osteoporosis, diabetes and polycystic ovarian syndrome. Osteoporosis is studied at the level of local bone transfer regulators. The aim of the research is to shed light on the importance of local regulators for aetiopathogenesis osteoporosis. The assumption of this endeavour is that a serum marker will be identified that will be correlated with occurrence in the bone tissue itself. They also plan to study the effect of germ mutations of some responsible genes on treatment (pharmacogenetics) and on early detection of subjects at increased risk of osteoporosis. In the field of diabetes, the emergence of cell resistance in peripheral tissues to insulin is investigated. In patients with polycystic ovary syndrome, changes in the mechanism of transfer of glucose to adipocyte after treatment with metformin or rosiglitazone are addressed. It is assumed that conclusions will help to

sindroma policističnega ovarija, ki sloni na insulinski rezistenci.

Sistemske avtoimunske bolezni P3-0314 (letni obseg na UL FFA: 0,15 FTE)

Raziskovalni program deluje od 1. 1. 2022 pod vodstvom doc. dr. Katje Lakota na UKC Ljubljana ter na UL FFA, Katedra za klinično biokemijo, kot koordinatorjem prof. dr. Borutom Božičem.

Avtoimunost, vnetje, ateroskleroza in bolezni ožilja predstavljajo prioriteto 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), vključitev bioinformatike in podatkovnih databaz (kot je Register bolnikov, ki jemljejo biološka zdravila) in razvijanje in uporaba 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 titanijevega 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 akutnofazni protein serumski amiloid A (SAA) lokalno.

Farmacevtska biotehnologija: znanje za zdravje P4-0127 (letni obseg na UL FFA: 1,4 FTE)

Pod vodstvom prof. dr. Janka Kosa združuje raziskovalce Katedre za farmacevtsko biologijo, Katedre za klinično biokemijo in Odseka za biotehnologijo Instituta Jožefa Stefana.

understand the aetiopathogenesis of polycystic ovary syndrome, which is based on insulin resistance.

Systemic autoimmune diseases P3-0314 (annual range for UL FFA: 0.15 FTE)

The research programme is being conducted from 1 Jan 2022 under the guidance of Assist. Prof. Dr. Katja Lakota at UKC Ljubljana and at the UL FFA with coordinator Prof. Dr. Borut Božič, Chair of Clinical Biochemistry.

Autoimmunity, inflammation, atherosclerosis and vascular diseases are a priority in the medicine of developed countries. However, the links between the scientific fields are suboptimal and still vague. The programme represents a continuation of the research of the programme group with a strong focus on 4 P's in medicine (prevention, predication, personalisation and participatory medicine), the inclusion of bioinformatics and data databases content (such as the Register of Patients Taking Biological Medicinal Products) 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 the determination of the environmental regulation of cell inflammatory transcription, c) titanium dioxide nanotube studies for potential use in implantation devices, d) phage library and large lipid vesicles for antigen-antibody interaction study e) cell models of wound healing with scratch and antibacterial tests to increase understanding of how acute phase protein serum amyloid A (SAA) works locally.

Pharmaceutical Biotechnology: knowledge for health P4-0127 (annual range for UL FFA: 1.4 FTE)

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

Delo programske skupine se vključuje v sodobne znanstvene trende z namenom povečati vedenje o življenju, ohraniti zdravje ljudi in čisto okolje. 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 biotehnoških 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.

Sodelovanje v drugih programih

Raziskovalci fakultete sodelujejo tudi v raziskovalnih programih, ki se izvajajo na drugih inštitucijah, in sicer Eksperimentalna biofizika kompleksnih sistemov in slikanje v biomedicini, vodja je prof. dr. Janez Štrancar na Institutu Jožefa Stefana, in Celična fiziologija 1 10-7, vodja je prof. dr. Robert Zorec na UKC Ljubljana.

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.

Participation in other programmes

The faculty's researchers also participate in research programmes conducted in other institutions, namely experimental biophysics of complex systems and imaging in biomedicine, headed by Prof. Dr. Janez Štrancar at the Jožef Stefan Institute and Cell Physiology 1 10-7, headed by Prof. Dr. Robert Zorec at UKC Ljubljana.

NACIONALNI RAZISKOVALNI PROJEKTI UL FFA

Temeljni raziskovalni projekti ARRS

- 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)
- J1-1715 - Atlas proteinskih interakcij za napovedovanje genskih variacij, povezanih z interakcijami z zdravi in razvojem bolezni (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilka: prof. dr. Dušanka Janežič, UP FAMNIT)
- J1-1717 - Razvoj novih zaviralcev Hsp90 s protitumornim delovanjem (nosilec: izr. prof. dr. Tihomir Tomašič)
- J1-2483 - Radiofarmaki z antagonističnim delovanjem na CCK2R (nosilec: prof. dr. Marko Anderluh)
- 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)
- 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)
- J1-4400 - Vrednotenje prehodnih stanj proteinov (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilka prof. dr. Simona Golič Grdadolnik, KI)

FACULTY OF PHARMACY RESEARCH PROJECTS

ARRS basic research projects

- J1-1709 - Structural insight into the mechanism of *Clostridium difficile* surface formation (coordinator at the UL FFA: Assoc. Prof Dr. Janez Mravljak, PI: Prof. Dr. Dušan Turk, Jožef Štefan Institute)
- J1-1715 - Protein interaction atlas for prediction of genetic variations involved in drug interactions and disease development (coordinator at the UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Dušanka Janežič, University of Primorska, FAMNIT)
- J1-1717 - Development of novel Hsp90 inhibitors with anticancer activity (PI: Assoc. Prof. Dr. Tihomir Tomašič)
- J1-2483 - Radiopharmaceuticals with antagonistic activity on CCK2R (PI: Prof. Dr. Marko Anderluh)
- J1-2484 - Development of antibacterial compounds targeting validated enzymes in peptidoglycan biosynthesis (PI: Prof. Dr. Stanislav Gobec)
- J1-2485 - The kiss of death for key apoptosis players: development of BCL-2 and BAX PROTACs (PI: Assist. Prof. Dr. Izidor Sosič)
- J1-3018 - Smart probes for ex vivo assay-based early prediction of Alzheimer disease (coordinator at the UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Janez Košmrlj, University of Ljubljana, Faculty of Chemistry and Chemical Technology)
- J1-3021 - A synthetic biofilm-based platform for studying and development of new antibiofilm strategies (coordinator at the UL FFA: Assoc. Prof. Dr. Nace Zidar, PI: doc. dr. Iztok Dogša, University of Ljubljana, Biotechnical faculty)
- J1-3030 - MTAVsAMR: new MultiTargeting Antibiotics against AntiMicrobial Resistance (PI: Prof. Dr. Lucija Peterlin Mašič)
- J1-3031 - Development of new inhibitors of bacterial topoisomerases to overcome antimicrobial resistance (PI: Assoc. Prof. Dr. Nace Zidar)

- J1-4402 - Dinamični model molekulskega stroja DNA topoizmeraze tipa II in razvoj katalitičnih inhibitorjev (koordinator 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)
- J1-9194 - Nanozdravila z antibiotiki in probiotiki za lokalno zdravljenje parodontalne boleznibolezni (nosilka: prof. dr. Julijana Kristl)
- 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)
- J3-1745 - 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: doc. dr. Janja Zupan)
- J3-1759 - Celostna karakterizacija zadetkov analiz GWAS - pot do novih terapevtskih tarč za anabolno zdravljenje osteoporoze (GWASforAna) (nosilka: prof. dr. Janja Marc)
- J3-2517 - Razvojjhimernih 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: izr. prof. dr. Mojca Kerec Kos, nosilec: prof. dr. Peter Veranič, UL MF)
- J1-4400 - Evaluation of transient protein states (coordinator at the UL FFA: Prof. Dr. Stanislav Gobec, PI Prof. Dr. Simona Golič Grdadolnik, National Institute of Chemistry)
- J1-4402 - Dynamical model of a type II DNA topoisomerase biological nanomachine and design of catalytic inhibitors (coordinator at the UL FFA: Prof. Dr. Marija Sollner Dolenc, PI: Assoc. Prof. Dr. Andrej Perdih, National Institute of Chemistry)
- J1-4414 - ProBiS-Fold approach for binding site detection for whole structural human proteome in drug discovery (coordinator at the UL FFA: Prof. Dr. Stanislav Gobec, PI: Prof. Dr. Dušanka Janežič, University of Primorska, FAMNIT)
- J1-4417 - Development of novel small molecule Toll-like receptors 7 and 8 modulators for cancer immunotherapy (PI: Assoc. Prof. Dr. Matej Sova)
- J1-9194 - Nanomedicines with antibiotics and probiotics for local treatment of periodontal disease (PI: Prof. Dr. Julijana Kristl)
- J2-3043 - Exploitation of the magneto-mechanical effect in the treatment of neurodegenerative diseases (coordinator at the UL FFA: Assoc. Prof. Dr. Petra Kocbek, PI: Assist. Prof. Dr. Slavko Kralj, Jožef Štefan Institute)
- J3-1745 - Elucidating the role of immunoproteasome in platelet-driven immune response (PI: Assoc. Prof. Dr. Martina Gobec)
- J3-1749 - Mesenchymal stem cells - the keepers of tissue endogenous regenerative capacity facing up to aging of the musculoskeletal system (PI: Assist. Prof. Dr. Janja Zupan)
- J3-1759 - Comprehensive characterization of GWAS hits - pipeline to novel drug targets for anabolic treatment of osteoporosis (GWASforAna) (PI: Prof. Dr. Janja Marc)
- J3-2517 - Development of innate immune receptor-targeting chimeras as custom-tailored vaccine adjuvants (PI: Prof. Dr. Žiga Jakopin)
- J3-2518 - Role of APOBEC proteins in the oncogenesis of HPV viruses (coordinator at the UL FFA: Assist. Prof. Dr. Marija Nika Lovšin, PI: Assist. Prof. Dr. Martina Bergant)

- 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 biofilnov (nosilec: doc. dr. Stane Pajk)
- 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)
- J3-9256 - Razvoj agonistov receptorja NOD2 ter dualnih NOD2/TLR7 agonističnih konjugatov kot novih adjuvansov za cepiva (nosilec: prof. dr. Žiga Jakopin)
- J4-1767 - Selektivna ekstrakcija molekul z visoko vrednostjo za sektor specialnih kemikalij iz ostankov predelave lesa (koordinator na UL FFA: prof. dr. Samo Kreft, nosilka: dr. Andreja Kutnar, InnoRenew CoE)
- J4-1776 - Izboljšanje imunoterapevtske vrednosti NK celic z modulacijo cistatina F (koordinator na UL FFA: prof. dr. Janko Kos, nosilec: prof. dr. Janko Kos, IJS)
- J4-1778 - Uporaba malega proteina bakteriofaga v boju proti razvoju odpornosti proti antibiotikom pri bakteriji *Staphylococcus aureus* (koordinator na UL FFA: prof. dr. Stanislav Gobec, nosilec: doc. dr. Matej Butala, UL BF)
- 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)
- J4-3096 - Rekombinantni probiotiki kot bio-alternativni protimikrobni pristop proti bakteriji *Clostridioides difficile* (nosilec: prof. dr. Borut Štrukelj)
- Marušič, University of Nova Gorica)
- J3-2521 - Inflammatory process in interstitial cystitis and evaluation of the influence of cannabinoid receptor agonists in urinary bladder - from cells to patients (coordinator at the UL FFA: Assoc. Prof. Dr. Mojca Kerec Kos, PI: Prof. Dr. Peter Veranič, University of Ljubljana, Medicine faculty)
- J3-3062 - Autologous immunohybridomas and advanced treatment of stage II and III triple-negative breast cancer (PI: Prof. Dr. Matjaž Jeras)
- J3-3071 - Cathepsins B and X in breast cancer stem cells - molecular targets and relevance for antitumor therapy (coordinator at the UL FFA: Prof. Dr. Janko Kos, PI: Assist. Dr. Ana Mitrović, Jožef Štefan Institute)
- J3-3079 - Bactericidal nanoblades: a proof-of-concept approach for bimodal chemo-mechanical eradication of persistent biofilms (PI: Assist. Prof. Dr. Stane Pajk)
- J3-4496 - Next-generation adjuvants for mucosal vaccines (PI: Prof. Dr. Žiga Jakopin)
- J3-4499 Mechanisms of response to interleukin 12/23 blockers in ulcerative colitis - toward personalized medicine (coordinator at the UL FFA: Prof. Dr. Iztok Grabnar, PI: doc. dr. David Drobne, University Medical Center Ljubljana)
- J3-4527 - Muscle cell secretom and bone cells interplay in osteosarcopenia (MiKOSA) (PI: Prof. Dr. Janja Marc)
- J3-9256 - Development of NOD2 agonists and dual NOD2/TLR7 agonistic conjugates as novel vaccine adjuvants (PI: Prof. Dr. Žiga Jakopin)
- J4-1767 - Selective extraction of high value molecules from forest products processing residues in the speciality chemicals sector (coordinator at the UL FFA: Prof. Dr. Samo Kreft, PI: Dr. Andreja Kutnar, InnoRenew CoE)
- J4-1776 - Improvement of immunotherapeutic potential of NK cells through modulation of cystatin F (coordinator at the UL FFA: Prof. Dr. Janko Kos, PI: Prof. Dr. Janko Kos, Jožef Stefan Institute)
- J4-1778 - Exploitation of a virus-borne small protein to combat antibiotic resistance in *Staphylococcus aureus* (coordinator at the UL FFA: Prof. Dr. Stanislav Gobec,

- J4-4556 – Nov pristop za gnojenje rastlin, ki temelji na mikrobnih biokatalitičnih agregatih (koordinator na UL FFA: doc. dr. Špela Zupančič, dr. Tomaž Rijavec, IJS)
- J7-2603 – Učinkovitost bakteriofagov za zdravljenje ekstracelularnih in intracelularnih bakterijskih okužb implantatov (koordinatorka na UL FFA: doc. dr. Janja Zupan, nosilec: izr. prof. dr. Aleš Podgornik, UL FKKT)
- 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)

PI: Assist. Prof. Dr. Matej Butala, University of Ljubljana, Biotechnical faculty)

- J4-3092 - Development of biologically active and chemically stable xanthophylls based on a sustainable esterification of xanthophylls from renewable natural resources (coordinator at the UL FFA: Assoc. Prof. Dr. Ilija German Ilić, PI: Assist. Prof. Dr. Alen Albreht - National institute of Chemistry)
- J4-3096 - Recombinant probiotics as bio-alternative antimicrobial approach against *Clostridioides difficile* (PI: Prof. Dr. Borut Štrukelj)
- J4-4556 - New biofertilization approach based on the microbial multispecies biocatalytic aggregates (coordinator at the UL FFA: Assist. Prof. Dr. Špela Zupančič, Dr. Tomaž Rijavec, Jožef Stefan Institute)
- J7-2603 - Efficacy of bacteriophages for treatment of extracellular and intracellular bacterial infections of implants (coordinator at the Faculty of Pharmacy: Assist. Prof. Dr. Janja Zupan, PI: Assoc. Prof. Dr. Aleš Podgornik, University of Ljubljana, Chemistry and Chemical Technology faculty)
- J7-4418 - Nanofibers for codelivery of selected microbiota cocktails and antimicrobials for local treatment of vaginal infections (PI: Assist. Prof. Dr. Špela Zupančič)
- J7-4420 - Selective mechanical removal of bacterial biofilms by conjugated magnetic nanoparticles (coordinator at the UL FFA Prof. Dr. Marko Anderluh, PI: Assoc. Prof. Dr. Aleš Berlec, Jožef Stefan Institute)
- J7-4635 - MitoCan - Preclinical development of new Mitochondrial ion channel inhibitors for Cancer therapy (PI: Prof. Dr. Lucija Peterlin Mašič)

Aplikativni raziskovalni projekti ARRS

- L1-3160 - Razvoj visokokonzentriranih 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: doc. 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: prof. dr. Metka Filipič, NIB)
- 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)
- 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)

Ciljni raziskovalni programi

- V4-2038 - DNK cepiva in peptidni inhibitorji proti SARS-CoV-2 (koordinator na UL FFA: prof. dr. Borut Štrukelj, nosilec: prof. dr. Roman Jerala, KI)

ARRS's 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 Potential Application of Immunomodulatory Mesenchymal Stem Cells in COVID-19 Disease (PI: Assist. Prof. Dr. Janja Zupan)
- L3-3177 - Safety evaluation of cannabidiols and implications for public health and consumers' behaviour (coordinator at the UL FFA: Assist. Prof. Dr. Jurij Trontelj, PI: Prof. Dr. Metka Filipič - National Institute of Biology)
- L4-4564 - Biotechnological potential of selected microorganisms from Sečovlje Saltpans for application in cosmetics products (Coordinator at the UL FFA: Assoc. Prof. Dr. Alenka Zvonar Pobirk, PI: dr. Ana Rotter, National Institute of Biology)
- L2-4455 - Quantitative light scattering spectroscopy as a process analytical technology in pharmaceutical manufacturing (coordinator at the UL FFA: Prof. Dr. Rok Dreu, PI: Prof. Dr. Franjo Pernuš, University of Ljubljana, Faculty of Chemistry and Chemical Technology)

Target research programmes

- V4-2038 - DNA vaccine and peptide inhibitors against Sars-CoV-2 (coordinator at the Faculty of Pharmacy: Prof. Dr. Borut Štrukelj, PI: Prof. Dr. Roman Jerala, National Institute of Chemistry)

Podoktorski raziskovalni projekti

- Z1-2635 - Modularna asimetrična totalna sinteza biološko aktivnih naravnih produktov z več kiralnimi centri (nosilec: asist. dr. Andrej Emanuel Cotman)
- Z1-4405 - Razvoj novih antibiotikov s sočasnim zavi-ranjem beta-laktamaz in penicilin-vezočih proteinov (nosilec: asist. dr. Alen Krajnc)

Drugi nacionalni projekti

- N1-0098 - Odkrivanje in mehanizem delovanja novih spojin vodnic hEag1 kalijevih kanalov s protirakavim delovanjem (nosilka: prof. dr. Lucija Peterlin Mašič)
- N1-0169 - Kovalentni pristop k boju proti bakterijski rezistenci (nosilec: prof. dr. Stanislav Gobec)
- N1-0172 - Fotokemijski pristop za odkrivanje naprednih ATP-kompetitivnih prob z zaviralnim delovanjem na Topoizomerozo IIalfa (nosilec: prof. dr. Janez Ilaš)

Post-doctoral research projects

- Z1-2635 - Modular asymmetric total synthesis of bio-active multi-chiral natural products (PI: Assist. Prof. Dr. Andrej Emanuel Cotman)
- Z1-4405 - Development of new antibiotics simultaneously targeting beta-lactamases and penicillin-binding proteins (PI: Assist. Dr. Alen Krajnc)

Other national projects

- N1-0098 - Discovery and mechanism of action of novel hEag1 potassium channel lead molecules with anti-cancer activity (PI: Prof. Dr. Lucija Peterlin Mašič)
- N1-0169 - A Covalent Approach Against Antibiotic Resistance (PI: Prof. Dr. Stanislav Gobec)
- N1-0172 - Photochemistry toolbox for discovery of advanced ATP-competitive chemical probes with Topo-isomerase IIalpha inhibitory activity (PI: Prof. Dr. Janez Ilaš)

MEDNARODNI RAZISKOVALNI PROJEKTI V 2022 EU PROJEKTI

PROGRAM OBZORJE 2020 (2014–2020)

PhD4GlycoDrug

UL FFA je v okviru programa Obzorje 2020 Marie Skłodowska-Curie Innovative Training Networks pridobila štiriletni projekt European Joint Doctorate z akronimom PhD4GlycoDrug. PhD4GlycoDrug projekt je skupni evropski doktorski program na področju odkrivanja in razvoja spojin vodnic na osnovi ogljikovih hidratov z delovanjem na lektinske receptorje in encime, ki vežejo in procesirajo ogljikove hidrate. Skupni izobraževalni in raziskovalni program konzorcija PhD4GlycoDrug vključuje vse faze razvoja do spojine vodnice, od identifikacije in karakterizacije novih tarč, odkrivanja novih bioaktivnih spojin, njihove optimizacije in biokemijskega vrednotenja v sistemih *in vitro* ter *in vivo*. Koordinator projekta na UL FFA je **prof. dr. Marko Anderluh**.

EATRIS PLUS

V okviru programa Obzorje 2020 je evropski infrastrukturni center za translacijsko medicino EATRIS pridobil financiranje Evropske komisije za vodilni 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

INTERNATIONAL RESEARCH PROJECTS IN 2022 EU PROJECTS

HORIZON 2020 PROGRAMME (2014–2020)

PhD4GlycoDrug

In the context of Horizon 2020 Marie Skłodowska-Curie Innovative TRAINING NETWORKS, the UL FFA acquired a four-year European Joint Doctorate with acronym PhD4GlycoDrug. PhD4GlycoDrug project is a common European doctoral programme in the field of discovery and development of lead compounds based on carbohydrate structure, with the action on lectin receptors and enzymes that bind and process carbohydrates. The joint education and research programme of the consortium PhD4GlycoDrug includes all stages of development till the lead compound, from the identification and characterization of new targets, discovery of new bioactive compounds, their optimization and biochemical evaluations *in vitro* and *in vivo* systems. Project coordinator at the Faculty of Pharmacy is **Prof. Dr. Marko Anderluh**.

EATRIS-PLUS

Under Horizon 2020 the European infrastructure centre for translational medicine EATRIS gained funding from the European Commission for the leading project EATRIS-Plus. 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 centre in the field of personalized medicine to improve the functioning of academic institutions and industry and to enhance the integration of the EATRIS centre 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

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 na UL FFA je **prof. dr. Irena Mlinarič-Raščan**.

RISE ORBIS

Open Research Biopharmaceutical Internships Support (ORBIS) je mednarodni projekt v okviru programa Obzorje 2020 – MSCA – Research and Innovation Staff Exchange (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 zdravil. Shema RISE podpira napotitve, da se tako mladi kot izkušeni raziskovalci napotijo v konzorcijske partnerske ustanove na napredne študije iz farmacevtske preformulacije, dozirne oblike in sistemov za dajanje zdravil ter metode biofarmacevtskega vrednotenja. Projekt ORBIS omogoča raziskovalcem, ki so napoteni na gostujoče institucije, pridobivanje novih veščin in razvijanje kompetenc v mednarodnem in medsektorskem okolju ter 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 oz. bo v okviru projekta na usposabljanje poslala 9 svojih zaposlenih ter gostovala 13 tujih raziskovalcev. Nosilca projekta sta **prof. dr. Rok Dreu** in **prof. dr. Stane Srčič**.

partnership with research infrastructure. EATRIS-Plus will contribute to combining and exploiting the translational infrastructure capacity of academic institutions in the field of different “omic technologies” and provide access to data obtained through such modern technologies. The project will facilitate the resolution of global scientific and societal challenges in the field of personalized medicine. The coordinator at the University of Pharmacy is **Prof. Dr. Irena Mlinarič-Raščan**.

RISE-ORBIS

Open Research Biopharmaceutical Internships Support (ORBIS) is an international project within the Horizon 2020 programme - MSCA - Research and Innovation Staff Exchange (RISE). Originally, six academic institutions and four pharmaceutical companies from seven countries are working together to improve the preclinical pathway of drug development through increased R&D productivity, particularly by focusing on processes and technologies that address the poor bioavailability of drugs. The RISE scheme supports referrals by referring both young and experienced researchers to consortium partner institutions for advanced studies in pharmaceutical reformulation, dosage form and drug delivery systems, and biopharmaceutical evaluation methods. The ORBIS project enables researchers seconded to host institutions to acquire new skills and develop competencies 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 will send 9 of its employees for training as part of the project and host 13 foreign researchers. The project leaders are **Prof. Dr. Rok Dreu** and **Prof. Dr. Stane Srčič**.

PROGRAM OBZORJE EVROPA

EVROPSKA NOČ RAZISKOVALCEV 2022

V okviru programa Obzorje 2020 Marie Skłodowska-Curie Actions je v septembru 2022 na UL FFA potekala Evropska noč raziskovalcev »Humanistika, to si ti!« z naslovom »Človek živali in žival človeku«. Vodilna partnerica projekta je Filozofska fakulteta Univerze v Ljubljani, na projektu pa sodeluje osem fakultet UL, med njimi tudi UL FFA. Koordinatorica projekta na UL FFA je **izr. prof. dr. Alenka Zvonar Pobirk**.

Med 150 obiskovalci je bilo približno 90 otrok. 25-članska ekipa zaposlenih in študentov je za obiskovalce pripravila 9 aktivnosti, ki so potekale v laboratorijih in/ali predavalnicah. Obiskovalci so dobili odgovore na vprašanja, kot so: kako svetijo kresničke; kako lahko izoliramo DNA-molekulo življenja iz različnih materialov; kako se izdela šampon za hišnega ljubljence in kako loščilo za ustnice iz čebeljega voska; kaj se skriva za izrazi slončkova zobna pasta, magične gliste in nanopajek; katera zdravila so živalim prijazna; kakšna je vloga lekarne in lekarniških farmacevtov pri varni in učinkoviti uporabi (veterinarskih) zdravil; ali so računalniške metode alternativa testiranju na živalih in kako zdravimo simptome pasje demence. V okviru projekta Evropska noč raziskovalcev je UL FFA na glavnem odru prireditve sodelovala tudi z izvedbo okrogle mize o etiki uporabe živalskih modelov v raziskavah v farmaciji in medicini ter z online prikazom laboratorijskega dela z živalskimi celičnimi linijami. V okviru projekta so zaposleni UL FFA, ki sodelujejo pri projektu, že v poletnih mesecih obiskali 4 skupine vrtčevskih otrok in približno 60 šolarjev ter jim predstavili poklic farmacevta. Nov dogodek v okviru projekta bo organiziran tudi v letu 2023.

HORIZON EUROPE (2021-2027)

EUROPEAN RESEARCHERS' NIGHT 2022

Under Horizon 2020, Marie Skłodowska-Curie Actions, in September 2022, the UL FFA held a European Research Night - "Humanities, that is you!", entitled "Man of animal and animal to man". The project's lead partner is the Faculty of Arts of the University of Ljubljana, with eight UL faculties, including the UL FFA, taking part in the project. The project coordinator at the UL FFA is **Assoc. Prof. Dr. Alenka Zvonar Pobirk**.

Of the 150 visitors, about 90 were children. A 25-member team of staff and students prepared 9 activities for visitors, which took place in laboratories and/or lecture halls. During the latter, visitors were given answers to questions such as: how fireflies shine; how we can isolate DNA - a molecule of life from different materials; how to make a shampoo for a pet and how to make a lip gloss from beeswax; what is the secret to terms elephant toothpaste, magic worms and nanospider; which medicines are animal-friendly; what is the role of pharmacy and pharmacists with safe and efficient use of (veterinary) medicinal products; whether computer methods are an alternative to animal testing and how we treat the symptoms of canine dementia. As part of the European Researchers' Night project the UL FFA also participated on the main stage of the event by conducting a roundtable on the ethics of the use of animal models in research in pharmacy and medicine and by showing online laboratory work with animal cell lines. As part of the project FFA's employees involved in the project visited 4 groups of kindergarten children and around 60 schoolchildren during the summer months and presented them the profession of pharmacist. A new project event is also planned to be held in 2023.

PARC – Partnerstvo za oceno tveganja zaradi kemikalij

PARC je evropski projekt, ki ga delno sofinancira Evropska unija (EU) v okviru zdravstvenega programa Obzorje Evropa 2021 (Horizon Europe 2021) in traja 7 let. Skupni proračun projekta je 400 milijonov EUR – približno polovično je sofinanciran s strani partnerjev.

Glavni namen projekta Partnerstvo za oceno tveganja zaradi kemikalij (PARC) je spodbujanje inovacij pri procesu ocen tveganja kemikalij, ki bodo prispevale k trajnostni rabi in upravljanju s kemikalijami za varno okolje in zdravje ljudi:

- a) s krepitvijo znanstvenih podlag za oceno kemičnih tveganj v EU, z združevanjem ocenjevalcev tveganj in upravljavcev s tveganji z znanstveniki, da se tako pospeši razvoj metod in orodij za naslednjo generacijo znanja in informacij;
- b) z omogočanjem prehoda v naslednjo z dokazi podprto generacijo ocene tveganj.

PARC je projekt v podporo EU in nacionalnim ustanovam za oceno tveganj, upravljanje tveganj in komunikacijo tveganj v povezavi s kemikalijami, tako da zagotovi nove podatke, znanje, 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 - Partnership for the Assessment of Risk from Chemicals (PARC)

PARC is a European project partly co-financed by the European Union (EU) under the Horizon Europe 2021 Health Programme (Horizon Europe 2021) and lasting for 7 years. The total budget of the project is EUR 400 million - it is approximately co-financed (in half) by the partners.

The main purpose of the Partnership for the Assessment of Risk from Chemicals (PARC) project is to promote innovation in the chemical risk assessment process, which will contribute to the sustainable use and management of chemicals for the safe environment and human health by:

- a) strengthening the scientific basis for assessing chemical risks in the EU, bringing together risk assessors and risk managers with scientists in order to accelerate the development of methods and tools for the next generation of knowledge and information;
- b) enabling the transition to the next evidence-based generation of risk assessment.

PARC is a project to support the EU and national institutions for risk assessment, risk management and chemical risk communication by providing new data, knowledge, methods, networks and skills to address existing and new chemical safety challenges. It will encourage the transition to the next generation of risk assessments to better protect human health and the environment, in line with the Green Agreement. The coordinator at the UL FFA is **Prof. Dr. Marija Sollner Dolenc**.

REMEDI4ALL – Oblikovanje trajnostne evropske inovacijske platforme za izboljšanje sprememb uporabnosti zdravil za vse – Building a sustainable European innovation platform to enhance repurposing of medicines for all

Projekt v obsegu 23 milijonov evrov sofinancira Evropska unija (EU) v okviru programa Obzorje Evrope. V projektu, ki traja 5 let, bodo partnerji zagotovili platformo za celosten prenos znanja in storitev v razponu od znanstvene, metodološke, finančne, pravne, regulativne ravni do upoštevanja intelektualne lastnine.

