

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*):

Jure Derganc, jure.derganc@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Biofizika

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: Na Inštitutu za biofiziko Medicinske fakultete iščemo mladega raziskovalca ali mlado raziskovalko z diplomom ali magisterijem iz fizike, ki ima željo raziskovati na področju ved o življenju. Naše raziskovalne tematike so povezane z razumevanjem delovanja celičnih toksinov, z uporabo umetnih celičnih membran v sintezni biologiji ter z analizo in manipulacijo velikega števila posameznih sesalskih celic, kar postaja vse pomembnejše pri personalizirani medicini in sodobnih celičnih terapijah. Vsebina naloge bo prilagojena predznanju in interesom kandidatke oz. kandidata. Pri raziskavah bomo uporabljali najnovejše mikroskopske tehnike, optično pinceto, sodobne metode za strojno razpoznavanje slik ter razvijali nove mikrofluidične metode za uporabo v biomedicini. Več informacij o naših raziskavah je na naslovu <https://biophysics.splet.arnes.si/jure-derganc/>.

Eng: We are looking for an open-minded student with a BSc MSc in Physics who is interested in doing research at the intersection between biophysics and medicine. Our research topics include the study of cellular toxins, artificial cell membranes in synthetic biology, and high-throughput analysis of individual mammalian cells, which is becoming increasingly important for personalized medicine and advanced cell therapies. The PhD topic will be adapted to the candidate's interests and prior expertise. We will use the latest microscopic techniques, optical tweezers, advanced machine image recognition methods, and develop new biomedical microfluidic methods. For more information about our research, visit <https://biophysics.splet.arnes.si/jure-derganc/>.

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.

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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*):

Katja Goričar, katja.goricar@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Naravoslovje, Biokemija in molekularna biologija; Onkologija (Natural sciences, Biochemistry and molecular biology; Oncology)

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 se bo v raziskovalnem delu posvetil preučevanju molekularnih mehanizmov, ki so povezani z odgovorom na zdravljenje z obsevanjem pri raku dojk.

Duktalni karcinom in situ (ductal carcinoma in situ, DCIS) je neinvazivna oblika raka dojk, ki ga najpogosteje odkrijejo v okviru presejalnih programov. Čeprav ima DCIS zelo dobro prognozo, se lahko razvije tudi v invazivno obliko raka dojk. Standardno zdravljenje DCIS temelji na ohranitveni operaciji dojk in dopolnilnem obsevanju. Pri velikem deležu bolnic, ki se zdravijo z obsevanjem, se pojavijo akutni ali pozni neželeni učinki zdravljenja. Na molekularni ravni lahko obsevanje neposredno poškoduje različne makromolekule, zlasti DNA. Preko različnih dejavnikov, ko so na primer nekodirajoče RNA, citokini in zunajcelični vezikli, vpliva na številne procese v celici. Nekatere raziskave so že pokazale, da so molekularni dejavniki lahko povezani z odzivom tumorja na obsevanje in neželenimi učinki obsevanja.

Kandidat bo v longitudinalni raziskavi preučeval molekularne dejavnike, ki bi lahko služili kot biološki označevalci odgovora na zdravljenje z obsevanjem. Kandidat bo analiziral prisotnost genetskih, epigenetskih (nekodirajoče RNA) in proteinskih označevalcev pred in po zdravljenju z obsevanjem v krvni plazmi ter v zunajceličnih veziklih. Eksperimentalno pridobljene podatke bo skupaj s kliničnimi podatki vključil v napovedne modele odgovora na zdravljenje z obsevanjem. Identificirani biološki označevalci bi lahko pomagali napovedati možnost za pojav neželenih učinkov obsevanja in tako prispevali k razvoju personaliziranega zdravljenja pri DCIS.

Raziskovalno delo bo potekalo v sodelovanju med Laboratorijem za farmakogenetiko Inštituta za biokemijo in molekularno genetiko UL MF in Onkološkim inštitutom Ljubljana. Pri svojem delu bo mladi raziskovalec uporabljal številne sodobne molekularno genetske pristope: metode za izolacijo in analizo DNA, RNA, proteinov in zunajceličnih veziklov; pa tudi različna bioinformatična in biostatistična orodja. Za kandidata je zaželeno aktivno znanje angleškega jezika zaradi udeleževanja mednarodnih strokovnih izpopolnjevanj.

eng:

The young researcher will focus on the studies of molecular mechanisms associated with response to treatment with radiotherapy in breast cancer.

Ductal carcinoma in situ (DCIS) is a non-invasive type of breast cancer that is most commonly detected in screening programs. Even though DCIS has a very good prognosis, it is also a potential precursor of invasive breast cancer. Standard DCIS treatment mostly includes breast-conserving surgery and adjuvant radiotherapy. A significant portion of patients treated with radiotherapy will experience acute or late adverse events. On the molecular level, radiotherapy can directly damage different macromolecules, especially DNA. It affects many cellular pathways through different circulating factors including non-coding RNAs, cytokines, and extracellular vesicles. Some studies have already shown that molecular biomarkers can be associated with tumor response to radiotherapy and occurrence of adverse events.

