

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

1. Članica UL (*UL member*):

Biotehniška fakulteta

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

Neža Čadež, neza.cadez@bf.uni-lj.si

3. Raziskovalno področje (*Research field*):

4.06.04 Mikrobna biotehnologija

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.

sl: Proučevanja mehanizmov prilagajanja kvasovk na človekova okolja

Mladi raziskovalec bo sodeloval pri študijah proučevanja mehanizmov prilagajanja kvasovk na človekova okolja, ki se spreminjajo zaradi podnebnih sprememb in zato omogočajo prevlado novih, invazivnih vrst nad avtohtonimi vinskimi kvasovkami. Z orodjem eksperimentalne adaptivne evolucije bo lahko poustvaril in primerjal izida naravnega in laboratorijskega procesa prilagajanja na dejavnike okolja. Iz genomskih podatkov je namreč mogoče razbrati vplive okolja in sklepati na evolucijske gonilne sile na vrste, ki jih poznamo danes. Končni cilj raziskave bo preučitev mehanizma prilagoditev na spremembe v okolju in razvoj metodološkega pristopa, s katerim bomo začeli razumeti kompleksno vlogo mikroorganizmov v sklopu podnebnih sprememb in njihov vpliv na določene pomembne dejavnosti, kot so vinarstvo in sadjarstvo.

Program usposabljanja mladega raziskovalca bo obsegal:

- določitev okolijskih dejavnikov, ki omogočajo prevlado invazivne vrste kvasovk.
- z adaptivno laboratorijsko evolucijo invazivne vrste kvasovk izzvati potrebne prilagoditve na človekovo okolje.
- s primerjalno genomiko pojasniti mehanizem teh prilagoditev.

V okviru raziskovalne skupine že imamo ekspertizo fenotipske karakterizacije kvasovk in določanja odpornosti sevov na okoljske dejavnike, metodološki pristop k adaptivni evoluciji, ter imamo vzpostavljena bioinformatična orodja za analizo genomskih podatkov, s čimer bomo omogočili podporo mlademu raziskovalcu pri izvedbi naloge.

Kandidati z naslednjimi izkušnjami bodo pri izboru imeli prednost:

- ima izkušnje z delom s kvasovkami;
- ima izkušnje z molekularno-biološkimi tehnikami dela;
- osnovno poznavanje bioinformatičnih orodij in pristopov
- ima izkušnje pri pisanju izvirnih znanstvenih člankov v angleščini.

eng: Investigating mechanisms of adaptation of yeasts to human environments

The young researcher will be involved in studies determining mechanisms of adaptation of yeasts to man-made environments e.g. vineyards, on which climate changes have a strong impact allowing new invasive species to displace native wine yeasts. Using the tool of experimental adaptive evolution, a young researcher will recreate and compare the outcomes of natural and laboratory adaptation processes to environmental factors. This is because genomic data can be used to infer environmental influences and evolutionary drivers on the species we know today. The goal of the research is to investigate the mechanisms of adaptation to environmental change and to develop a methodological approach that will allow us to understand the complex role of microorganisms in the context of climate change and their impact on certain important activities such as viticulture and fruit growing.

The training programme for the young researcher includes the following:

- Identify environmental factors that enable the dominance of invasive yeast species.
- Determine the necessary adaptations to the human environment through adaptive laboratory evolution of invasive yeast species.
- Elucidate the mechanisms of these adaptations through comparative genomics.

Within the research group, we already have expertise in phenotypic characterization of yeasts and in determining resistance of strains to environmental factors, a methodological approach to adaptive laboratory evolution, and we have bioinformatics tools for analysis of genomic data that will allow us to assist the young researcher in carrying out the task.

Applicants with the following experience will be given preference in the selection process:

- Experience working with yeast;
- Experience in molecular biology techniques;
- Basic knowledge on bioinformatics tools and approaches;
- Experience in writing original scientific papers in English.