Namen projekta je vzpostaviti vodilno vlogo Evrope na področju spremembe uporabnosti zdravil z oblikovanjem povezane skupnosti praktikov iz vseh relevantnih področij in disciplin. Te bodo oblikovale raziskovalni in inovacijski ekosistem za hiter, na pacienta usmerjen in cenovno dosegljiv razvoj in dostop do zdravil s spremenjeno uporabo:

- a) Projekt vzpostavlja na bolnika osredotočeno platformo za spremembe uporabnosti zdravila od samega začetka razvoja zdravila s kateregakoli bolezenskega področja.
- b) Aktivnosti so namenjene usposabljanju in izobraževanju naslednjih generacij raziskovalcev, zdravnikov klinične prakse, bolnikov, odločevalcev, regulatorjev in financerjev o mehanizmi in procesih spreminjanja uporabnosti zdravil.
- c) S pomočjo strojnega učenja in umetne inteligence, odprtih baz podatkov in orodij ter znanj bo projekt poglobljal razumevanje mehanizmov delovanja posameznih zdravil.
- d) Vzpostavljena globalna skupnost praktikov, ki bodo delovali v okolju, delujočem po principu think-tanka, se bo povezovala v multidisciplinarnih aktivnostih in na srečanjih spodbujala dialog.
- e) Projekt podpira odločevalce po vsej EU pri zagotavljanju pravičnega dostopa do zdravil s spremenjeno uporabnostjo.

Koordinator na UL FFA je **prof. dr. Rok Dreu**.

REMEDI4ALL - Building a sustainable European innovation platform to enhance repurposing medicines for all

The €23 million project is co-financed by the European Union (EU) under Horizon Europe. In the project, which is planned for 5 years, the partners will provide a platform for the integrated transfer of knowledge and services ranging from scientific, methodological, financial, legal and regulatory level to intellectual property consideration.

The aim of the project is to establish Europe's leading role in repurposing medicines by creating a connected community of practitioners from all relevant fields and disciplines. These will create a research and innovation ecosystem for rapid, patient-oriented and affordable development and access to medicines with a modified utility:

- a) The project establishes a patient-centric platform for repurposing medicines from the very beginning of the development of the medicinal product in any disease area.
- b) The activities are aimed at training and educating the next generation of researchers, clinical practice doctors, patients, decision-makers, regulators and funders on the mechanisms and processes of repurposing medicines.
- c) Through machine learning and artificial intelligence, open databases and tools and skills, the project will deepen the understanding of the mechanisms of action of individual medicines.
- d) A global community of practitioners operating on the basis of think-tank environment will cooperate in multidisciplinary activities and promote meetings of dialogue.
- e) The project supports EU-wide decision-making in ensuring fair access to repurposed medicines.

The coordinator at the UL FFA is **Prof. Dr. Rok Dreu**.

ERASMUS+ ADVANCE

Projekt Erasmus+ ADVANCE je evropski izobraževalni projekt. Osnovan je na tristopenjskem učnem programu s področja naprednih zdravil (ATMP) in bo vseboval: 1) spletne tečaje, 2) spletne seminarje ter 3) praktični enotedenski delavnici. UL FFA je z italijanskim inštitutom za zdravje (Istituto Superiore di Sanita – ISS) zadolžena za sodelovanje pri pripravi učnega načrta ter izvedbo delavnic. Vsaka delavnica je sprejela do 30 slušateljev. Udeleženci programa so med izobraževanjem prejeli potrdila, s pomočjo katerih so dokazovali ekspertizo s področja ATMP. Program je namenjen študentom in znanstvenikom s širšega področja biomedicine, ki na začetku svoje kariere želijo pridobiti specifična znanja in kompetence za spopadanje z izzivi pri razvoju, izdelavi, trženju in uporabi ATMP. Koordinator projekta je EATRIS ERIC, Nizozemska, kot partnerji pa poleg UL FFA sodelujejo še: Istituto Superiore di Sanita, Italija; Universite Libre de Bruxelles, Belgija; Elevate, Nizozemska; KU Leuven, Belgija in Takis SRL, Italija. Koordinatorica na UL FFA je **prof. dr. Irena Mlinarič-Raščan**.

DOMINOS - Digital Osce for Medical specialities - InnOvatlon for Students (K2)

Projekt DOMINOS predstavlja mednarodni, multidisciplinarni Erasmus+ projekt na področju digitalne preobrazbe izobraževanja z namenom izgradnje objektivnega, strukturiranega, kliničnega vrednotenja OSCE v e-okolju. V okviru projekta sodelujejo pedagogi, ki delujejo v okviru študijskih programov medicine, dentalne medicine in farmacije. Na projektu z Univerze v Ljubljani sodelujeta Medicinska fakulteta, odgovorni raziskovalki sta asist. dr. Vesna Homar in asist. Lucija Strmšek, in Fakulteta za farmacijo. Koordinator na UL FFA je **prof. dr. Mitja Kos**.

ERASMUS+ ADVANCE

The Erasmus+ ADVANCE project is a European educational project. It is based on a three-stage curriculum in the field of advanced medicines (ATMP) and will include: 1) web courses, 2) webinars and 3) a practical one-week workshop. The UL FFA is responsible for participating in the preparation of the curriculum and carrying out workshops with the Italian Institute of Health (ISS). Each workshop had up to 30 listeners. During training, participants received certificates demonstrating ATMP expertise. The programme is aimed at students and scientists from the broader field of biomedicine who wish to acquire specific knowledge and competences at the beginning of their careers to meet the challenges of developing, manufacturing, marketing and using ATMP. The project coordinator is EATRIS ERIC, the Netherlands, and in addition to UL FFA partners include: Istituto Superiore di Sanita, Italy; Universite Libre de Bruxelles, Belgium; Elevate, Netherlands; KU Leuven, Belgium and Takis SRL, Italy. The coordinator at the UL FFA is **Prof. Dr. Irena Mlinarič-Raščan**.

DOMINOS - Digital Osce for Medical specialities - InnOvatlon for Students (K2)

THE DOMINOS project represents an international, multidisciplinary Erasmus+ project in the field of digital transformation of education with a view to building an objective, structured, clinical evaluation of OSCE in an e-environment. The project involves educators working in the framework of medical, dental medicine and pharmacy study programmes. In the project on behalf of the University of Ljubljana The Faculty of Medicine is involved with responsible researchers Asist. Prof. Dr. Vesna Homar and Asist. Lucija Strmšek, and the Faculty of Pharmacy. The coordinator at the UL FFA is **Prof. Dr. Mitja Kos**.

OEMONOM

»Open access Educational Materials on Naturally Occurring Molecules – sources, biological activity and use« je projekt Erasmus+. Glavni cilj projekta je pripraviti gradiva o pozitivnih in negativnih učinkih naravnih spojin oz. rastlin, v katerih se nahajajo in se uporabljajo za več različnih indikacij (okužbe, menopavza in ginekološke težave, benigna hiperplazija prostate, kašelj, bolezni srca in ožilja, centralnega živčnega sistema ter kože in motnje prebavil), v skladu z najnovejšimi znanstvenimi dokazi. Pripravljena gradiva bodo na voljo za delo v spletnih učilnicah za študente, prav tako pa bodo objavljena v strokovnih in laičnih revijah. Koordinator projekta je izr. prof. dr. Prěmysl Mladěnka, Fakulteta za farmacijo na Univerzi Charles, Hradec Králové. Koordinatorica projekta na UL FFA je **prof. dr. Marija Sollner Dolenc**.

DRUGI EU PROJEKTI

BILATERALNI PROJEKTI

UL FFA je imela v letu 2022 vzpostavljenih 12 bilateralnih projektov, kjer sodelujemo z akademskimi institucijami v naslednjih državah: Francija, Hrvaška, Kitajska, Litva, Madžarska, Turčija in ZDA.

CELSA

Univerza v Ljubljani je v skladu s podpisanim sporazumom z dne 12. maja 2016 članica združenja CELSA (*Central European Leuven Strategic Alliance*), v okviru katerega je bil januarja 2017 ustanovljen CELSA sklad. Odbor Razvojnega sklada Univerze v Ljubljani (RSUL) vsako leto sprejme proračun, v katerem namenja sredstva za sofinanciranje CELSA projektov. Na razpis CELSA sklada se lahko prijavijo raziskovalci in pedagogi zaposleni na Univerzi v Ljubljani. V

OEMONOM

»Open access Educational Materials on Naturally Occurring Molecules - sources, biological activity and use« is an Erasmus+ project. The main objective of the project is to prepare materials on the positive and negative effects of natural compounds or plants in which they are located, and which are used for several different indications (infections, menopause and gynaecological problems, benign prostatic hyperplasia, cough, cardiovascular disease, central nervous system and skin and gastrointestinal disorders), according to the latest scientific evidence. Materials prepared will be available for work in online classrooms for students and will be published in professional and lay journals. The project coordinator is the director of the Prof. Dr. Prěmysl Mladěnka, Faculty of Pharmacy, Charles University, Hradec Králové. The project coordinator at the UL FFA is **Prof. Dr. Marija Sollner Dolenc**.

OTHER EU PROJECTS

BILATERAL PROJECTS

In 2022 the Faculty of Pharmacy was involved in twelve bilateral projects, where cooperation was established with academic institutions in following countries: France, Croatia, China, Lithuania, Hungary, Turkey and United States of America.

CELSA

The University of Ljubljana is a member of Celsa (*Central European Leuven Strategic Alliance*) under which the CELSA Fund was established in January 2017, in accordance with the signed agreement of 12 May 2016. Every year, the Committee of the Development Fund of the University of Ljubljana (RSUL) adopts a budget allocating funds to co-finance CELSA projects. Researchers and educators at the University of Ljubljana can apply for the CELSA Fund. In

primeru odobrenega financiranja projekta CELSA je v roku treh let od začetka tega projekta projektni konzorcij dolžan pripraviti in oddati prijavo na katerikoli razpis programa Obzorje Evropa ali drugega evropskega raziskovalno-inovacijskega programa. Namen projektov CELSA je priprava skupne prijave na evropski razpis, ne samo sodelovanje pri prijavi, iz česar izhaja, da naj bi bila vsaj ena od univerz, KU Leuven ali UL, koordinator prijavljenega projekta. Projektno prijavo lahko odda le raziskovalec iz KU Leuvna preko njihovega internega spletnega portala.

Na UL FFA so trenutno aktivni trije projekti v okviru CELSE:

Projekt z naslovom: **»S proteinom G sklopljeni receptorji so dobro validirane tarče, saj nanje deluje ena tretjina vseh zdravil na tržišču«**. CCR7 je primer takšnega receptorja, ki pa je slabo raziskan kljub udeležnosti v številnih človeških boleznih (npr. rak, vnetne in imunske bolezni). Raziskovalci v projektu skušajo s pomočjo vrednotenja kemijske knjižnice, virtualnega rešetanja in optimizacije že znanih neselektivnih ligandov odkriti selektivni ligand za receptor CCR7. Modulacijo delovanja receptorja bomo potrdili z različnimi in vitro biološkimi testi. Vodja projekta na UL FFA je **prof. dr. Stanislav Gobec**.

Cilj projekta **»Generation of nanobodies against immunomodulating checkpoint receptors in glioblastoma tumor cells«** je pridobiti nanotelesa proti najpogostejše izraženim imunomodulacijskim receptorjem kontrolnih točk v tumorskih celicah glioblastoma. Raziskovalna skupina z UL (MF in FFA) bo obogatila, izolirala in okarakterizirala nova nanotelesa. Vodja projekta na UL FFA je **prof. dr. Robert Roškar**, na UL MF dr. Ivana Jovčevska.

Projekt 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

the case of approved CELSA project financing, within three years of the start of CELSA project in consideration, the project consortium shall be obliged to prepare and submit an application for any call for proposals from Horizon Europe or another European Research and Innovation Programme. Celsa projects are intended to prepare a joint application for a European calls, to participate in the application, meaning that at least one of the universities, KU Leuven or UL, should be the coordinator of the project declared. Only a researcher from KU Leuvna can submit a project application through their internal web portal.

Three CELSE projects are currently active at the UL FFA:

The project, titled: **»Protein G-clutched receptors are well-validated targets, as one-third of all medicines on the market work on them.«** CCR7 is an example of such a receptor, which is poorly studied despite its involvement in a number of human diseases (e.g. cancer, inflammatory and immune diseases). In the project, researchers are trying to detect a selective ligand for the CCR7 receptor by evaluating the chemical library, virtual grise and optimization of already known non-selective ligands. Modulation of receptor function will be confirmed by various in vitro biological tests. The project manager at the UL FFA is **Prof. Dr. Stanislav Gobec**.

The project **»Generation of nanobodies against immunomodulating checkpoint receptors and glioblastoma tumor cells«** aims to obtain nanobodies against the most commonly expressed immunomodulating receptors of checkpoints in glioblastoma tumor cells. The research team with UL (MF and FFA) will enrich, isolate and map new nanobodies. The project manager at the UL FFA is **Prof. Dr. Robert Roškar**, and at the UL MF Dr. Ivana Jovčevska.

The project, titled: **»The role of snoRNAs in the etiology of inflammatory bowel disease«**. Chronic inflammatory bowel disease (IBD) represents a group of progressive and debilitating diseases characterised by chronic inflammation

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 je prof. dr. Boris Rugelj.

CEEPUS

Novel diagnostic and therapeutic approaches to complex genetic disorders (CIII-HR-0611).

Projekt CEEPUS 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. Koordinatorica na UL FFA je **prof. dr. Janja Marc**.

PROJEKTI COST

COST - *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 ne financira izvajanja raziskav, temveč zagotavlja podporo raziskovalni dejavnosti s spodbujanjem mobilnosti v okviru COST akcij. Namen tovrstnih akcij je, da z inovativnimi, izvirnimi idejami, ki vodijo do novih konceptov in izdelkov prispevajo h krepitvi evropske raziskovalne in inovacijske zmogljivosti. COST akcije potekajo v obliki sestankov, delavnic, konferenc,

of the gut with poorly explained aetiology. The central objective of the proposed project is to find reliable diagnostic biological markers from the snoRNAs group with functional significance for IBD for future support at accurate diagnosis of disease, thus enabling early and effective treatment. Last but not least, the animal and cell models created in this project could be used to screen agents to detect new therapeutics for IBD. The project manager at THE FFA's UL is **Assoc Prof. Dr. Tomaž Bratkovič**, at the UL FKKT is Prof. Dr. Boris Rugelj.

CEEPUS

Novel diagnostics and therapeutic approaches to complex genetic disorders (CIII-HR-0611).

The CEEPUS project, a regional programme aims at establishing and promoting the mobility of students and professors between participating countries and is coordinated by the University of Zagreb. The project includes faculties from partner countries Austria, Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania, Slovakia, Slovenia, Serbia, Albania, Macedonia and Montenegro. The coordinator at the UL FFA is **Prof. Dr. Janja Marc**.

COST PROJECTS

COST - *European CO-operation in Science and Technology* is an intergovernmental framework for the cooperation of research organisations from different European countries in the field of science and technology, enabling the coordination of nationally funded research at European level by the research organisations themselves working in the same field and problem. COST does not fund the implementation of research but provides support for research activity by promoting mobility under COST actions. The purpose of such actions is to contribute to strengthening European research and innovation capacities through innovative, original ideas leading to new concepts and products.

šol za usposabljanje, kratkoročnih znanstvenih misij in različnih dejavnosti razširjanja rezultatov raziskovalnega dela. Vanje se lahko vključijo raziskovalci na vseh stopnjah raziskovalne kariere. Pridružijo se jim lahko raziskovalci iz univerz, javnih in zasebnih raziskovalnih ustanov kot tudi iz nevladnih organizacij, industrije ter malih in srednje velikih podjetij. Na javni razpis v okviru COST se lahko prijavijo raziskovalci iz celotne Evrope. Raziskovalci se lahko priključijo tudi obstoječi COST akciji ali se vključijo v njihove dejavnosti kot člani delovnih skupin.

UL FFA je v letu 2022 sodelovala v 11 projektih COST.

PROJEKTI ESRR

RAZISKOVALCI NA ZAČETKU KARIERE 2.1

Namen projekta je vzpostaviti povezavo med raziskovalnim in podjetniškim okoljem, kjer je povezovalni člen raziskovalec na začetku kariere.

Cilji projekta so:

- spodbuditi izvedbo neodvisnih raziskav (raziskovalnih projektov) raziskovalnih organizacij v okviru učinkovitega sodelovanja z gospodarstvom (z gospodarskimi subjekti). Neodvisne raziskave za več znanja in boljše razumevanje so izvedene v splošno korist in za potrebe gospodarstva kot celote, ne pa posameznega sodelujočega gospodarskega subjekta;
- spodbuditi raziskovalne aktivnosti raziskovalcev na začetku kariere v okviru raziskovalnih organizacij in z učinkovitim sodelovanjem tudi njihovo povezovanje z gospodarstvom, pri čemer se rezultati sodelovanja splošno, obsežno in nediskriminatorno razširjajo in se kakršne koli pravice intelektualne lastnine, ki izhajajo iz dejavnosti raziskovalne organizacije, v celoti pripišejo raziskovalni organizaciji;
- okrepiti povezovanje med akademsko sfero in gospo-

COST actions take the form of meetings, workshops, conferences, training schools, short-term scientific missions and various activities to disseminate the results of research work. Researchers at all stages of their research careers can participate in COST actions. They can be joined by researchers from universities, public and private research institutions, as well as from NGOs, industry and small and medium-sized enterprises. Researchers from all over Europe can apply for a COST call. Researchers can also join existing COST campaigns or engage in activities as members of working groups.

UL FFA participated in 11 COST projects in 2022.

ESRR PROJECTS

EARLY CAREER RESEARCHERS 2.1

The purpose of the project is to establish a link between the research and entrepreneurial environment, where the connecting link is the researcher at the beginning of his career.

The goals of the project are:

- encourage the implementation of independent research (research projects) of research organizations in the framework of effective cooperation with the economy (economic entities). Independent research for more knowledge and better understanding is carried out for the general benefit and for the needs of the economy as a whole, rather than the individual participating economic entities;
- encourage research activities of researchers at the beginning of their careers within research organisations and through effective cooperation, integration into the economy, with the results of the cooperation disseminated in a general, comprehensive and non-discriminatory fashion and fully enforcing attribution of any intellectual property rights arising from the research organisation's activities to the research organisation;

- darstvom ter hkrati krepiti raziskovalni potencial institucij znanja in razvojno naravnanih gospodarskih subjektov;
- prenos znanja in dobrih praks iz tujine, ki bodo imele vpliv na RRI.
 - Na UL FFA sta v okviru projekta za 3 leta zaposlena 2 raziskovalca:
 - dr. Aljoša Bolje, z naslovom operacije: »Strukturna karakterizacija proteinov v trdnih farmacevtskih oblikah« v sodelovanju z Lekom d. d. in
 - dr. Eva Kranjc, z naslovom operacije: »Razvoj in vpeljava naprednih analitskih pristopov, ki temeljijo na kvantitativni uporabi masne spektrometrije med razvojem biofarmacevtskih učinkovin« v sodelovanju z Lekom d. d.

Gostujoči tuji strokovnjaki Univerze v Ljubljani (GTS)

V okviru projekta »Krajša in daljša gostovanja tujih strokovnjakov in visokošolskih učiteljev na slovenskih visokošolskih zavodih v obdobju 2019–2022« in projekta ORBIS smo na Fakulteti za farmacijo v letu 2022 gostili tuje visokošolske učitelje, raziskovalce in strokovnjake:

• raziskovalno delo:

- Davida Ciszak: 1. 3.–10. 4. 2022;
- Arkadinsz Heyduk: 1. 3.–22. 3. 2022;
- Karolina Nowak: 3. 5.–3. 8. 2022;
- Nicolas Marie: 1. 6.–30. 6. 2022;
- Anja Sadžak: 6. 6.–10. 6. 2022;

• pedagoško sodelovanje:

- Anna Froelich, Tomasz Osmalek in Emilia Jakubowska: 3. 4.–9. 4. 2022;
- Zerrin Sezgin Bayindir: 8. 5.–13. 5. 2022;
- Andrea Hulina Tomašković, Ema Ruszova, Jasmina Ivanišević, Jelena Kotur-Stevuljević in Edina Vranič, 12. 9.–16. 9. 2022.

• Druga gostovanja v projektih (ORBIS):

- Vít Zvoniček: 3. 4.–2. 6. 2022;
- Erika Hrinova: 1. 6.–31. 8. 2022;
- Božena Raducha in prof. dr. Janina Lulek: 23. 3.–24. 3. 2022.

- strengthening the integration between the academic sphere and the economy, while enhancing the research potential of knowledge institutions and development-oriented economic entities;
- transfer of knowledge and good practices from abroad that will have an impact on RDI.
- The UL FFA has employed 2 researchers for the duration of 3 years:
 - Dr. Aljoša Bolje participates in an operation entitled: "Structural characterization of proteins in solid pharmaceutical forms" in cooperation with Lek d. d. and
 - Dr. Eva Kranjc participates in an operation entitled "Development and introduction of advanced analytical approaches based on the quantitative use of mass spectrometry during the development of biopharmaceuticals" in cooperation with Lek d. d.

Visiting foreign experts from the University of Ljubljana (GTS)

Within the framework of the project "Shorter and longer visits of foreign professionals and higher education teachers at Slovenian higher education institutions in the period 2019-2022" and the ORBIS project, in 2022 following foreign higher education teachers, researchers and experts were hosted:

• Research activities:

- Davida Ciszak: 1. 3. - 10. 4. 2022;
- Arkadinsz Heyduk: 1. 3. - 22. 3. 2022;
- Karolina Nowak: 3. 5. - 3. 8. 2022;
- Nicolas Marie: 1. 6. - 30. 6. 2022;
- Anja Sadžak: 6. 6. - 10. 6. 2022;

• Educational cooperation:

- Anna Froelich, Tomasz Osmalek in Emilia Jakubowska: 3. 4. - 9. 4. 2022;
- Zerrin Sezgin Bayindir: 8. 5. - 13. 5. 2022;
- Andrea Hulina Tomašković, Ema Ruszova, Jasmina Ivanišević, Jelena Kotur-Stevuljević in Edina Vranič, 12. 9. - 16. 9. 2022.

• **Other visits in projects (ORBIS):**

- Vít Zvoníček: 3. 4. - 2. 6. 2022;

- Erika Hrinova: 1. 6. - 31. 8. 2022;

- Božena Raducha in prof. dr. Janina Lulek: 23. 3. - 24. 3. 2022.

DRUGI MEDNARODNI PROJEKTI

Mednarodni projekt RiskAwareTTS o varnosti vektorskih cepiv proti SARS-CoV-2, ki ga UL FFA izvaja za Evropsko agencijo za zdravila.

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**.

Mednarodni projekt IMPACT o vključevanju novih varnostnih informacij v klinične smernice, ki ga UL FFA izvaja za Evropsko agencijo za zdravila.

V okviru projekta IMPACT proučujemo vključevanje novih varnostnih informacij, ki nastajajo v okviru regulatornih postopkov, klinične prakse in raziskav, v klinične smernice zdravljenja. 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

The International RiskAwareTTS project on the safety of vector vaccines against SARS-CoV-2 by the UL FFA for the European Medicines Agency

The RiskAwareTTS project examines the impact of regulatory decisions and recommendations related to the risk of thrombosis syndrome with thrombocytopenia when vaccinated with SARS-CoV-2 adenovirus vector vaccines. We investigate awareness and knowledge of the risk of complications among both healthcare professionals and the general public and how the latter has affected attitudes towards vaccination with selected vaccines. The Chair of Social Pharmacy, UL FFA participates in a consortium of partners from six countries conducting the research for the European Medicines Agency (EMA). The project manager at the UL FFA is **Prof. Dr. Mitja Kos**.

International IMPACT project on the inclusion of new safety information in clinical guidelines implemented by the UL FFA for the European Medicines Agency

The IMPACT project examines the integration of new safety information generated through regulatory procedures, clinical practice and research into clinical treatment guidelines. The Chair of Social Pharmacy, UL FFA participates in a consortium of partners from six countries carrying out the research for the European Medicines Agency (EMA). The project manager at the UL FFA is **Prof. Dr. Mitja Kos**.

PRENOS ZNANJA IN SODELOVANJE Z OKOLJEM

Podelitev 52. Krkinih nagrad

Družba Krka je 21. 10. 2022 že 52. podelila Krkine nagrade za dodiplomska in podiplomska raziskovalna dela, s katerimi spodbuja raziskovalno delo med dijaki in študenti. Nagrado so podelili 31 mladim raziskovalcem, pet jih je prejelo veliko Krkino nagrado za raziskovalno delo. Izjemno ponosni smo, da vseh pet prejemnic oz. prejemnikov velike nagrade prihaja z Univerze v Ljubljani, med njimi so tri doktorandke, ki so zaposlene na Fakulteti za farmacijo. Za mlade znanstvenike so Krkine nagrade dodatna priložnost, ki jim pomaga, da jih v podjetjih in znanstvenih institucijah prepoznajo in jim omogočijo razvoj v odlične strokovnjake, ki bodo s svojim delom uspeli v gospodarstvu ali v znanstvenoraziskovalnih ter izobraževalnih ustanovah.

Tri sodelavke UL FFA so prejemnice velike Krkine nagrade za raziskovalno delo 2022:

dr. Maja Bjelošević Žiberna

(mentorica izr. prof. dr. Pegi Ahlin Grabnar)

Dr. Majo Bjelošević Žiberna je med dodiplomskim študijem na Fakulteti za farmacijo znanost tako pritegnila, da je nadaljevala z magistrskim študijem industrijske farmacije. Po dobrem letu dela na Katedri za farmacevtsko tehnologijo, kjer je tudi zaposlena, se je vpisala na doktorski študijski program Biomedicina, smer farmacija in ga uspešno zaključila. Njeno raziskovanje je usmerjeno v razvoj in vrednotenje formulacij z biološkimi zdravilnimi učinkovinami.

dr. Ana Dolšak

(mentorja izr. prof. dr. Matej Sova in izr. prof. dr. Urban Švajger)

KNOWLEDGE TRANSFER AND COOPERATION WITH THE ENVIRONMENT

Presentation of the 52nd Krka Awards

Krka has awarded 52nd Krka prizes for undergraduate and postgraduate research work to promote research work among students on 21. 10. 2022. The prize was awarded to 31 young researchers, five of which received the Great Krka Prize for research work. It gives us great pride that all five recipients of the grand prize come from the University of Ljubljana, among them three PhDs employed at the Faculty of Pharmacy. For young scientists Krka's prizes are an additional opportunity to help them stand out for a variety of companies and scientific institutions and to enable them to develop into excellent professionals, who will succeed in the industry or in scientific research and educational institutions.

Three UL FFA colleagues receive The Great Krka Prize for Research Work 2022

Dr. Maja Bjelošević Žiberna

Under the mentorship of Assoc. Prof. Dr. Pegi Ahlin Grabnar

Dr. Majo Bjelošević Žiberna was so interested in her undergraduate studies at the Faculty of Pharmacy that she continued her master's degree in industrial pharmacy. After being employed for more than a year at the Department of Pharmaceutical Technology, she enrolled in the Doctoral Study Programme Biomedicine, a pharmacological course and completed it successfully. His research focuses on the development and evaluation of formulations with biological active substances.

Dr. Ana Dolšak

Under the mentorship of Assoc. Prof. Dr. Matej Sova and Assoc. Prof. Dr. Urban Švajger

Dr. Ana Dolšak se je že med študijem na Fakulteti za farmacijo vključila v raziskovalno delo na Katedri za farmacevtsko kemijo. Tu je kot mlada raziskovalka nadaljevala doktorski študij na področju Biomedicine, smer farmacija, trenutno je na katedri zaposlena kot raziskovalka. Deluje na področju farmacevtske kemije, kjer se ukvarja z razvojem imunomodulatorjev, spojin, ki so sposobne uravnati delovanje imunskega sistema.

dr. Tina Vida Plavec

(mentorja: izr. prof. dr. Aleš Berlec, prof. dr. Borut Štrukelj)

Dr. Tina Vida Plavec je v zadnjem letniku študija na Fakulteti za farmacijo navdušilo hitro razvijajoče se področje biotehnologije. Magistrski študij je nadgradila z doktorskim študijem biomedicine, smer farmacija, na Odseku za biotehnologijo v okviru Instituta Jožef Stefan, kjer je zaposlena kot raziskovalka. Ob raziskovalnem delu se kot asistentka na Fakulteti za farmacijo posveča tudi pedagoškemu delu.

During her studies at the Faculty of Pharmacy, Dr. Ana Dolšak was involved in research work at the Department of Pharmaceutical Chemistry. As a young researcher she continued her doctoral studies in Biomedicine, majoring in Pharmacology, and is currently employed as a researcher. She works in the field of pharmaceutical chemistry, where she deals with the development of immunomodulators, compounds that are able to regulate the functioning of the immune system.

Dr. Tina Vida Plavec

Under the mentorship of Assoc. Prof. Dr. Aleš Berlec and Prof. Dr. Borut Štrukelj

Dr. Tina Vida Plavec was impressed by the rapidly evolving field of biotechnology in her final year of studies at the Faculty of Pharmacy. She upgraded her master's degree with her doctoral studies in Biomedicine, a pharmacy course, at the Department of Biotechnology at the Jožef Stefan Institute, where she works as a researcher. Besides research work she is also dedicated to her pedagogical work as an Assistant at the Faculty of Pharmacy.



Slika: Prejemniki Krkinih nagrad za leto 2022 / Photo: Recipients of Krka awards for the year 2022, Vir: arhiv Krke, d. d., Novo mesto.

EATRIS PLUS delavnica: Building strong partnerships between industry and academia

Septembra 2022 se je v okviru evropskega projekta H2020 EATRIS PLUS v soorganizaciji UL FFA, Biocat (Barcelona, Španija) in EATRIS (Amsterdam, Nizozemska) odvijala mednarodna dvodnevna delavnica »Building strong partnerships between industry and academia«. Delavnica je potekala na temo javno-zasebnega partnerstva. Na njej so se udeleženci praktično seznanili s ključnimi izzivi sodelovanja med podjetji in akademsko-raziskovalno sfero. Izkušnje so delili predstavniki malih in srednje velikih biotehnoških podjetij (SME), raziskovalnih konzorcijev in pisarn za prenos znanja.