In a longitudinal study, the young researcher will investigate molecular factors that could serve as molecular biomarkers of response to radiotherapy. The young researcher will analyse genetic, epigenetic (non-coding RNAs) and protein biomarkers before and after treatment with radiotherapy in blood plasma and in extracellular vesicles. Experimental data will be integrated with clinical data into predictive models of radiotherapy response. The identified biomarkers could help predict the occurrence of adverse events of radiotherapy and therefore contribute to the development of personalized treatment in DCIS.

Research work will be performed in collaboration between the Pharmacogenetics Laboratory at the Institute of Biochemistry and Molecular Genetics, UL MF and Institute of Oncology Ljubljana. The young researcher will use

several modern molecular genetic research approaches: methods for the isolation and analysis of DNA, RNA, proteins and extracellular vesicles, as well as bioinformatic and biostatistic tools. Active knowledge of the English language due to participation at international research and professional meetings is desired for the young researcher candidates.

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

1. Članica UL (UL member):

Medicinska fakulteta, Katedra za družinsko medicino (Faculty of Medicine, Department of Family medicine)

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

Vesna Homar, vesna.homar@mf.uni-lj.si

3. Raziskovalno področje (Research field):

7.02 Interdisciplinarne raziskave (Interdisciplinary studies)

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 katedre za družinsko medicino. Raziskovalna skupina se osredotoča na raziskovanje novih pristopov in tehnologij v družinski medicini in edukaciji družinske medicine. Specifična raziskovalna področja so raziskovanje potreb bolnikov na primarni ravni zdravstvenega varstva, raziskovanje dejavnikov v medosebnih odnosih, raziskovanje življenjskega sloga, preventive ter kakovosti zdravstvene oskrbe. Raziskovalna skupina vključuje strokovnjake s področja družinske medicine in drugih kliničnih ved, javnega zdravja in psihologije.

Mladi raziskovalec/raziskovalka bo vključen/a v raziskovanje sodobnih pristopov in tehnologij za implementacijo v klinično prakso družinske medicine in/ali poučevanje družinske medicine. Skozi vključevanje bo mladi raziskovalec spoznal znanstveni proces in oblikoval lastno raziskovalno temo za doktorsko disertacijo. Glede na foksno področje bo spoznal ustrezne metodološke in analitične prostopa za samostojno raziskovanje, ki mu/ji bo v pomoč pri izdelavi doktorske disertacije. Program usposabljanja mladega raziskovalca/raziskovalke in natančna vsebina doktorske naloge bosta dokončno dogovorjena z izbranim kandidatom/kandidatko. Mladi raziskovalec/raziskovalka bo imel/a možnost sodelovanja pri raziskovalnih projektih in možnost udeležbe na mednarodnih konferencah in izobraževanjih v tujini.

Pričakujemo izobrazbo s področja medicine, psihologije, socialnega dela, zdravstvene nege ali sorodnih ved. Prednost bodo imeli/e kandidati/kandidatke z izkušnjami z delom v raziskovalnem in v interdisciplinarnem okolju. V primeru, da bo izbran kandidat, ki opravlja klinično specializacijo, ga bomo podprli pri opravljanju specialističnega študija.

eng: Junior researcher will be part of the interdisciplinary Research Group of the Department of Family Medicine. The research group focuses on researching new approaches and technologies in family medicine and family medicine education. Specific research areas are investigating patient needs at the primary health care level, researching factors in interpersonal relationships, researching lifestyle, prevention and quality of health care. The research group includes experts in family medicine, public health and psychology and other clinical areas.

Junior researcher will be involved in researching contemporary approaches and technologies for implementation in the clinical practice of family medicine and/or the teaching of family medicine. Through the involvement, the young researcher will learn about the scientific process and develop his/her own research topic for the PhD thesis. Depending on the area of focus, he/she will learn about the appropriate methodological and analytical tools for independent research, which will help him/her to produce a doctoral dissertation. The training programme of the young researcher and the exact content of the doctoral thesis will be finalised with the selected candidate. The junior researcher will have the opportunity to participate in research projects and to attend international conferences and training courses abroad.

A degree in medicine, psychology, social work, nursing or a related area is expected. Preference will be given to candidates with experience of working in a research and interdisciplinary environment. If a candidate is pursuing a clinical specialisation, he/she will be supported to follow both programmes.

