

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

1. Članica UL (UL member):

Biotehniška fakulteta / Biotechnical Faculty

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

Matej Butala, matej.butala@bf.uni-lj.si

3. Raziskovalno področje (Research field):

1.05 Biokemija in molekularna biologija

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

*slo:*

Mladi raziskovalec (MR) se bo usposabljal na Katedri za biokemijo, Oddelek za biologijo (BF, UL). Ukvarjal se bo z encimatsko sintezo DNA *de novo* (brez matrične DNA).

MR bo prvo iz bakterije izoliral protein, ki je zmožen sinteze DNA v odsotnosti matrične DNA. Sledila bo analiza nekaterih lastnosti izoliranega encima. MR bo ovrednotil npr., pri kateri temperaturi je optimalno shranjevati izolirani protein, kako na encimsko aktivnost vplivajo temperatura, vrednost pH reakcijskega pufru in različni dvovalentni kationi. Preučil bo hitrost polimerizacije verige DNA pri izbranem pogoju in določil maksimalno dolžino polimera nukleotidov, ki jo encim sintetizira. MR bo v nadaljevanju vzpostaviti pogoje za sintezo verige DNA z zaporedjem nukleotidov, ki bo sestavljeno iz odsekov nukleotidov z izbrano bazo. Nadalje, MR bo poskušal vzpostaviti pogoje, ki bodo omogočali encimatsko sintezo DNA, ki bo na nukleotid natančna. V primeru, da tovrstnih pogojev ne bo prepoznal, bo MR na podlagi tridimenzionalne strukture encima v kompleksu z DNA predvidel zamenjave aminokislinskih ostankov, ki bi omogočale, da nov encim polimerizira DNA z reverzibilno blokiranimi nukleotidi. Po izolaciji tovrstnih proteinov bo sledil postopek analize delovanja pridobljenih proteinov, kot je opisano zgoraj za encim divjega tipa. Za analizo (branje) sintetizirane DNA bo kandidat optimiziral pogoje za sekvenciranje pridobljene sintetične DNA. MR bo za sintezo proteinov uporabil standardne mikrobiološke, molekularno biološke in biokemijske metode. Za kontrolirano polimerizacijo DNA (pisanje DNA): imobilizacijo encima na različne trdne nosilce ter refraktometer, ki deluje po principu površinske plazmonske resonance. Za branje DNA bo MR optimiziral postopek sinteze druge verige, komplementarne sintetični DNA in uporabil nanopore sekvenciranje.

Od kandidatke/kandidata se pričakujejo vsaj osnovna znanja iz molekularne biologije, biokemije in analiz tridimenzionalnih struktur makromolekul.

*eng:*

The young researcher (MR) will be trained at the Chair of biochemistry, Department of Biology (BF, UL). He will work on the enzymatic synthesis of DNA *de novo* (in the absence of the template DNA).

MR will first isolate a protein from the bacterium that is capable of DNA synthesis in the absence of template DNA. Subsequently, certain properties of the isolated enzyme will be analyzed. For example, MR will investigate which is optimal temperature for the storage of the protein, how the enzyme activity is affected by temperature, the pH of the reaction buffer and various divalent cations. MR will investigate the rate of polymerization of the DNA chain under selected conditions and determine the maximum length of the polymer of nucleotides that the enzyme synthesizes. Next, MR will determine the conditions for synthesizing a DNA chain with a sequence of nucleotides consisting of stretches of nucleotides with the selected base. In addition, MR will attempt to determine the conditions that will allow enzymatic synthesis of DNA that is accurate to the single nucleotide. In the event that such conditions are not identified, MR will predict substitutions of amino acids, based on the three-dimensional structure of the enzyme in complex with DNA, that will allow the new enzyme to polymerize DNA with reversibly blocked nucleotides. After isolation of the new proteins, the procedure for analyzing the function of the proteins will be performed as described above for the wild type enzyme. For the analysis (reading) of the synthesized DNA, the candidate will optimize the conditions for sequencing the obtained synthetic DNA by nanopore sequencing. MR will use standard microbiological, molecular biological and biochemical methods for protein synthesis. For controlled DNA polymerization (DNA writing): Enzyme immobilization on various solid supports and a refractometer that works on the principle of surface plasmon resonance. For DNA reading, MR will optimize the synthesis process of the second strand complementary to the synthetic DNA and use nanopore sequencing.