Spletni festival UNI.MINDS 2022

Največji slovenski spletni festival za grajenje inovacijske skupnosti in dolgoročnih partnerstev med akademsko sfero in gospodarstvom je potekal med 8. in 10. novembrom 2022.

Odprtje festivala UNI.MINDS 2022 je potekalo v motivacijskem slogu: predstavitev pomembnosti sodelovanja med univerzami in podjetji, nato je sledil vpogled v različne možnosti financiranja na področju »deep-tech« inovacij. Prvi dan festivala se je zaključil z dogodkom Novartis v Sloveniji: dan raziskovalcev.

Drugi in tretji dan so bile vsebine razdeljene po tematikah: hrana, zdravje, podnebje ter proizvodnja, surovine in urbana mobilnost. Mednarodno uveljavljeni strokovnjaki so predstavili svetovne trende posameznega področja, sledile so panelne razprave, interaktivni pogovori oz. »fireside chats« med slovenskimi strokovnjaki iz gospodarske in akademske sfere ter odločevalci.

Celoten program je omogočil vpogled v tehnologije in ekspertize raziskovalcev Univerze v Ljubljani, Univerze v

EATRIS-Plus Workshop: Building strong partnerships between industry and academia

In September 2022, an international two-day workshop "Building strong partnerships between industry and academia" was held under the European project H2020 EATRIS-Plus, co-organised by the UL FFA, Biocat (Barcelona, Spain) and EATRIS (Amsterdam, Netherlands). The workshop was held on the topic of public-private partnerships. It offered participants to practically experience the key challenges of cooperation between companies and the academic and research field. Experience was shared by representatives of small and medium-sized biotech companies (SME), research consortia and knowledge transfer offices.

UNI.MINDS 2022 online festival

The largest Slovenian online festival for building an innovation community and long-term partnerships between the academic sphere and the industry took place between 8 and 10 November 2022.

The opening of the UNI MINDS Festival 2022 took place in a motivational style: a demonstration of the importance of cooperation between universities and businesses, followed by an insight into various funding opportunities in the field of deep-tech innovation. The first day of the festival ended with the Novartis event in Slovenia: The Day of Researchers.

On the second and third day the contents were coupled by theme: food, health, climate and production, raw materials and urban mobility. Internationally established experts presented global trends in each field, this was followed by panel discussions, interactive conversations or "fireside chats" between Slovenian experts from the industry and academic sphere and selectors.

The entire programme provided an insight into the technologies and expertise of researchers from the University

Mariboru in Univerze na Primorskem. Predstavljene so bile dobre prakse sodelovanja z lokalnimi predstavniki EIT mreže in razmišljanja o boljši sistemski podpori inovacijam.

Inovacijski sklad Univerze v Ljubljani

Pomemben pogoj za uspešno komercializacijo izumov so dolgoročna partnerstva z gospodarstvom in sposobnost preverjanja delovanja idej znotraj Univerze. Namen razpisa Inovacijskega sklada UL je podpreti obetavne projekte in jim pomagati doseči višjo stopnjo tehnološke pripravljenosti in s tem povečati privlačnost tehnologij za potencialne kupce. UL je vzpostavila sklad za lajšanje komercializacije tehnologij in z njim omogoča ekipam, ki na UL razvijajo inovativne rešitve, da te približajo industrijskim partnerjem oz. trgu.

Aktivna projekta, financirana iz Inovacijskega sklada UL v letu 2022, sta:

- projekt z naslovom »**Razvoj zdravil za zdravljenje kognitivnih motenj pri psih**«, ki ga razvija ekipa Fakultete za farmacijo: prof. dr. Stanislav Gobec, asist. dr. Urban Košak in doc. dr. Damijan Knez in
- projekt z naslovom »**Širokospektralne protibakterijske učinkovine**«, ki ga razvijata prof. dr. Marko Anderluh in doc. dr. Martina Hrast.

of Ljubljana, the University of Maribor and the University of Primorska. Good cooperation practices with local EIT network representatives and reflections on better systemic support for innovation have been presented.

Innovation Fund of the University of Ljubljana

A necessary condition for the successful commercialisation of inventions are long-term partnerships with the economy and the ability to verify the functioning of ideas within the University. The UL Innovation Fund call aims to support promising projects and help them achieve a higher level of technological readiness, thus making technologies more attractive to potential buyers. UL has set up a fund to facilitate the commercialisation of technologies, enabling teams developing innovative solutions at the UL to bring those closer to industrial partners or the market.

Active projects funded by the UL Innovation Fund in 2022:

- project entitled "**Development of medicines for the treatment of cognitive disorders in dogs**", developed by the team of the Faculty of Pharmacy Prof. Dr. Stanislav Gobec, Assist. dr. Urban Košak and Assist. Prof. Dr. Damijan Knez, and
- a project entitled "**Broad-spectrum Antibacterial Agents**", developed by Prof. Dr. Marko Anderluh and Assist. Prof. Dr. Martina Hrast.

IZUMI, INTELEKTUALNA LASTNINA

Fakulteta za farmacijo je v letu 2022 vložila pet mednarodnih patentnih prijav in tako nadaljevala s prakso inovacijske dejavnosti, saj je izsledke svojih raziskav v sodelovanju s Pisarno za prenos znanja na UL zaščitila z vložitvijo petih mednarodnih patentnih prijav. Patentne prijave so vložene na različnih področjih farmacevtskih znanosti, tudi na področju boja proti bolezni COVID-19.

Prof. dr. Lucija Peterlin Mašič, Špela Gubič, izr. prof. dr. Tihomir Tomašič so vložili patentno prijavo z naslovom »Mitochondriotropic heteroaryl benzamide potassium channel KV1.3 inhibitors«.

Prof. dr. Lucija Peterlin Mašič, Špela Gubič, izr. prof. dr. Tihomir Tomašič so vložili patentno prijavo z naslovom »Heteroaryl benzamide potassium channel KV1.3 inhibitors«.

Prof. dr. Stanislav Gobec in doc. dr. Damijan Knez sta vložila patentno prijavo z naslovom »Quinolin-2-yl nitrones for the prevention and treatment of neurodegenerative diseases«.

Prof. dr. Stanislav Gobec, doc. dr. Damijan Knez in Anže Meden so vložili patentno prijavo z naslovom »N,N-dialkyl-4-(2-ethylindan-2-yl)-1H-imidazole-1-carboxamides and related compounds for treatment of neurodegenerative diseases«.

Blaž Grilc, asist. dr. Maja Bjelošević, prof. dr. Robert Roškar, Nika Osel, prof. dr. Albin Kristl in prof. dr. Mirjana Gašperlin so vložili patentno prijavo z naslovom »Enteric-coated particles containing lactoferrin« / »Farmacevtska formulacija z laktoferinom za ohranjanje zdravega ravno-vesja črevesne mikrobiote«.

INNOVATIONS AND INVENTIONS

In 2022 the Faculty of Pharmacy filed five international patent applications, thus continuing the practice of innovation activity, as it protected the results of its research in cooperation with the UL's Knowledge Transfer Office by filing five international patent applications. Patent applications are filed in various fields of pharmaceutical science, including in the field of combating COVID-19 disease.

Prof. Dr. Lucija Peterlin Mašič, Špela Gubič, Assoc. Prof. Dr. Tihomir Tomašič filed a patent application entitled "Mitochondriotropic heteroaryl benzamide potassium channel KV1.3 inhibitors".

Prof. Dr. Lucija Peterlin Mašič, Špela Gubič, Assoc. Prof. Dr. Tihomir Tomašič filed a patent application entitled "Heteroaryl benzamide potassium channel KV1.3 inhibitors".

Prof. Dr. Stanislav Gobec and Assist. Prof. Dr. Damijan Knez filed a patent application entitled 'Quinolin-2-yl nitrones for the prevention and treatment of neurodegenerative diseases'.

Prof. Dr. Stanislav Gobec, Assist. Prof. Dr. Damijan Knez and Anže Meden filed a patent application entitled 'N,N-dialkyl-4-(2-ethylindan-2-yl)-1H-imidazole-1-carboxamides and related compounds for treatment of neurodegenerative diseases'.

Blaž Grilc, Assist. Dr. Maja Bjelošević, Prof. Dr. Robert Roškar, Nika Osel, Prof. Dr. Albin Kristl and Prof. Dr. Mirjana Gašperlin filed a patent application entitled "Enteric-coated particles containing lactoferrin"/ "Pharmaceutical formulation with lactoferin, to maintain a healthy balance of the gut microbiota".

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 in 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.

Mednarodni simpozij iz farmakometrike: Od tu do kam?

Univerza v Ljubljani, Fakulteta za farmacijo je organizirala mednarodni simpozij farmakokinetike z namenom, da se predstavi, kako farmakometrika prispeva k razvoju zdravil, individualizaciji in optimizaciji zdravljenja ter regulativnih odločitvah. Z govorci iz akademskega sveta, industrije in regulativnih organov je dogodek pokrival širok nabor vlog farmakometrike in je zagotovil multidisciplinarno predstavitev uporabe različnih matematičnih in statističnih modelov, ki običajno opisujejo razmerje med izpostavljenostjo zdravilu (ali farmakokinetiko) in odzivom na zdravilo (ali farmakodinamiko) za želene in neželene učinke ter značilnostmi posameznih bolnikov.

Mednarodna poletna šola CEEPUS 2022

Od 20. do 25. julija 2022 je v Portorožu potekala 7. mednarodna poletna šola CEEPUS, ki jo je organizirala CEEPUS mreža SI-0611: »Novel diagnostic and therapeutic approaches to complex genetic disorders« v sodelovanju

PERFORMANCE IN THE PROFESSION

- Participation in bodies outside the UL (ministries, domestic and international organisations).
- Editorial boards (more than 30 editorials of national and international journals).
- Public appearances (TV and radio interviews and contributions).
- Lifelong education and training - constant transfer of knowledge into the profession (LBM courses, training for pharmacists, summer schools, international schools ...).
- Professional development in the field of pharmacy.
- Direct projects (expertise, opinions) for partners from the public and industry.

International Pharmacometrics Symposium: From Here to Where?

The University of Ljubljana, Faculty of Pharmacy has organized an international symposium of pharmacokinetics to present how pharmacometry contributes to drug development, individualization and optimisation of treatment and regulatory decisions. With speakers from academia, industry and regulatory authorities, the event covered a wide range of pharmacometry roles and provided a multidisciplinary representation of the use of different mathematical and statistical models, which typically describe the relationship between drug exposure (or pharmacokinetics), drug response (or pharmacodynamics) for the desired and adverse effects to and characteristics of individual patients.

CEEPUS International Summer School 2022

From 20 to 25 July 2022, the 7th International CEEPUS Summer School was held in Portorož, organised by CEEPUS network SI-0611: "Novel diagnostic and therapeutic approaches to complex genetic disorders" in cooperation

z Univerzo v Ljubljani, Fakulteto za farmacijo. Sodelovalo je 54 udeležencev iz 7 držav: Slovenije, Hrvaške, Bosne in Hercegovine, Srbije, Češke, Slovaške in Japonske. Glavna tema poletne šole so bile tekočinske biopsije.

Poletna šola: Kozmetologija danes in jutri

V okviru univerzitetnega študijskega programa Kozmetologija na UL FFA so študenti spoznali strokovne vsebine s področja razvoja, proizvodnje in vrednotenja kozmetičnih izdelkov. Poletna šola »Kozmetologija danes in jutri« znotraj razpisa »Pridobivanje praktičnih kompetenc študentov 1. in 2. stopnje v sodelovanju z okoljem«, je še dodatno prispevala k izpopolnitvi njihovih kompetenc z vidika aplikativnih predavanj strokovnjakov iz domače industrije in praktičnega dela v laboratoriju. Obenem pa dogodek predstavlja priložnost za pridobivanje vpogleda na področje kozmetologije tudi za študente/ke ostalih študijskih programov Univerze v Ljubljani.

with the University of Ljubljana, Faculty of Pharmacy. Total of 54 participants from 7 countries partook in the event: Slovenia, Croatia, Bosnia and Herzegovina, Serbia, the Czech Republic, Slovakia and Japan. The main theme of summer school was liquid biopsies.

Summer School: Cosmetology Today and Tomorrow

As part of the university study programme Cosmetology at the UL FFA the students learned about professional topics from the field of development, production and evaluation of cosmetic products. The summer school "Cosmetology today and tomorrow" within the call "Acquiring practical competences of students of 1st and 2nd level in cooperation with the environment" further contributed to the improvement of their competences in terms of applied lectures by experts in domestic industry and practical work in the laboratory. Simultaneously, the event presented an opportunity to gain insight into the field of cosmetology also for the students from other study programmes of the University of Ljubljana.

MEDNARODNA DEJAVNOST

Na UL FFA se je v letu 2021/22 število študentskih izmenjav na vseh študijskih programih povečevalo. Bistveno se je povečalo tudi število izmenjav učiteljev, raziskovalcev in administrativnih sodelavcev v študijskem letu 2021/22.

Naši cilji so še vedno okrepiti izmenjave in sodelovanje znotraj partnerstev, doseči uravnotežen interes za izmenjave iz različnih partnerskih univerz po vsej Evropi, nadaljevati z ukrepi, ki vodijo v vrhunske pogoje študija, omogočiti kakovostno mobilnost čim večjemu številu študentov UL FFA in na tak način prispevati k nadgradnji splošnih kompetenc diplomantov.

INTERNATIONAL ACTIVITY

At the UL FFA the number of student exchanges in all study programmes increased in the year 21/22. Number of exchanges of teachers, researchers and administrative staff in the academic year 2021/22 also increased significantly.

Our goals are to increase exchanges and collaborations within partnerships to achieve a balanced interest in international exchanges from different partner universities across Europe, to continue with measures that create better study conditions and quality mobility for as many UL FFA students as possible and thereby contribute to general competencies of graduates.

PROGRAMI MOBILNOSTI

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 2021 smo potrdili interes vseh naših dosedanjih Erasmus+ partnerjev za podaljšanje sporazumov v EWP platformi za obdobje 2023–2027. Konec leta 2022 se je vzpostavila platforma UL, preko katere bomo v prihodnjem letu potrdili vse sporazume. 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-1113-00-2021 (Central European Knowledge Alliance for Teaching, Learning & Research in Pharmaceutical Technology). UL FFA je koordinator CEEPUS mreže CIII-SI-0611-10-2021 (Novel diagnostic and therapeutic approaches to complex genetic disorders). Študentje opravljajo izmenjave pogosto 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.

MOBILNOST V ŠTEVILKAH

Naši študenti na mednarodnih inštitucijah

60 študentov se je udeležilo mednarodne mobilnosti v okviru programa Erasmus+, od tega 48 za študij, 12 za praktično usposabljanje, od teh 4 diplomanti. Največ študentov je bilo na študijski izmenjavi v Nemčiji (9), v Španiji (7), na Češkem in Portugalskem (6), v Belgiji, Finski, Franciji in Italiji (3), v Švici in Estoniji (2) ter v Norveški, Hrvaški in Poljski (1). 27 študentov je opravilo krajšo mobilnost za praktično usposabljanje v trajanju do 1 meseca v okviru IPSF.

MOBILITY PROGRAMMES

Under the Erasmus+ programme 67 interinstitutional agreements are signed at the UL FFA to provide approximately 160 places for student mobility, and 75 for staff mobility. In 2021 we confirmed the interest of all our current Erasmus partners in extending the agreements in the EWP platform for the period 2023-2027. At the end of 2022 the UL platform was established, through which we will confirm all agreements in the coming year.

Within the Central European Exchange Programme for University Studies - CEEPUS, we participate in two networks. The UL FFA is a partner in the CEEPUS network CIII-RS-1113-00-2021 (Central European Knowledge Alliance for Teaching, Learning & Research in Pharmaceutical Technology). The UL FFA is the coordinator of the CEEPUS network CIII-SI-0611-10-2021 (Novel diagnostic and therapeutic approaches to complex genetic disorders). Students also conduct mobilities within the framework of the International Pharmacy Students Association (IPSF) programme and the European Pharmacy Students Association (EPSA) programme. Student and staff exchanges also take place through other initiatives and funding mechanisms.

MOBILITY IN NUMBERS

Our students at international institutions

60 students took part in international mobility under the Erasmus + programme, among them 48 for the purpose of study, 12 for the purpose of practical training, 4 of them for the purpose of final thesis research. The most students were on study exchange in Germany (9), Spain (7), the Czech Republic and Portugal (6), Belgium, Finland, France and Italy (3), Switzerland and Estonia (2) and Norway, Croatia and Poland (1). 27 students completed short-term mobility for practical training lasting up to 1 month within IPSF.

Gostujoči študenti na UL FFA

72 mednarodnih študentov je opravilo del svojih študijskih obveznosti na UL FFA v okviru programa Erasmus+ (49 jih je opravljalo predmete, 18 samo raziskovalno delo za magistrsko nalogo in 5 raziskovalno delo v laboratoriju). 28 študentov je opravilo krajšo mobilnost za praktično usposabljanje v trajanju do 1 meseca v okviru IPSF.

Izmenjave učiteljev, raziskovalcev in administrativnih sodelavcev

V študijskem letu 2021/22 je na UL FFA gostovalo 24 mednarodnih znanstvenih delavcev in raziskovalnih sodelavcev, ki so sodelovali v pedagoškem in znanstveno-raziskovalnem procesu (10 za obdobje do 1 meseca in 14 za obdobje do 6 mesecev). V študijskem letu 2021/22 je bilo na izmenjavi v tujini 12 visokošolskih učiteljev ali znanstvenih sodelavcev za obdobje do 1 meseca, 3 so bili na gostovanju za obdobje do 6 mesecev, izmenjave se je udeležila tudi 1 administrativna delavka za obdobje do 1 meseca.

Visiting students at the UL FFA

72 international students completed part of their study obligations at the UL FFA within the Erasmus + programme (49 of them took courses, 18 performed research work for final thesis and 5 performed research internship in a laboratory). 28 students completed a short mobility for practical training lasting up to 1 month under the IPSF.

Exchanges of teachers, researchers and administrative staff

In the academic year 2021/22 the UL FFA hosted 24 international academic and research associates who participated in the teaching and scientific research process (10 for a period of up to 1 month and 14 for a period of up to 6 months). In the academic year 2021/22 there were 12 higher education teachers or researchers, who were on exchange abroad for a period of up to 1 month, 3 were abroad for a period of up to 6 months and 1 administrative worker also participated in the exchange for a period of up to 1 month.

KLJUČNI DOSEŽKI V LETU 2022

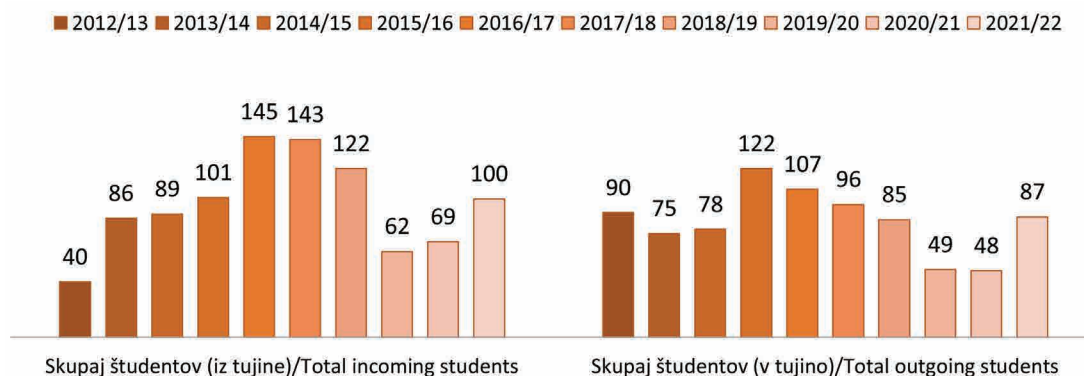
Potrdili smo interes vseh naših dosedanjih Erasmus+ partnerjev za podaljšanje sporazumov v EWP platformi za obdobje 2021–2027. V 2021/22 je mednarodnim študentom na voljo 15 učnih enot v angleškem jeziku. Na ta način želimo povečati interes in ustvariti boljše pogoje študija za mednarodne študente. Nadaljujemo z aktivnostmi za izvedbo študijskega programa S2 Industrijska farmacija v angleškem jeziku. Promocija in obveščanje študentov o izmenjavah sta potekali tako v živo kot tudi online.

KEY ACCHIVEMENTS IN 2022

We have confirmed the interest of all our current Erasmus partners in extending the agreements in the EWP platform for the period 2021-2027. In 2020/21 15 courses in English were available to international students. In this way we want to increase interest and create better study conditions for international students.

We continue with the activities for the implementation of the study programme S2 Industrial Pharmacy in English. Promotion and notification of students about exchanges took place both in person and online. Mobility Day, which combines the presentation of all international mobility options for the UL FFA students, from Erasmus exchanges to international congresses and internships within IPSF, was held online on December 13, 2021. The students also presented their recent experiences from Erasmus and IPSF exchanges.

MOBILNOST ŠTUDENTOV / STUDENT MOBILITY



Število študentov UL FFA na izmenjavi v tujini in število mednarodnih študentov na izmenjavi na UL FFA (zadnjih deset študijskih let).
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 ten 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, skozi svoj obstoj pa se je uveljavil kot zelo konstruktiven sogovornik pri vprašanjih, vezanih na študijski proces in kakovost UL FFA. Ena izmed mnogih nalog ŠS FFA je ustvarjanje ter oblikovanje mnenj o pedagoških delavcih, s čimer pa slednjim omogoča izvolitev v zahtevane nazive. ŠS FFA je uradni zastopnik študentov UL FFA na vseh organizacijskih nivojih in uspešno sodeluje v sklopu drugih organov fakultete (Senat, Upravni odbor, Komisija za študijsko področje, Akademski zbor, Komisija za kakovost). Svoje študente prav tako zastopa v okviru Univerze v Ljubljani na sejah ŠS UL.

EXTRACURRICULAR ACTIVITIES

The extracurricular opportunities at the Faculty of Pharmacy at the University of Ljubljana are specific and enable students a wide spectrum of work, both in professional areas and extracurricular activities and international engagements.

The Student Council of the Faculty of Pharmacy (ŠS FFA) is a student body of UL FFA. It has been successfully functioning for many years and has established itself as a very constructive contributor when it comes to questions regarding the study process and other wider qualities of the faculty. One of the many tasks of the Student Council is to produce and form objective opinions about the work of the teaching staff and therefore enabling them the possibility of election into the desired titles. It is the official representative of the faculty's students at all organisational levels, and it successfully collaborates

Poleg omenjenih nalog in aktivnosti je ŠS FFA 3. 10. 2022 že tretje 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**. V letošnjem letu je organiziral svoj prvi samostojni koncert v predzadnjem tednu decembra 2022 v prostorih fakultete.

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)** – preko slednjega 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 Inkubator inovativnosti, simpozij ŠSSFD, strokovni večeri in okrogle mize.

Študentska organizacija Fakultete za farmacijo (ŠOFFA) je ena izmed podružnic ŠOU v Ljubljani. Organizacija je tudi v letu 2022 organizirala različne dogodke, ki pomagajo študentom v prostem času bolje spoznati svoje sošolce in druge študente UL FFA ter ostalih članic UL.

Informativni dnevi

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

Spatula in Placebo

Spatula je glasilo Študentske sekcije Slovenskega farmacevtskega društva, s katerim se študente UL FFA seznanja

in other bodies of the faculty (Senate, Management Board, Commission of Study Affairs, Academic Assembly, Commission of Quality). It also represents its students on the university level at the sessions of the Student's Council of the University of Ljubljana (ŠS UL).

Apart from said functions, ŠS FFA successfully organised **Introductory day for 1st year students (UDB)** on the 3 October 2022 for a third year in a row. This event aims to facilitate the transition of first year students from secondary school into the university environment and familiarise them with UL FFA. Furthermore, ŠS FFA also established the **UL FFA Choir** in 2020, which had their first independent concert at the faculty in December 2022.

In addition to the Student Council there are a lot of other student entities at the faculty that also successfully continue their work. These include **The Slovenian Pharmacy Students' Society (DŠFS)**, **The Society of Pharmaceutical Studies students (DŠFV)** and **The Students' Section of the Slovenian Pharmaceutical Society (ŠSSFD)**. The latter enables our students to be actively involved in European and worldwide projects. Working with ŠS FFA and The Students' Organisation of the Faculty of Pharmacy, they successfully organised many professional work-related and social projects. These included Innovations Incubator, ŠSSFD Symposium and discussion panels.

The Students' Organisation of the Faculty of Pharmacy (ŠOFFA) is one of the many subsidiaries of The Students' Organisation of the University of Ljubljana (ŠOU). In 2022 they organised many events which helped our students to get to know each other better in their free time.

Information days

Our faculty students were actively involved in many presentations of the faculty, its study programmes, and extracurricular activities. These presentations took place at our annual informative events.

Spatula and Placebo

Spatula is the periodically published newsletter of the Students' section of the Slovenian Pharmaceutical Society,

o aktualnih obštudijskih dogodkih in novostih na področju farmacije, kozmetologije in laboratorijske biomedicine. Izhaja periodično. V letu 2022 je zaživela tudi strokovna revija Placebo, ki je bila v obliki strokovnih prispevkov posvečena temi avtoimunskih bolezni.

8. simpozij Študentske sekcije Slovenskega farmacevtskega društva: Spolno in reproduktivno zdravje

15. 10. 2022 se je na 8. simpoziju ŠSSFD zvrstilo šest predavanj strokovnjakov z različnih področij, ki so predavali o tematiki spolnega in reproduktivnega zdravja. Simpozij je potekal na Pravni fakulteti Univerze v Ljubljani, udeležilo pa se ga je okoli 150 študentov UL FFA.

Inkubator inovativnosti

Inkubator inovativnosti študentom UL FFA omogoča vpogled v delo farmacevta na področju marketinga. Inkubator inovativnosti 2022 je potekal med 11. in 13. 11. 2022. Pri izvedbi dogodka sta sodelovali farmacevtski podjetji Novo Nordisk in VIVIT Pharma. Sodelujoči študenti so delali v ekipah, ki so v drugem delu dogodka predstavile svoje rešitve zastavljenega problema podjetij s področja farmacevtskega marketinga.

Strokovni večer: Odpornost in prehranska dopolnila

Strokovni večer projekta InterAKCIJA je potekal 23. 11. 2022 v prostorih UL FFA. Okrog 100 udeležencev je poslušalo krajša predavanja treh strokovnjakov, ki jim je sledila okrogla miza. Udeleženci so se seznanili, kakšno vlogo imajo različni vitamini in zdravilne rastline pri imunskem odzivu.

Javne kampanje

Študenti so v letu 2022 organizirali in izvedli naslednje javne kampanje: Javna kampanja o darovanju organov, Javna kampanja projekta InterAKCIJA, Javna kampanja SPF.

through which the students of the Faculty of Pharmacy are informed about various extracurricular activities taking place and on the latest developments in the field of pharmacy, cosmetology and laboratory biomedicine. In 2022 Placebo, a peer-reviewed journal, was launched. The authors of the articles are students with experts from different fields as mentors. The first edition was dedicated to the topic of autoimmune diseases.

8th Symposium of the Student Section of the Slovenian Pharmaceutical Society: Sexual and Reproductive Health

On 15 October 2022, the 8th SSSFD Symposium featured six lectures by experts from various fields on the topic of sexual and reproductive health. The symposium took place at the Faculty of Law of the University of Ljubljana and was attended by around 150 UL FFA students.

Innovations Incubator

The Innovations Incubator gives UL FFA students an insight into a pharmacist's work in the marketing field. The Innovation Incubator 2022 took place between 11 and 13 November 2022 and was sponsored by Novo Nordisk and VIVIT Pharma. Participating students worked in teams, which presented their solutions to a problem posed by the two companies from pharmaceutical marketing in the second part of the event.

Expert evening: Resilience and dietary supplements

The InterACTION Expert Evening took place on 23.11.2022 at the UL FFA. Around 100 participants listened to short lectures by three experts, followed by a panel discussion. The participants learned about the role of different vitamins and medicinal plants in the immune response.

Public health campaigns

The students organised and implemented the following public campaigns in 2022: A public campaign on organ donation, a campaign for the InterACTION project, and a public campaign on SPF.

Humanitarna dejavnost

V letu 2022 sta potekala spomladanski in božični sejem, kjer 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.

Humanitarian activities

In 2022 the Spring and Christmas Bazaars were held, where students and employees of UL FFA could buy handmade cosmetic products, greeting cards and other gifts prepared by students. Proceeds were donated to a humanitarian organisation to help families in need.