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

1. Članica UL (UL member):

Medicinska fakulteta, UL, Inštitut za biologijo celice (Faculty of Medicine, Institute of Cell Biology)

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

Samo Hudoklin, samo.hudoklin@mf.uni-lj.si

3. Raziskovalno področje (Research field):

Celična biologija (Cell biology); molekularna celična biologija (Molecular cell 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.

slo:

Mladi raziskovalec (M/Ž) se bo priključil kolektivu Inštituta za biologijo celice, Medicinska fakulteta v Ljubljani, ki ima tradicijo pedagoškega dela, raziskovalnega dela in razvoja metod celične biologije v našem prostoru. Raziskovalno se inštitut kot celota ukvarja s proučevanjem bazičnih in aplikativnih vidikov delovanja epitelijskega mehurja (urotelija) v normalnih in patoloških stanjih, pri čemur uporabljamo sodobno opremo ter interdisciplinarno sodelujemo z domačimi in tujimi inštitucijami. Mladi raziskovalec bo vključen v raziskovalni program inštituta z naslovom »Celična biologija in molekularna genetika v biomedicini« (P3-0108), v študijskem letu 2023/2024 se bo vpisal na interdisciplinarni doktorski študijski program Biomedicina Univerze v Ljubljani, kasneje pa bo imel možnost spoznati tudi pedagoško delo.

Znanstvenoraziskovalno delo mladega raziskovalca bo zajemalo dva medsebojno povezana sklopa, tj. i) raziskovanje celične biologije urotelija in ii) razvoj naprednih metod elektronske mikroskopije. i) Osrednja tema raziskovalnega dela bo proučevanje celičnih organelov, ki so vključeni v nastanek, organizacijo in transport urotelijskih plakov (Golgijev aparat, post-Golgijevi predelki, fuziformni vezikli) ter mitohondrijev, ki so odgovorni za energijsko ravnotežje v urotelijskih celicah. Znano je, da urotelijski plaki, tj. specifične membranske domene, ključne za vzdrževanje krvno-urinske pregrade sečnega mehurja, postopoma zorijo v omenjenih organelih, vendar so mehanizmi nastanka ter prostorsko-časovni odnosi med njimi slabo poznani. Prav tako ni znano, kakšna je vloga mitohondrijev v različno diferenciranih urotelijskih celicah. Namen dela bo analizirati te vloge in odnose s pomočjo in vitro modelov normalnih in rakavih urotelijskih celic ter in vivo živalskih modelov normalnega urotelija in urotelija med regeneracijo po poškodbi. ii) Za iskanje odgovorov na znanstvena vprašanja bo mladi raziskovalec uporabil različne celično biološke metode (metode svetlobne (konfokalne) ter elektronske (presevne, vrstične) mikroskopije, molekularno-biokemijske metode). Elektronska mikroskopija ima na Inštitutu za biologijo celice več kot 50-letno tradicijo, a razvoj novih aparatov in metod elektronske mikroskopije v zadnjem obdobju odpira nove možnosti analize kriofiksiranih vzorcev, označevanja proteinov, korelativne svetlobne in elektronske mikroskopije ter analize in avtomatizirane rekonstrukcije tridimenzionalnih odnosov med celičnimi strukturami. Mladi raziskovalec se bo spoznal s temi metodami, jih prilagodil ter optimiziral protokole za pripravo urotelijskih vzorcev. Del raziskav bo potekal v tujini, rezultate raziskav bomo objavili v mednarodnih revijah, kandidat pa bo v tem obdobju zaključil doktorski študij. Na delovno mesto se lahko prijavijo kandidati naravoslovnih smeri študija na 2. stopnji (biologija, biokemija, mikrobiologija, biotehnologija, farmacija, medicina, dentalna medicina, veterina, laboratorijska biomedicina ipd.), ki jih veseli raziskovalno delo, učenje novih veščin in so pripravljeni odprto in sistematično delati v kolektivu. Poznavanje računalniških programov (MS Office, Photoshop, programiranje), izkušnje z delom v laboratoriju in mikroskopiranjem je dobrodošlo, ni pa pogoj.

eng:

The young researcher (m/f) will join the pleasant and well-organised collective of the Institute of Cell Biology at the Faculty of Medicine in Ljubljana, which has a tradition of teaching, research and development of cell biology methods in Slovenia. In research, the Institute investigates various basic and applied aspects of the functioning of the urinary bladder epithelium (urothelium) under normal and pathological conditions, for which we use modern equipment and cooperate in an interdisciplinary manner with domestic and foreign partners. The young researcher will be included in the Institute's research programme entitled "Cell Biology and Molecular Genetics in Biomedicine" (P3-0108), in the academic year 2023/2024 he/she will be enrolled in the interdisciplinary PhD programme in Biomedicine at the University of Ljubljana, and later he/she will have the opportunity to be involved in educational work.

The scientific work of the young researcher will cover two interrelated areas, namely i) the study of urothelial cell biology and ii) the development of advanced electron microscopic methods. i) The central research topic will be the study of cell organelles involved in the formation, organisation and transport of urothelial plaques (e.g. Golgi apparatus, post-Golgi compartments, fusiform vesicles) and mitochondria, which are responsible for energy balance in urothelial cells. It is known that urothelial plaques, i.e. specific membrane domains crucial for maintaining the blood-urine permeability barrier of the urinary bladder, progressively mature in the above organelles, but the mechanisms of formation and their spatiotemporal relationships are poorly understood. It is also not known what role mitochondria play in the differently differentiated urothelial cells. The aim of the work is to analyse these roles and relationships using *in vitro* models of normal and cancerous urothelial cells as well as *in vivo* models of normal and regenerating urothelium after injury in rodents. ii) To find answers to scientific questions, the young researcher will use cell biology methods (light- (e.g. confocal) and (scanning, transmission) electron microscopy methods, molecular biology methods). Electron microscopy has a tradition of more than 50 years at the Institute of Cell Biology, but the development of new equipment and methods of electron microscopy in recent years opens up new possibilities for the analysis of cryofixed samples, protein labelling, correlative light and electron microscopy as well as the analysis and automated reconstruction of three-dimensional relationships between cellular compartments. The young researcher will learn these methods, and optimise the protocols for the preparation of urothelial samples.

