

## Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*)

1. Članica UL (*UL member*):

Univerza v Ljubljani, Medicinska fakulteta (University of Ljubljana, Faculty of Medicine)

2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Vita Dolžan, vita.dolzan@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Naravoslovje - Biokemija in molekularna biologija (Natural sciences - Biochemistry and molecular biology)

4. Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*):

Vključuje morebitne dodatne pogoje, ki jih mora izpolnjevati kandidat/ka za mladega raziskovalca/ko, ki niso navedeni v razpisu za mlade raziskovalce.

Mladi raziskovalec se bo vključil v raziskave na področju farmakogenomike in bo imel ključno vlogo pri prehodu iz dosedanjih analiz posameznih pogostih funkcionalnih sprememb v tarčnih farmakogenih na analize celotnega genoma. Sodeloval bo predvsem pri razvoju pristopov za pridobivanje farmakogenomskih informacij iz podatkov sekvenciranja celotnega genoma in dolgih branj, ki omogočajo identifikacijo farmakogenomskih podatkov tudi iz intronskih področij in kompleksnih genomskih regij z visoko stopnjo strukturne variabilnosti (na primer CYP2D6). Kandidat bo preverjal hipotezo, da farmakogenetski podatki, pridobljeni s sekvenciranjem celotnega genoma in dolgimi branji omogočajo boljšo napoved učinkovitosti in varnosti zdravljenja z izbranimi zdravili, kot dosednji pristop, ki temelji na analizi pogostih genetskih sprememb v tarčnih farmakogenih. Preverjanje hipoteze bo potekalo v okviru kliničnih raziskav in zanimivih kliničnih primerov s področja psihiatrije, imunosupresivnega zdravljenja in družinske medicine.

Raziskovalno delo bo potekalo v sodelovanju med Laboratorijem za farmakogenetiko Inštituta za biokemijo in molekularno genetiko na UL, Medicinska fakulteta, kjer bo kandidat spoznal področje farmakogenetike in različne molekularno genetske metode za tarčne analize nukleinskih kislin in se vključil v klinične študije, ter Oddekom za genomiko Kliničnega inštituta za specialno laboratorijsko diagnostiko na Pediatrični kliniki UKC, s katerim bomo sodelovali pri analizi in interpretaciji farmakogenomskih podatkov, pridobljenih s tehnologijo sekvenciranja celotnega genoma in s tehnologijo dolgih branj. Kandidat se bo vključil tudi v EU projekt PharmGenHub in se redno udeleževal strokovnih in raziskovalnih srečanj in izpopolnjevanj doma in v tujini, zato je zaželeno aktivno znanje angleškega jezika. Prednost pri izbiri bodo imeli kandidati z boljšim poznavanjem bioinformatičnih orodij.

The candidate will be involved in research in the field of pharmacogenomics and will play a key role in the transition from the previous analyses of common functional variants in target pharmacogenes to the analyses of the entire genome. The candidate will mainly participate in the development of approaches for obtaining pharmacogenomic information from whole genome sequencing data and long reads, which enable the identification of pharmacogenomic data also from intronic regions and complex genomic regions with a high degree of structural variability (for example, CYP2D6).

The candidate will test the hypothesis that pharmacogenetic data obtained by whole-genome sequencing and long reads enable better prediction of the efficacy and safety of treatment with selected drugs than the current approach, which is based on the analysis of common genetic variants in target pharmacogenes. This hypothesis will be tested within the framework of clinical studies and interesting clinical cases from the fields of psychiatry, immunosuppressive treatment, and family medicine.

Research will be performed in collaboration between the Pharmacogenetics Laboratory of the Institute of Biochemistry and Molecular Genetics at UL, Faculty of Medicine, where the candidate will become familiar with the field of pharmacogenetics and various molecular genetic methods for targeted molecular genetic analyses and participate in clinical studies, and the Department of Clinical Genomics of the Institute for Special Laboratory Diagnostics at the Children's Hospital, UKC Ljubljana, where the analysis and interpretation of pharmacogenomic data obtained by whole genome sequencing and long read technology will take place. The candidate will also participate in the EU project PharmGenHub and at the national and international research and professional meetings and training courses, therefore active knowledge of the English language is required. Preference will be given to candidates with better knowledge of bioinformatics tools.

## Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*)

1. Članica UL (*UL member*):

Medicinska fakulteta, Katedra za stomatološko protetiko

2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Ime in priimek mentorja Čedomir Oblak

3. Raziskovalno področje (*Research field*):

Medicina, Stomatologija

4. Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*):

Vključuje morebitne dodatne pogoje, ki jih mora izpolnjevati kandidat/ka za mladega raziskovalca/ko, ki niso navedeni v razpisu za mlade raziskovalce.

*slo:*

Mladi raziskovalec/raziskovalka bo del interdisciplinarne raziskovalne skupine, ki deluje na raziskovalnem področju medicine in dentalne medicine in vključuje strokovnjake s področij medicine, dentalne medicine, biomaterialov, farmakologije in toksikologije, biokemije, biotehnologije in mikrobiologije.