Slika: Obštudijska dejavnost UL FFA / Photo: Extracurricular activities

ŠPORT NA UL FFA

SPORT AT UL FFA

ORGANIZACIJA ŠPORTNE VZGOJE NA UL FFA V LETU 2022

ORGANIZATION OF SPORTS EDUCATION AT UL FFA IN 2022

1. ŠPORTNE DEJAVNOSTI ZA ŠTUDENTE NA UL FFA

SPORTS ACTIVITIES FOR STUDENTS AT THE UL FFA

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

2. ŠTUDENTI S STATUSOM VRHUNSKEGA ŠPORTNKA 2022

STUDENTS WITH THE STATUS OF A TOP ATHLETE 2022

Rok Bergant – Vaterpolo / Water polo

Špela Berus – Košarka 3x3 / Basketball 3x3

Taja Dovjak – Twirling

Nina Drobnič – Alpsko smučanje / Alpine skiing

Sara Gradišek – Nogomet / Football

Lea Haler – Atletika / Athletics

Maj Janža – Atletika / Athletics

Anica Sedmak – Karate / Karate

Anja Mandeljč – Tek na smučeh / Cross-country skiing

Tina Topič - Odbojka / Volleyball

Laura Potisk – Karate / Karate

Nika Simšič – Rokomet / Handball

3. UNIVERZITETNA LIGAŠKA TEKMOVANJA – SESTAVA EKIP 2022

UNIVERSITY LEAGUE COMPETITIONS – TEAM 2022

ODBOJKA – ŽENSKE

VOLLEYBALL – WOMEN

Izza Rozman (kapetan)

Ema Kranjc

Mia Medved

Žana Županc

Taja Nataneč

Vesna Slatinek

Tina Topič

Tiana Jarnovič

Špela Pajer

Nuša Svetanič

Gaja Pušnik

Laura Šoba

Aleksandra Šoronda

Ajda Dedič

Ljubka Pavlova

Tina Bengez

Pia Berglez

Špela Morgen

ODBOJKA – MOŠKI
VOLLEYBALL – MEN

David Vuk (kapetan)
David Arnuš
Uroš Štuhec
Tit Jelenko
Matej Dragovan
Toni Travnik
Miha Rožič
Mihael Lebar
Jure Kuder
Lev Grabnar

DVORANSKI NOGOMET – MOŠKI
FUTSAL – MEN

Tilen Strmšnik (kapetan)
Andraž Tkalec
Gaj Boršič
Klemen Bele
Tilen Kralj
Filip Zlatoper Dobrijevič
Arne Bulajič
Lan Leskovšek
Jan Pipp
Julijan Mark Jurečko
Jaka Križnik
Nik Podkrajšek
David Vuk

KOŠARKA – MOŠKI
BASKETBALL – MEN

Luka Horvat (kapetan)
Žan Vodopivec
Tim Korošec Vobovnik
Vid Tement
Tine Sotlar
Lars Riedl
Jaka Rotman
Luka Garb
Jure Kuder



3

Ponosni smo – priznanja in nagrade
We are proud of - awards and prizes

Fakulteta za farmacijo je tudi v letu 2022 s številnimi priznanji in objavami izkazala dolgoročno raziskovalno usmeritev fakultete, ki vodi do objektivnih raziskovalnih uspehov. Kakovost in aktualnost raziskovalnega dela fakultete potrujeta tudi sodelovanje v programski skupini ARRS na področju sistemskih avtoimunskih bolezni in nova programska skupina UL FFA na področju naprednih imunoloških zdravil ter celičnih pristopov v farmaciji.

Raziskovalci UL FFA so prejeli vrsto odličij: za zasluge pri nastanku in razvoju Zbornice laboratorijske medicine Slovenije, nagrado Slovenskega farmacevtskega društva za izjemne zasluge pri razvoju farmacevtske stroke, priznanje za odličnost v komuniciranju Prometej znanosti, nagrado za znanstveno odličnost Danubius Young Scientist Award, Lapanjetovo plaketo Slovenskega biokemijskega društva za zasluge pri uveljavljanju slovenske biokemije v širši družbeni skupnosti in priznanje za najodličnejši raziskovalni dosežek Univerze v Ljubljani v letu 2022.

Z izkušnjo bistvenega prispevka znanosti pri soočanju z epidemijo in pomembnosti raziskovanja in inovacij je UL FFA tudi v letu 2022 širila sodelovanje z gospodarskimi subjekti s področja farmacije, laboratorijske biomedicine, toksikologije in kozmetologije doma in v tujini. Raziskovalne dosežke so sodelavci UL FFA objavljali v prestižnih publikacijah s področja farmacevtske kemije, naravoslovja in medicine.

Ključni kazalci uspešnosti raziskovalnega in inovacijskega dela (število objav, število citatov in količina FTE) so tudi v letu 2022 pokazali, da UL FFA v zadnjem večletnem obdobju potrjuje odličen uspeh raziskovalnega dela UL FFA in izkaz več kot 60-letne tradicije odličnosti na področju znanosti. Le-to izkazujejo tudi prejeta priznanja sodelavcev Fakultete za farmacijo s strani Univerze v Ljubljani: zaslužna profesorica za rezultate na področjih pedagoškega in znanstvenoraziskovalnega dela; zlata plaketa Univerze v Ljubljani za izjemne zasluge pri razvijanju znanstvenega, pedagoškega ali umetniškega ustvarjanja univerze ter za izjemne rezultate pri delu.

In 2022 the Faculty of Pharmacy demonstrated the long-term research orientation of the faculty, leading to objective research successes, with numerous awards and publications. The quality and topicality of the faculty's research work is also confirmed by its participation in the ARRS programme group in the field of systemic autoimmune diseases and the new UL FFA programme group in the field of advanced immunological medicinal products and cellular approaches in pharmacy. The UL FFA researchers received a number of honours: for merit in the creation and development of the Chamber of Laboratory Medicine of Slovenia, the Slovenian Pharmaceutical Society Award for Outstanding Merit in the Development of the Pharmaceutical Profession, the Award for Excellence in Communication Prometheus of science, the Award for Scientific Excellence Danubius Young Scientist Award, the Lapajne Plaque of the Slovenian Biochemical Society for merit in the promotion of Slovenian biochemistry in the wider social community and ultimately award for the most remarkable research achievement of the University of Ljubljana in 2022.

With the experience of the vital contribution of science in dealing with the epidemic and the importance of research and innovation, the UL FFA in 2022 also expanded its cooperation with economic entities in the fields of pharmacy, laboratory biomedicine, toxicology and cosmetology, at home and abroad. The research achievements were published by the UL FFA colleagues in prestigious publications in the field of pharmaceutical chemistry, science and medicine. The key performance indicators for research and innovation work (number of publications, number of citations and amount of FTE) also showed in 2022 that the UL FFA confirms the excellent success of the UL FFA's research work and demonstrates a more than 60-year tradition of excellence in science over the last multiannual period. This is also reflected in the received awards of colleagues of the Faculty of Pharmacy by the University of Ljubljana: emeritus professor for results in the fields of pedagogical and scientific research work;



Slika: Raziskovalni dan Fakultete za farmacijo 2022 / Photo: Faculty of Pharmacy 2022 Research Day

Golden Plaque of the University of Ljubljana for outstanding merit in developing the university's scientific, pedagogical or artistic creation and for outstanding results in work.

On the basis of its scientific excellence, the importance of scientific work beyond national boundaries and its innovative approach to academic work, Dr. Žane Temova Rakuša is the recipient of the Danubius Young Scientist Award 2022. The prize is awarded by the Austrian Ministry of Education, Science and Research and the Institute for the Danube Region and Central Europe.

IZJEMNI DOSEŽKI UL FFA 2022

prof. dr. Matjaž Jeras, prejemnik priznanja za najodličnejši raziskovalni dosežek Univerze v Ljubljani v letu 2021

Komisija za raziskovalno in razvojno delo Univerze v Ljubljani je raziskovalni dosežek »Novo napredno celično zdravilo za imunsko terapijo raka prostate« izbrala za enega od najodličnejših raziskovalnih dosežkov Univerze v Ljubljani v letu 2022. Prestižno priznanje je s soavtorji prejel član Katedre za klinično biokemijo, prof. dr. Matjaž Jeras. Izsledki raziskave so bili pred tem objavljeni v ugledni reviji Clinical and Translational Medicine.

Prometej znanosti za leto 2021 za dosežene odličnosti v komuniciranju znanosti

Priznanje Prometej znanosti za odličnost v komuniciranju za leto 2021 za spoštljive in empatične pogovore o

OUTSTANDING ACHIEVEMENTS OF UL FFA 2022

Prof. Dr. Matjaž Jeras, recipient of the award for the most remarkable research achievement of the University of Ljubljana in 2021

The Research and Development Commission of the University of Ljubljana has selected the research achievement "A new advanced cell medicine for prostate cancer immune therapy" as one of the most prestigious Universities in Ljubljana in 2022. The prestigious award was awarded to a member of the Chair for Clinical Biochemistry, Prof. Dr. Matjaž Jeras. The findings of the study were previously published in the prominent journal Clinical and Translational Medicine.

Prometheus of science 2021 for excellence achieved in communication of science

Recognition Prometheus of science for excellence in communication 2021 for respectful and empathetic con-

spektru problemov pandemije COVID-19 je bilo podeljeno skupini Science Mamas' Vaccine Forum, ki so jo leta 2021 oblikovale sodelavke UL FFA: izr. prof. dr. Nataša Karas Kuželički, izr. prof. dr. Martina Gobec, asist. dr. Tijana Markovič, doc. dr. Jasna Omersel, Lucija Aba Vrščaj in nekdanja sodelavka UL FFA doc. dr. Simona Jurkovič Mlakar.

doc. dr. Žane Temova Rakuša, prejemnica nagrade Danubius Young Scientist Award 2022

Doc. dr. Žane Temova Rakuša je na podlagi svoje znanstvene odličnosti, pomembnosti znanstvenega dela izven nacionalnih meja in inovativnega pristopa k akademskemu delu prejemnica nagrade Danubius Young Scientist Award 2022. Nagrado podeljujeta Avstrijsko ministrstvo za izobraževanje, znanost in raziskave ter Inštitut za podonavsko regijo in centralno Evropo. Njen osnovni namen je nadgraditi in povečati prepoznavnost mladih raziskovalcev in raziskovalk z izjemnimi dosežki v njihovi znanstveni dejavnosti in rezultatih, ki se povezujejo s podonavsko regijo.

Objava članka sodelavcev UL FFA v vodilni reviji s področja farmacevtske kemije Journal of Medicinal Chemistry

Samo Guzelj in Žiga Jakopin s Katedre za farmacevtsko kemijo UL FFA sta skupaj s sodelavci z Univerze v Leidnu in Centra za raziskave in prenos znanja Univerze v Zagrebu objavila članek z naslovom »Covalently Conjugated NOD2/TLR7 Agonists Are Potent and Versatile Immune Potentiators« v vodilni reviji iz področja farmacevtske kemije Journal of Medicinal Chemistry (IF = 8,039).

prof. dr. Janko Kos prejemnik Lapanjetove plakete 2022

Med prejemniki priznanj Slovenskega biokemijskega društva za leto 2022, ki so jih podelili 29. septembra 2022 na redni letni skupščini društva, je tudi prof. dr. Janko Kos. Plaketo

versations about the spectrum of problems of the COVID-19 pandemic has been awarded to the Science Mamas' Vaccine Forum, which was created in 2021 by the UL FFA colleagues: the science. Assoc. Prof. Dr. Nataša Karas Kuželički, Assoc. Prof. Dr. Martina Gobec, Asist. Dr. Tijana Markovič, Asist. Dr. Jasna Omersel, Lucija Ana Vrščaj and former associate of UL FFA, Assist. Dr. Simona Jurkovič.

Assistant Professor Dr. Žane Temova Rakuša, Winner of the Danubius Young Scientist Award 2022

On the basis of its scientific excellence, the importance of scientific work beyond national boundaries and its innovative approach to academic work, Assist Prof. Dr. Žane Temova Rakuša is the recipient of the Danubius Young Scientist Award 2022. The prize is awarded by the Austrian Ministry of Education, Science and Research and the Institute for the Danube Region and Central Europe. Its primary purpose is to reward and increase the visibility of young researchers and researchers with outstanding achievements in their scientific activities and results related to the Danube region.

Publication of an article by UL FFA colleagues in a leading journal in the field of pharmaceutical chemistry, Journal of Medicinal Chemistry

Samo Guzelj and Žiga Jakopin from the UL FFA Pharmaceutical Chemistry Chair, together with colleagues from the University of Leiden and the Centre for Research and Knowledge Transfer of the University of Zagreb, published an article entitled "Covalently Conjugated NOD2/TLR7 Agonists Are Potent and Versatile Immune Potentiators" in a leading journal of pharmaceutical chemistry Journal of Medicinal Chemistry (IF = 8,039).

Prof. Dr. Janko Kos recipient of Lapanje Plaque 2022

Among the recipients of the 2022 Slovenian Biochemical Society awards, which were awarded on 29 September 2022 at the regular annual general meeting of the

je prejel za dolgoletno organizacijsko delo na področju biokemijskih znanosti, strokovno delo v sekcijah ali organih društva, za zasluge pri uveljavljanju slovenske biokemije v širši družbeni skupnosti, za popularizacijo in predstavljanje dosežkov znanstvenoraziskovalnega dela in dosežkov širši javnosti ter za uspešno organizacijsko in strokovno delo pri širjenju biokemijske dejavnosti in uveljavitvi novih oblik delovanja, ki prispevajo k razvoju biokemijskih znanosti.

prof. dr. Borut Božič prejemnik odličja ZLMS za posebne zasluge

Prof. dr. Borut Božič je ob 30. obletnici delovanja Zbornice laboratorijske medicine Slovenije prejel odličje za zasluge za pomemben prispevek pri nastanku, razvoju ter ugledu ZLMS. V letih 1996–2006 je bil njen predsednik v obdobju postavljanja in uveljavljanja pravnih osnov za prevzem javnih pooblastil na področju registra in licenc laboratorijskih strokovnjakov, specialističnega usposabljanja ter strokovnih nadzorov, pa tudi oblikovanja, sprejemanja in implementacije temeljnega pravilnika na področju laboratorijske medicine. Še vedno je aktiven v več zborničnih komisijah in kot presojevalec medicinskih laboratorijev.

izr. prof. dr. Mojca Kerec Kos prejemnica Minařikovega priznanja

Slovensko farmacevtsko društvo je 12. maja 2022 podelilo nagrade za izjemne zasluge pri razvoju farmacevtske stroke v slovenskem in mednarodnem prostoru. Minařikovo priznanje je prejela sodelavka UL FFA, izr. prof. dr. Mojca Kerec Kos, za njene zasluge pri razvoju farmacevtske stroke.

Association, is Prof. Dr. Janko Kos. The plaque was awarded to him for his long-standing organizational work in the field of biochemical science, professional work in the sections or boards of the association, for merit in the promotion of Slovenian biochemistry in the wider social community, for popularisation and presentation of the achievements of scientific research work to the general public, and to successfully organisational and professional work at expanding biochemical activities and establishing new forms of action that contribute to the development of biochemical sciences.

Prof. Dr. Borut Božič recipient of the ZLMS Medal for Special Merit

Prof. Dr. Borut Božič received a medal for his important contribution to the creation, development and reputation of ZLMS on the 30th anniversary of the activities of the Chamber of Laboratory Medicine of Slovenia. From 1996 to 2006, he was its president, during the period of setting and enforcing the legal bases for the acquisition of public powers in the field of registry and licensing of laboratory professionals, specialist training and professional supervision, as well as the design, adoption and implementation of the basic regulations in the field of laboratory medicine. He is still active in several ushers and as an auditor for medical laboratories.

Assoc. Prof. Dr. Mojca Kerec Kos recipient of Minařik's Award

On 12 May 2022, the Slovenian Pharmaceutical Society awarded recognitions for outstanding merit in the development of the pharmaceutical profession in the Slovenian and international arena. Minařik's award was received by an associate of the UL FFA, Assoc. Prof. Dr. Mojca Kerec Kos, for her merits in the development of the pharmaceutical profession.

SLAVIMO ZNANOST – RAZISKOVALNI DAN UL FFA

V okviru tedna Univerze je bil 30. 11. 2022 organiziran raziskovalni dan UL FFA. Dogodek je bil namenjen osvetlitvi in počastitvi izjemnih dosežkov fakultete. V dopoldanskem delu so dekanovi nagrajenci predstavili svoje članke, doc. dr. Špela Zupančič pa je podelila vtise s srečanja z Nobelovimi nagrajenci. Popoldanski del se je pričel s slavnostnim predavanjem prof. dr. Uroša Urleba, člana uprave Leka d. d. in direktorja Razvoja bioloških zdravil Mengeš. Sledila je 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.

Priznanje UL FFA za življenjsko delo je prejel prof. dr. Albin Kristl

Prof. dr. Albin Kristl je diplomiral leta 1984 na Fakulteti za naravoslovje in tehnologijo v Ljubljani. Za diplomsko delo je prejel tudi Krkino nagrado. Po diplomi se je zaposlil kot stažist raziskovalec na Katedri za farmacevtsko tehnologijo takratne VTOZD Farmacija, kjer je leta 1986 opravil znanstveni magisterij in 1993 doktoriral. Leta 1994 je bil izvoljen v naziv docenta za področje farmacevtska tehnologija in biofarmacija, 1999 v naziv izrednega profesorja in 2004 v naziv rednega profesorja za isto področje. Ves čas je zaposlen na Fakulteti za farmacijo, deloval pa je tudi na drugih univerzah, in sicer na univerzi v Trstu, na Leiden-Amsterdam Center for Drug Research in na univerzi v Utrechtu. Raziskovalno deluje na področju trdnih farmacevtskih oblik, *in-vitro* in *in-vivo* vrednotenja biofarmacevtskih lastnosti zdravil, fizikalno-kemijskih lastnosti spojin, raziskav mehanizmov absorpcije in metabolizma zdravilnih učinkovin. V soavtorstvu je objavil 76 znanstvenih člankov v revijah s faktorjem vpliva, bil mentor ali somentor pri osmih doktorskih disertacijah,

CELEBRATING SCIENCE - FACULTY OF PHARMACY RESEARCH DAY

As a part of the University Week, the FFA UL Research Day was organised on 30. 11. 2022. The event was intended to illuminate and celebrate the outstanding achievements of the faculty. In the morning work, the dean's winners presented their articles and Assist. Dr. Špela Zupančič gave impressions from the meeting with the Nobel laureates. The afternoon part began with a ceremonial lecture from Prof. Dr. Uroš Urleb, member of the Management Board of Leka d. d. and director of the Development of Biological Medicines Mengeš. This was followed by the award ceremony of recognitions and praises of the UL FFA, which the Faculty awards to outstanding individuals whose work is important to mark the scientific field or to influence the reputation and quality of the faculty.

The UL FFA Lifetime Achievement Award was awarded to Prof. Dr. Albin Kristl

Prof. Dr. Albin Kristl graduated in 1984 from the Faculty of Natural Sciences and Technology in Ljubljana. He also received the Krka Award for his thesis. After graduating, he worked as an intern researcher at the Department of Pharmaceutical Technology at the time VTOZD Pharmaceuticals, where he received a master's degree in 1986 and a Doctorate in 1993. In 1994 he was elected Assistant Professor in the field of pharmaceutical technology and biopharmacy, in 1999 as Associate Professor and in 2004 as a Full Professor in the same field. Throughout his career he worked at the Faculty of Pharmacy and also worked at other universities, namely the University of Trieste, the Leiden-Amsterdam Centre for Drug Research and the University of Utrecht. He is active in research works in the field of solid pharmaceutical forms, *in-vitro* and *in-vivo* evaluation of biopharmaceutical properties of medicinal products, physico-chemical properties of compounds, research of absorption mechanisms and metabolism of active substances. In co-authorship, he published 76 scientific articles in journals with an impact factor, mentored or co-mentored eight doctoral thesis, two

dveh znanstvenih magisterijih in petdesetih diplomskih in magistrskih nalogah.

Na Fakulteti za farmacijo je deloval na številnih vodstvenih funkcijah, in sicer kot prodekan za raziskovalno delo, predsednik habilitacijskega odbora, predsednik upravnega odbora ter dekan. Od leta 2009 je predstojnik Katedre za biofarmacijo in farmakokinetiko in od 2016 vodja programske skupine Farmacevtska tehnologija.

Prof. dr. Albin Kristl si je skozi celotno kariero prizadeval za napredek Fakultete za farmacijo. V času njegovega prvega prodekanovanja je bil zgrajen in opremljen južni prizidek, pridobljena je bila tudi nova raziskovalna oprema, kar je vodilo v nov razvojni cikel fakultete. Po gostovanju na univerzah v Leidnu in Utrechtu je na fakulteti uvedel sodobne metode biofarmacevtskega vrednotenja zdravilnih učinkovin za napovedovanje njihove absorpcije po peroralni aplikaciji ter metode za raziskavo mehanizmov absorpcije in pomena prenašalnih proteinov.

scientific master's degrees and 50 master's degrees and master's thesis.

He worked at the Faculty of Pharmacy in a number of management positions, as dean of research, Chairman of the Habilitation Board, Chairman of the Board of Directors and Dean. Since 2009 he has been the Head of the Department of Biopharmaceuticals and Pharmacokinetics and has been the Head of the Pharmaceutical Technology programme group since 2016.

Prof. Dr. Albin Kristl has worked throughout his career to advance the Faculty of Pharmacy. At the time of his first mandate as Dean, the Southern Wing was built and equipped, and new research equipment was acquired, which led to a new development cycle of the faculty. After hosting at the Universities of Leiden and Utrecht, he introduced modern methods of biopharmaceutical evaluations of the active substances to predict their absorption after oral administration and methods for the study of absorption mechanisms and the importance of transport proteins of active substances at the faculty.



Slika: Prejemnik nagrade za življenjsko delo prof. dr. Albin Kristl / Photo: Recipient of the Lifetime Achievement Award Prof. Dr. Albin Kristl

Priznanje UL FFA za življenjsko delo je prejel prof. dr. Joško Osredkar

Prof. dr. Joško Osredkar, specialist medicinske biokemije, je redni profesor za področje klinične biokemije, redno zaposlen v UKC in dopolnilno na Fakulteti za farmacijo na delovnem mestu visokošolskega učitelja. V UKC je bil zaposlen najprej kot vodja Hormonskega laboratorija, nato pa kot direktor Inštituta za klinično biokemijo. V tem času je veliko pozornosti posvetil raziskovalnemu delu inštituta, s čimer je slednji pridobil naziv Klinični inštitut za klinično kemijo in biokemijo. Leta 2000 je dr. Osredkarju minister za zdravje podelil naziv svetnika, leta 2007 naziv višjega svetnika. V zadnjih letih je zaposlen v UKC na delovnem mestu svetovalca.

Prof. Osredkar je bil mentor ali somentor študentom pri številnih zaključnih delih: 9 doktoratom, 13 znanstvenim magisterijem, 325 diplomam na prvi stopnji ali predbolonjskim programom. Objavil je skoraj 200 znanstvenih in strokovnih člankov, okoli 50 samostojnih prispevkov v monografijah, več študijskih gradiv in dva univerzitetna učbenika za študijske programe UL FFA – Laboratorijska medicina I in Izbrana poglavja iz klinične kemije. Je tudi soavtor Registra zdravil RS.

Priznanje UL FFA za izjemne rezultate pri delu je prejela prof. dr. Marija Sollner Dolenc

Prof. dr. Marija Sollner Dolenc je odlična in prodorna znanstvenica, ki je izvedla številne pomembne toksikološke študije motilcev endokrinega sistema ter skupaj s sodelavci razvila računalniško orodje Endocrine Disruptome, ki je postal priporočena in silico metoda pri vrednotenju kemičnih motilcev endokrinega sistema v okviru smernic ECHA in EFSA.

Ima izvrstne zasluge pri razvoju toksikologije na Univerzi v Ljubljani in uspehe pri vzgojno-izobraževalnem in mentorskem delu predvsem na področju toksikologije. Skozi celo akademsko kariero si je prizadevala za aktivno povezovanje

The UL FFA Lifetime Achievement Award was awarded to Prof. Dr. Joško Osredkar

Prof. Dr. Joško Osredkar, a specialist in medical biochemistry and a professor of clinical biochemistry, a full-time employee of the UKC and a supplementary professor at the Faculty of Pharmacy in the workplace of a higher education teacher. At UKC he was first employed as Head of the Hormone Laboratory and then as director of the Institute of Clinical Biochemistry. During this time, he paid great attention to the research work of the Institute, thus giving him the title of Clinical Institute for Clinical Chemistry and Biochemistry. In 2000 Prof. Dr. Joško Osredkar was awarded the title of Senior Councillor by the Health Minister. In recent years he has worked at UKC having a position of consultant. Prof. Dr. Osredkar was a mentor or co-mentor to students in a number of final works: 9 doctoral dissertations, 13 scientific masters, 325 first-level diplomas or pre-Bologna programmes. He published almost 200 scientific and professional articles, about 50 independent papers in monographs, several study materials and two university textbooks for the UL FFA study programmes - Laboratory Medicine I and Selected Chapters in Clinical Chemistry. He is also a co-author of the Register of Medicines of the Republic of Slovenia.

The UL FFA award for outstanding results at work was received by Prof. Dr. Marija Sollner Dolenc

Prof. Dr. Marija Sollner Dolenc is an excellent and pervasive scientist who has carried out a number of important toxicological studies of endocrine disruptors and, together with colleagues, developed the Endocrine Disruptome computer tool, which has become a recommended and powerful method in the evaluation of endocrine disruptors under the ECHA and EFSA guidelines.

She has excellent merit in the development of toxicology at the University of Ljubljana and enjoys success in educational and mentoring work, especially in the field of toxicology. Throughout her academic career she has worked to actively

slovenskega univerzitetnega okolja s tujimi univerzami in inštitucijami ter tako neposredno pomembno vplivala na razvoj farmacevtske kemije in toksikologije v slovenskem in mednarodnem prostoru. Je dobro mednarodno prepoznavna, kar omogoča, da podpira stroko z idejami in nazorom evropske misli, jim dodaja nove in izvirne zamisli, kar zagotavlja avtonomen razvoj farmacevtskih in toksikološke znanosti na Univerzi v Ljubljani.

Priznanje UL FFA za izjemne rezultate pri delu je prejel prof. dr. Rok Dreu

Prof. dr. Rok Dreu je zaposlen na UL FFA od leta 2000, od leta 2017 pa je prodekan za znanstvenoraziskovalno področje. Je predstojnik Inštituta za farmacijo in član ožjega gradbenega odbora novogradnje Brdo. V prejšnjem mandatu je vodil Komisijo za doktorski študij in Komisijo za raziskovalno in razvojno delo. Poleg vodstvenih funkcij skrbi za razvoj področja farmacevtskega inženirstva in procesne opreme, ki ga goji tako raziskovalno kot pedagoško, kjer izsledke svojih raziskovalnih dognanj predano prenaša na študente in strokovno, saj je nepogrešljiv koordinator številnih aplikativnih projektov z domačo in tujo farmacevtsko industrijo. Prof. Dreu se poleg svojega dela na fakulteti udeležuje tudi v stroki in v različnih mednarodnih združenjih aktivno prispeva k vidnosti slovenske tehnologije in s tem farmacije v evropskem prostoru.

Priznanje UL FFA za izjemne rezultate pri delu je prejela prof. dr. Irena Mlinarič-Raščan

Prof. dr. Irena Mlinarič-Raščan od leta 2017 kot dekanja vodi Fakulteto za farmacijo ter si aktivno prizadeva za ohranjanje in nadgradnjo kakovosti pedagoškega in raziskovalnega procesa, kar vključuje tudi prizadevanja za izboljšanje infrastrukturnih pogojev in preiščeno kadrovanje.

connect the Slovenian university environment with foreign universities and institutions, thus having a direct significant impact on the development of pharmaceutical chemistry and toxicology in the Slovenian and international sphere. She is widely recognized internationally, enabling her to support the profession with ideas and the view of European thought, adding new and original ideas to them, which ensures the automatic development of pharmaceutical and toxicological sciences at the University of Ljubljana.

The UL FFA award for outstanding results at work was received by Prof. Dr. Rok Dreu

Prof. Dr. Rok Dreu has been employed at the UL FFA since 2000 and has been the Dean of Science and Research since 2017. He is the Head of the Institute of Pharmacy and a member of the shortlist of the new Brdo construction project. During the previous term, he led the Doctoral Studies Commission and the Research and Development Commission. In addition to his management functions he is responsible for the development of the field of pharmaceutical engineering and process equipment, which he cultivates both in research and education, where he transfers the results of his research knowledge to students and professional experts, as he is an indispensable coordinator of many applied projects with the domestic and foreign pharmaceutical industries. In addition to his work at the faculty Prof. Dr. Dreu is also involved in diverse international professional associations and actively contributes to the visibility of Slovenian technology and thus pharmacy in the European area in various international associations.

The UL FFA award for outstanding work results was received by Prof. Dr. Irena Mlinarič-Raščan

Prof. Dr. Irena Mlinarič-Raščan has led the Faculty of Pharmacy as a Dean and is actively working to maintain and upgrade the quality of the pedagogical and research process, including efforts to improve infrastructural conditions and thoughtful personnel recruitment.

Do letošnjega študijskega leta so študenti enovitega magistrskega programa farmacija poslušali predmet farmakologija na Medicinski fakulteti. Dolgoletna želja in ambicija Fakultete za farmacijo je bila farmakologijo voditi kot lastno matično področje. Profesorici Mlinarič-Raščan in njeni ekipi je uspelo, kar pred njo ni dosegel noben od predhodnih dekanov fakultete: s študijskim letom 2022/2023 je farmakologija postala eden od matičnih predmetov Fakultete za farmacijo, ki je zaposlila tudi prvega visokošolskega učitelja s habilitacijo iz farmakologije. Nedvomno gre za dosežek, ki je pomemben, saj prinaša možnosti novih medpredmetnih povezovanj znotraj fakultete.

Prejemnik priznanja zunanjemu sodelavcu ali poslovnemu partnerju je prof. dr. Uroš Urleb

Prof. dr. Uroš Urleb je svojo kariero začel kot raziskovalec in pedagog na Univerzi v Ljubljani, Fakulteti za farmacijo. Doktoriral je na Fakulteti za kemijo in kemijsko tehnologijo. Kasneje se je ukvarjal z načrtovanjem in sintezo novih zdravilnih učinkovin, predvsem na področju trombinskih inhibitorjev, antilipemikov in antibiotikov. Gostoval je tudi na univerzi v Gradcu, univerzi v Heidelbergu, Parizu, Halleju in Philadelphii. Leta 2020 je bil izvoljen v naziv rednega profesorja za področje farmacevtske kemije. Razvijal je tudi kariere menedžerja in vodje, znanja pa pridobil tako na francoski poslovni šoli INSEAD kot na poslovni šoli Harvard v Združenih državah Amerike. Strokovno delo prof. dr. Uroša Urleba ni vezano zgolj na področje farmacevtske kemije. Njegova široka razgledanost nad širšim področjem farmacevtskih znanosti je pripomogla, da so bila na Fakulteti za farmacijo v času njegovega prodekanovanja vpeljana številna nova področja, kot so na primer farmakoekonomika, farmacevtsko trženje in upravljanje ter regulativa zdravil. Za svoje delo je leta 2012 prejel Sandozovo nagrado za odličnost. Objavil je več kot 100 znanstvenih člankov, 5 znanstvenih monografij, ima več kot 20 podeljenih patentov. Bil je tudi mentor pri 17 doktorskih disertacijah.