Part of the research will take place abroad, the research results will be published in international journals, and the candidate will complete his/her PhD studies during this time. Candidates who have studied natural sciences at the 2nd level (biology, biochemistry, microbiology, biotechnology, pharmacy, medicine, dentistry, veterinary medicine, laboratory biomedicine, etc.), who enjoy research work and learning new skills, and who are willing to work systematically in a team should apply for the position. Knowledge of computer programmes (MS Office, Photoshop, programming) and experience of working in a laboratory or with microscopes is welcome but not a prerequisite.

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1. Članica UL (*UL member*):

Medicinska fakulteta

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

Andrej Kastrin, andrej.kastrin@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.

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*):

Nataša Knap Gašper, natasa.knap@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

3.01 Mikrobiologija in imunologija

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/ka bo vključen/a v raziskovalno skupino Laboratorija za diagnostiko in raziskave zoonoz na Inštitutu za mikrobiologijo in imunologijo Medicinske fakultete Univerze v Ljubljani. V okviru svojega dela bo moral/a opraviti doktorski študijski program Biomedicina, predvidoma znanstveno področje mikrobiologija, na Univerzi v Ljubljani.

Delo bo usmerjeno v raziskave patogeneze in genetske raznolikosti porajajočih se patogenih virusov. V okviru svojega dela bo kandidat/ka uvajal sodobne molekularne metode za odkrivanje novih patogenih virusov, raziskovanje genetskih raznolikosti v povezavi s patogenezo bolezni. Poleg molekularnega dela bo kandidat/ka uporabljal tudi klasične virološke metode v laboratoriju 3. stopnje biološke varnosti, se aktivno udeleževal/a terenskega dela ter sodeloval/a pri delu s poskusnimi živalmi. Kandidat/ka mora biti pripravljen/a tudi na morebitno izpopolnjevanje pri partnerskih raziskovalnih skupinah v tujini.

Od kandidata/ke pričakujemo zainteresiranost za znanstveno raziskovalno delo, pripravljenost za usposabljanje in delo z živalmi v poskusih, aktivno znanje angleškega jezika in opravljanje del po nalogu mentorja in vodje organizacijske enote. Prednost bo imel kandidat/ka z izkušnjami z laboratorijskim delom in izkazanim znanstvenim udejstvom (predstavitev lastnega raziskovalnega dela v pisni in ustni obliki).

eng: The young researcher will be part of the research team of the Laboratory for Diagnosis and Research of Zoonoses at the Institute of Microbiology and Immunology, Faculty of Medicine, University of Ljubljana. As part of his/her work, he/she will be required to complete a PhD programme in Biomedicine, presumably in the scientific field of microbiology, at the University of Ljubljana.

The work will focus on research of the pathogenesis and genetic diversity of emerging pathogenic viruses. The candidate will introduce modern molecular methods for the discovery of new pathogenic viruses, investigating genetic diversity in relation to the pathogenesis of disease. In addition to molecular work, the candidate will use classical virological methods in a Biosafety Level 3 laboratory, actively participate in field work and work with experimental animals. The candidate should also be prepared to undertake possible advanced training with partner research groups abroad.

We expect the candidate to have an interest in scientific research, a willingness to train and work with experimental animals, an active knowledge of the English language and to carry out work as assigned by the mentor and the Head of Unit. Preference will be given to candidates with experience in laboratory work and a proven record of scientific engagement (written and oral presentation of their own research).

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

1. Članica UL (*UL member*):

Medicinska fakulteta (Faculty of Medicine)

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

Katarina Miš, katarina.mis@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Nevrobiologija / Metabolne in hormonske motnje (Neurobiology/Metabolic and hormonal disorders).

Raziskave programske skupine P3-0043, v katero bo vključen mladi raziskovalec/-ka, so usmerjene k proučevanju molekularnih mehanizmov, ki uravnavajo delovanje in razvoj skeletne mišice. Glavni namen raziskovalnega programa je proučevanje mehanizmov, ki vodijo v izgubo in obnovo skeletnomišične mase in funkcije v fizioloških in patofizioloških razmerah. Mladi raziskovalec/-ka bo vključen v raziskave presnovnih motenj skeletne mišice, povezanih s kroničnimi obolenji, kot so debelost, sladkorna bolezen, revmatične in neurodegenerativne bolezni.