The applicant is expected to have at least basic knowledge of molecular biology, biochemistry and the analysis of three-dimensional structures of macromolecules.

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1. Članica UL (UL member):

Biotehniška fakulteta, Biotechnical Faculty

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

Miha Humar; [miha.humar@bf.uni-lj.si](mailto:miha.humar@bf.uni-lj.si)

3. Raziskovalno področje (Research field):

Lesarstvo / Wood Science and Technology

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:*

*Les je eden izmed najpomembnejših gradbenih materialov, ki je kot material biološkega izvora izpostavljen širokemu spektru abiotskih in biotskih dejavnikov razkroja. V naravi so ti procesi zaželeni, kadar pa les uporabljamo v komercialne namene, želimo te procese čim bolj upočasniti.*

*Razkrojni procesi se pogosto prično že pred posekom, med skladiščenjem v gozdu ali na obratih. Če je les zelo vlažen je zaščiten pred razkrojem, ko pa vlažnost prične upadati, se razkrojni procesi lahko prično. Na podlagi spremljanja vlažnosti lesa, lahko tako spremljamo tudi ogroženost lesa za razkroj. Ker je destruktivno spremljanje vlažnosti lesa delovno intenzivno in zahtevno, bomo uvedli novo tehniko hiperspektralnega slikanja, preko katere bomo spremljali vlažnost in stanje lesa.*

*Eden od načinov spremljanja dinamike navlaževanja je hiperspektralno slikanje. S hiperspektralnim oslikovanjem lahko hitro pridemo do podatkov o porazdelitvi vlažnosti po površini, oziroma preseku lesa. Hiperspektralno slikanje zbira in obdeluje informacije iz celotnega elektromagnetnega spektra. Cilj hiperspektralnega slikanja je pridobiti spekter za vsak piksel na sliki prizora z namenom iskanja predmetov, identifikacije materialov ali odkrivanja procesov. Medtem ko človeško oko vidi barvo vidne svetlobe večinoma v treh pasovih (dolge valovne dolžine - zaznavamo jih kot rdečo, srednje valovne dolžine - zaznavamo jih kot zeleno in kratke valovne dolžine - zaznavamo jih kot modro), spektralno slikanje razdeli spekter na veliko več pasov. To tehniko delitve slik na pasove je mogoče razširiti tudi zunaj vidnega spektra. Pri hiperspektralnem slikanju imajo posneti spektri fino ločljivost valovne dolžine in pokrivajo širok razpon valovnih dolžin.*

Tema usposabljanja mladega raziskovalca bo povezana z aplikacijo hiperspektralne analize v lesarstvu. Mladi raziskovalec bo analiziral dinamiko vlaženja in sušenja lesa in te analize apliciral na hlodovino ...

*eng:*

Wood is one of the most important building materials and, as a material of biological origin, is exposed to a wide range of abiotic and biotic decomposition factors. These processes are desirable in nature, but when wood is used commercially, we want to slow them down as much as possible.

Decomposition processes often start before harvesting, during storage in the forest or at the mill. If the wood is very moist it is protected from decomposition, but when the moisture content starts to drop, decomposition processes can start. By monitoring the moisture content of the wood, we can also monitor the risk of decomposition. As destructive monitoring of wood moisture is labour-intensive and challenging, we will introduce a new hyperspectral imaging technique to monitor the moisture content and condition of the wood.