Until a current academic year, the students of the single master's programme of Pharmacy listened to the subject Pharmacology at the Faculty of Medicine. The long-standing desire and ambition of the Faculty of Pharmacy was to lead pharmacology as its own home area. Professor Mlinarič-Raščan and her team succeeded in something, which none of the previous deans of the faculty had achieved before: with the academic year 2022/2023 pharmacology became one of the parent subjects of the Faculty of Pharmacy, which also recruited the first higher education teacher with habilitation in pharmacology. It is undoubtedly an achievement, which is important, because it brings about the possibility of new cross-disciplinary integration within the faculty.

The award to an external colleague or business partner is Prof. Dr. Uroš Urleb

Prof. Dr. Uroš Urleb began his career as a researcher and educator at the University of Ljubljana, Faculty of Pharmacy. He received his PhD from the Faculty of Chemistry and Chemical Technology. He later worked on the design and synthesis of new active substances, mainly in the field of thrombin inhibitors, antilipemics and antibiotics. He also visited the University of Graz, the University of Heidelberg, Paris, Halle and Philadelphia. In 2020 he was elected Full Professor in the field of pharmaceutical chemistry. He also developed a career as a manager and leader and acquired knowledge at both the French business school INSEAD and Harvard business school in the United States. The professional work of Prof. Dr. Uroš Urleb is not limited to the field of pharmaceutical chemistry alone. His broad view of the wider field of pharmaceutical sciences has helped to introduce several new areas at the Faculty of Pharmacy during his deanship, such as pharmacoeconomics, pharmaceutical marketing and management and drug regulation. He won the Sandoz Award for Excellence in 2012. He has published more than 100 scientific papers, 5 scientific monographs, he also has more than 20 patents granted. He was also a mentor of 17 doctoral dissertations.

Prof. dr. Uroš Urleb je svoje izkušnje iz akademskega in industrijskega okolja zelo spretno izkoristil pri načrtovanju in vzpostavljanju novih povezav med Univerzo v Ljubljani in podjetjem Lek d. d., od aplikativnih industrijskih projektov, projekta razvoja kadrov, do skupnih prijav projektov pri Javni agenciji za raziskovalno dejavnost RS. Je tudi velik zagovornik interdisciplinarnega raziskovanja.

Prof. Dr. Uroš Urleb has made great use of his experience in academical field and industrial environment in planning and establishing new links between the University of Ljubljana and Lek d.d., from applied industrial projects, personnel development projects, to joint project applications from the Slovenian Research Agency. He is also a great advocate of interdisciplinary research.

NOVOIZVOLJENI REDNI PROFESORJI UL FFA V LETU 2022

prof. dr. ROK DREU je bil rojen leta 1976 v Slovenj Gradcu. Po končanem univerzitetnem študiju farmacije na Univerzi v Ljubljani se je vpisal na doktorski študij biomedicina in leta 2005 zagovarjal doktorsko disertacijo.

Leta 2000 se je zaposlil na Univerzi v Ljubljani, Fakulteti za farmacijo, najprej kot stažist mladi raziskovalec, po doktoratu je bil 6 let zaposlen kot asistent z doktoratom, od leta 2012 pa kot visokošolski učitelj na Katedri za farmacevtsko tehnologijo.

V vmesnem času je bil za namen habilitacije (januar–avgust 2014) sedem mesecev neprekinjeno zaposlen kot znanstveni sodelavec na tuji instituciji Heinrich Heine Universität Düsseldorf v Düsseldorfu v Nemčiji.

NEWLY APPOINTED FULL PROFESSORS AT THE UL FFA IN 2022

Prof. Dr. ROK DREU

He was born in 1976 in Slovenj Gradec. After finishing the study of Pharmacy at the University of Ljubljana he enrolled in doctoral studies of Biomedicine and successfully defended his dissertation in 2005.

In 2000 he got an employment at the University of Ljubljana, Faculty of Pharmacy, first as an intern - a young researcher, and after acquiring his doctorate he was employed for 6 years as a Doctoral Assistant. He has been working as an educator at the Department of Pharmaceutical Technology since 2012.

In the meantime - for the purpose of habilitation (from January till August 2014) - he was continuously employed for 7 months as a scientific associate on a foreign institution - Heinrich Heine Universität Düsseldorf in Germany.



Izr. prof. dr. Rok Dreu ima preverjeno pedagoško aktivnost. Je nosilec in izvajalec predavanj in seminarjev pri temeljnih predmetih farmacevtska tehnologija in farmacevtsko inženirstvo (IndFarm, 2. stopnja), alternativnem predmetu industrijska farmacija (EMŠF, enovit študij) ter izbirnih predmetih farmacevtsko procesna oprema (IndFarm, 2. stopnja) in farmacevtsko inženirstvo (EMŠF, enovit študij). Sodeluje še pri izvedbi predmeta farmacevtska tehnologija (EMŠF, enovit študij). Na podiplomskem študiju biomedicina je nosilec in izvajalec modula farmacevtsko tehnološki procesi – Modul 4.1 (3. stopnja).

Izkazuje mentorstvo pri štirih zaključenih doktoratih, so-mentorstvo pri enem zaključenem doktoratu ter mentorstvo oziroma somentorstvo pri več kot 40 diplomskih in magistrskih nalogah na različnih študijskih programih Fakultete za farmacijo. V zadnjih petih letih je bil mentor pri petih Krkinih nagradah.

Njegovo raziskovanje je tesno povezano s preučevanjem in razvojem tehnoloških procesov oblaganja delcev in tablet, raziskavami na področju dostavnih sistemov, osnovanih na lipidih, in tehnologij talin ter razvoja sodobnih večnotnih farmacevtskih oblik, osnovanih na peletah in mini tabletah. Njegova bibliografija v okviru raziskovalne dejavnosti obsega več kot 50 znanstvenih člankov, od katerih je skoraj polovica (27) objavljena s prvim ali vodilnim avtorstvom.

Svojo ekspertizo na področju farmacevtske tehnologije izkazuje z vodenjem več kot petnajstih raziskovalnih projektov za farmacevtsko industrijo. Prav tako je vključen v projekt razvoja kadrov FFA-Lek. Na fakulteti je vodja evropskega Research and Innovation Staff Exchange (RISE) projekta ORBIS.

Prof. dr. Rok Dreu je bil na Univerzi v Ljubljani prvič izvoljen v naziv asistenta leta 2002, nato v docenta leta 20011 in izrednega profesorja leta 2016. Habilitacijska komisija UL je na 39. seji 24. 11. 2021 podala soglasje k njegovi izvolitvi v naziv rednega profesorja za področje farmacevtske tehnologije.

Prof. dr. Rok Dreu is proven to have pedagogical activity. He holds and conducts lectures and seminars in main subjects, such as Pharmaceutical Technology and Pharmaceutical Engineering (IndFarm, level 2); he also holds classes of alternative subject Industrial Pharmacy EMŠF, uniform study) and elective subjects - Pharmaceutical Process Equipment (IndFarm, level 2) and Pharmaceutical Engineering (EMFŠ, uniform study). He also cooperates in implementing the subject of Pharmaceutical technology (EMŠF, uniform study). In post-graduate studies of Biomedicine, he holds and conducts the module Pharmaceutical Technological Processes (Module 4.1) (level 3).

He was a mentor of four completed doctorates and co-mentored one completed doctorate. Furthermore, he was a mentor and a co-mentor of over 40 bachelors and master's theses in various study programmes of the Faculty of Pharmacy. In the last five years he was a mentor of five Krka Awards.

His research is closely related to studying and developing technological processes of particle and pill coating, research in the field of delivery systems, based on lipids and melt technologies, including the development of modern multicomponent pharmaceutical shapes, based on pellets and mini pills. His bibliography in the context of research activity includes more than 50 scientific articles, from which almost one half (27) is published, with him being the first or leading author.

He proves his expertise in the field of Pharmaceutical Technology by running more than 15 research projects for the pharmaceutical industry. Moreover, he is also involved in the project of human resources development at FFA-Lek. He also runs the European Research and Innovation Staff Exchange (RISE) of the ORBIS project.

At the University of Ljubljana, Prof. Dr. Rok Dreu was elected an Assistant in 2002, then Assistant Professor in 2011 and finally Associate Professor in 2016. At its 39th session, 24. 11. 2021, the Habilitation Commission of UL gave its consent to elect him to a position of Full Professor in the field of Pharmaceutical Technology.

prof. dr. ŽIGA JAKOPIN

Prof. dr. Žiga Jakopin je diplomiral leta 2005 in doktoriral leta 2010 na Fakulteti za farmacijo, UL. Od leta 2005 raziskovalno in pedagoško deluje na Katedri za farmacevtsko kemijo.

Raziskovalno je aktiven na več področjih. Primarno se ukvarja s področjem kemijske imunologije, in sicer z načrtovanjem, sintezo in biološkim vrednotenjem novih spojin, sposobnih manipulacije imunskega odziva, ki so uporabne kot adjuvansi ali imunoterapevtiki. Manjši del njegovega raziskovalnega dela pa je usmerjen tudi v proučevanje škodljivega vpliva ksenobiotikov na imunski in endokrini sistem.

Svojo znanstvenoraziskovalno usposobljenost izkazuje s številnimi znanstvenimi publikacijami (>50), njihovo mednarodno odmevnost pa s citati (h indeks 22, Google Scholar). Je dvakratni prejemnik nagrade odlični v znanosti ARRS (2013 in 2018) za področje farmacije. Strokovno se udeležuje bodisi kot recenzent številnih mednarodnih znanstvenih revij bodisi kot član uredniških odborov revij, hkrati pa deluje kot ekspertni ocenjevalec



Prof. Dr. ŽIGA JAKOPIN

Prof. dr. Žiga Jakopin graduated in 2005 and acquired his doctorate in 2010 at the Faculty of Pharmacy, University of Ljubljana. Since 2005 he has been active in research and pedagogical work at the Department of Pharmaceutical Chemistry.

In terms of research, he has been active in several fields. He primarily deals with chemical immunology, namely with planning, synthesis, and biological evaluation of new compounds, capable of manipulating the immune response; they are useful as adjuvants or immunotherapeutics. A smaller part of his research work is also aimed at studying harmful effects of xenobiotics on the immune and endocrine system.

He demonstrates his scientific and research competence with numerous scientific publications (>50), and their international recognition has been confirmed in citations (h index 22, Google Scholar). He is a two-time recipient of the ARRS Excellence in Science Award (2013 and 2018) in pharmacy. Professionally, he has been active either as a reviewer of many international scientific journals or as a member of the editorial boards of journals; simultaneously he acts as an expert evaluator of projects of foreign research agencies. Through ARRS tenders he acquired two research projects and one programme so far and also actively participates in several other projects with many acknowledged research groups in Europe and America. In cooperation with the University and the Faculty he ensures the protection of intellectual property of promising inventions and is the main inventor in the pending patent application.

Since 2005 he has been participating in the implementation of lectures and seminars in the fields of Pharmaceutical Chemistry, Toxicological Chemistry and Toxicology in the uniform master's programme - Pharmacy, and in the master's programme of Industrial Chemistry, in the

projektov tujih raziskovalnih agencij. Do sedaj je na razpisih ARRS uspešno pridobil že dva raziskovalna projekta in en program, sodeluje pa tudi v več drugih projektih s številnimi priznanimi raziskovalnimi skupinami v Evropi in Ameriki. V sodelovanju z Univerzo in FFA skrbi za zaščito intelektualne lastnine pri obetavnih izumih in je glavni izumitelj pri patentni prijavi v postopku.

Od leta 2005 sodeluje pri izvedbi vaj in predavanj pri predmetih iz področja farmacevtske kemije, toksikološke kemije in toksikologije na enovitem magistrskem programu Farmacija, na magistrskem programu Industrijska farmacija, na univerzitetnem programu Kozmetologija in magistrskem programu Laboratorijska biomedicina.

Do tega trenutka je bil mentor pri več kot 50 diplomskih oziroma magistrskih nalogah na programih EMŠ Farmacija, UŠP Industrijska Farmacija in UŠP Kozmetologija ter pri 1 magisteriju znanosti in 1 doktoratu znanosti. Pod njegovim mentorstvom so študenti prejeli 2 Prešernovi nagradi (od tega eno univerzitetno).

Mednarodno je dvakrat gostoval na Fakulteti za farmacijo Univerze v Milanu, kjer je opravljal raziskovalno delo, kot vabljeni predavatelj pa je deloval na več domačih in mednarodnih konferencah ter univerzah. Sodeloval je tudi pri organizaciji številnih domačih in mednarodnih konferenc, strokovnih izobraževanj ter delavnic. Je aktiven član Slovenskega farmacevtskega društva in Slovenskega toksikološkega društva, s strokovnimi publikacijami in prispevki pa skrbi tudi za približevanje znanosti širši javnosti, za kar je prejel zlato plaketo Univerze v Ljubljani.

Leta 2008 je bil prvič in 2011 drugič izvoljen v naziv asistenta, leta 2012 v naziv docenta in leta 2017 v naziv izrednega profesorja za področje farmacevtske kemije. Hkrati je od leta 2020 tudi docent za področje toksikološke kemije. Habilitacijska komisija UL je v marcu 2022 podala soglasje k njegovi izvolitvi v naziv rednega profesorja za področje farmacevtske kemije.

university programme of Cosmetology and in the master's programme of Laboratory Biomedicine.

So far, he has been a mentor of over 50 diploma or master's theses in various programmes - Pharmacy, Industrial Pharmacy and Cosmetology, including one Master of Science and one Doctor of Science. Under his tutelage the students received two Prešeren awards (one of which was a university award).

He was an international guest at the Faculty of Pharmacy of the University of Milan, where he performed research work. As an invited lecturer he spoke in several domestic and international conferences and universities. He also participated in the organization of numerous domestic and international conferences, academic trainings, and workshops. He is an active member of the Slovenian Pharmaceutical Society and Slovenian Society of Toxicology. With professional publications and articles, he strives to bring science closer to general public, for which he received the Golden Plaque of the University of Ljubljana.

In 2008 he was elected to a title of the Assistant for the first time and for the second time in 2011. In 2012 he was elected to the title of Assistant Professor and in 2017 and to the title of Associate Professor in the field of Pharmaceutical Chemistry in 2017. Since 2020 he is simultaneously an Assistant Professor in the field of Toxicological Chemistry. In March 2022 the Habilitation Commission of UL gave its consent to his election to the title of Full Professor in the field of Pharmaceutical Chemistry.

prof. dr. MOJCA LUNDER

Prof. dr. Mojca Lunder je diplomirala leta 2002 in doktorirala leta 2008 na Fakulteti za farmacijo, UL. Od leta 2003 raziskovalno in pedagoško deluje na Katedri za farmacevtsko biologijo.

Raziskovalno je aktivna na več področjih. Ukvarja se z identifikacijo in razvojem novih imunoterapevtikov na osnovi kratkih peptidov, mimetikov epitopov alergenov in določanjem njihovega potenciala v imunoterapiji. Preučuje interakcije antigen-protitelo in vlogo teh interakcij pri klinični sliki antifosfolipidnega sindroma. Pomemben del njenega raziskovalnega dela pa je usmerjen tudi v identifikacijo zaviralcev encimov, vpletenih v absorpcijo hranil in inhibitorjev delovanja hormonov, vpletenih regulacijo telesne mase.

Svoje znanstvenoraziskovalno usposobljenost izkazuje s številnimi znanstvenimi publikacijami (>50), njihovo mednarodno odmevnost pa s citati (h indeks 13). V sodelovanju z Univerzo in FFA skrbi za zaščito intelektualne lastnine pri inovativnih in ekonomsko obetavnih izumih.

Prof. Dr. MOJCA LUNDER

Prof. dr. Mojca Lunder graduated in 2002 and received her doctorate in 2008 at the Faculty of Pharmacy, University of Ljubljana. Since 2003 she has been active in research and pedagogical work at the Department of Pharmaceutical Biology.

In terms of research, she has been active in several fields. She deals with identification and development of new immunotherapeutics based on short peptides, mimetics of allergen epitopes and determining their potential in immunotherapy. She studies antigen-antibody interactions and the role of these interactions in the clinical picture of antiphospholipid syndrome. An important part of her research work is also aimed at identifying enzyme inhibitors, involved in nutrient absorption and inhibitors of hormonal activity, involved in body weight regulation.

She demonstrates her scientific and research competence with numerous scientific publications (>50) and their international recognition has been confirmed in citations (h index 13). In cooperation with the University and the



Je so-izumiteljica pri treh podeljenih patentih. Je tudi dvakratna prejemnica rektorjeve nagrade za naj inovacijo Univerze v Ljubljani (2010 in 2019).

Od leta 2003 sodeluje pri izvedbi vaj in predavanj pri predmetih s področja biotehnologije in biologije na enovitem magistrskem programu Farmacija, na magistrskem programu Industrijska farmacija, na univerzitetnem programu Kozmetologija in magistrskem programu Laboratorijska biomedicina.

Je mentorica ali somentorica pri številnih diplomskih (11), magistrskih (23) in doktorskih delih (7). Pod njenim mentorstvom ali somentorstvom so študentje prejeli 3 Krkine nagrade (eno veliko), Krkino priznanje s posebno pohvalo in 2 Prešernovi nagradi (od teh eno univerzitetno).

Mednarodno je gostovala (predavala in raziskovala) na Fakulteti za farmacijo Univerze Comenius v Bratislavi in Masarykovi univerzi v Brnu. Sodeluje v številnih strokovnih komisijah in odborih (članica UO FFA do 2018, nadomestna članica Etične komisije za poskuse na živalih, članica Komisije za farmakopejo in za pripravo Nacionalnega dodatka k evropski farmakopeji, članica ocenjevalne skupine v odboru UNESCO-LOREAL »Za ženske v znanosti« in članica skupine za pripravo Slovenskega farmacevtskega terminološkega slovarja). S številnimi poljudnimi in strokovnimi publikacijami skrbi za približevanje znanosti širši javnosti. Je tudi dvakratna prejemnica nagrade ZRC SAZU »Prometej znanosti za odličnost v komuniciranju«.

Leta 2003 je bila prvič izvoljena v naziv asistentke, leta 2009 je bila izvoljena v naziv docentke in leta 2014 v naziv izredne profesorice za področje farmacevtske biologije. Habilitacijska komisija UL je v decembru 2021 podala soglasje k njeni izvolitvi v naziv redne profesorice za področje farmacevtske biologije.

Faculty she ensures the protection of intellectual property of innovative and economically promising inventions. She is a co-inventor of three granted patents and a two-time recipient of the Chancellor's Award for Top Innovation of the University of Ljubljana (2010 and 2019)

Since 2003 she has been participating in the implementation of lectures and seminars in the field of Biotechnology and Biology on the uniform master's programme of Pharmacy, including the master's programme of Industrial Pharmacy, the university programme of Cosmetology and the master's programme of Laboratory Biomedicine.

She is the mentor or co-mentor of numerous diploma papers (11), master's theses (23) and doctoral dissertations (7). Under her tutelage or co-tutelage, the students received 3 Krka Awards (one major), one Krka Award with a special commendation and 2 Prešeren Awards (one of them was a university award).

She was an international guest (as a lecturer and researcher) at the Faculty of Pharmacy of the University of Comenius in Bratislava and Masaryk University in Brno. She participates in many expert commissions and committees (a member of the UO FFA until 2018, a substitute member of the Ethics Committee for Animal Experimentation, a member of the Pharmacopoeia Commission and preparation of the National Addendum to the European Pharmacopoeia, member of the evaluation group in the UNESCO-LOREAL Committee "For Women in Science" and a member of the group for the preparation of the Slovenian Pharmaceutical Terminological Dictionary). With several more common and professional publications she strives to bring science closer to general public. She is also a two-time recipient of the ZRC SAZU "Prometheus of Science for Excellence in Communication" Award.

In 2003 she was elected to the title of Assistant for the first time. In 2009 she was elected to the title of Assistant Professor and 2014 to the title of Associate Professor in the field of Pharmaceutical Biology. In December 2021 the Habilitation Commission of UL gave its consent to her election to the title of Full Professor in the field of Pharmaceutical Biology.



Slika: Novoizvoljeni redni profesorji UL FFA v letu 2022 / Photo: New appointed full professors at UL FFA in 2022

Od leve proti desni sledijo: prof. dr. Aleš Obreza, prof. Dr. Mojca Lunder, prof. dr. Irena Mlinarič-Raščan, prof. dr. Rok Dreu
From left to right as follows: Prof. Dr. Aleš Obreza, Prof. Dr. Mojca Lunder, Prof. Dr. Irena Mlinarič-Raščan, Prof. Dr. Rok Dreu

PRIZNANJA UNIVERZE V LJUBLJANI

V okviru tedna Univerze so bile na slovesnosti UL izpostavljene navdihujoče posameznice in posamezniki, ki so pomembno prispevali k uspešnemu delu univerze.

prof. dr. Julijana Kristl, prejemnica naziva zaslužna profesorica

Rezultati, ki jih je prof. dr. Julijana Kristl dosegla na področjih pedagoškega in znanstvenoraziskovalnega dela, so izjemno zaznamovali razvoj tako farmacevtske tehnologije in nanotehnologije kot kozmetologije. Je mednarodno priznana znanstvenica, uvrščena med prva dva odstotka najvplivnejših svetovnih znanstvenikov na področju farmakologije in farmacije, kar dokazuje njeno veliko mednarodno odmevnost in visoko kakovost raziskovalnega dela v svetovnem merilu. Je prejemnica najvišjih nagrad in priznanj.

prof. dr. Borut Božič, prejemnik zlate plakete Univerze v Ljubljani za izjemne zasluge redno zaposlenega posameznika na Univerzi v Ljubljani, pri razvijanju znanstvenega, pedagoškega ali umetniškega ustvarjanja univerze in za krepitev njenega ugleda

Prof. dr. Borut Božič je široko razgledan strokovnjak, odličen predavatelj, pedagog in mentor. Sodi v vrh evropskih kliničnih biokemikov, učiteljev in raziskovalcev. S svojim akademskim opusom daje Univerzi v Ljubljani, Fakulteti za farmacijo ter slovenski klinični biokemiji in laboratorijski biomedicini nepogrešljiv pečat in je pomemben raziskovalni steber imunologije v evropskem merilu.

Prejemnica priznanj strokovnim delavkam/strokovnim delavcem Univerze v Ljubljani:

Gospa Bernarda Žagar

AWARDS OF THE UNIVERSITY OF LJUBLJANA

As part of University Week, the UL ceremony highlighted inspiring individuals and individuals who made a significant contribution to the university's successful work.

Prof. Dr. Julijana Kristl, Professor Emeritus

The results achieved by Prof. Dr. Juliana Kristl in the fields of pedagogical and scientific research work were significantly marked by the development of both pharmaceutical technology and nanotechnology and cosmetology. She is an internationally renowned scientist, ranked among the first two percent of the world's most influential scientists in pharmacology and pharmacy, as evidenced by its great international recognition and high quality of research work on a global scale. She is the recipient of the highest awards and recognitions.

Prof. Dr. Borut Božič is a recipient of the Golden Plaque of the University of Ljubljana for outstanding merit of a full-time individual at the University of Ljubljana in developing the scientific, pedagogical or artistic creation of the university and for strengthening its reputation

Prof. Dr. Borut Božič is a widely regarded expert, excellent lecturer, educator and mentor. He is among top-notch European clinical biochemists, teachers and researchers. The University of Ljubljana, the Faculty of Pharmacy and Slovenian Clinical Biochemistry and Laboratory Biomedicine carry an indispensable mark of his academic work, and he remains an important research pillar of immunology on a European scale.

Recipient of awards to professionals/practitioners of the University of Ljubljana:

Mrs. Bernarda Žagar

PREJEMNIKI DEKANOVIH NAGRAD

Dekanove nagrade se podelijo študentom, raziskovalcem ali doktorandom UL FFA, ki so v preteklem obdobju kot prvi ali vodilni avtor objavili delo v reviji z visokim faktorjem vpliva ali v reviji, ki sodi v zgornjih 10 odstotkov revij s posameznega področja in s tem doprinesli k razvoju farmacevtske znanosti in stroke.

Prejemniki dekanovih nagrad 2022 so:

Damjan AVSEC za znanstveni članek z naslovom: »Zaviranje p38 MAPK ali imunoproteasoma premosti odpornost celic kronične limfocitne levkemije na antagonist Bcl-2 venetoklaks«, objavljen v reviji Cell death & disease.

Mentorica: prof. dr. Irena Mlinarič-Raščan, somentorica: izr. prof. dr. Helena Podgornik.

Katarina GRABRIJAN za znanstveni članek: »Kovalentni zaviralci encima biosinteze bakterijskega peptidoglikana MurA na osnovi kloracetamida«, objavljen v reviji European Journal of Medicinal Chemistry.

Mentor: prof. dr. Stanislav Gobec.

Špela GUBIČ za znanstveni članek: »Načrtovanje novih tiofenskih zaviralcev napetostno odvisnih kalijevih kanalov KV1.3 in njihov potencial za protirakavo delovanje«, objavljen v reviji Cancers.

Mentorica: prof. dr. Lucija Peterlin Mašič, somentor: izr. prof. dr. Tihomir Tomašič.

Sebastjan NEMEC za znanstveni članek z naslovom: »Vsestranska metoda samourejanja na medfazi za pripravo oblog SiO₂ z radialno usmerjenimi porami na primerih različnih jedrnih magnetnih nanodelcev«, objavljen v reviji ACS applied materials & interfaces.

Mentor: doc. dr. Slavko Kralj, somentorica: izr. prof. dr. Petra Kocbek.

RECIPIENTS OF DEAN'S AWARDS

Dean's awards are awarded to students, researchers or UL FFA doctoral students who, in the past period, have published work as the first or lead author in a journal with a high impact factor or in a journal that belongs to the top 10 percent of journals in each field, thus contributing to the development of pharmaceutical science and the profession.

Recipients of the Dean's 2022 Awards are:

Damjan AVSEC for the scientific paper entitled: "Inhibition of p38 MAPK or immunoproteasoma overcomes the resistance of chronic lymphocytic leukemia cells to the Bcl-2 venetoclax antagonist", published in the journal Cell Death & Disease.

Supervisor: Prof. Dr. Irena Mlinarič-Raščan, co-supervisor: Assoc. Prof. Dr. Helena Podgornik.

Katarina GRABRIJAN for the scientific paper: "Covalent inhibitors of the biosynthesis of bacterial peptidoglytic MurA based on chloroacetamide", published in the European Journal of Medicinal Chemistry.

Supervisor: Prof. Dr. Stanislav Gobec.

Špela GUBIČ for the scientific paper: "Design of new thiophene inhibitors of voltage-dependent potassium channels KV1.3 and their potential for anti-cancer activity", published in the journal Cancers.

Supervisor: Prof. Dr. Lucija Peterlin Mašič, co-supervisor: Assoc. Prof. Dr. Tihomir Tomašič.

Sebastjan NEMEC for the scientific article entitled "Versatile method of self-regulation at the interphase for the preparation of SiO₂ coatings with radially oriented pores on cases of different nuclei magnetic nanoparticles", published in the journal ACS Applied Materials & Interfaces.

Supervisor: Assist. Prof. Dr. Slavko Kralj, co-supervisor: Assoc. Prof. Dr. Petra Kocbek.

Dr. Andrej ŠTERMAN za znanstveni članek z naslovom: »Enostavna sinteza alfa-aminoborovih kislin za preprost dostop do bor-vsebujočih zdravil za raka«, objavljen v reviji Chemical science.

Mentor: prof. dr. Zdenko Časar, somentor: izr. prof. dr. Izidor Sosič.

Dr. Matjaž WEISS za znanstveni članek: »Modulacija diferenciacije in zorenja dendritičnih celic z zaviralci O-GlcNAc transferase«, objavljen v reviji Cells.

Mentorica: izr. prof. dr. Martina Gobec, somentor: prof. dr. Marko Anderluh.

Dr. Andrej ŠTERMAN for a scientific paper entitled "Simple synthesis of alpha-aminoboric acids for easy access to boron-inducing cancer drugs", published in the journal Chemical Science.

Supervisor: Prof. Dr. Zdenko Timer, co-supervisor: Assoc. Prof. Izidor Sosič.

Dr. Matjaž Weiss for the scientific paper: "Modulation of differentiation and maturation of dendritic cells with O-GlcNAc transferase inhibitors", published in the journal Cells.

Supervisor: Assoc. Prof. Dr. Martina Gobec, co-supervisor: Prof. Dr. Marko Anderluh.

PREJEMNIKI PREŠERNOVIH NAGRAD 2022

PREJEMNIKI FAKULTETNIH PREŠERNOVIH NAGRAD 2022

Špela JANEŽ: Farmakokinetična in farmakodinamična optimizacija dezmuramilpeptidnih agonistov receptorja prirojene imunosti NOD2

Mentor: prof. dr. Žiga Jakopin, somentor: asist. dr. Samo Guzelj.

Lara JASENC: Primerjava izražanja molekulskih označevalcev ter sposobnosti osteogeneze skeletnih matičnih celic bolnikov z zgodnjo in pozno obliko osteoartroze

Mentor: prof. dr. Matjaž Jeras, somentorica: doc. dr. Janja Zupan.

Ajda OSOJNIK: Preučevanje Ph gradiena v gelski plasti ogrodnih tablet in njegovega vpliva na sproščanje slabo topnih učinkovin

Mentor: doc. dr. Jurij Trontelj, somentorica: dr. Katja Berginc.

Edvin Purić: Spremljanje internalizacije fluorescentno označene α -D-manozilirane sode v dendritične celice s superločljivostnim slikanjem

Mentor: prof. dr. Marko Anderluh, somentor: izr. prof. dr. Janez Mravljak.

Anja Šenk: Ugotavljanje vsebnosti in stabilnosti vitaminov B kompleksa v kozmetičnih izdelkih

Mentor: prof. dr. Robert Roškar, somentorica: doc. dr. Žane Temova Rakuša.