(Research programme P3-0043, in which the young researcher will be involved, is studying the molecular mechanisms underlying skeletal muscle function and development. The overarching research objective of our programme is to elucidate the mechanisms that lead to the loss and restoration of skeletal muscle mass and function under physiological and pathophysiological conditions. The young researcher will be involved in studies related to metabolic dysfunction of skeletal muscle associated with chronic disorders such as obesity, diabetes, and rheumatic and neurodegenerative diseases.)

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: Prednost imajo kandidati z izkušnjami z delom s primarnimi človeškimi skeletnomišičnimi celicami, s celicami L6, odtisom western in qPCR.

eng: Preference is given to candidates with experience working with primary human skeletal muscle cells, L6 cells, western blot, and qPCR.

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

1. Članica UL (*UL member*):

UL Medicinska fakulteta (*University of Ljubljana, Faculty of Medicine*)

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

Damjana Rozman, damjana.rozman@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

Biokemija in molekularna biologija (*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.

slo: Delovni naslov: Vpliv hipoksije na dnevno sintezo holesterola in na presnovo sterolnih intermediatov

Cilj doktorskega projekta je proučiti, kako hipoksija (in HIF1 α) vplivajo na dnevno sintezo holesterola in na presnovo sterolnih intermediatov. Pri tem bomo uporabljali celične kulture in preverjali, kako hipoksija vpliva na dnevno izražanje genov centralne cirkadiane ure in genov, proteinov in presnovkov sterolov, povezanih s sintezo holesterola. Ugotoviti želimo i) ali je glavni učinek hipoksije modulacija izražanja genov/proteinov ali le pomanjkanja kisika; ii) pri kateri koncentraciji kisika začne hipoksija vplivati na dnevno sintezo sterolov in kateri encim je glavna tarča. Proučiti želimo tudi, kateri steroli iz sinteze holesterola se lahko pretvorijo v oksisterole pod normalnimi pogoji in v hipoksiji in če je možna pretvorba nepolarnih sterolov do žolčnih kislin, kar do sedaj še ni bilo pokazano. Izbrane presnovne produkte sterolov, ki jih bomo v celičnih linijah opredelili ob hipoksiji, bi lahko preverjali tudi v krvi hipoksičnih bolnikov z obstruktivno apnejo v spanju.

Doprinos k znanosti: Raziskava bo doprinesla k osnovnemu znanju o biokemijskih povezavah med hipoksijo in sintezo holesterola, ki je eden od procesov pod nadzorom cirkadiane ure. Napolarni steroli iz sinteze holesterola in njihovi presnovni produkti so premalo raziskane perspektivne biomolekule, ki jih lahko zaznamo v krvnem serumu in bi morda lahko služile kot klinično pomembni bioznačevalci pri s hipoksijo (in dislipidemijami) povezanimi bolezenskimi stanji.

Metodologija bo obsegala delo z nesmrtnimi celičnimi linijami, določevanje sterolnih metabolitov z metodo LC-MS/MS, profiliranje izražanja genov s qRT-PCR ter z mikromrežami ali sekvenciranjem RNA, bioinformatško analizo za obdelavo podatkov in rudarjenje v podatkovnih zbirkah, ter druge molekularno-biološke tehnike.

Prednost pri izbiri bodo imeli kandidati, ki že izkazujejo izkušnje pri laboratorijskem delu iz širšega področja biokemije in molekularne biologije. Od kandidatov pričakujemo, da se bodo tekom doktorskega dela usposobili tudi v računskih pristopih za delo z omškimi in drugimi podatki.

eng: **Working title:** The influence of hypoxia on the diurnal synthesis of cholesterol and on metabolism of sterol intermediates

The goal of the doctoral project is to study how hypoxia (in HIFs) affect the diurnal synthesis of cholesterol and the metabolism of sterol intermediates. To address this we will use cell cultures and check how hypoxia affects the daily expression of genes of the central circadian clock and genes, proteins and sterol metabolites related to cholesterol synthesis. We want to find out i) whether the main effect of hypoxia is *via* modulation of gene/protein expression or is simply due to the reduction of oxygen; ii) at what oxygen concentration does hypoxia begin to affect diurnal sterol synthesis and which enzyme is the major target. We also want to evaluate which sterols from cholesterol synthesis can be converted to oxysterols under normal conditions and in hypoxia, and if the conversion of non-polar sterols to bile acids is possible, which has not been shown so far. Selected metabolic products of sterols, which will be identified in cell lines with hypoxia, could also be checked in the blood of hypoxic patients with obstructive sleep apnea.

Contribution to science: The research will contribute to basic knowledge about the biochemical connections between hypoxia and cholesterol synthesis, which is one of the processes under the control of the circadian clock. Nonpolar sterols from cholesterol synthesis and their metabolic products are understudied promising biomolecules that can be detected also in the blood serum and may potentially serve as clinically relevant biomarkers for hypoxia (and dyslipidemia) related disease states.

The methodology will include work with immortal cell lines, determination of sterol metabolites using the LC-MS/MS method, gene expression profiling with qRT-PCR and microarrays or RNAsequencing, bioinformatic analyses for data processing and data mining, and other molecular biology techniques.