Mladi raziskovalec/raziskovalka bo vključen v predklinično, klinično in laboratorijsko delo s sodobno raziskovalno infrastrukturo, kjer bo uporabljal najsodobnejše metode za preverjanje varnosti in biokompatibilnosti biomaterialov. Učinkovitost biomaterialov se bo preverila klinično; varnost biomaterialov pa s testi citotoksičnosti (testi viabilnosti celic) biokompatibilnosti in dodatno z metodami elektronske mikroskopije ter integrirane tehnike na mikro, nano in atomski skali.

Preiskovani materiali bodo karakterizirani v pogojih pospešenega staranja v *in vitro* in *in vivo* okolju.

Raziskovalno delo bo povezava predkliničnih in kliničnih raziskav sodobnih biomaterialov v laboratorijskem in kliničnem okolju. Pomemben cilj doktorata je prenos izsledkov temeljnih raziskav v sodobne diagnostične procese in preverjanje varne uporabe biomaterialov v kliničnem okolju.

Mladi raziskovalec/raziskovalka bo sodeloval pri predkliničnih in kliničnih raziskavah ter študijskem programu UL-MF. Aktivno se bo udeležil mednarodnih konferenc in izobraževanj doma in v tujini. Pričakujemo izobrazbo medicine. Program usposabljanja mladega raziskovalca/raziskovalke in natančna vsebina doktorske naloge bosta dokončno dogovorjena z izbranim kandidatom/kandidatko.

*eng:*

The young researcher will be part of an interdisciplinary research group working in the field of medicine and dental medicine, which includes experts from the fields of medicine, dental medicine, biomaterials, pharmacology and toxicology, biochemistry, biotechnology, and microbiology.

The young researcher will be involved in preclinical, clinical, and laboratory work with modern research infrastructure, utilizing the latest methods for assessing the safety and biocompatibility of biomaterials. The effectiveness of biomaterials will be clinically tested; their safety will be evaluated through cytotoxicity tests (cell viability assays), biocompatibility tests, and additionally with methods such as electron microscopy and integrated techniques on the micro, nano, and atomic scale.

The materials under investigation will be characterized under accelerated aging conditions in both in vitro and in vivo environments.

The research work will include preclinical and clinical studies of modern biomaterials in both laboratory and clinical settings. An important objective of the PhD is the translation of fundamental research findings into modern diagnostic processes and the application of safe biomaterials in clinical practice.

The young researcher will participate in preclinical and clinical research as well as in the study program at the University of Ljubljana Faculty of Medicine. They will actively attend international conferences and trainings both domestically and abroad. A background in medicine is expected. The training program for the young researcher and the precise content of the doctoral thesis will be finalized in agreement with the selected candidate.

## Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*)

1. Članica UL (*UL member*):

Medicinska fakulteta, Katedra za čeljustno in zobno ortopedijo

2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Ime in priimek mentorja Maja Ovsenik maja.ovsenik@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Medicina, stomatologija

4. Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*):

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*slo:*

Mladi raziskovalec/raziskovalka bo del interdisciplinarne raziskovalne skupine, ki deluje na raziskovalnem področju dentalne medicine in vključuje strokovnjake s področij dentalne medicine, medicine, biomaterialov, biokemije, biotehnologije in mikrobiologije.

Mladi raziskovalec/raziskovalka bo vključen v predklinično, klinično in laboratorijsko delo s sodobno raziskovalno infrastrukturo, kjer bo uporabljal najsodobnejše metode za trirazsežnostno diagnostiko obraza in čeljustnic. Za karakterizacijo fizikalno kemijskih lastnosti in biokompatibilnosti dentalnih biomaterialov (citotoksičnost, modifikacija površine) bodo uporabljene metode elektronske mikroskopije in integrirane tehnike na mikro, nano in atomski skali.

Preiskovani materiali bodo karakterizirani v pogojih pospešenega staranja v *in vitro* in *in vivo* okolju.

Raziskovalno delo bo povezovala interdisciplinarnega področja predkliničnih in kliničnih dejavnikov sodobnih dentalnih biomaterialov v okolju ustne votline z uporabo trirazsežnostnih preiskovalnih metod. Pomemben cilj doktorata je prenos izsledkov temeljnih raziskav v sodobne diagnostične procese v okviru dentalne patologije.

Mladi raziskovalec/raziskovalka bo sodeloval pri raziskovalnih kliničnih in predkliničnih projektih in študijah ter študijskem programu MF. Aktivno se bo udeležil na mednarodnih konferencah in izobraževanjih doma in v tujini. Pričakujemo izobrazbo dentalne medicine. Program usposabljanja mladega raziskovalca/raziskovalke in natančna vsebina doktorske naloge bosta dokončno dogovorjena z izbranim kandidatom/kandidatko.

*eng:*

The young researcher will be part of an interdisciplinary research group working in the field of dental medicine, which includes experts from the fields of dental medicine, medicine, biomaterials, biochemistry, biotechnology, and microbiology.