RECIPIENTS OF PREŠEREN AWARDS IN 2022

FACULTY OF PHARMACY PREŠEREN AWARDS

JANEŽ Špela: Pharmacokinetic and pharmacodynamic optimization of desmuramylpeptide agonists of the innate immune receptor NOD2

Supervisor: Prof. Dr. Žiga Jakopin, co-supervisor: Assist. Dr. Samo Guzelj.

JASENC Lara: The comparison of molecular marker expression and osteogenic capacity of skeletal stem cells in patients with early and end-stage osteoarthritis

Supervisor: Prof. Dr. Matjaž Jeras, co-supervisor: Assist. Prof. Dr. Janja Zupan.

OSOJNIK Ajda: Evaluation of the pH gradient in a gel layer of matrix tablets and its influence on the poorly soluble drug release

Supervisor: Assist. Prof. Dr. Jurij Trontelj, co-supervisor: Dr. Katja Berginc.

Purić Edvin: Internalization monitoring of a fluorescently labelled α -D-mannosylated probe into dendritic cells by super-resolution imaging

Supervisor: Prof. Dr. Marko Anderluh, co-supervisor: Assoc. Prof. Dr. Janez Mravljak.

Šenk Anja: Determination of content and stability of B-complex vitamins in cosmetic products

Supervisor: Prof. Dr. Robert Roškar, co-supervisor: Assist. Prof. Dr. Žane Temova Rakuša.

PRIZNANJA FAKULTETE

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

Barbič Špela
Bernard Špela
Biškup Nika
Bogovčič Rupnik Ana
Bohinc Klara
Božič Meta
Breznik Nika
Brilej Žana
Brumat Eva
Čemažar Bernardka
Češek Tjaša
Čurič Sara
Dremelj Anja
Frlic Tjaša
Gerhold Petra
Gnidovec Klemen
Godeša Ana
Gorenjšček Zala
Gošek Teja

Gošnjak Tanja
Gruden Staš
Herakovič Lea
Jug Ana
Kalan Lanna
Karun Tina
Kavaš Vid
Klinar Katarina
Košir Katja
Kvartuh Anja
Meglen Lara
Mihelič Blaž
Mužina Karolina
Pečnik Matija
Podgoršek Eva
Polajžer Sara
Pollak Sicherl Pika
Potisk Katja
Prelog Urška

FACULTY OF PHARMACY RECOGNITIONS

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.

Ramšak Urška
Razinger
Remic Anamarija
Resnik Katarina
Ribnikar Neža
Rotar Pucko Eva
Rozman Iza
Simončič Eva
Snoj Lara
Šenica Ana
Šifrer Nina
Škufca Valentina
Trstenjak Ana
Valič Tjaša
Verk Zala
Vovk Tara
Vrevc Žlajpah Jaka
Zlatevska Verica
Zupan Ana

POHVALE FAKULTETE / FACULTY OF PHARMACY PRAISE

Ahdali Hana	Doberšek Zarja	Kalan Lanna
Ahlin Taja	Eržen Kaja	Karun Tina
Artnjak Diana	Faganeli Ema	Kaučič Nuša
Balaško Kaja	Flac Neli	Keber Lara
Benčuk Katja,	Freljih Aljaž	Kek Sara
Berglez Pia	Frlic Tjaša	Kirbus Klemen
Bernard Špela	Furjanič Lara	Klement Maja
Bevk Ana	Garb Luka	Klinar Katarina
Biškup Nika	Gerhold Petra	Kocjančič Metka
Bizjak Taja	Gojko Klara	Koder Tia
Bohinc Klara	Gorenc Jerca	Kojek Zala
Borovnik Laura	Gorše Iza	Kolenc Lana
Boštlic Nika	Gostiša Pia	Kopač Lina
Bračko Tine	Gošek Teja	Košir Eva
Bratun Manja	Gošnjak Tanja	Košir Katja
Brečko Maja	Gotovac Svetlana	Kovač Nuša
Breznik Luka	Habjan Liza	Kovačič Romi Lea
Breznik Nika	Horvat Katja	Kovšca Živa
Brilej Žana	Horvat Tjaša	Kranjc Aljaž
Brumat Eva	Hrovat Lučka	Krebelj Nina
Burgar Irena	Janža Zala	Kumer Karin
Cerovšek Karin	Janžekovič Vida Julija	Kuralt Vid
Cör Lucija	Jeram Ema	Kurent Ema
Črnič Manca	Jereb Filip	Kuster Tamara Picaboo
Čurič Sara	Jerič Bole Maruša	Lavrič Suzana,
Čuš Tilen	Jevnikar Lana	Leban Marta
Dobaj Nina	Ježek Barbara	Linke Urban

Lunder Alen
Mahorič Maja
Marovič Astrid
Matijašić Než,
Melkić Sitar Inja
Mencin Amadeja
Mihelič Mašala
Milanović Saša
Mlakar Živa
Murovec Anika
Murovec Kristina
Mužina Karolina
Navratil Juš
Oberč Rok
Oberstar Sara
Pačnik Nejc
Panjtar Blažka
Petančič Žiga
Petrič Neja
Pipp Jan
Pirnat Maša
Polajžer Sara
Pollak Sicherl Pika
Potisk Katja
Račnik Lara
Rakoše Iva
Ramšak Urška

Remic Anamarija
Resnik Katarina
Rogelj Meljo Neža
Roglič Mitja
Rojc Eva
Roškarič Damijana
Rozman Iza
Ruparčič Katja
Rus Lucija
Sedmak Anika
Simonič Sara
Smajilović Sandra
Snoj Lara
Stanko Sara
Strupi Luka
Šarman - Gaberšek Zala
Šenica Ana
Šenk Anja
Šifrer Nina
Šimc Ema
Šimnovec Leja
Škufca Valentina
Štante Brina
Šurk Hana
Tonchia Jan
Travnik Toni
Trstenjak Ana

Tršek Anja
Trunkelj Natalija
Tuškei Kaja
Vaupotič Tinkara
Vehar Mateja
Veljanovska Melisa
Verk Zala
Vesel Žiga
Vetrih Manca
Videnšek Podgorelec Rok
Vidrih Maruša
Viher Hana
Vovk Tara
Vrevc Žlajpah Jaka
Zabirc Bor
Zadnek David
Zajc Kaja
Zupan Ana
Zupančič Matic
Žabota Urška
Žežlina Maja
Žinko Nuša



4

Seznam diplomantov List of graduates

DIPLOMANTI NA FAKULTETI ZA FARMACIJO V LETU 2022

2022 GRADUATES AT THE FACULTY OF PHARMACY

UNIVERZITETNI ŠTUDIJSKI PROGRAM KOZMETOLOGIJA

THE ACADEMIC BACHELOR STUDY PROGRAMME COSMETOLOGY

Bernik Teja
Borošak Lara
Brčan Maruša
Breška Šilc Saška
Barbara
Damjanič Poljanec Julija
Doler Ajda
Ferara Živa
Gologranc Petra
Gorenjšček Zala
Grobiša Nika
Hostnik Manica
Jenko Damjana
Majdič Urša
Medved Mia
Mlakar Živa
Rigler Ida
Roškar Sara
Rožič Eva
Serianz Ema
Simonič Nika

Smrečnik Monika
Šarman – Gaberšek Zala
Švigelj Meta
Tominc Tinkara
Vovk Tara
Vutolen Valentina
Zagorc Ana

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

Aberšek Nina	Filipič Neja	Javornik Špela
Ahmić Azra	Gaber Tjaša	Jelesijević Špela
Arh Ana	Gajšek Ina	Jeram Katarina
Arnež Ana	Gartner Nika	Jerebic Karmen
Bajc Grega	Geč Katarina	Jeriha Anja
Balkovec Anamarija	Gladek Mojca	Jerman Tjaša
Baš Jakob	Glizijan Milica	Jesenšek Petra
Bek Filip	Gobec Lucija	Kastelic Meta
Bizjak Špela	Golčar Špela	Kastelic Anže
Bojnec Aljaž	Gorjan Gazdag Anteja	Kavaš Vid
Bokal Meta	Gornik Tjaša	Kobentar Zala
Božič Meta	Gošek Tjaša	Kočevlar Lucija
Bučar Tajda	Gričar Eva	Kolenc Kaja
Burnik Tilen	Grošelj Luka	Korošec Tajda
Cink Teja	Grošelj Petra	Korošec Lara
Čižman Nina	Grošelj Anja	Kosmač Teja
Čižmek Ula	Groznič Klara	Košćak Sara
Ćosić Adis	Hergouth Lucija	Košir Pija
Dacar Zala	Hren Larisa	Kotevska Ana
Debevec Eva	Hrovat Anja	Kovačič Zala
Dragovan Matej	Hrvatič Nina	Krajnc Tina
Dremelj Anja	Ileršič Nives	Krajnc Monja
Dvoršič Mojca	Jakobčič Maja	Krajnc Tajda
Emkić Erma	Jasenc Lara	Kralj Matej

Kralj Sandi
Kralj Manca
Krapež Vesna
Krašovec Maruša
Kristan Jerca
Križaj Nika
Kuk Jurij
Lah Nadine
Laneger Katja
Lisac Jan
Lombergar Leon
Lukić David
Maffi Katarina
Majnik Manca
Malek Tina
Markoja Boris
Martinović Sanja
Marzidovšek Špela
Matijašević Žan
Mavec Blaž
Mavri Maja
Medic Ana
Mičić Dejan
Mikuletič Ana
Morovič Domen Ian
Nussdorfer Klara
Orlač Anja
Pangeršič Katarina
Pirc Urša

Pirnat Živa
Podgornik Urška
Podlesek Aleš
Podvršnik Tanja
Poherc Laura
Potočnik Tjaša
Povše Tjaša
Požar Ana
Prando Aneja
Prašnikar Monika
Prebanda Petra
Prelog Urška
Premoš Anja
Pučko Taj
Rajhard Saša
Razinger Anita
Rebov Taja
Rekar Žan
Ribič Anja
Rožič Anja
Rožič Polona
Rus Zala
Simončič Urban
Skala Špela
Skenderović Enita
Skornšek Nina
Slokan Tjaša
Sluga Janja
Smajić Benjamin

Smrtnik Martina
Sopčič Ema
Sraka Tina
Stanković Aleksandra
Stiplošek Tea
Stopar Veronika
Strašek Timeja
Studen Tina
Šabić Anesa
Šajina Julijana
Šalehar Dominik
Šebenik Robert
Šehić Sanela
Šeligo Lina
Šentjunc Alenka
Šerod Klara
Šimec Domen
Šimec Anja
Šmigoc Matic
Štampar Anja
Štrukelj Pahovič Pia
Štucin Janja
Šuklje Vito
Tement Valentina
Temov Dejan
Tivadar Michelle
Tratnik Rahela
Turšič Živa
Vedlin Vid

Velikanje Melita
 Verbič Klara
 Verk Ema
 Vidmar Špela
 Virant Julija
 Vodolšak Tanja
 Vodolšak Sanja
 Vodopivec Klemen
 Zakrajšek Jan
 Zimič Tajda
 Zobec Lea
 Zorman Teja
 Zupan Tomaž
 Žaberl Majcenovič Sara
 Živko Doris
 Žmavc Žan
 Žnidarič Mitja
 Žnidaršič Kristjan

MAGISTRSKI ŠTUDIJSKI PROGRAM INDUSTRIJSKA FARMACIJA THE MASTER STUDY PROGRAMME INDUSTRIAL PHARMACY

Ažbe Nika	Marovt Tajda
Bercko Simon	Mikić Daniela
Bombek Domen	Nabernik Urša
Božič Tajda	Novak Maja
Caf Anja	Pekez Laura
Dovjak Jernej	Perko Mark
Fink Janja	Podvratnik Kaja
Gajšek Tea	Porenta Ema
Gojčič Mojca	Ribič Nina
Gregorc Lucija	Rifelj Eva
Hodulak Antea	Roštan Klara
Hren Anja	Sladič Vila Lidija
Intihar Klara	Slak Tjaša
Jug Ana	Šenica Leja
Krampelj Betka	Tavčar Klara
Krošelj Ana	Trebušak Tadeja
Marinček Eva	Zrimšek Anja

MAGISTRSKI ŠTUDIJSKI PROGRAM LABORATORIJSKA BIOMEDICINA

THE MASTER STUDY PROGRAMME LABORATORY BIOMEDICINE

Blažun Dora

Bricman Vesna

Colja Sara

Čurič Sara

Dejanović Luka

Golubič Tara

Goručan Jana

Hrastnik Eva

Hribar Laura

Hriberšek Anja

Jeršin Martina

Jud Laura

Jug Brešan Tina

Kert Špela

Klinar Katarina

Lešnik Nika

Lukan Eva

Makše Nataša

Miholič Marta

Morel Žana

Mrhar Tiona

Povše Ana

Rožič Tjaša

Stankić Janko

Šegula Larisa

Štucin Neža

Toman Polona

Tomšič Iza

Železnik Ana

Žibert Urša



Slika: Diplomanti / Photo: Graduates

DOKTORSKI ŠTUDIJSKI PROGRAM BIOMEDICINA

DOCTORAL STUDY PROGRAMME OF BIOMEDICINE

Doktorati s področja farmacevtskih znanosti

Aguiar Zdovc, Jurij (mentor Iztok Grabnar): Razvoj farmakometričnih modelov ustekinumaba, rivaroksabana in zdravil s platino = Development of pharmacometric models of ustekinumab, rivaroxaban and platinum agents, COBISS.SI-ID: 127480067.

Gubič, Špela (mentorica Lucija Peterlin Mašič, somentor Tihomir Tomašič): Načrtovanje in sinteza novih zaviralcev napetostno odvisnih kalijevih kanalov KV1.3 in KV10.1 s protitumornim delovanjem = Design and synthesis of novel voltage-gated potassium channel KV1.3 and KV10.1 inhibitors with anticancer activity, COBISS.SI-ID: 133516291.

Guzelj, Samo (mentor Žiga Jakopin): Development of novel NOD2 agonists and dual NOD2 and TLR7 agonists as vaccine adjuvants = Razvoj novih agonistov NOD2 in dvojnih agonistov NOD2 in TLR7 kot novih adjuvansov za cepiva, COBISS.SI-ID: 120062211.

Hassan, Mujtaba (mentor Žiga Jakopin, somentor Ulf J. Nilsson): Novel glycomimetic inhibitors and proteolysis-targeting chimeras for human galectins = Novi glikomimetični zaviralci in himerni razgrajevalci človeških galektinov, COBISS.SI-ID: 140389123.

Potrc, Tanja (mentor Petra Kocbek): Razvoj polimernih nanovlaken in magnetnih nanoverig za dostavo učinkovin pri zdravljenju raka = Development of polymer nanofibers and magnetic nanochains for drug delivery in cancer treatment, COBISS.SI-ID: 127476483.

Doctors of Pharmaceutical Sciences

Aguiar Zdovc, Jurij (supervisor Iztok Grabnar): Razvoj farmakometričnih modelov ustekinumaba, rivaroksabana in zdravil s platino = Development of pharmacometric models of ustekinumab, rivaroxaban and platinum agents, COBISS.SI-ID: 127480067.

Gubič, Špela (supervisor Lucija Peterlin Mašič, co-supervisor Tihomir Tomašič): Načrtovanje in sinteza novih zaviralcev napetostno odvisnih kalijevih kanalov KV1.3 in KV10.1 s protitumornim delovanjem = Design and synthesis of novel voltage-gated potassium channel KV1.3 and KV10.1 inhibitors with anticancer activity, COBISS.SI-ID: 133516291.

Guzelj, Samo (supervisor Žiga Jakopin): Development of novel NOD2 agonists and dual NOD2 and TLR7 agonists as vaccine adjuvants = Razvoj novih agonistov NOD2 in dvojnih agonistov NOD2 in TLR7 kot novih adjuvansov za cepiva, COBISS.SI-ID: 120062211.

Hassan, Mujtaba (supervisor Žiga Jakopin, co-supervisor Ulf J. Nilsson): Novel glycomimetic inhibitors and proteolysis-targeting chimeras for human galectins = Novi glikomimetični zaviralci in himerni razgrajevalci človeških galektinov, COBISS.SI-ID: 140389123.

Potrc, Tanja (supervisor Petra Kocbek): Razvoj polimernih nanovlaken in magnetnih nanoverig za dostavo učinkovin pri zdravljenju raka = Development of polymer nanofibers and magnetic nanochains for drug delivery in cancer treatment, COBISS.SI-ID: 127476483.

Prikeržnik, Marcel (mentor Stane Srcic): Uporaba multivariatne analize in nevronske mreže za identifikacijo in optimizacijo kritičnih lastnosti materialov ter procesnih parametrov valjčnega kompaktiranja in tabletiranja = Application of multivariate analysis and artificial neural networks for identification and optimization of critical material attributes and process parameters of roller compaction and tablet compression, COBISS.SI-ID: 108228355.

Rede, Katarina (mentorica Marija Bogataj, somentorica Mirjana Gašperlin): Razvoj biorelevantne in vitro metode za vrednotenje sproščanja zdravilnih učinkovin iz lipidnih dostavnih sistemov = Development of a biorelevant in vitro method for evaluation of drug release from lipid-based systems, COBISS.SI-ID: 125441283.

Stojanov, Spase (mentor Aleš Berlec, somentor Špela Zupančič): Engineering of fluorescent vaginal *Lactobacillus* species for their monitoring in nanofibers and cell models = Razvoj fluorescentnih vaginalnih vrst iz rodu *Lactobacillus* za njihovo spremljanje v nanovlaknih in celičnih modelih, COBISS.SI-ID: 124677891.

Šterman, Andrej (mentor Zdenko Časar, somentor Izidor Sosič): Novi pristopi za sintezo α -aminoborovih kislin kot ključnih gradnikov za zaviralce proteasoma = Novel approaches for the synthesis of α -aminoboronic acids as key building blocks for proteasome inhibitors, COBISS.SI-ID: 103977731.

Vidovič, Sara (mentor Odon Planinšek, somentorica Biljana Jankovič): Evaluation of critical material attributes and critical process parameters in development of pellets with quality by design approaches = Vrednotenje kritičnih lastnosti pomožnih snovi in kritičnih procesnih parametrov pri razvoju pelet s pristopi vgrajene kakovosti, COBISS.SI-ID: 112585219.

Prikeržnik, Marcel (supervisor Stane Srčič): Uporaba multivariatne analize in nevronske mreže za identifikacijo in optimizacijo kritičnih lastnosti materialov ter procesnih parametrov valjčnega kompaktiranja in tabletiranja = Application of multivariate analysis and artificial neural networks for identification and optimization of critical material attributes and process parameters of roller compaction and tablet compression, COBISS.SI-ID: 108228355.

Rede, Katarina (supervisor Marija Bogataj, co-supervisor Mirjana Gašperlin): Razvoj biorelevantne in vitro metode za vrednotenje sproščanja zdravilnih učinkovin iz lipidnih dostavnih sistemov = Development of a biorelevant in vitro method for evaluation of drug release from lipid-based systems, COBISS.SI-ID: 125441283.

Stojanov, Spase (supervisor Aleš Berlec, co-supervisor Špela Zupančič): Engineering of fluorescent vaginal *Lactobacillus* species for their monitoring in nanofibers and cell models = Razvoj fluorescentnih vaginalnih vrst iz rodu *Lactobacillus* za njihovo spremljanje v nanovlaknih in celičnih modelih, COBISS.SI-ID: 124677891.

Šterman, Andrej (supervisor Zdenko Časar, co-supervisor Izidor Sosič): Novi pristopi za sintezo α -aminoborovih kislin kot ključnih gradnikov za zaviralce proteasoma = Novel approaches for the synthesis of α -aminoboronic acids as key building blocks for proteasome inhibitors, COBISS.SI-ID: 103977731.

Vidovič, Sara (supervisor Odon Planinšek, co-supervisor Biljana Jankovič): Evaluation of critical material attributes and critical process parameters in development of pellets with quality by design approaches = Vrednotenje kritičnih lastnosti pomožnih snovi in kritičnih procesnih parametrov pri razvoju pelet s pristopi vgrajene kakovosti, COBISS.SI-ID: 112585219.

Weiss, Matjaž (mentorica Martina Gobec, somentor Marko Anderluh): Vpliv modulacije N-acetilglukozaminilacije na delovanje izbranih imunskih in rakavih celic in vitro = In vitro modulation of O-GlcNAcylation and its impact on the function of selected immune and cancer cells, COBISS.SI-ID: 97407491.

Žerovnik, Špela (mentor Igor Locatelli, somentor Mitja Kos): Dolgoročni klinični izidi zdravljenj za zdravljenje bolnikov s sladkorno boleznijo tipa 2 = Long-term clinical outcomes of medicines for patients with type 2 diabetes, COBISS.SI-ID: 96687619.

Doktorati s področja klinične biokemije in laboratorijske biomedicine

Fabjan, Teja (mentor Joško Osredkar, somentor Eda Bokal Vrtačnik): Antimüllerjev hormon in označevalci oksidativnega stresa kot prognostični dejavniki oploditve v postopku zunajtelesne oploditve = Antimüllerian hormone and oxidative stress biomarkers as predictors of fertilization in medically assisted conception, COBISS.SI-ID: 104028931.

Kumer, Kristina (mentor Joško Osredkar, somentorica Nataša Tul Mandič): Pomen placentnega proteina 13, topnega endoglina in inhibina A v kombinaciji z merjenjem endotelijske funkcije pri preeklampsiji = Significance of placental protein 13, soluble endoglin and inhibin A in combination with the measurement of endothelial function in preeclampsia, COBISS.SI-ID: 112579843.

Senior, Emanuela (mentor Janko Kos, somentorica Milica Perišić Nanut): Cystatin F as a mediator of immune suppression in tumor microenvironment = Cistatin F kot mediator imunske supresije v tumorskem mikrookolju, COBISS.SI-ID: 121229059.

Weiss, Matjaž (supervisor Martina Gobec, co-supervisor Marko Anderluh): Vpliv modulacije N-acetilglukozaminilacije na delovanje izbranih imunskih in rakavih celic in vitro = In vitro modulation of O-GlcNAcylation and its impact on the function of selected immune and cancer cells, COBISS.SI-ID: 97407491.

Žerovnik, Špela (supervisor Igor Locatelli, co-supervisor Mitja Kos): Dolgoročni klinični izidi zdravljenj za zdravljenje bolnikov s sladkorno boleznijo tipa 2 = Long-term clinical outcomes of medicines for patients with type 2 diabetes, COBISS.SI-ID: 96687619.

Doctors in the field of Clinical Biochemistry and Laboratory Biomedicine

Fabjan, Teja (supervisor Joško Osredkar, co-supervisor Eda Bokal Vrtačnik): Antimüllerjev hormon in označevalci oksidativnega stresa kot prognostični dejavniki oploditve v postopku zunajtelesne oploditve = Antimüllerian hormone and oxidative stress biomarkers as predictors of fertilization in medically assisted conception, COBISS.SI-ID: 104028931.

Kumer, Kristina (supervisor Joško Osredkar, co-supervisor Nataša Tul Mandič): Pomen placentnega proteina 13, topnega endoglina in inhibina A v kombinaciji z merjenjem endotelijske funkcije pri preeklampsiji = Significance of placental protein 13, soluble endoglin and inhibin A in combination with the measurement of endothelial function in preeclampsia, COBISS.SI-ID: 112579843.

Senior, Emanuela (supervisor Janko Kos, co-supervisor Milica Perišić Nanut): Cystatin F as a mediator of immune suppression in tumor microenvironment = Cistatin F kot mediator imunske supresije v tumorskem mikrookolju, COBISS.SI-ID: 121229059.



5

Znanstvene in strokovne publikacije
Scientific and professional publications

RAZISKOVALNA ORGANIZACIJA / RESEARCH ORGANIZATION

Univerza v Ljubljani, Fakulteta za farmacijo l. 2022

University of Ljubljana, Faculty of Pharmacy, 2022

ZNANSTVENI ČLANKI / SCIENTIFIC ARTICLES

ÁBRÁNYI-BALOGH, Péter, KEELEY, Aaron, FERENCZY, György G., PETRI, László, IMRE, Tímea, GRABRIJAN, Katarina, HRAST, Martina, KNEZ, Damijan, ILAŠ, Janez, GOBEC, Stanislav, KESERÜ M., György. Next-generation heterocyclic electrophiles as small-molecule covalent MurA inhibitors. *Pharmaceuticals*, 2022, vol. 15, iss. 12, art. 1484, str. 1-10, [COBISS.SI-ID 132462339].

AVSEC, Damjan, ŠKRLJ MIKLAVČIČ, Marja, BURNIK, Tilen, KANDUŠER, Maša, BIZJAK, Maruša, PODGORNIK, Helena, MLINARIČ-RAŠČAN, Irena. Inhibition of p38 MAPK or immunoproteasome overcomes resistance of chronic lymphocytic leukemia cells to Bcl-2 antagonist venetoclax. *Cell death & disease*, 2022, vol. 13, art. 860, str. 1-13, [COBISS.SI-ID 124912643].

BAHUN, Miha, JUKIČ, Marko, OBLAK, Domen, KRANJC, Luka, BAJC, Gregor, BUTALA, Matej, BOZOVIČAR, Krištof, BRATKOVIČ, Tomaž, PODLIPNIK, Črtomir, POKLAR ULRIH, Nataša. Inhibition of the SARS-CoV-2 3CLpro main protease by plant polyphenols. *Food chemistry*, 2022, vol. 373, part B, str. 1-10, art. 131594, [COBISS.SI-ID 84899331].

BAUTISTA-AGUILERA, Oscar M., ALONSO, José M., CATTO, Marco, IRIEPA, Isabel, KNEZ, Damijan, GOBEC, Stanislav, MARCO-CONTELLAS, José. N-hydroxy-N-propargylamide derivatives of ferulic acid: inhibitors of cholinesterases and monoamine oxidases. *Molecules*, 2022, vol. 27, iss. 21, art. 7437, str. 11-18, [COBISS.SI-ID 127684867].

BENKŐ, Ernő, GERMAN ILIĆ, Ilija, KRISTÓ, Katalin, REGDON, Géza, CSÓKA, Ildiko, PINTYÉ-HODI, Klára, SRČIČ, Stanko, SOVÁNY, Tamás. Predicting drug release rate of implantable matrices and better understanding of the underlying mechanisms through experimental design and artificial neural network-based modelling. *Pharmaceutics*, 2022, vol. 14, iss. 2, str. 1-16, [COBISS.SI-ID 94193411].

BERECZKI, Ilona, VIMBERG, Vladimir, LÓRINCZ, Eszter, PAPP, Henrietta, NAGY, Lajos, KÉKI, Sándor, BATTÁ, Gyula, MITROVIĆ, Ana, KOS, Janko, ZSIGMOND, Áron, et al. Semisynthetic teicoplanin derivatives with dual antimicrobial activity against SARS-CoV-2 and multiresistant bacteria. *Scientific reports*, 2022, vol. 12, art. 16001, str. 1-15, [COBISS.SI-ID 123460611].

BERGINC, Katja, HUZZAK, Tilen, LAVRIČ, Olivera, BUZETI, Uroš, JORDAN, Vanja, VELUŠČEK, Dejan. Exposing profound screening potential of ethanol-based dissolution media in the development of oral-modified dosage forms. *International journal of drug development and research*. 2022, vol. 14, no. 11, art. 979, str. 1-10, graf. prikazi, tabele, [COBISS.SI-ID 140713219].

BRANKOVIČ, Jana, LESKOVEC, Jakob, ŠTURM, Sabina, CERKVENIK, Vesna, ŠTERPIN, Saša, OSREDKAR, Joško, POGOREVC, Estera, ANTOLINC, David, VRECL, Milka. Experimental exposure to bisphenol A has minimal effects on bone tissue in growing rams: a preliminary study. *Animals*, 2022, vol. 12, no. 17, art. 2179, str. 1-15, [COBISS.SI-ID 119202307].

BREZOVAR, Teja, SVETIČ, Sandi, DREU, Rok. Comparison of the robustness of pellet film coating with and without in-process coating thickness evaluation. *Pharmaceutics*, 2022, vol. 14, iss. 11, art. 2274, str. 1-16, [COBISS.SI-ID 127052291].

CLUZEAU, Jérôme, NETTEKOVEN, Ulrike, KOVAČEVIČ, Miroslav, ČASAR, Zdenko. Concise six-step asymmetric approach to ramelteon from an acetophenone derivative using Ir, Rh, Cu, and Ni catalysis. *Journal of organic chemistry*, 2022, vol. 87, iss. 4, str. 2029–2135, [COBISS.SI-ID 90308355].

COTMAN, Andrej Emanuel, DUB, Pavel, STERLE, Maša, LOZINŠEK, Matic, DERNOVŠEK, Jaka, ZAJEC, Živa, ZEGA, Anamarija, TOMAŠIČ, Tihomir, CAHARD, Dominique. Catalytic stereoconvergent synthesis of homochiral β -CF₃ β -CF₃, β -SCF₃ β -SCF₃, and β -OCF₃ β -OCF₃ benzylic alcohols. *ACS Organic & Inorganic Au*, 2022, iss. 5, vol. 2, str. 396–404, [COBISS.SI-ID 111499267].

CVIKL, Darija, AVGUŠTIN, Cvetka, KREFT, Samo. The physiological and psychological effects benefits of forest therapy (FT) on tourists in the Kranjska Gora destination. *Forests*, 2022, iss. 10, art. 1670, vol. 13, str. 1–21, [COBISS.SI-ID 125200387].

ČEBRON LIPOVEC, Nanča, ANDERLIČ, Andrej, LOCATELLI, Igor. General antidepressants prescribing trends 2009–2018 in Slovenia: a cross-sectional retrospective database study. *International journal of psychiatry in clinical practice*, 2022, vol. 26, iss. 4, str. 401–405, [COBISS.SI-ID 104861443].

DIEZ-IRIEPA, Daniel, KNEZ, Damijan, GOBEC, Stanislav, IRIEPA, Isabel, DE LOS RÍOS, Cristóbal, BRAVO, Isaac, LÓPEZ-MUÑOZ, Francisco, MARCO-CONTELLES, José, HADJIPAVLOU-LITINA, Dimitra. Polyfunctionalized alpha-phenyl-tert-butyl(benzyl)nitrones: multifunctional antioxidants for stroke treatment. *Antioxidants*, 2022, vol. 11, iss. 9, str. 1–20, art. 1735, [COBISS.SI-ID 119819011].