One way to monitor the dynamics of wetting is through hyperspectral imaging. With hyperspectral imaging, we can quickly obtain information on the moisture distribution across the surface, or cross-section, of the wood. Hyperspectral imaging collects and processes information from the entire electromagnetic spectrum. The aim of hyperspectral imaging is to obtain a spectrum for each pixel in the image of a scene to search for objects, identify materials or detect processes. While the human eye sees the colour of visible light mainly in three bands (long wavelengths - perceived as red, medium wavelengths - perceived as green, and short wavelengths - perceived as blue), spectral imaging divides the spectrum into many more bands. This technique of dividing images into bands can be extended beyond the visible spectrum. In hyperspectral imaging, the spectra recorded have fine wavelength resolution and cover a wide range of wavelengths.

The topic of the young researcher's training will be related to the application of hyperspectral analysis in the wood industry. The young researcher will analyse the dynamics of wood wetting and drying and apply these analyses to modified wood, wood treated with hydrophobic preparations, cultural heritage, old wood, etc.

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1. Članica UL (*UL member*):

Bitehniška fakulteta / Biotechnical faculty

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

Tomaž Polak; tomaz.polak@bf.uni-lj.si

3. Raziskovalno področje (*Research field*):

4.02; Biotehnika; Živalska produkcija in predelava; Mikotoksini  
4.02; Biotechnical sciences; Animal production; Mycotoxins

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 se bo vključil(a) v raziskave na področju **proučevanja mikotoksinov v modelnih sistemih in mesnih izdelkih**. Študija bo obravnavala več ciljev trajnostnega razvoja, ki so tudi del nekaterih globalnih ciljev, določenih pri Združenih narodih; Cilj 2 – Odprava lakote: Raziskave mikotoksinov in njihovega vpliva na mesne izdelke so neposredno povezane z varnostjo hrane. Razumevanje in ublažitev kontaminacije z mikotoksini bo prispevalo k zagotavljanju varnejše in hranljive hrane. Cilj 3 – Zdravje in dobro počutje: Besedilo poudarja potencialne učinke mikotoksinov na zdravje ljudi in živali. Raziskovanje in zmanjšanje tvorbe mikotoksinov v mesnih izdelkih je v skladu s ciljem spodbujanja dobrega zdravja in počutja. Cilj 12 – Odgovorna poraba in proizvodnja: Cilj študije je razviti modele in strategije za zmanjšanje prisotnosti mikotoksinov v mesnih izdelkih, kar je v skladu z zagotavljanjem trajnostnih vzorcev potrošnje in proizvodnje. Cilj 13 – Podnebni ukrepi: Raziskava omenja podnebne spremembe, ki so posledica globalnega segrevanja in vplivajo na razvoj toksigenih plesni. Razumevanje omenjenih vplivov lahko prispeva k obravnavi podnebnih sprememb. Z izvedeno študijo bomo pomembno prispevali k bolj trajnostni in odporni verigi preskrbe s hrano. Večina raziskovalnega dela bo potekala v laboratoriju.

Prednost bodo imeli kandidati s predznanjem na področju živilske tehnologije, ki je temelj raziskav. Zaželeno je znanje tekočinske kromatografije.

*eng:*

The young researcher will be involved in research in the field of studying mycotoxins in model systems and meat products. Present study addresses several Sustainable Development Goals (SDGs), which are a set of global goals established by the United Nations; Goal 2 - Zero Hunger: The research on mycotoxins and their impact on meat products is directly related to food safety and security. Understanding and mitigating mycotoxin contamination contribute to ensuring safe and nutritious food. Goal 3 - Good Health and Well-being: The text highlights the potential health effects of mycotoxins on humans and animals. Investigating and minimizing mycotoxin formation in meat products aligns with the goal of promoting good health and well-being. Goal 12 - Responsible Consumption and Production: The project aims to develop models and strategies to reduce the presence of mycotoxins in meat products. This aligns with the goal of ensuring sustainable consumption and production patterns. Goal 13 - Climate Action: The study mentions climate changes caused by global warming affecting the developmental stages of toxigenic fungi. Understanding these climate-related impacts contributes to addressing climate change concerns. By addressing these goals, the research aims to contribute to a more sustainable and resilient food supply chain.