The young researcher will be involved in preclinical, clinical, and laboratory work with modern research infrastructure, utilizing the latest methods for three-dimensional diagnostics of the face and jaws. Methods such as electron microscopy and integrated techniques on the micro, nano, and atomic scale will be used to characterize the physicochemical properties and biocompatibility of dental biomaterials (cytotoxicity, surface modification).

The materials under investigation will be characterized under accelerated aging conditions in both in vitro and in vivo environments. The research work will connect the interdisciplinary fields of preclinical and clinical factors of modern dental biomaterials within the oral cavity, using three-dimensional investigative methods. An important objective of the PhD is the translation of fundamental research findings into modern diagnostic processes within dental pathology.

The young researcher will participate in research, clinical, and preclinical projects and studies, as well as in the study program of the Faculty of Medicine. They will actively attend international conferences and trainings both domestically and abroad. A background in dental medicine is expected. The training program for the young researcher and the precise content of the doctoral thesis will be finalized in agreement with the selected candidate.

**Opis delovnega mesta mladega raziskovalca/ke** (*Description of the Young Researcher's position*)

1. Članica UL (*UL member*):

Medicinska fakulteta

2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Maja Pohar Perme, maja.pohar@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

statistika, računsko-intenzivne metode in aplikacije, mikrobiologija

4. Opis delovnega mesta mladega raziskovalca/ke (*Description of the Young Researcher's position*):

Vključuje morebitne dodatne pogoje, ki jih mora izpolnjevati kandidat/ka za mladega raziskovalca/ko, ki niso navedeni v razpisu za mlade raziskovalce.

*slo:* Inštitut za biostatistiko in medicinsko informatiko (IBMI) se uvršča med vodilne raziskovalne in izobraževalne institucije na področju statistike v Sloveniji ter v Jugovzhodni Evropi. Naš cilj je razvoj vrhunskih raziskav in aplikacij s področij podatkovnih znanosti (npr. analiza preživetja), tehnologij znanja (npr. strojno učenje) in drugih področij, ki se ukvarjajo z upravljanjem, analizo, modeliranjem in uporabo podatkov in znanja. Raziskovalci IBMI so avtorji odmevnih znanstvenih prispevkov in so sodelovali pri organizaciji številnih mednarodnih znanstvenih konferenc in delavnic.

Usposabljanje mladega raziskovalca (m/ž) (v nadaljevanju: MR) bo potekalo na interdisciplinarnem področju podatkovnih znanosti in tehnologij znanja, s poudarkom na uporabi v biomedicini. Temo doktorske naloge bomo oblikovali v dogovoru s kandidatom, odvisno od kompetenc kandidata, njegovih preferenc in trenutnih raziskovalnih prioritet IBMI. Po identifikacija ožjega raziskovalnega področja se bo kandidat aktivno vključil v delo programske skupine in spoznal različne faze in procese raziskovalnega dela. V okviru usposabljanja bo MR spoznal delo sorodnih raziskovalnih skupin, s katerimi tudi sicer intenzivno sodelujemo. Pričakujemo, da bo MR s področja obravnavanega problema objavil dva izvorna znanstvena prispevka.

Od kandidata pričakujemo visoko stopnjo motiviranosti in delovne vneme. Kandidat naj izpolnjuje pogoje za vpis na doktorski študijski program Računalništvo in informatika (UL FRI), Matematika in fizika (UL FMF) ali Interdisciplinarni doktorski študijski program Statistika (UL). Po dogovoru z mentorjem je možen tudi vpis na drug študijski program.

*eng:* The Institute of Biostatistics and Medical Informatics (IBMI) is one of the leading statistical research and training institutions in Slovenia and South-Eastern Europe. Our aim is to advance research and develop cutting-edge applications in data science (e.g., survival analysis), knowledge technologies (e.g., machine learning), and other areas dealing with the management, analysis, modeling, and use of data and knowledge. IBMI researchers have authored high-impact publications and have co-organized numerous international scientific conferences and workshops.

The doctoral candidate will get training in the interdisciplinary fields of statistics, data science, and knowledge technologies, specifically emphasizing their applications in the domain of biomedicine. The field of study of the PhD thesis will be determined collaboratively with the candidate, taking into consideration the candidate's skills, preferences, and the current research goals of IBMI. After identifying a more specific research area, the candidate will actively participate in the program team's work and gain knowledge of the various stages and procedures involved in research. As part of the training, the PhD candidate will work closely with our recognized research partners. The candidate will write and publish two original scientific papers on the subject under study. The PhD

candidate will author and publish two original scientific papers.

We expect the candidate to be highly motivated and with a high level of grit. The candidate should meet the requirements for admission to the PhD program in Computer and Information Science (UL FRI), Mathematics and Physics (UL FMF), or the Interdisciplinary Doctoral Study Programme in Statistics (UL). In consultation with the supervisor, enrollment in another program with similar content is also possible.