DRAGAR, Črt, ILERŠIČ, Nives, POTRČ, Tanja, NEMEC, Sebastjan, KRALJ, Slavko, KOCBEK, Petra. Electrospinning as a method for preparation of redispersible dry product with high content of magnetic nanoparticles. *International journal of pharmaceutics*, 2022, vol. 628, str. 1–16, [COBISS.SI-ID 130650883].

DULAR, Aleša, HODŽIČ, Bor, BREC, Tina, HUDOVORNIK, Grega, VREČER, Franc. Influence of formulation factors, process parameters, and selected quality attributes on carvedilol release from roller-compacted hypromellose-based matrix tablets. *Pharmaceutics*, 2022, vol. 14, iss. 4, str. 1–14, [COBISS.SI-ID 105147907].

DURCIK, Martina, GRAMEC, Darja, TOMAŠIČ, Tihomir, TRONTELJ, Jurij, PETERLIN-MAŠIČ, Lucija. Last piece in the puzzle of bisphenols BPA, BPS and BPF metabolism: kinetics of the in vitro sulfation reaction. *Chemosphere*, 2022, vol. 303, part 2, art. 135133, str. 1–9, [COBISS.SI-ID 111924227].

DURCIK, Martina, HITI, Luka, TOMAŠIČ, Tihomir, PETERLIN-MAŠIČ, Lucija. New bisphenol A and bisphenol S analogs: evaluation of their hERalpha agonistic and antagonistic activities using the OECD 455 in-vitro assay and molecular modeling. *Chemico-biological interactions*, 2022, vol. 354, str. 1–11, [COBISS.SI-ID 96740611].

ERJAVEC, Vladimira, VOVK, Tomaž, NEMEC SVETE, Alenka. The effect of two acute bouts of exercise on oxidative stress, hematological, and biochemical parameters, and rectal temperature in trained canicross dogs. *Frontiers in veterinary science*, 2022, vol. 9, art. 767482, str. 1–13, [COBISS.SI-ID 100610563].

FABJANČIČ, Igor, OBREZA, Aleš. O lekarnarju Petru Eugenu Sušnju in njegovem izvodu knjige Friedricha Wöhlerja = About the pharmacist Petar Eugen Sušan and his book copy written by Friedrich Wöhler. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 191–198, [COBISS.SI-ID 115495427].

FATUR, Karsten, RAVNIKAR, Matjaž, FRAS, Vitjan, KREFT, Samo. Pipes and potions : testing the efficacy of European folk preparation methods for anticholinergic Solanaceae plants. *Plants*, 2022, vol. 11, iss. 1, str. 1–12, [COBISS.SI-ID 91864835].

FEVŽER, Tadej, POŽENEL, Primož, ZAJC, Kaja, TEŠIČ, Nataša, ŠVAJGER, Urban (avtor, korespondenčni avtor). Combined TLR-3/TLR-8 signaling in the presence of alpha-type-1 cytokines represents a novel and potent dendritic cell type-1, anti-cancer maturation protocol. *Cells*, 2022, vol. 11, iss. 5, str. 1–16, [COBISS.SI-ID 99744771].

FRANKO, Nina, VRŠČAJ, Lucija Ana, ZORE, Taja, OSTANEK, Barbara, MARC, Janja, LOJK, Jasna. TBP, PPIA, YWHAZ and EF1A1 are the most stably expressed genes during osteogenic differentiation. *International journal of molecular sciences*, 2022, vol. 23, no. 8, str. 1–17, [COBISS.SI-ID 105244163].

FRLAN, Rok. An evolutionary conservation and druggability analysis of enzymes belonging to the bacterial shikimate pathway19. *Antibiotics*, 2022, vol. 11, iss. 5, str. 1–24, [COBISS.SI-ID 108163587].

GAJIC, Mihajlo, KNEZ, Damijan, SOSIČ, Izidor, MRAVLJAK, Janez, MEDEN, Anže, KOŠAK, Urban, LEITZBACH, Luisa, GOBEC, Stanislav, SMELCEROVIČ, Andrija, ANDERLUH, Marko, et al. Repurposing of 8-hydroxyquinoline-based butyrylcholinesterase and cathepsin B ligands as potent non-peptidic deoxyribonuclease I inhibitors. *ChemMedChem*, 2022, vol. 17, iss. 5, str. 1–11. [COBISS.SI-ID 92638723].

GLAVNIK, Teja, FELC, Brina, JAZBAR, Janja, FELC, Zlata. Poznavanje demence in podpore osebam z demenco med obiskovalci zdravstvenih domov v Savinjski regiji = Knowledge of dementia and support for people with dementia among visitors of health care services in the Savinjska region. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 210–221, [COBISS.SI-ID 114728195].

GLINŠEK, Katja, KRAMER, Lovro, KRAJNC, Aleksander, KRANJC, Eva, PIRHER, Nina, MARUŠIČ, Jaka, HELLMANN, Leon, PODOBNIK, Barbara, ŠTRUKELJ, Borut, AUSLÄNDER, David, GABER, Rok. Coupling CRISPR interference with FACS enrichment: new approach in glycoengineering of CHO cell lines for therapeutic glycoprotein production. *Biotechnology journal*, 2022, vol. 17, iss. 7, art. e2100499, str. 1–13, [COBISS.SI-ID 112903939].

GOCKEL, Lukas Maria, PFEIFER, Vladlena, BALTES, Fabian, BACHMAIER, Rafael D., WAGNER, Karl G., BENDAS, Gerd, GÜTSCHOW, Michael, SOSIČ, Izidor, STEINEBACH, Christian. Design, synthesis, and characterization of PROTACs targeting the androgen receptor in prostate and lung cancer models. *Archiv der Pharmazie*, 2022, vol. 355, iss. 5, e2100467, str. 1–15, [COBISS.SI-ID 96807683].

GOLOB, Nejc, GRAHEK, Rok, ROSS, Malcolm, ROŠKAR, Robert. Nitrocellulose blister material as a source of N-nitrosamine contamination of pharmaceutical drug products. *International journal of pharmaceutics*, 2022, vol. 618, str. 1–9, [COBISS.SI-ID 102696963].

GRABRIJAN, Katarina, STRAŠEK, Nika, GOBEC, Stanislav. Synthesis of 3-amino-4-substituted monocyclic β -lactams – important structural motifs in medicinal chemistry. *International journal of molecular sciences*, 2022, vol. 23, no. 1, str. 1–26, [COBISS.SI-ID 92152323].

GRABRIJAN, Katarina, HRAST, Martina, PROJ, Matic, DOLŠAK, Ana, ZDOVC, Irena, IMRE, Tímea, PETRI, László, ÁBRÁNYI-BALOGH, Péter, KESERÜ M., György, GOBEC, Stanislav. Covalent inhibitors of bacterial peptidoglycan biosynthesis enzyme MurA with chloroacetamide warhead. *European journal of medicinal chemistry*, 2022, vol. 243, str. 1–15, [COBISS.SI-ID 123442179].

GROBIN, Andrej, ROŠKAR, Robert, TRONTELJ, Jurij. Multi-parameter risk assessment of forty-one selected substances with endocrine disruptive properties in surface waters worldwide. *Chemosphere*, 2022, vol. 287, part 2, str. 1–14, [COBISS.SI-ID 83326467].

GUBIČ, Špela, HENDRICKX, Louise Antonia, SHI, Xiaoyi, TOPLAK, Žan, MOŽINA, Štefan, VAN THEEMSCHE, Kenny M., LOPES PINHEIRO-JUNIOR, Ernesto, PEIGNEUR, Steve, TOMAŠIČ, Tihomir, PETERLIN-MAŠIČ, Lucija, et al. Design of new potent and selective thiophene-based Kv1.3 inhibitors and their potential for anticancer activity. *Cancers*, 2022, vol. 14, no. 11, art. no. 2595, str. 1–20, [COBISS.SI-ID 109409795].

GUBIČ, Špela, TOPLAK, Žan, SHI, Xiaoyi, DERNOVŠEK, Jaka, HENDRICKX, Louise Antonia, LOPES PINHEIRO-JUNIOR, Ernesto, PEIGNEUR, Steve, TYTGAT, Jan, PARDO A., Luis, PETERLIN-MAŠIČ, Lucija, TOMAŠIČ, Tihomir. New diarylamine KV10.1 inhibitors and their anticancer potential. *Pharmaceutics*, 2022, vol. 14, iss. 9, art. 1963, str. 1–27, [COBISS.SI-ID 121841667].

GUZELJ, Samo, BIZJAK, Špela, JAKOPIN, Žiga. Discovery of desmuramylpeptide NOD2 agonists with single-digit nanomolar potency. *ACS Medicinal Chemistry Letters*, 2022, vol. 13, iss. 8, str. 1270–1277, [COBISS.SI-ID 117643267].

GUZELJ, Samo, ŠIŠIČ, Marcela, BIZJAK, Špela, FRKANEC, Leo, FRKANEC, Ruža, JAKOPIN, Žiga. Lipidation of NOD2 agonists with adamantane and stearyl moieties differentially regulates their In vivo adjuvant activity. *Pharmaceutics*, 2022, vol. 14, iss. 12, art. 2755, str. 1–9, [COBISS.SI-ID 133033219].

GUZELJ, Samo, WEISS, Matjaž, SLÜTTER, Bram, FRKANEC, Ruža, JAKOPIN, Žiga. Covalently conjugated NOD2/TLR7 agonists are potent and versatile immune potentiators. *Journal of medicinal chemistry*, 2022, vol. 65, no. 22, str. 15085–15101, [COBISS.SI-ID 128189187].

GUZELJ, Samo, JAKOPIN, Žiga. Nucleotide-Binding oligomerization domain 1/Toll-like receptor 4 co-engagement promotes non-specific immune response against K562 cancer cells. *Frontiers in pharmacology*, 2022, vol. 13, art. 920928, str. 1–12, [COBISS.SI-ID 117623555].

GUZELJ, Samo, TOMAŠIČ, Tihomir (avtor, korespondenčni avtor), JAKOPIN, Žiga. Novel scaffolds for modulation of NOD2 identified by pharmacophore-based virtual screening. *Biomolecules*, 2022, vol. 12, iss. 8, art. 1054, str. 1–17, [COBISS.SI-ID 117616387].

HARING, Gregor, ZUPAN, Janja. Knee and peri-knee tissues of post mortem donors are strategic sources of Mesenchymal stem/stromal Cells for regenerative procedures. *International journal of molecular sciences*, 2022, vol. 23, iss. 6, str. 1–21, [COBISS.SI-ID 103163395].

HOMŠAK, Miha, TRAMPUŽ, Marko, NAVERŠNIK, Klemen, KITANOVSKI, Zoran, ŽNIDARIČ, Mateja, KIEFER, Markus, ČASAR, Zdenko. Assessment of a diverse array of nitrite scavengers in solution and solid state: a study of inhibitory effect on the formation of alkyl-aryl and dialkyl N-nitrosamine derivatives. *Processes*, 2022, vol. 10, iss. 11, str. 1–18, [COBISS.SI-ID 129891843].

HROVAT, Katja, REHBERGER LIKOZAR, Andreja, ZUPAN, Janja, ŠEBEŠTJEN, Miran. Gene expression profiling of markers of inflammation, angiogenesis, coagulation and fibrinolysis in patients with coronary artery disease with very high lipoprotein(a) levels treated with PCSK9 inhibitors. *Journal of cardiovascular development and disease*, 2022, vol. 9, no. 7, str. 1–13, [COBISS.SI-ID 114718979].

JAGARLAMUDI, K. K., SWINKELS, M. J. W., ZUPAN, Mojca, OSREDKAR, Joško, VENGE, Per, ERIKSSON, Stefan. Analytical and clinical characterization of an optimized dual monoclonal sandwich ELISA for the quantification of thymidine kinase 1 (TK1) protein in human blood samples. *PloS one*. 2022, vol. 17, iss. 10, art. e0275444, str. 1–22, [COBISS.SI-ID 141114883].

JAIN, Arjun, BOZOVIČAR, Krištof, MEHROTRA, Vidhi, BRATKOVIČ, Tomaž, JOHNSON, Martin H., JHA, Ira. Investigating the specificity of endothelin-traps as a potential therapeutic tool for endothelin-1 related disorders. *World journal of diabetes*, 2022, vol. 13, iss. 6, str. 434–441, [COBISS.SI-ID 110850819].

JASENC, Lara, STRAŽAR, Klemen, TREBŠE, Rihard, MIHELIČ, Anže, MIHALIČ, Rene, JERAS, Matjaž, ZUPAN, Janja. In vitro characterization of the human skeletal stem cell-like properties of primary bone-derived mesenchymal stem /stromal cells in patients with late and early hip osteoarthritis. *Life*, 2022, vol. 12, iss. 6, art. 899, str. 1–15, [COBISS.SI-ID 112107267].

JAZBEC, Katerina (avtor, korespondenčni avtor), JEŽ, Mojca, ŠVAJGER, Urban, SMREKAR, Boštjan, MICESKA, Simona, RAJČEVIČ, Uroš, JUSTIN, Mojca, ZAVRŠNIK, Janja, MALOVRH, Tadej, ŠVARA, Tanja, GOMBAČ, Mitja, RAMŠAK, Živa, ROŽMAN, Primož. The influence of heterochronic non-myeloablative bone marrow transplantation on the immune system, frailty, general health, and longevity of aged murine recipients. *Biomolecules*, 2022, vol. 12, iss. 4, str. 1–21, [COBISS.SI-ID 105264643].

JOŠT, Maja KNEZ, Lea, MRHAR, Aleš, KEREK KOS, Mojca. Adverse drug events during transitions of care: randomized clinical trial of medication reconciliation at hospital admission. *Wiener klinische Wochenschrift*, 2022, vol. 134, iss. 3/4, str. 130–138, [COBISS.SI-ID 86913539].

JUHÁS, Martin, PALLABOTHULA S. K., Vinod, GRABRIJAN, Katarina, ŠIMOVIČOVÁ, Martina, JANDŮREK, Ondřej, KONEČNÁ, Klára, BÁRTA, Pavel, GOBEC, Stanislav, SOSIČ, Izidor, ZITKO, Jan, et al. Design, synthesis and biological evaluation of substituted 3-amino-N-(thiazol-2-yl)pyrazine-2-carboxamides as inhibitors of mycobacterial methionine aminopeptidase 1. *Bioorganic chemistry*, 2022, vol. 118, str. 1–9, [COBISS.SI-ID 84883715].

JUKIČ, Marko, AUGER, Rodolphe, FOLCHER, Victor, PROJ, Matic, BARRETEAU, Hélène, GOBEC, Stanislav, TOUZÉ, Thierry. Towards discovery of inhibitors of the undecaprenyl-pyrophosphate phosphatase BacA by virtual high-throughput screening. *Computational and Structural Biotechnology Journal*, 2022, vol. 20, str. 2360–2371, [COBISS.SI-ID 108336643].

KARAS KUŽELIČKI, Nataša, ŠMID, Alenka, VIDMAR, Maša, KEK, Tina, GERŠAK, Borut, MAZIČ, Uroš, MLINARIČ-RAŠČAN, Irena, GERŠAK, Ksenija. A common polymorphism in the MTHFD1 gene is a modulator of risk of congenital heart disease. *Journal of cardiovascular development and disease*, 2022, vol. 9, no. 6, str. 1–14, [COBISS.SI-ID 109243907].

KENDA, Maša, PEČAR FONOVIC, Urša, KOS, Janko, SOLLNER DOLENC, Marija. The effect of endocrine disrupting chemicals on the vitronectin-receptor (integrinalphavbeta3alphavbeta3)-mediated cell adhesion of human umbilical vein endothelial cells. *Toxicology in vitro*, 2022, vol. 79, str. 1–7, [COBISS.SI-ID 85860099].

KENDA, Maša, ZORE, Taja, SOLLNER DOLENC, Marija. Effects of central nervous system drugs on androgen, estrogen alpha, glucocorticoid, and thyroid receptors. *Chemico-biological interactions*, 2022, vol. 363, str. 1–8, [COBISS.SI-ID 112819203].

KENDA, Maša, AVSEC, Damjan, ZORE, Taja, KOGOVŠEK, Eva, PEČAR FONOVIC, Urša, KOS, Janko, BOZOVIČAR, Krištof, BRATKOVIČ, Tomaž, KARAS KUŽELIČKI, Nataša, ŽEGURA, Bojana, FILIPIČ, Metka, SOLLNER DOLENC, Marija. Effects of tyrosine kinase inhibitors on androgen, estrogen $\alpha\alpha$ glucocorticoid and thyroid receptors. *Toxicology and applied pharmacology*, 2022, vol. 434, str. 1–10, [COBISS.SI-ID 88548099].

KNEZ, Damijan, GOBEC, Stanislav, HRAST, Martina. Screening of big pharma's library against various in-house biological targets. *Molecules*, 2022, vol. 27, iss. 14, art. 4484, str. 1–12, [COBISS.SI-ID 117586947].

KNEZ, Damijan, HRAST, Martina, FRLAN, Rok, PIŠLAR, Anja, ŽAKELJ, Simon, KOS, Janko, GOBEC, Stanislav. Indoles and 1-(3-(benzyloxy)benzyl)piperazines: reversible and selective monoamine oxidase B inhibitors identified by screening an in-house compound library. *Bioorganic chemistry*, 2022, vol. 119, str. 1–19, [COBISS.SI-ID 91639299].

KODERMAN PODBORŠEK, Gorazd, ZUPANČIČ, Špela, KAUFMAN, Rok, SURCA, Angelja Kjara, MARSEL, Aleš, PAVLIŠIČ, Andraž, HODNIK, Nejc, DRAŽIČ, Goran, BELE, Marjan. Microstructure and electrical conductivity of electrospun titanium oxynitride carbon composite nanofibers. *Nanomaterials*, 2022, vol. 12, no. 13, str. 1–17, [COBISS.SI-ID 114169091].

KOKALJ, Meta, KOČEVAR GLAVAČ, Nina. GC/MS analysis of A Helichrysum italicum hydrosol: sensitivity, repeatability and reliability of solvent extraction versus direct hydrosol analysis. *Applied sciences*, 2022, vol. 12, iss. 19, art. 10040, str. 1–11, [COBISS.SI-ID 124905731].

KOKALJ, Meta, KOČEVAR GLAVAČ, Nina. Statistical FT-IR spectroscopy for the characterization of 17 vegetable oils. *Molecules*, 2022, vol. 27, iss. 10, str. 1–14, [COBISS.SI-ID 107994627].

KOKOT, Maja, WEISS, Matjaž, ZDOVC, Irena, ANDERLUH, Marko, HRAST, Martina, MINOVSKI, Nikola. Diminishing hERG inhibitory activity of aminopiperidine-naphthyridine linked NBTI antibacterials by structural and physicochemical optimizations. *Bioorganic chemistry*, 2022, vol. 128, str. 1–14, [COBISS.SI-ID 118137091].

KOLEV, Emil, MIRCHEVA, Lilyana, EDWARDS, Michael R., JOHNSTON, Sebastian L., KALINOV, Krassimir, STANGE, Rainer, GANCITANO, Giuseppe, VANDEN BERGHE, Wim, KREFT, Samo. Echinacea purpurea for the long-term prevention of viral respiratory tract infections during covid-19 pandemic: a randomized, open, controlled, exploratory clinical study. *Frontiers in pharmacology*, 2022, vol. 13, str. 1–9, [COBISS.SI-ID 106347267].

KONC, Janez, LEŠNIK, Samo, ŠKRLJ, Blaž, SOVA, Matej, PROJ, Matic, KNEZ, Damijan, GOBEC, Stanislav, JANEŽIČ, Dušanka. ProBiS-Dock: a hybrid multitemplate homology flexible docking algorithm enabled by protein binding site comparison. *Journal of chemical information and modeling*, 2022, vol. 62, iss. 6, str. 1573–1584, [COBISS.SI-ID 101681411].

KORAČIN, Nejc, ZUPANČIČ, Matevž, VREČER, Franc, HUDOVORNIK, Grega, GOLOBIČ, Iztok. Characterization of the spray droplets and spray pattern by means of innovative optical microscopy measurement method with the high-speed camera. *International journal of pharmaceutics*, 2022, vol. 629, str. 1–8, [COBISS.SI-ID 130835715].

KOVAČ, Lidija, ČASAR, Zdenko, TRDAN LUŠIN, Tina, ROŠKAR, Robert. Development of an analytical method for determination of related substances and degradation products of cabotegravir using analytical quality by design principles. *ACS omega*, 2022, iss. 10, vol. 7, str. 8896–8905, [COBISS.SI-ID 100925955].

KOVAČEVIĆ, Mila, GERMAN ILIĆ, Ilija, BOLKO SELJAK, Katarina, ZVONAR POBIRK, Alenka. High-shear wet granulation of SMEDDS based on mesoporous carriers for Improved carvedilol solubility. *Pharmaceutics*, 2022, vol. 14, iss. 10, art. 2077, str. 1–21, [COBISS.SI-ID 123836163].

KREFT, Klemen, LAVRIČ, Zoran, STANIĆ LJUBIN, T., PERHAVEC, Petra, DREU, Rok. Influence of the binder jetting process parameters and binder liquid composition on the relevant attributes of 3D-printed tablets. *Pharmaceutics*, 2022, vol. 14, iss. 8, art. 1568, str. 1–21, [COBISS.SI-ID 119609859].

KUNC, Nina, FRLAN, Antonela, BARIČEVIČ, Dea, KOČEVAR GLAVAČ, Nina, KOKALJ, Meta. Essential oil and hydrosol composition of immortelle (*Helichrysum italicum*). *Plants*, 2022, vol. 11, iss. 19, art. 2573, str. 1–12, [COBISS.SI-ID 124658179].

KUZMIČ, Samo, HRAST, Martina, FRLAN, Rok. The synthesis of (2R)-aziridine-2-carboxylic acid containing dipeptides. *Acta chimica slovenica*, 2022, vol. 69, no. 2, str. 261–270, [COBISS.SI-ID 108102659].

LAMEŠIČ, Dejan, PLANINŠEK, Odon, ROŠKAR, Robert, GRILC, Blaž, et al. Spherical agglomerates of lactose reduce segregation in powder blends and improve uniformity of tablet content at high drug loads. *AAPS PharmSciTech*, 2022, vol. 23, str. 1–15, [COBISS.SI-ID 84940547].

LAVRIŠA, Živa, HRISTOV, Hristo, HRIBAR, Maša, KOROUŠIČ-SELJAK, Barbara, GREGORIČ, Matej, BLAZNIK, Urška, ZALETEL, Katja, OBLAK, Adrijana, OSREDKAR, Joško, KUŠAR, Anita, ŽMITEK, Katja, LAINŠČAK, Mitja, PRAVST, Igor. Dietary iron intake and biomarkers of iron status in Slovenian population: results of SI.Menu/nutrihealth study. *Nutrients*, 2022, vol. 14, iss. 23, art. 5144, str. 1–26, [COBISS.SI-ID 132231939].

LAVRIŠA, Živa, HRISTOV, Hristo, HRIBAR, Maša, ŽMITEK, Katja, KUŠAR, Anita, KOROUŠIČ-SELJAK, Barbara, GREGORIČ, Matej, BLAZNIK, Urška, GREGORIČ, Nadan, ZALETEL, Katja, OBLAK, Adrijana, OSREDKAR, Joško, PRAVST, Igor. Dietary intake and status of vitamin B12 in Slovenian population. *Nutrients*, 2022, vol. 14, iss. 2, str. 1–22, [COBISS.SI-ID 93577219].

LEGAN, Mateja, BARBIČ, Matija, OSREDKAR, Joško, BLAGANJE, Mija. Association of vitamin D deficiency and pelvic organ prolapse in postmenopausal women: a cross-sectional study. *Women's midlife health*, 2022, vol. 8, iss. 9, str. 1–7, [COBISS.SI-ID 118315523].

LOI, Elena Maria, TOMAŠIČ, Tihomir, BALSOLLIER, Cyril, VAN EEKELEN, Kevin, WEISS, Matjaž, GOBEC, Martina, ALTEEN, Matthew G., VOCADLO, David J., PIETERS, Roland J., ANDERLUH, Marko. Discovery of a new drug-like series of OGT inhibitors by virtual screening. *Molecules*, 2022, vol. 27, iss. 6, str. 1–21, [COBISS.SI-ID 101699843].

MAJC, Bernarda, HABIČ, Anamarija, NOVAK, Metka, ROTTER, Ana, PORČNIK, Andrej, MLAKAR, Jernej, ŽUPUNSKI, Vera, PEČAR FONOVIČ, Urša, KNEZ, Damijan, ZIDAR, Nace, GOBEC, Stanislav, KOS, Janko, LAH TURNŠEK, Tamara, PIŠLAR, Anja, BREZNIK, Barbara. Upregulation of cathepsin X in glioblastoma: interplay with gamma-enolase and the effects of selective cathepsin X inhibitors. *International journal of molecular sciences*, 2022, vol. 23, iss. 3, str. 1–22, [COBISS.SI-ID 96442883].

MARASCA, Camilla, MANDRIOLI, Roberto, SARDELLA, Roccaldo, VOVK, Tomaž, ARMIROTTI, Andrea, CAVALLI, Andrea, SERRETTI, Alessandro, PROTTI, Michele, MERCOLINI, Laura. Dried volumetric microsampling approaches for the therapeutic drug monitoring of psychiatric patients undergoing clozapine treatment. *Frontiers in psychiatry*, 2022, vol. 13, str. 1–22, [COBISS.SI-ID 105496323].

MARKOVIČ, Tijana, PODGORNIK, Helena, AVSEC, Damjan, NABERGOJ, Sanja, MLINARIČ-RAŠČAN, Irena (avtor, korespondenčni avtor). The enhanced cytotoxic effects in B-cell leukemia and lymphoma following activation of prostaglandin EP4 receptor and targeting of CD20 antigen by monoclonal antibodies. *International journal of molecular sciences*, 2022, vol. 23, iss. 3, str. 1–19, [COBISS.SI-ID 96734467].

MEDEN, Anže, KNEZ, Damijan, BRAZZOLOTTO, Xavier, NACHON, Florian, DIAS, Jose, SVETE, Jurij, STOJAN, Jure, GROŠELJ, Uroš, GOBEC, Stanislav. From tryptophan-based amides to tertiary amines: optimization of a butyrylcholinesterase inhibitor series. *European journal of medicinal chemistry*, 2022, vol. 234, str. 1-39, [COBISS.SI-ID 100613379].

MIHOVEC, Katja, TEMOVA RAKUŠA, Žane, GAÁL, Enikő Éva, ROŠKAR, Robert. Evaluation of the stability of hydrocortisone sodium succinate in solutions for parenteral use by a validated HPLC-UV method. *Acta chimica slovenica*, 2022, vol. 69, no. 4, str. 796–802, [COBISS.SI-ID 125575171].

MILLER, Daniel H., VOELL, Sabine Anna, SOSIČ, Izidor, PROJ, Matic, ROSSANESE, Olivia, SCHNAKENBURG, Gregor, GÜTSCHOW, Michael, COLLINS, Ian, STEINEBACH, Christian. Encoding BRAF inhibitor functions in protein degraders. *RSC medicinal chemistry*, 2022, vol. 13, iss. 6, str. 731–736, [COBISS.SI-ID 106746115].

MITROVIĆ, Ana, SENJOR, Emanuela, JUKIČ, Marko, BOLČINA, Lara, PRUNK, Mateja, PROJ, Matic, PERIŠIĆ, Milica, GOBEC, Stanislav, KOS, Janko. New inhibitors of cathepsin V impair tumor cell proliferation and elastin degradation and increase immune cell cytotoxicity. *Computational and Structural Biotechnology Journal*, 2022, vol. 20, str. 4667–4687, [COBISS.SI-ID 119687939].

MITROVIĆ, Ana, ZAVRŠNIK, Janja, MIKHAYLOV, Georgy, KNEZ, Damijan, PEČAR FONOVIĆ, Urša, MATJAN-ŠTEFIN, Petra, BUTINAR, Miha, GOBEC, Stanislav, TURK, Boris, KOS, Janko. Evaluation of novel cathepsin-X inhibitors in vitro and in vivo and their ability to improve cathepsin-B-directed antitumor therapy. *Cellular and molecular life sciences*, 2022, vol. 79, no. 1, str. 1-14, [COBISS.SI-ID 92443651].

MOUSSAOUI, Oussama, BHADANE, Rajendra, SGHYAR, Riham, ILAŠ, Janez, EL HADRAMI, El Mestafa, CHAKROUNE, Said, SALO-AHEN, Outi. Design, synthesis, in vitro and in silico characterization of 2-quinolone-L-alaninate-1,2,3-triazoles as antimicrobial agents. *ChemMedChem*, 2022, vol. 17, iss. 5, e202100714, str. 1–11, [COBISS.SI-ID 96723715].

MURGAJ, Arunima, SOSIČ, Izidor, GOBEC, Martina, LEMNITZER, Patricia, PROJ, Matic, WITTENBURG, Sophie, VOGET, Rabea, GÜTSCHOW, Michael, KRÖNKE, Jan, STEINEBACH, Christian. Targeting the deubiquitinase USP7 for degradation with PROTACs. *Chemical communications*, 2022, vol. 58, iss. 63, str. 8858–8861, [COBISS.SI-ID 115213571].

NABERGOJ MAKOVEC, Urška, GOETZINGER, Catherine, RIBAUT, Janette, PILAR, Barnestein-Fonseca, HAUPENTHAL, Frederik, HERDEIRO, Maria Teresa, SEAN PATRICK, Grant, JÁCOME, Cristina, ROQUE, Fátima, SMITS, Dins, TADIĆ, Ivana, et al. Developing a medication adherence technologies repository: proposed structure and protocol for an online real-time Delphi study. *BMJ open*, 2022, vol. 12, iss. 4, str. 1–12, [COBISS.SI-ID 106278403].