Preference will be given to candidates with prior knowledge in the field of food science and technology, which is the basis of research. Knowledge of liquid chromatography preferred.

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Univerza v Ljubljani, Biotehniška fakulteta University of Ljubljana, Biotechnical Faculty
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2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Denis Rusjan, denis.rusjan@bf.uni-lj.si
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3. Raziskovalno področje (*Research field*):

4.03 Rastlinska produkcija in predelava
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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.

<p>Rastlinska pridelava oziroma pridelava rastlinske hrane se sooča s kompleksnimi izzivi, ki jih povzročajo spreminjajoče se podnebne, ekonomske, naravovarstvene in družbene razmere. Edino sprejemljiva je trajnostna pridelava, ki ne zagotavlja samo okoljske, ampak tudi ekonomske in socialno-družbene stabilnosti, kar je nujno za nacionalno prehransko samooskrbo in družbeno neodvisnost. Na prehodu v zeleno, digitalno in podnebno nevtralnno rastlinsko pridelavo, morajo pridelovalci hrane čim hitreje prilagoditi tehnologije pridelave, ki vključujejo digitalna orodja in obenem naravi sprejemljivejše ukrepe, s katerimi na kmetijskem gospodarstvu zagotavljajo ustrezno ekonomsko varnost. Družbeno zavedanje o okoljskih vprašanjih narašča, kar postavlja pritisk na pridelovalce hrane, da sprejmejo ukrepe, ki vključujejo zmanjšanje uporabe pesticidov in mineralnih gnojil in obenem uporabo obnovljivih virov energije, ohranjanje biotske raznovrstnosti ter skrb za ohranjanje zdravih kmetijskih ekosistemov. Z znanstvenega in strokovnega stališča vidimo velike možnosti v uporabi biostimulantov tudi v rastlinski produkciji. Biostimulanti so raznolika skupina naravnih ali sintetičnih snovi, ki spodbujajo rast, razvoj, odpornost in kakovost rastlin. Njihova uporaba v rastlinski produkciji postaja vse bolj priljubljena, saj lahko prinašajo več prednosti, kot so povečana odpornost na stres, izboljšana kakovost pridelka in zmanjšana uporaba pesticidov. Biostimulante lahko uporabljajo v kmetijstvu za:</p>
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(i) spodbujanje koreninskega razvoja, saj pričakujemo povečano absorpcijo vode in hranil, kar rastlinam pomaga bolje prenesti sušo in druge stresne razmere;

(ii) povečanje tolerance na bolezni, škodljivce in abiotične stresne dejavnike, kot so ekstremne temperature, vročinski valovi, pomanjkanje vode itn.;

(iii) izboljšanje količine, kot tudi kakovosti pridelkov, tako na primernem kot tudi sekundarnem metabolizmu (topna suha snov, organske kisline, fenolne in aromatične spojine);

(iv) hitrejše okrevanje po sušnem, vročinskem ali vodnem stresu;

(v) zmanjšanje uporabe pesticidov in gnojil, kar prispeva k zmanjšanju vpliva na okolje in nenazadnje

(vi) izboljšanje trajnosti, saj zmanjšajo potrebo po uporabi pesticidov, povečajo učinkovitost hranjenja in povečajo odpornost rastlin na ekstremne razmere.

Pri uporabi biostimulantov je pomembno upoštevati pravilno doziranje in uporabiti izdelke, ki so primerni za specifične potrebe gojene rastline in okolja. Prav tako je pomembno slediti navodilom proizvajalca ter upoštevati lokalne zakonodajne zahteve in smernice za uporabo tovrstnih izdelkov.