Preference will be given to candidates who already have experience in laboratory work in the broader field of biochemistry and molecular biology. Candidates are expected to be trained in computational approaches for working with omic and other data during the course of their doctoral work.

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

1. Članica UL (*UL member*):

Medicinska fakulteta / Faculty of Medicine

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

Nina Vardjan, nina.vardjan@mf.uni-lj.si

3. Raziskovalno področje (*Research field*):

3. Medicina (3.03. Nevrobiologija) / 3. Medicine (3.03. Neurobiology)

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:

Vloga nevronov in celic glije pri disregulaciji možganske presnove in kognitivnih motnjah med staranjem

Med staranjem in nevrodegeneracijo se zmožnost porabe energije v možganih postopoma zmanjšuje, kar je povezano z upadom kognitivnih sposobnosti, a učinkovite terapije za kognitivno staranje ni. Energijska presnova celic je odvisna od več dejavnikov, med drugim od uspešnosti i) oskrbe celice s hranili, ii) prenosa hranil v celico, iii) encimov, ki poganjajo presnovne reakcije ter iv) regulatornih mehanizmov, ki nadzorujejo delovanje encimov celične presnove. Motnje v delovanju zgoraj naštetih dejavnikov lahko povzročijo spremembe v energijski presnovi možganov in prispevajo k upadu kognitivnih sposobnosti med staranjem. Natančni molekularni mehanizmi in možganske celice (nevroni in/ali celice glije), ki so odgovorni za presnovne motnje v starajočih možganih, še niso poznani, prav tako ne njihov prispevek h kognitivnemu staranju. Presnovna komunikacija med možganskimi celicami, nevroni in celicami glije (astrociti, oligodendrociti, mikroglia), je ključnega pomena za ohranjanje kognitivnih funkcij. Večina dosedanjih študij kognitivnega staranja se je osredotočila predvsem na nevrone, a za zdravljenja kognitivnega upada še vedno ni učinkovitega zdravila. Zato je pomembno, da v nove študije poleg nevronov vključimo tudi celice glije, ki predstavljajo kar polovico vseh možganskih celic pri človeku in nadzorujejo presnovno homeostazo v možganih, ki je ključna za tvorbo spomina in učenje. V projektu bomo spremljali signalizacijo in presnovo v možganskih celicah med staranjem/nevrodegeneracijo, da bi ugotovili, kateri tip celic in signalna pot v presnovni zanki med glijo in nevroni je odgovorna za disregulacijo presnove in kognitivne motnje.

Mladi raziskovalec/-ka bo za proučevanje molekularnih mehanizmov uravnavanja presnove v možganskih celicah med staranjem uporabljal znotrajcelične fluorescenčne označevalce in genetsko kodirajoče senzorce za sekundarne prenašalce in presnovke (Ca²⁺, cAMP, glukoza, laktat, lipidi, ...) ter opazoval spremembe v signaliziranju/presnovi v posamezni celici z napredno fluorescenčno mikroskopijo (konfokalna, dvofotonska, SIM (angl. "structured

illumination”) in STED mikroskopija) na ko-kulturah nevronov in astrocitov, v možganskih tkivnih rezinah oz. v možganih živalskih modelov staranja/nevrodegenerativnih bolezni (glodavci, vinska mušica).

Vabimo delavne in visoko motivirane kandidate/-ke, ki so/bodo zaključili do predpisanega roka v septembru 2024 bolonjski študijski program 2. stopnje naravoslovnih smeri, kot so biologija, biokemija, veterina, mikrobiologija, farmacija, biotehnologija, medicina, kemija. Prednost bodo imeli kandidati/-ke z izobrazbo iz naravoslovne smeri, dobrim znanjem angleškega jezika, visoko povprečno oceno študija in z izkušnjami z delom v celični biologiji in biokemiji/molekularni biologiji. Zaželeno je, da kandidati/-ke k prijavi priložijo kratek življenjepis in motivacijsko pismo.

eng:

The role of neurons and glial cells in brain metabolic dysregulation and cognitive impairment during ageing

During aging and neurodegeneration, the brain's ability to use energy gradually declines, which is associated with cognitive decline, but there is no effective therapy for cognitive ageing. Cellular energy metabolism depends on several factors, including the success of (i) the supply of nutrients to the cell, (ii) the transport of nutrients into the cell, (iii) the enzymes that drive metabolic reactions, and (iv) the regulatory mechanisms that control the action of the enzymes of cellular metabolism. Disturbances in the functioning of the above factors can lead to changes in the brain's energy metabolism and contribute to cognitive decline during ageing. However, the exact molecular mechanisms and brain cells (neurons and/or glial cells) responsible for metabolic disturbances in the ageing brain are not yet known, nor is their contribution to cognitive ageing. Metabolic communication between brain cells, neurons and glial cells (astrocytes, oligodendrocytes, microglia), is crucial for maintaining cognitive function. Most studies of cognitive ageing to date have focused mainly on neurons, but there is still no effective cure for cognitive decline. It is therefore important that new studies include not only neurons but also glial cells, which account for as many as half of all human brain cells and control the metabolic homeostasis in the brain that is crucial for memory formation and learning. In this project, we will monitor metabolism in brain cells, neurons and glia, during ageing/neurodegeneration to identify which cell type and which signalling pathway in the metabolic loop between glia and neurons is responsible for metabolic dysregulation and cognitive deficit in the ageing brain.