OLECHNO, Katarzyna, GRILC, Katarina Nina, ZUPANČIČ, Špela, WINNICKA, K. Incorporation of ethylcellulose microparticles containing a model drug with a bitter taste into nanofibrous mats by the electrospinning technique – preliminary studies. *Materials*, 2022, vol. 15, iss. 15, art 5286, str. 1-10, [COBISS.SI-ID 118353155].

OSREDKAR, Joško, FABJAN, Teja, KUMER, Kristina, TRŠAN, Jure, POLJANČIČ, Laura, KOŠIR, Miha, VOVK, Pia, SNOJ, Nada, FINDERLE, Petra, MOŽINA, Hugon. Comparison of ADVIA Centaur ultra-sensitive and high-sensitive assays for troponin I in serum. *Practical laboratory medicine*, 2022, vol. 33, art. e00293, str. 1–6, [COBISS.SI-ID 115290371].

OSREDKAR, Joško, GERŠAK, Živa Miriam, KARAS KUŽELIČKI, Nataša, SNOJ TRATNIK, Janja, MAZEJ, Darja, FALNOGA, Ingrid, HORVAT, Milena, GERŠAK, Ksenija (avtor, korespondenčni avtor). Association of Zn and Cu levels in cord blood and maternal milk with pregnancy outcomes among the Slovenian population. *Nutrients*, 2022, vol. 14, no. 21, str. 1–19, [COBISS.SI-ID 128037379].

OSREDKAR, Joško, PUCKO, Sara, LUKIČ, Milica, FABJAN, Teja, BOŽNAR ALIČ, Elizabeta, KUMER, Kristina, MARTIN RODRIGUEZ, Maria, JEREB, Matjaž. The predictive value of oxidative stress index in patients with confirmed SARS-COV-2 infection. *Acta chimica slovenica*, 2022, vol. 69, no. 3, str. 564–570, [COBISS.SI-ID 124453635].

PANIĆ, Jovana, VRANEŠ, Milan, MIRTIČ, Janja, CERC KOROŠEC, Romana, ZUPANČIČ, Špela, GADŽURIĆ, Slobodan, KRISTL, Julijana, BEŠTER-ROGAČ, Marija. Preparation and characterization of innovative electrospun nanofibers loaded with pharmaceutically applicable ionic liquids. *International journal of pharmaceutics*, 2022, vol. 615, str. 1–11, [COBISS.SI-ID 95357699].

PEKLAR, Boris, PERDIH, Franc, MAKUC, Damjan, PLAVEC, Janez, CLUZEAU, Jérôme, KITANOVSKI, Zoran, ČASAR, Zdenko. Glasdegib dimaleate: synthesis, characterization and comparison of its properties with monomaleate analogue. *Pharmaceutics*, 2022, vol. 14, issue 8, str. 1–26, [COBISS.SI-ID 118209027].

PERIŠIĆ, Milica, ŽURGA, Simon, KONJAR, Špela, PRUNK, Mateja, KOS, Janko, SABOTIČ, Jerica. The fungal *Clitocybe nebularis* lectin binds distinct cell surface glycoprotein receptors to induce cell death selectively in Jurkat cells. *The FASEB journal*, 2022, vol. 36, no. 4, str. e22215-1-e22215-20, [COBISS.SI-ID 99060227].

PIŠLAR, Anja, BOŽIČ, Biljana, PERIĆ, Mina, JAKOŠ, Tanja, ZIDAR, Nace, KOS, Janko. Cysteine peptidase cathepsin X as a therapeutic target for simultaneous TLR3/4-mediated microglia activation. *Molecular neurobiology*, 2022, vol. 56, iss. 4, str. 2258–2276, [COBISS.SI-ID 95406083].

POHLEN, Mitja, ZDOVC, Jurij, TRONTELJ, Jurij, MRAVLJAK, Janez, GOSENCA MATJAZ, Mirjam, GRABNAR, Iztok, SNOJ, Tomaž, DREU, Rok. Relative bioavailability enhancement of simvastatin via dry emulsion systems : comparison of spray drying and fluid bed layering technology. *European journal of pharmaceutics and biopharmaceutics*, 2022, vol. 172, str. 228–239, [COBISS.SI-ID 93593859].

PRAH, Alja, GAVRANIĆ, Tanja, PERDIH, Andrej, SOLLNER DOLENC, Marija, MAVRI, Janez. Computational insights into beta-carboline inhibition of monoamine oxidase A. *Molecules*, 2022, vol. 27, iss. 19, art. 6711, str. 1–20, [COBISS.SI-ID 124842499].

PRELESNIK, Sara, ČEBRON LIPOVEC, Nanča, KOS, Mitja. Ozaveščenost pacientk, farmacevtov in predpisovalcev o farmakovigilančnih ukrepih za varno uporabo retinoidov = Awareness of pharmacovigilance measures for safe use of retinoids among female patients, pharmacists and prescribers. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 199–209, [COBISS.SI-ID 115498755].

PROJ, Matic, DE JONGHE, Steven, VAN LOY, Tom, JUKIČ, Marko, MEDEN, Anže, CIBER, Luka, PODLIPNIK, Črtomir, GROŠELJ, Uroš, KONC, Janez, SCHOLS, Dominique, GOBEC, Stanislav. A set of experimentally validated decoys for the human CC chemokine receptor 7 (CCR7) obtained by virtual screening. *Frontiers in pharmacology*, 2022, vol. 13, str. 1–13, [COBISS.SI-ID 101491459].

PROJ, Matic, ZIDAR, Mitja, LEBAR, Blaž, STRAŠEK, Nika, MILIČIĆ, Goran, ŽULA, Aleš, GOBEC, Stanislav. Discovery of compounds with viscosity-reducing effects on biopharmaceutical formulations with monoclonal antibodies. *Computational and Structural Biotechnology Journal*, 2022, vol. 20, str. 5420–5429, [COBISS.SI-ID 123845891].

PROJ, Matic, BOZOVIČAR, Krištof, HRAST, Martina, FRLAN, Rok, GOBEC, Stanislav. DNA-encoded library screening on two validated enzymes of the peptidoglycan biosynthetic pathway. *Bioorganic & Medicinal Chemistry Letters*, 2022, vol. 73, art. 128915, str. 1–4 str, [COBISS.SI-ID 117813507].

PROJ, Matic, HRAST, Martina, KNEZ, Damijan, BOZOVIČAR, Krištof, GRABRIJAN, Katarina, MEDEN, Anže, GOBEC, Stanislav, FRLAN, Rok. Fragment-sized thiazoles in fragment-based drug discovery campaigns: friend or foe?. *ACS Medicinal Chemistry Letters*, 2022, vol. 13, iss. 12, str. 1905–1910, [COBISS.SI-ID 130706947].

PROSCHAK, Anna, MARTINELLI, Giada, FRANK, Denia, ROTTER J., Marco, BRUNST, Steffen, WEIZEL, Lilia, BURGERS D., Luisa, FÜRST, Robert, PROSCHAK, Ewgenij, SOSIČ, Izidor, GOBEC, Stanislav, et al. Nitroxoline and its derivatives are potent inhibitors of metallo- β -lactamases. *European journal of medicinal chemistry*, 2022, vol. 228, str. 1–10, [COBISS.SI-ID 84869891].

RENKO, Miha, ZUPAN, Tanja, PLAZA, David F., SCHMIEDER, Stefanie S., PERIŠIĆ, Milica, KOS, Janko, TURK, Dušan, KÜNZLER, Markus, SABOTIČ, Jerica. Cocaprins, $\beta\beta$ -trefoil fold inhibitors of cysteine and aspartic proteases from *Coprinopsis cinerea*. *International journal of molecular sciences*, 2022, vol. 23, iss. 9, str. 4916-1-4916-15, [COBISS.SI-ID 106176771].

SARAF, Isha, ROŠKAR, Robert, MODHAVE, Dattatray, BRUNSTEINER, Michael, KARN, Anjali, NESHCHADIN, Dmytro, GESCHEIDT, Georg, PAUDEL, Amrit. Forced solid-state oxidation studies of nifedipine-PVP amorphous solid dispersion. *Molecular pharmaceutics*, 2022, vol. 19, iss. 2, str. 568–583, [COBISS.SI-ID 96891907].

SCHLICHTNER, Stephanie, YASINSKA, Inna M., RUGGIERO, Sabrina, BERGER, Steffen M., ALIU, Nijas, PRUNK, Mateja, KOS, Janko, MEYER, N. Helge, GIBBS, Bernhard F., FASLER-KAN, Elizaveta, SUMBAYEV, Vadim V. Expression of the immune checkpoint protein VISTA is differentially regulated by the TGF-1 β Smad3 signaling pathway in rapidly proliferating human cells and T Lymphocytes. *Frontiers in medicine*, 2022, vol. 9, str. 1–10, [COBISS.SI-ID 96884995].

SCHOSS, Katja, BENEDETIČ, Rebeka, KREFT, Samo. The phenolic content, antioxidative properties and extractable substances in Silver fir (*Abies alba* Mill.) branches decrease with distance from the trunk. *Plants*, 2022, vol. 11, no. 3, str. 1–9, [COBISS.SI-ID 96702979].

SCHOSS, Katja, KOČEVAR GLAVAČ, Nina, DOLENC KOCE, Jasna, ANŽLOVAR, Sabina. Supercritical CO₂ plant extracts show antifungal activities against Crop-Borne fungi. *Molecules*, 2022, vol. 27, iss. 3, str. 1–15, [COBISS.SI-ID 96933891].

SCHULTE, Bianca, KÖNIG, Maria, ESCHER, Beate I., WITTENBURG, Sophie, PROJ, Matic, WOLF, Valentina, LEMKE, Carina, SCHNAKENBURG, Gregor, SOSIČ, Izidor, STREECK, Hendrik, et al. Andrographolide derivatives target the KEAP1/NRF2 axis and possess potent anti-SARS-CoV-2 activity. *ChemMedChem*, 2022, vol. 17, iss. 5, e202100732, str. 1–11, [COBISS.SI-ID 96813827].

SHARABI-NOV, Adi, TUL, Nataša, KUMER, Kristina, PREMUR-SRŠEN, Tanja, FABJAN-VODUŠEK, Vesna, FABJAN, Teja, OSREDKAR, Joško, NICOLAIDES, Kypros H., MEIRI, Hamutal. Biophysical markers of suspected preeclampsia, fetal growth restriction and the two combined – how accurate they are?. *Reproductive medicine*, 2022, vol. 3, iss. 2, str. 62–84, [COBISS.SI-ID 104946947].

SIBINOVSKA, Nadica, ŽAKELJ, Simon, TRONTELJ, Jurij, KRISTAN, Katja. Applicability of RPMI 2650 and Calu-3 cell models for evaluation of nasal formulations. *Pharmaceutics*, 2022, vol. 14, issue 2, art.369, str. 1–19, [COBISS.SI-ID 107048707].

SLAVEC, Lara, KARAS KUŽELIČKI, Nataša, LOCATELLI, Igor, GERŠAK, Ksenija. Genetic markers for non-syndromic orofacial clefts in populations of European ancestry: a meta-analysis. *Scientific reports*, 2022, vol. 12, str. 1–14, [COBISS.SI-ID 92147459].

SOPIĆ D., Miron, NINIĆ, Ana, OSTANEK, Barbara, BOJANIN, Dragana, MILENKOVIĆ, Tatjana, MUNJAS, Jelena, MIHAJLOVIĆ, Marija, VEKIĆ, Jelena, MARC, Janja, KALIMANOVSKA SPASOJEVIĆ, Vesna. Downregulation of MAPK/MAK/MRK overlapping kinase 1 in peripheral blood mononuclear cells of pediatric patients with type 1 diabetes mellitus = Nishodna regulacija MAPK/MAK/MRK preklapajuće kinaze u mononuklearnim ćelijama periferne krvi pedijatrijskih pacijenata sa tip1 Diabetes mellitus-om. *Journal of Medical Biochemistry*. 2022, vol. 41, no. 3, str. 282–289, [COBISS.SI-ID 141569283].

STOJANOV, Spase, KRISTL, Julijana, ZUPANČIČ, Špela, BERLEC, Aleš. Influence of excipient composition on survival of vaginal lactobacilli in electrospun nanofibers. *Pharmaceutics*, 2022, vol. 14, iss. 6, art. 1155, str. 1–17, [COBISS.SI-ID 110284547].

ŠTERMAN, Andrej, SOSIČ, Izidor, ČASAR, Zdenko. Primary trifluoroborate-iminiums enable facile access to chiral alpha-aminoboronic acids via ruthenium-catalyzed asymmetric hydrogenation and simple hydrolysis of trifluoroborate moiety. *Chemical science*, 2022, vol. 13, issue. 10, str. 2946–2953, [COBISS.SI-ID 95169795].

VAN KLAVEREN, Sjors, SUNDIN, Anders, JAKOPIN, Žiga, ANDERLUH, Marko, LEFFLER, Hakon, NILSSON, Ulf, TOMAŠIČ, Tihomir. Selective galectin-8N ligands : the design and synthesis of phthalazinone-d-galactals. *ChemMedChem*, 2022, vol. 17, iss. 6, art. e202100575, str. 1-8, [COBISS.SI-ID 89783811].

VAN KLAVEREN, Sjors, DERNOVŠEK, Jaka, JAKOPIN, Žiga, ANDERLUH, Marko, LEFFLER, Hakon, NILSSON, Ulf, TOMAŠIČ, Tihomir. Design and synthesis of novel 3-triazolyl-1-thiogalactosides as galectin-1, -3 and -8 inhibitors. *RSC advances*, 2022, vol. 12, iss. 29, str. 18973–18984, [COBISS.SI-ID 113857283].

VANDENBOSCH, Michiel, PAJK, Stane, VAN DEN BOGAERT, Wouter, WUJSTENBERGS, Joke, VAN DE VOORDE, Wim, CUYPERS, Eva. Post-mortem analysis of opioids and metabolites in skeletal tissue. *Journal of analytical toxicology*, 2022, vol. 46, iss. 7, str. 783–790, [COBISS.SI-ID 83610627].

VEČERIĆ-HALER, Željka, SEVER, Matjaž, KOJC, Nika, HALLORAN, Philip F., BOŠTJANČIČ, Emanuela, MLINŠEK, Gregor, OBLAK, Manca, POŽENEL, Primož, ŠVAJGER, Urban, PRETNAR-HARTMAN, Katrina, KNEŽEVIČ, Miomir, BARLIČ, Ariana, GIRANDON, Lenart, ALEŠ, Andreja, ZVER, Samo, BUTUROVIČ-PONIKVAR, Jadranka, ARNOL, Miha. Autologous mesenchymal stem cells for treatment of chronic active antibody-mediated kidney graft rejection: report of the phase I/II clinical trial case series. *Transplant international*, 2022, vol. 35, art. 10772, str. 1–10, [COBISS.SI-ID 131622403].

VIČIČ, Vid, KUKEC, Andreja, KUGLER, Saša, GERŠAK, Ksenija, OSREDKAR, Joško, PANDEL MIKUŠ, Ruža. Assessment of Vitamin D status in Slovenian premenopausal and postmenopausal women, using total, free, and bioavailable 25-hydroxyvitamin D (25(OH)D). *Nutrients*, 2022, vol. 14, iss. 24, art. 5349, str. 1–12, [COBISS.SI-ID 134262787].

VIDOVIČ, Sara, BIZJAK, Alan, SITAR, Anže, HORVAT, Matej, JANKOVIČ, Biljana, GOLOBIČ, Iztok. Development of a semi-empirical model for droplet size determination of a three-channel spray nozzle for pellet coating based on the optical method concept. *Processes*, 2022, vol. 10, iss. 1, str. 1–19, [COBISS.SI-ID 92405763].

VRAČKO, Marjan, STANOJEVIČ, Mark, SOLLNER DOLENC, Marija. Comparison of predictions of developmental toxicity for compounds of solvent data set. *SAR and QSAR in environmental research*, 2022, vol. 33, no. 1, str. 35–48, [COBISS.SI-ID 94650883].

VRŠČAJ, Lucija Ana, MARC, Janja, OSTANEK, Barbara. Interactome of PTH-Regulated miRNAs and their predicted target genes for Investigating the epigenetic effects of PTH (1–34) in bone metabolism. *Genes*, 2022, vol. 13, iss. 8, art. 1443, str. 1–15, [COBISS.SI-ID 118226947].

ZAHIROVIČ, Abida, PLAVEC, Tina Vida, BERLEC, Aleš. Dual functionalized lactococcus lactis shows tumor antigen targeting and cytokine binding in vitro. *Frontiers in bioengineering and biotechnology*, 2022, vol. 10, str. 822823-1-822823-17, [COBISS.SI-ID 95175427].

ZAJEC, Živa (avtor, korespondenčni avtor), DERNOVŠEK, Jaka, GOBEC, Martina, TOMAŠIČ, Tihomir. In silico discovery and optimisation of a novel structural class of Hsp90 C-terminal domain inhibitors. *Biomolecules*, 2022, vol. 12, iss. 7, art 884, str. 1–23, [COBISS.SI-ID 113870339].

ZDOVC, Jurij, VAUPOTIČ, Mihaela, MAROLT, Gregor, KNEZ, Lea, REŽONJA, Renata, ČUFER, Tanja, VOVK, Tomaž, GRABNAR, Iztok. Population pharmacokinetics of cisplatin in small cell lung cancer patients guided with informative priors. *Cancer chemotherapy and pharmacology*, 2022, vol. 90, iss. 4, str. 301–313, [COBISS.SI-ID 118699523].

ŽEPIČ BOGATAJ, Vesna, OVEN, Primož, ČOP, Matjaž, VEK, Viljem, JANKOVIČ, Biljana, POLJANŠEK, Ida. Physical, rheological and mechanical properties of alkali activated hydrogels based on nanofibrillated cellulose. *Journal of natural fibers*, 2022, vol. 19, iss. 17, str. 16040–16052, [COBISS.SI-ID 122854147].

ŽEROVNIK, Špela, KOS, Mitja, LOCATELLI, Igor. Initiation of insulin therapy in patients with type 2 diabetes: an observational study. *Acta pharmaceutica*, 2022, vol. 72, no. 1, str. 147–157, [COBISS.SI-ID 60946179].

ŽIVEC, Katarina, VEBER, Matija, PIŽEM, Jože, JEŽ, Mojca, BOŽIKOV, Krešimir, ŠVAJGER, Urban. Intraoperative intradermal application of stromal vascular fraction into the abdominal suture line: histological analysis of abdominal scar tissue. *Aesthetic plastic surgery*, 2022, vol. 46, str. 2853–2862, [COBISS.SI-ID 104226051].

PREGLEDNI ZNANSTVENI ČLANKI / REVIEW ARTICLES

ANDERLUH, Marko, BERTI, Francesco, BZDUCHA-WRÓBEL, Anna, CHIODO, Fabrizio, COLOMBO, Cinzia, COMPOSTELLA, Federica, DURLIK, Katarzyna, FERHATI, Xhenti, HOLMDAHL, Rikard, ŠVAJGER, Urban, et al. Recent advances on smart glycoconjugate vaccines in infections and cancer. *FEBS journal*, 2022, vol. 289, iss. 14, str. 4251–4303, [COBISS.SI-ID 61513987].

AVSEC, Damjan, PODGORNIK, Helena, ŠKERGET, Matevž, MLINARIČ-RAŠČAN, Irena. Tarčno zdravljenje kronične limfocitne levkemije z zaviralci Brutonove tirozin kinaze = Targeting Bruton's tyrosine kinase in chronic lymphocytic leukemia. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 5, str. 410–417, [COBISS.SI-ID 132626435].

AVSEC, Damjan, PODGORNIK, Helena, MLINARIČ-RAŠČAN, Irena. Tarčno zdravljenje kronične limfocitne levkemije z antagonisti antiapoptotičnih proteinov = Antagonists of antiapoptotic proteins in the targeted therapy of chronic lymphocytic leukemia. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 1, str. 31–39, [COBISS.SI-ID 103039747].

BOLČINA, Lara, KOS, Janko, PIŠLAR, Anja. Pomen cisteinskih peptidaz pri nevrodegenerativnih boleznih = Importance of cysteine peptidases in neurodegenerative disorders. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 5, str. 403–409, [COBISS.SI-ID 132623619].

BRATKOVIČ, Tomaž. Monoklonska protitelesa za preprečevanje migrene = Monoclonal antibodies for the prevention of migraine. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 2, str. 107–114, [COBISS.SI-ID 108481539].

CARLI, Tanja, LOCATELLI, Igor, KOŠNIK, Mitja, KUKEC, Andreja. Epidemiology and risk factors of self-reported systemic allergic reactions to a Hymenoptera venom in beekeepers worldwide: a protocol for a systematic review of observational studies. *BMJ open*, 2022, vol. 12, iss. 7, str. 1–5, [COBISS.SI-ID 114751235].

CETIN, Sandra, KNEZ, Damijan, GOBEC, Stanislav, KOS, Janko, PIŠLAR, Anja. Cell models for Alzheimer's and Parkinson's disease: at the interface of biology and drug discovery. *Biomedicine & pharmacotherapy*, 2022, vol. 149, str. 1–11, [COBISS.SI-ID 105487619].

DURCIK, Martina, ILAŠ, Janez. Protibakterijske spojine z multiplim delovanjem = Antibacterial compounds with multiple mode of action. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 241–251, [COBISS.SI-ID 115506179].

GABRIČ, Alen, HODNIK, Žiga, PAJK, Stane. Oxidation of drugs during drug product development: problems and solutions. *Pharmaceutics*, 2022, vol. 14, iss. 2, str. 1–19, [COBISS.SI-ID 100590851].

GROBIN, Andrej, TRONTELJ, Jurij, ŠTRUKELJ, Borut. Estrogeni hormoni in estrogensko delujoči kemijski motilci endokrinega sistema = Estrogen hormones and estrogenically active endocrine disruptors: ali vplivajo na izražanje DNA?: do they influence DNA expression?. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 5, str. 375–383, [COBISS.SI-ID 132615427].

GUZONJIĆ, Azra, SOPIĆ D., Miron, OSTANEK, Barbara, KOTUR STEVULJEVIĆ, Jelena. Telomere length as a biomarker of aging and diseases = Dužina telomera kao biomarker staranja i bolesti. *Arhiv za farmaciju: časopis Farmaceutskog društva Srbije*, 2022, vol. 72, br 2, str. 105–126, [COBISS.SI-ID 108516099].

KENDA, Maša, KOČEVAR GLAVAČ, Nina, NAGY, Milan, SOLLNER DOLENC, Marija. Medicinal plants used for anxiety, depression, or stress treatment: an update. *Molecules*, 2022, vol. 27, iss. 18, str. 1–20, art. 6021, [COBISS.SI-ID 121583363].

KLANČIČ, Veronika, GOBEC, Martina, JAKOPIN, Žiga. Environmental contamination status with common ingredients of household and personal care products exhibiting endocrine-disrupting potential. *Environmental science and pollution research*, 2022, vol. 29, str. 73648–73674, [COBISS.SI-ID 122859523].

KLANČIČ, Veronika, GOBEC, Martina, JAKOPIN, Žiga. Halogenated ingredients of household and personal care products as emerging endocrine disruptors. *Chemosphere*, 2022, vol. 303, part 1, art. 134824, str. 1-19, [COBISS.SI-ID 117775107].

KLINC, Igor, SOLLNER DOLENC, Marija. Neklinično preverjanje varnosti zdravil, namenjenih pediatrični populaciji = Non-clinical safety testing of medicines intended for the paediatric population. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 5, str. 384-394, [COBISS.SI-ID 132614147].

KOKOT, Maja, ANDERLUH, Marko, HRAST, Martina, MINOVSKI, Nikola. The structural features of novel bacterial topoisomerase inhibitors that define their activity on topoisomerase IV. *Journal of medicinal chemistry*, 2022, vol. 65, iss. 9, str. 6431-6440, [COBISS.SI-ID 106691587].

KOS, Janko, MITROVIČ, Ana, PERIŠIČ, Milica, PIŠLAR, Anja. Lysosomal peptidases: intriguing roles in cancer progression and neurodegeneration. *FEBS open bio*, 2022, vol. 12, iss. 4, str. 708-738, [COBISS.SI-ID 95225859].

KREFT, Ivan, GERM, Mateja, GOLOB, Aleksandra, VOMBERGAR, Blanka, VOLLMANNOVÁ, Alena, KREFT, Samo, LUTHAR, Zlata. Phytochemistry, bioactivities of metabolites, and traditional uses of *Fagopyrum tataricum*. *Molecules*, 2022, vol. 27, iss. 20, art. 7101, str. 1-17, [COBISS.SI-ID 127403011].

MILOSHESKA, Daniela, ROŠKAR, Robert. Use of retinoids in topical antiaging treatments: a focused review of clinical evidence for conventional and nanoformulations. *Advances in therapy*, 2022, vol. 39, no. 12, str. 5351-5375, [COBISS.SI-ID 130724867].

MITROVIČ, Ana, KOS, Janko. Možnosti uporabe protimikrobnih učinkovin pri zdravljenju raka = Possible use of antimicrobial agents in cancer therapy. *Zdravniški vestnik: glasilo Slovenskega zdravniškega društva*, 2022, letn. 91, št. 5/6, str. 215-225, [COBISS.SI-ID 98189827].

OSEL, Nika, ROŠKAR, Robert. Analizne tehnike za vrednotenje (ne)stabilnosti proteinov = Analytical techniques for evaluation of protein (in)stability. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 252-260, [COBISS.SI-ID 115506947].

POLJŠAK, Nina, KOČEVAR GLAVAČ, Nina. Vegetable butters and oils as therapeutically and cosmetically active ingredients for dermal use: a review of clinical studies. *Frontiers in pharmacology*, 2022, vol. 13, str. 1-17, [COBISS.SI-ID 108011011].

POTRČ, Tanja, ERDANI-KREFT, Mateja, KOCBEK, Petra. Polimerna nanovlakna za dostavo učinkovin in regeneracijo tkiv pri zdravljenju raka = Polymer nanofibers for drug delivery and tissue regeneration in cancer treatment. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 3, str. 222-230, [COBISS.SI-ID 114658819].

PROJ, Matic, KNEZ, Damijan, SOSIČ, Izidor, GOBEC, Stanislav. Redox active or thiol reactive? Optimization of rapid screens to identify less evident nuisance compounds. *Drug discovery today*, 2022, vol. 27, iss. 6, str. 1733-1742, [COBISS.SI-ID 100881923].

REDE, Katarina, BOGATAJ, Marija. Prebavne lipaze in njihov pomen pri aplikaciji zdravil = Digestive lipases and their significance in drug delivery. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 5, str. 395-402, [COBISS.SI-ID 132620035].

SOSIČ, Izidor, BRICELJ, Aleša, STEINEBACH, Christian. E3 ligase ligand chemistries : from building blocks to protein degraders. *Chemical Society reviews*, 2022, vol. 51, iss. 9, str. 3487-3534, [COBISS.SI-ID 104300035].

ŠVAJGER, Urban (avtor, korespondenčni avtor), CUKJATI, Marko. Zdravila za napredno zdravljenje: naslednja generacija zdravil = Advanced therapy medicinal products : next generation of medicines. *Farmacevtski vestnik: strokovno glasilo slovenske farmacije*, 2022, letn. 73, št. 2, str. 79-88, [COBISS.SI-ID 107885571].

TEMOVA RAKUŠA, Žane, ROŠKAR, Robert, HICKEY, Neal, GEREMIA, Silvano. Vitamin B12 in foods, food supplements, and medicines – a review of its role and properties with a focus on its stability. *Molecules*, 2023, vol. 28, iss. 1, art. 240, str. 1-30, [COBISS.SI-ID 136463875].

KRATKI ZNANSTVENI PRISPEVEK SHORT SCIENTIFIC ARTICLE

KOS, Janko. Proteases: role and function in cancer. *International journal of molecular sciences*, 2022, vol. 23, iss. 9, art. 4632, str. 1–4, [COBISS.SI-ID 108573443].

HRAST, Martina. Design and preparation of antimicrobial agents. *Antibiotics*, 2022, vol. 11, iss. 12, str. 1–4, [COBISS.SI-ID 142501123].

UČBENIŠKO GRADIVO FAKULTETE ZA FARMACIJO ACADEMIC TEXTBOOK OF THE FACULTY OF PHARMACY

KOČEVAR GLAVAČ, Nina, RAVNIKAR, Matjaž, SCHOSS, Katja. *Kozmetične sestavine naravnega izvora: vaje*. Ljubljana: Univerza v Ljubljani, Fakulteta za farmacijo, 2022. str. 1-19, [COBISS.SI-ID 120522755].

POROČILO O DOSEŽKIH 2022

PROGRESS REPORT 2022

Izdala / Published by: Univerza v Ljubljani, Fakulteta za farmacijo, Aškerčeva cesta 7, Ljubljana

Uredili / Edited by: Irena Mlinarič-Raščan, Katja Višnjevec Vahčič

Avtorji / Authors: Irena Mlinarič-Raščan, Borut Božič, Albin Kristl, Stanislav Gobec, Tanja Kadunc, Katja Višnjevec Vahčič, Dušan Videmšek, Marko Anderluh, Rok Dreu, Mojca Lunder, Mirjana Gašperlin, Marjetka Kirin, Ana Kodrič, Stane Pajk, Bojan Doljak, Maja Frelih, Milena Petek, Marjeta Lipužič, Urban Jernejčič, Marjeta Terčič

Slovenska lektura / Slovene proofreading: Karmen Jagodič Mlinarič

Angleška lektura / English proofreading: Vesna Kovač

Naslovnica / Cover: Gradimo pripadnost

Oblikovanje / Design: AGD, Tatjana Lješevič Cvar, Domžale

Tisk / Print: TISKARNA JANUŠ d. o. o., Sternadova ulica 12, 1210 Ljubljana-Šentvid

Naklada / Number of copies: 200 izvodov

ISSN: 1408-9939

Ni za prodajo / Not for sale

Ljubljana, 2023



UNIVERZA V LJUBLJANI, FAKULTETA ZA FARMACIJO
Aškerčeva cesta 7, 1000 Ljubljana | t. (01) 47 69 500
www.ffa.uni-lj.si