Mlad(i/a) raziskoval(ec/ka) se bo najprej lotil(a) zasnove raziskovalnega načrta, ki bo omogočil sistematično in znanstveno analizo vpliva biostimulantov na rast in razvoj gojene rastline, ter na kakovost pridelka (sadja, vrtnin, okrasnih rastlin itn.). Ta načrt bo upošteval več dejavnikov, kot so izbira biostimulantov, metode aplikacije, časovni okvir študije in parametri za oceno rasti, razvoja ter kakovosti pridelka, na nivoju primarnega in sekundarnega metabolizma. Mlad(a/i) raziskoval(ec/ka) bo moral(a) voditi natančne in dosledne zapise ter zagotoviti ustrezno ponovljivost eksperimentov, da bo lahko zanesljivo potrdil(a) ali ovrgel(a) hipoteze o vplivu biostimulantov na rast in razvoj trte ter na kakovost pridelka (sadja, grozdje, vrtnine, okrasne rastline itn.). Končni cilj je prispevati k boljšemu razumevanju uporabe biostimulantov v pridelavi hrane in njihovemu potencialu za izboljšanje trajnosti ter kakovosti pridelka in obenem k oblikovanju tehnoloških navodil za dotične uporabnike.

V okviru delovnega mesta bodo za opravljanje vseh potrebnih študij, poleg celotne raziskovalne opreme, na voljo tudi ustrezni infrastrukturni objekti, ki so na razpolago v okviru Hortikulturenega centra BF ter Infrastrukturenega centra BF Ljubljana.

Od kandidat(a/ke) se pričakuje dobro poznavanje (i) tehnoloških praks in ukrepov v rastlinski pridelavi (vinogradništvo, sadjarstvo, vrtnarstvo, okrasne rastline) (ii) fizioloških in biokemijskih procesov ter (iii) metabolizmov v rastlin, kar kandidat(ka) dokazuje z opravljenimi ustreznimi izpiti na BSc in MSc stopnji. Zaželene so izkušnje z delom v laboratoriju, sodelovanje pri raziskovalnem delu in dobro znanje angleškega jezika.

*eng:*

Plant production, or the production of plant-based food, faces complex challenges caused by changing climatic, economic, environmental and social conditions. Sustainable production is the only viable option, ensuring not only environmental but also economic and socio-economic stability, which is essential for national food self-sufficiency and social sovereignty. In the transition towards green, digital and climate-neutral crop production, food producers need to adapt production technologies as quickly as possible, incorporating digital tools and, at the same time, more nature-friendly measures to ensure adequate economic security on the farm. Social awareness of environmental issues is growing, putting pressure on food producers to take measures that include reducing the use of pesticides and mineral fertilisers while using renewable energy sources, preserving biodiversity and maintaining healthy agricultural ecosystems. From a scientific and professional point of view, we see great potential in the use of biostimulants also in crop production. Biostimulants are a diverse group of natural or synthetic substances that stimulate plant growth, development, resistance and quality. Their use in crop production is gaining popularity as they can bring several benefits such as increased stress tolerance, improved crop quality and reduced pesticide use. Biostimulants can be used in agriculture to:

- (i) stimulate root development, as we expect increased water and nutrient uptake, which helps plants better withstand drought and other stress conditions;
- (ii) increase tolerance to diseases, pests and abiotic stress factors such as extreme temperatures, heat waves, water scarcity, etc.;
- (iii) improving the quantity as well as the quality of the crop, both in the primary and secondary metabolism (soluble solids, organic acids, phenolic and aromatic compounds);
- (iv) faster recovery from drought, heat or water stress;

(v) reduction in the use of pesticides and fertilisers, which contributes to a reduction in the impact on the environment and, last but not least

(vi) improving sustainability by reducing the need to use pesticides, increasing feeding efficiency and increasing the plants' resilience to extreme conditions.

When using biostimulants, it is important to consider the correct dosage and to use products that are appropriate to the specific needs of the plant being grown and the environment. It is also important to follow the manufacturer's instructions and to comply with local legislative requirements and guidelines for the use of such products.