The young researcher will use intracellular fluorescent markers and genetically encoded sensors for second messengers and metabolites (Ca^{2+} , cAMP, glucose, lactate, lipids,) and measure changes in signalling/metabolism in individual cell types in real time by advanced fluorescence microscopies (confocal, two-photon, structured illumination (SIM), STED microscopy) on co-cultures of neurons and astrocytes, in the brain tissue slices or in the brains of animal models of ageing/neurodegenerative diseases (rodents, fruit fly).

We invite applications from hard-working and highly self-motivated candidates who have completed, by the deadline of September 2024, a second cycle Bologna degree programme in a natural science subject such as biology, biochemistry, veterinary medicine, microbiology, pharmacy, biotechnology, medicine, chemistry. Preference will be given to applicants with a degree in a natural science, a good command of the English language, a high-grade point average and working experience in cell biology and biochemistry/molecular biology. Candidates should preferably attach a short CV and a motivation letter to their application.

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

1. Članica UL (UL member):

Medicinska fakulteta
Faculty of Medicine

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

Prof. dr. Alja Videtič Paska, alja.videtic@mf.uni-lj.si

3. Raziskovalno področje (Research field):

3.09 Psihatrija
3.09 Psychiatry

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: Na globalni ravni samomori predstavljajo 50 % vseh nasilnih smrti med moškimi in 71 % med ženskami in po podatkih Svetovne zdravstvene organizacije vsako leto zaradi samomora umre 800.000 ljudi. Slovenija sodi v svetu med države z najvišjim samomorilnim količnikom. Samomor je kompleksen fenomen, pri katerem se prepletajo različni dejavniki, kot so npr. genetski dejavniki in dejavniki okolja. Najpomembnejši dejavniki tveganja za samomor so predhodni poskus samomora in duševne motnje. Genetska komponenta naj bi k samomoru prispevala pomemben delež, med 30% in 40%. V naši raziskovalni skupini smo do sedaj že pokazali, da bi pomembno vlogo lahko igrali polimorfizmi posameznih nukleotidov, v zadnjem času pa se posvečamo proučevanju epigenetike, predvsem metilacije DNA. Molekularno ozadje duševnih motenj je redkeje preučevano s stališča proteostaze. Analogno kot pri nevrodegenerativnih motnjah naj bi tudi pri duševnih motnjah prihajalo do tvorb proteinskih agregatov v nevronih. V najnovejših raziskavah so namreč pokazali prisotnost proteinskih agregatov (proteinov CRMP1, DISC1, dysbindin-1, NPAS3 in TRIOBP-1) v možganih oseb z duševnimi motnjami in samomorom.

Namen dela mladega raziskovalca je proučevanje metilacije in hidrosimetilacije DNA v povezavi s samomorilnim vedenjem ali duševno motnjo, predvsem depresijo. Pomembna in nova komponenta zastavljene naloge je povezovanje (hidroski)metilacijskih vzorcev DNA in nastajanjem proteinskih agregatov v možganih.

Metodologija dela bo temeljila na delu z možganskimi in krvnimi vzorci umrlih zaradi samomora in kontrol ter tudi celičnimi linijami. Raziskovalec bo uporabljal širok razpon molekularno genetskih pristopov, metode za izolacijo in analizo DNA, RNA, proteinov, proučevanje epigenetskih mehanizmov z metodo sekvenciranja naslednje generacije in različna bioinformatična orodja. Glavni cilj raziskave je s pridobljenimi podatki, ki bodo obsegali tako fenotip kot epigenetski status in informacije o prisotnosti proteinopatij, omogočiti celovitejši in globlji vpogled ne samo v samomor, temveč tudi v različna psihična stanja (predispozicije).

Raziskovalno delo bo potekalo v tesnem sodelovanju med Centrom za funkcijsko genomiko in bio-čipe, UL MF, Inštitutom za sodno medicino in Inštitutom za mikrobiologijo in imunologijo, oba UL MF in Fakulteto za biotehnologijo in razvoj zdravil, Univerza v Reki, Hrvaška. Od kandidata/ke pričakujemo veliko motiviranost za raziskovalno delo, natančnost, samostojnost, iznajdljivost in odličen študijski uspeh. Predhodne izkušnje z laboratorijskim delom na področju biokemije in molekularne biologije so potrebne. Prednost bodo imeli kandidati s predhodnimi izkušnjami na področju bioinformatike in obdelave podatkov in tisti, ki se želijo dela s podatki sekvenciranja naslednje generacije proučiti. V času opravljanja doktorskega dela se bo mladi/a raziskovalec/ka udeležil/a tudi več strokovnih izpopolnjevanj doma in v tujini, zato je potrebno aktivno znanje angleškega jezika.

