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

1. Raziskovalna organizacija (*Research organisation)*:

Univerza v Ljubljani, Biotehniška fakulteta

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

Bojana Bogovič Matijašić, Bojana.BogovicMatijasic@bf.uni-lj.si

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

4.02.04 Predelava animalnih surovin

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 tujih jezikov, izkušnje z laboratorijskim delom, potrebne licence za usposabljanje…).

slo:

Usposabljanje mladega raziskovalca bo osredotočeno na proučevanje učinkovanja bakteriocinov mlečnokislinskih bakterij in bioaktivnih proteinov iz sirotke kot stranskega produkta predelave mleka, na gostitelja. V skupini, v kateri se bo usposabljal mladi raziskovalec, smo v preteklih raziskavah razvili protokole za izolacijo in karakterizacijo sirotkinega proteina laktoferina ter raziskovali bakteriocine nekaterih mlečnokislinskih bakterij, predvsem gasericine K7, ki jih proizvaja *Lactobacillus gasseri* K7 ter nizin, ki ga proizvajajo nekateri laktokoki. S stališča potenciala omenjenih molekul za razvoj farmakoloških orodij za nove terapije so zanimivi predvsem njihovo protibakterijsko in protivirusno delovanje ter protivnetne, protiinfektivne in imunoregulacijske lastnosti. Medtem ko je o delovanju posameznih bakteriocinov in sirotkinih proteinov že veliko znanega, je manj raziskano morebitno sinergistično delovanje omenjenih molekul.

Mladi raziskovalec bo med usposabljanjem osvojil različne *in vitro* pristope za proučevanje bakteriocinov in sirotkinih proteinov, kot so kultivacija bakterij, čiščenje bioaktivnih molekul iz kultur in iz sirotke (HPLC, SDS-PAGE..), ugotavljanje biološke (protimikrobne, protivnetne, imunomodulacijske…) aktivnosti z uporabo indikatorskih bakterij ali celičnih kultur (epitelne celice, imunske celice). Odziv epitelnih in imunskih celic bo proučeval s pomočjo ELISA in transkriptomskih analiz (RNA).

Zaželjene so izkušnje s kultivacijo bakterij in celičnih kultur, z molekularno-biološkimi tehnikami ter poznavanje osnovnih statističnih in bioinformacijskih orodij.

Zaželjen je magisterij iz študijev mikrobiologije, biotehnologije, živilstva in prehrane, biologije, biokemije ali sorodnih smeri.

The focus of the young researcher's training will be to study the effects of bacteriocins of lactic acid bacteria and bioactive proteins from whey as a by-product of milk processing on the host. In the group where the young scientist will be trained, we have developed protocols for the isolation and characterization of the whey protein lactoferrin and studied the bacteriocins of some lactic acid bacteria, in particular the gassericins produced by *Lactobacillus gasseri* K7 and the nisin produced by some lactococci. From the point of view of the potential of the above molecules for the development of pharmacological tools for new therapies, their antibacterial and antiviral activity as well as their anti-inflammatory, anti-infective and immunoregulatory properties are of particular interest. While there is a lot of knowledge on the activity of the individual bacteriocins and whey proteins has been, the potential synergistic activity of these molecules has been less studied.

During the training, the young scientist will learn different *in vitro* approaches to study bacteriocins and whey proteins, such as the cultivation of bacteria, the purification of bioactive molecules from cultures and from whey (HPLC, SDS -PAGE ..), the determination of biological (antimicrobial, anti-inflammatory, immunomodulatory ...) activities using indicator bacteria or cell cultures (epithelial cells, immune cells). The responses of epithelial and immune cells will be studied by ELISA and transcriptomic analyses (RNA).

Experience with the cultivation of bacteria and cell cultures, with molecular biological techniques and knowledge of basic statistical and bioinformatic tools are welcome.

A Master's degree in microbiology, biotechnology, food and nutrition, biology, biochemistry or related fields is desirable.