The young researcher(s) will first design a research plan that will allow a systematic and scientific analysis of the effect of biostimulants on the growth and development of the cultivated plant and on the quality of the crop (fruit, vegetables, ornamentals, etc.). This plan will take into account several factors such as the choice of biostimulants, the methods of application, the timeframe of the study, and the parameters to be used for the assessment of the growth, development, and quality of the crop, at the level of primary and secondary metabolism. The young investigator(s) will be required to keep accurate and consistent records and to ensure adequate reproducibility of the experiments in order to be able to reliably confirm or refute hypotheses on the effect of biostimulants on the growth and development of the vine and on the quality of the crop (fruit, grape, vegetables, ornamentals, etc.). The final objective is to contribute to a better understanding of the use of biostimulants in food production and their potential to improve sustainability and crop quality, while at the same time contributing to the development of technological guidelines for the users concerned.

In addition to all the research equipment, the post will also make available the relevant infrastructural facilities, which are available at the BF Horticultural Centre and Infrastructure Centre Lab filed (Ljubljana), to carry out all the necessary studies.

The candidate is expected to have a good knowledge of (i) technological practices and measures in plant production (viticulture, fruit production, horticulture, ornamentals) (ii) physiological and biochemical processes and (iii) metabolisms in plants, as demonstrated by passing the relevant examinations at BSc and MSc level. Experience of working in a laboratory, participation in research work and a good command of the English language are welcome.

## Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*)

1. Raziskovalna organizacija (*Research organisation*):

Univerza v Ljubljani, Biotehniška fakulteta  
University of Ljubljana, Biotechnical Faculty

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

Katarina Vogel-Mikuš, katarina.vogelmikus@bf.uni-lj.si

3. Šifra in naziv raziskovalnega področja (*Research field*):

1.03. Biologija  
1.03. Biology

4. Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*):

Navedite tudi morebitne druge zahteve, vezane na usposabljanje mladega raziskovalca (npr. znanje angleškega jezika, izkušnje z laboratorijskim delom, potrebne licence za usposabljanje...).

*slo:*

Usposabljanje kandidata bo potekalo v mednarodno vpeti raziskovalni skupini Katedre za botaniko in fiziologijo rastlin, Oddelka za biologijo, BF, na področju interdisciplinarnih raziskav. Delo bo usmerjeno v študije mehanizmov interakcij delcev mikroplastike različne sestave z izbranimi kulturnimi rastlinami na organizemski, organski, tkivni in celični ravni z uporabo različnih molekularnih, spektroskopskih, mikroskopskih in slikovnih tehnik. Preučevali bomo tudi interakcije delcev mikroplastike s talnim mikrobiomom, raziskave pa bodo vključevale moderne molekularne pristope. Kandidat bo vključen v razvoj novih pristopov slikanja porazdelitve molekul v rastlinskih tkivih in celicah s spektroskopskimi tehnikami, kot sta SIMS in FTIR v okviru programske skupine »Biologija rastlin«, ARIS in mednarodnih projektov.

Od kandidata poleg osnovnih pogojev pričakujemo zaključen študij 2. stopnje naravoslovnih smeri (biologija, biotehnologija, mikrobiologija, kemija, biokemija, fizika,...), komunikativnost, motiviranost za raziskovalno delo v skupini, delavnost, natančnost, aktivno znanje angleškega jezika in poznavanje osnovnih računalniških orodij za obdelavo besedil in podatkov. Zaželeno je poznavanje programskega jezika za statistično računalništvo in vizualizacijo podatkov »R«.

*eng:*

The training of the young researcher will be carried out within internationally involved research group of the Laboratory for Plant Physiology, Department of Biology, BF, in the field of interdisciplinary research. The work will be focused on studies of the mechanisms of interactions of microplastic particles of different composition with selected cultivated plants at the organismal, organic, tissue and cellular level using various molecular, spectroscopic, microscopic and imaging techniques. We will also study the interactions of microplastic particles with the soil microbiome, and the research will include modern molecular approaches. The candidate will be involved in the development of new approaches for imaging the distribution of molecules in plant tissues and cells using spectroscopic techniques such as SIMS and FTIR within the



program group "Plant Biology", ARIS and international projects.

