1. Raziskovalna organizacija (*Research organisation)*:

Univerza v Ljubljani, *Fakulteta za farmacijo*
University of Ljubljana, *Faculty of Pharmacy*

2. Ime in priimek mentorja (*Name and surname of a mentor*):

Janko Kos

3. Področje znanosti iz šifranta ARRS (*Primary research field*):

4.06 Biotehnologija
4.06 Biotechnology

4. Kontaktni e-naslov mentorja (*Contact of a mentor)*:

Janko.kos@ffa.uni-lj.si

5. Kratek opis programa usposabljanja (*Short description of the program)*:

Kandidat bo raziskoval vlogo cisteinskih karboksipeptidaz katepsina B in katepsina X v procesih diferenciacije in delovanja mieloidnih supresorskih celic. Preveril bo izražanje in aktivnost omenjenih peptidaz v posameznih subpopulacijah mieloidnih supresorskih celic. Z metodami konfokalne mikroskopije in ligacije bližine bo določil subcelično lokalizacijo in naravne substrate omenjenih peptidaz. Na podoben način bo preveril prisotnost, aktivnost in lokalizacijo endogenih inhibitorjev omenjenih peptidaz, s poudarkom na cistatinih F in C. Z metodami utišanja ali nadizražanja peptidaz in inhibitorjev bo iskal povezane proteine. V nadaljevanju bo kandidat določil vlogo peptidaz in inhibitorjev pri interakcijah mieloidnih supresorskih celic s citotoksičnimi limfociti in NK celicami, pomen pri anergiji citotoksičnih celic in vlogo pri regulaciji protitumorskega imunskega odziva.

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The candidate will investigate the role of cysteine carboxypeptidases cathepsins B and X in processes of differentiation and function of myeloid –derived suppressor cells (MDSC). She/he will check the expression and activity of peptidases in subpopulations of MDSC. Using the methods of fluorescence confocal microscopy and proximity ligation the subcellular localisation and natural substrates will be determined. In a similar way the expression, activity and localisation of peptidase endogenous inhibitors will be determined, with focus on cystatins F and C. Using the methods of gene silencing and overexpression the candidate will find the proteins and mechanisms related to cathepsins' functions. Further, she/he will define the role of peptidases and inhibitors in interactions between MDSC with cytotoxic lymphocytes and NK cells, the role in anergy of cytotoxic cells and in regulation of anti-tumour immune response.