Kandidat/ka se bo vključil/a v majhno in dinamično skupino, ki se ukvarja s študijem (epi)genetike samomora in drugih duševnih motenj, katere rezultati dosega pomembno odmevnost v svetovnem merilu.

eng: On the global level, suicides represent 50% of all violent deaths among men and 71% among women, and according to the World Health Organization, 800,000 people die each year due to suicide. Slovenia is among the countries with the highest suicide rate. Suicide is a complex phenomenon, involving a variety of factors, such as genetic and environmental factors. The most important risk factors for suicide are previous suicide attempt and mental disorder. It has been shown that genetic component contributes a significant proportion to suicide, between

30% and 40%. In our research team, we have already shown that the single nucleotide polymorphisms could play an important role, but recently we are oriented on the study of epigenetics, in particular methylation of DNA. The molecular background of mental disorders is less often studied from the point of view of proteostasis. Similar to neurodegenerative disorders, the formation of protein aggregates in neurons is also thought to occur in mental disorders. In the latest research, they showed the presence of protein aggregates (proteins CRMP1, DISC1, dysbindin-1, NPAS3 and TRIOBP-1) in the brains of people with mental disorders and suicide.

The purpose of the proposed doctoral work is to study DNA methylation and hydroxymethylation in association with suicidal behaviour or mental disorder, particularly depression. An important and new component of the task is the association of (hydro)methylation patterns of DNA and the formation of protein aggregates in the brain.

The methodology of the proposed work will be based on the analysis of samples from brain and blood of suicides and controls and also cell lines. The researcher will use a wide range of molecular genetic approaches, methods for the isolation and analysis of DNA, RNA, proteins, study of epigenetic mechanisms using the next generation sequencing method and various bioinformatics tools. The main goal of the research is to enable a more comprehensive and deeper insight not only into suicide, but also into various psychological states (predispositions) with the obtained data, which will include both phenotype and epigenetic status and information about the presence of proteinopathies.

The research work will take place in close cooperation between the Center for Functional Genomics and Bio-chips, UL MF, the Institute of Forensic Medicine and Institute of Microbiology and Immunology, both UL MF and the Faculty of Biotechnology and Drug Development, University of Rijeka, Croatia. From the candidates we expect to be highly motivated for research work, accurate, independent, ingenious and have excellent grades. Previous experience with laboratory work in the field of biochemistry and molecular biology is required. Priority will be given to candidates with previous experience in the field of bioinformatics and data computation, and those who would like to learn the analysis of the next generation sequencing data. During the course of his doctoral work, the young researcher will also participate in several professional development courses at home and abroad, so an active knowledge of the English language is required.

The candidate will be included in a small and dynamic group studying the (epi)genetics of suicide and other mental disorders, whose results already achieved a significant global impact.

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

1. Članica UL (UL member):

Medicinska fakulteta, Center za klinično fiziologijo

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

Andrej Vovk, andrej.vovk@mf.uni-lj.si

3. Raziskovalno področje (Research field):

Medicina / Nevrobiologija

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:

Opis dela:

Mladi raziskovalec bo sodeloval v raziskovalni skupini, ki se ukvarja z obdelavo in analizo magnetno resonančnih (MR) slik. Delo bo vključevalo razvoj in uporaba naprednih metod za obdelavo MR slik na področjih:

- Segmentacije struktur človeškega telesa (možganov, notranjih organov, mišic,...),
- Analize funkcionalne povezljivosti možganov,
- Raziskovanja nevroanatomskih in funkcionalnih sprememb v povezavi z različnimi nevrološkimi motnjami.

Zahteve:

- Predhodna izobrazba iz nevroznanosti, računalništva, elektrotehnike, fizike ali sorodnega področja,
- Poznavanje programiranja oz. obdelave podatkov v Pythonu ali v Matlab ali R okolju ali v C-ju,
- Dobro poznavanje angleškega jezika,
- Samostojnost, motiviranost in kreativnost.

Nudimo:

Stimulativno in dinamično delovno okolje, z dostopom do opreme za MR slikanje.
Delo v raziskovalni skupini z mednarodnimi sodelovanjem,
Možnost za strokovni in osebni razvoj.

Eng:

Job description:

The young researcher will participate in a research group dealing with the processing and analysis of magnetic resonance (MR) images. The work will include the development and application of advanced methods for processing MR images in the areas of:

- Segmentation of human body structures (brain, internal organs, muscles,...),
- Analyzes of brain functional connectivity,
- Investigations of neuroanatomical and functional changes in connection with various neurological disorders.

Requirements:

- Prior education in neuroscience, computer science, electrical engineering, physics or a related field,
- Knowledge of programming or data processing in Python or in Matlab or R environment or in C,
- Good knowledge of the English language,
- Independence, motivation and creativity.

We offer:

Stimulating and dynamic work environment, with access to MR imaging equipment.
Working in a research group with international cooperation,
Opportunity for professional and personal development.