In addition to the basic requirements, we expect the candidate to have completed the 2nd-level course in natural sciences (biology, biotechnology, microbiology, chemistry, biochemistry, physics, etc.), communicative skills, motivation for research work in a group, diligence, accuracy, active knowledge of the English language and knowledge of basic computer skills tools for processing texts and data. Knowledge of the programming language for statistical computing and data visualization "R" is desirable.

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1. Članica UL (*UL member*):

Biotehniška fakulteta

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

Vesna Zupanc vesna.zupanc@bf.uni-lj.si

3. Raziskovalno področje (*Research field*):

4.03 Rastlinska produkcija in predelava, 1.08.00 Varstvo okolja

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 oziroma mlada raziskovalka (MR) se bo usposabljal z raziskovalnim delom v okviru raziskovalnega programa P4-0085 Agroekosistemi. Program pokriva biotehnične in naravoslovne vsebine, povezane s tlemi, vodo in agroekosistemi. V okviru dela na doktorski disertaciji in študijem na 3. stopnji bo MR sodeloval pri aktivnostih Centra za agrohidrologijo in urejanje kmetijskega prostora ter bo vključen v mednarodne in domače raziskovalne projekte ter strokovne naloge. Doktorska disertacija bo v dogovoru s kandidatom oz. kandidatko usmerjena v raziskovanje vodozadrževalnih lastnosti tal, ki so povezane s hidrološkimi procesi vrhnjega sloja vodonosnikov ter kakovostjo podzemne vode, skladno s predznanji kandidata ali kandidatke. Pogoji je zaključena magistrska stopnja bolonjskega študija (MSc), prednostno s področja agronomije ali drugih inženirskih znanosti (npr. vodarstvo, okoljsko gradbeništvo) ali naravoslovja (npr. geologija, hidrogeologija). Prednost pri izbiri bodo imeli kandidati s poglobljenim znanjem s širšega področja tal in agrohidrologije ter željo po izvajanju eksperimentalnega dela (laboratorij ali/in terensko delo) na tem področju. MR naj bi imel izkazano sposobnost za samostojno delo (samoiniciativnost), odlično znanje angleškega jezika (tako pisanje kot branje) in zanimanje za raziskovalno delo v naravi in/ali laboratoriju. Zaželeno je predznanje programskega jezika R (ali podobnih jezikov) in izkušnje z GIS orodji. MR bo deloval v krogu drugih mladih raziskovalnih sodelavcev in spoznal različne raziskovalne tehnike. Predviden je vpis ali na doktorski študijski program Bioznanosti.

*eng*: The young researcher (MR) will be involved in research work as part of the research program P4-0085 Agroecosystems. The program covers biotechnical and scientific topics related to soil, water and agroecosystems. As part of the dissertation work and 3rd level studies, MR will participate in the activities of the Center for Agrohydrology and Agricultural Land Management and will be involved in international and national research projects. The dissertation, in consultation with the candidate, will focus on soil water retention properties related to the hydrological processes of the upper layer of aquifers and groundwater quality, in accordance with the candidate's prior knowledge.

Expected MR profile is an MSc degree, preferably in the field of agronomy or other engineering (e.g. water resources management, environmental engineering) or natural sciences (e.g. hydrogeology). Preference will be given to applicants with a sound knowledge of soil and agrohydrology and a desire to carry out experimental work (laboratory and/or field work) in this area. MR should have a proven ability to work independently, an excellent command of English (written and spoken) and an interest in conducting research in the field and/or laboratory. Prior knowledge of the programming language R (or similar languages) and experience with GIS tools are desirable. MR will work in with other young researchers and learn about different research techniques. Enrollment in the doctoral program in Biosciences is planned.