Faculty of Biotechnology and Drug Development, University of Rijeka

1.

SCIENTIFIC SUPERVISOR	
Name and Surname	Nela Malatesti
UNIRI Faculty	Faculty of Biotechnology and Drug Development
Organisational Unit / Research Group	Medicinal chemistry / PDT group
Research Team	Professors: Dr. Nela Malatesti, Dr. Ivana Ratkaj and Dr. Milan Mesić. Doctoral student Martina Mušković.
EU-funded project experience	Member of two projects funded by the European Social Fund (ESF): HR.3.1.15-0044 and UP.03.1.1.02.0019. Part of the group for implementation of the project "Research Infrastructure for Campus-based Laboratories at the University of Rijeka", financed by European Regional Development Fund (ERDF).
Research Interests	Synthesis, characterisation and biological activity evaluation of new amphiphilic porphyrin-based photosensitisers (PSs) for anticancer photodynamic therapy. Studies of the influence of hydrophobic and ionic groups on the PS's aggregation properties, production of singlet oxygen (and other reactive oxygen species), selectivity between cancer (melanoma) and normal cells, entry and localization in the cell, and the overall PDT effect. Important PDT parameters such as the influence of different wavelengths, light and PDT dose, and PS incubation time are also studied.
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Contact e-mail	

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SCIENTIFIC SUPERVISOR	
Name and Surname	Toni Todorovski
UNIRI Faculty	Faculty of Biotechnology and Drug Development (FABRI)
Organisational Unit / Research Group	Peptide medicinal chemistry lab
Research Team	I am part of the peptide research team at FABRI, Rijeka, Croatia where I recently joined as assistant professor. With two postdoctoral stays (in the last 11 years) at the two most prestigious research centers in Spain (IRB Barcelona and PRBB Barcelona) where I worked in two world-recognized peptide labs (Prof. Ernest Giralt and Prof. David Andreu labs), I am keen to continue with similar research line at FABRI. My expertise is in the field of peptide medicinal chemistry and the planned research will focus on various antimicrobial peptide-drug conjugates. Additionally, synthesizing new peptide sequences that can successfully sequester heavy metals will be another research line that will develop progressively in the following years.
EU-funded project experience	I have been participated/participating at the following EU-funded projects: - NOVIRUSES2BRAIN (2019 – ongoing), European Union (Horizon 2020 Framework Programme, grant no 828774) - FP7 Marie-Curie COFUND (2012 -2014), European Commission, Marie Skłodowska-Curie Actions**,** Horizon 2020
Research Interests	According to the World Health Organization, **antimicrobial resistance** is now one of the top ten global public health threats that humanity is facing. In recent decades, novel approaches involving targeted delivery such as **peptide–drug conjugates (PDCs)** have gained attention as alternative (pro)drugs for tackling microbial diseases. **Antimicrobial PDC therapeutics** typically involve

	one or more small drug molecules **conjugated to a cell-penetrating peptide** either directly or through a linker.
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3.

SCIENTIFIC SUPERVISOR	
Name and Surname	Duško Čakara
UNIRI Faculty	Faculty of Biotechnology and Drug Development
Organisational Unit / Research Group	Centre for Micro- and Nanosciences and Technologies / Laboratory for Colloids, Polyelectrolytes and Interfaces (LCPI)
Research Team	Laboratory for Colloids, Polyelectrolytes and Interfaces (LCPI)
EU-funded project experience	2024– present: HORIZON-EIC-2023-PATHFINDEROPEN-01 - ICONIC (project number 101129638), principal investigator 2013 – 2017: FP7-PEOPLE-2013-ITN Marie Curie ITN Organic Bioelectronics (ORGBIO, project number 607896), principal investigator, work package leader
Research Interests	Clearly articulate the research interests emphasising specific topics offered to MSCA postdocs (max 500 characters).
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4.

SCIENTIFIC SUPERVISOR	
Name and Surname	IGOR JURAK
UNIRI Faculty	Faculty of Biotechnology and Drug Development
Organisational Unit / Research Group	Laboratory for Molecular Virology
Research Team	Igor Jurak, PhD, principal investigator Oliver Vugrek, PhD (Inst. Ruđer Bošković, Laboratory for Advance Genomics; Zagre, HR), collaborator Mary O'Connell, PhD (CEITEC, Brno, CZ), collaborator Donald M. Coen, PhD (Harvard Medical School, USA), collaborator
EU-funded project experience	FP7-PEOPLE-CIG-2013
Research Interests	Herpes simplex virus 1 (HSV-1) is an important human pathogen that usually causes self-limiting disease, but in rare cases can also lead to severe morbidity and death. HSV-1 belongs to the herpesviruses, large dsDNA viruses characterized by a biphasic replication cycle (productive and latent phase). We have recently discovered a specific post-transcriptional modification (A-to-I editing) of HSV-1 miRNAs that may have an important function in viral replication. Our main interest is to investigate the role of editing proteins in both productive and latent infection.
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SCIENTIFIC SUPERVISOR	
Name and Surname	Antonija Jurak Begonja
UNIRI Faculty	Faculty of Biotechnology and Drug Development
Organisational Unit / Research Group	Laboratory for haematopoiesis
Research Team	Antonija Jurak Begonja, PhD, principal investigator Markus Bender, PhD (University Hospital Wuerzburg, Germany), collaborator Antonella de Matteis, PhD (Tigem institute; Italy), collaborator Steve Watson, PhD (University of Birmingham, UK), collaborator
EU-funded project experience	Marie Curie FP7-PEOPLE-2011-COFUND (principal investigator) H2020-MSCA-ITN-2017, "Targeting Platelet Adhesion Receptors in Thrombosis" (collaborator)
Research Interests	Bleeding tendencies can result from thrombocytopenia or platelet dysfunction. Chemoradiotherapy causes prolonged life-threatening thrombocytopenias, and the only therapy is transfusion of platelets. Therefore, better knowledge of mechanisms governing platelet biology may improve treatments for abnormal platelet counts or function. Platelets are the smallest blood cells that derive from megakaryocytes in the bone marrow. Focus of our research group is how small lipid molecules, phosphoinositides (PIs), contribute to development of megakaryocytes and regulate platelet activity. We have recently discovered involvement of specific type of PIs in ribosome biology that contributes to cell survival and differentiation.
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6.

SCIENTIFIC SUPERVISOR	
Name and Surname	Daniela Kalafatović
UNIRI Faculty	Faculty of Biotechnology and Drug Development (FABRI)
Organisational Unit / Research Group	Peptide Chemistry lab (Kalafatovic lab) at FABRI and Laboratory for Drug Design at AIRI (Center for Artificial Intelligence and Cybersecurity)
Research Team	We are an interdisciplinary team working at the interface of peptide chemistry and machine learning to develop new knowledge and ideas. In the last few years we attracted national and European funding to support the research ideas of the application of machine learnign to peptide design. Our main strength is that we have reseachers with different backgrounds covering both, chemistry and computer science. We have an excellent track record in the field of chemistry (Chemcial Science, Nature Chemistry, Frontiers in Chemistry, ACS nano, Biomaterials, etc.) and in the filed of computer science (Applied Soft Computing, Journal of Cheminformatics, Knowledge-based systems, Artificial intelligence in the Life Sciences, etc.) Our laboratory in equipped with all the necessary tools for performing solid phase peptide synthesis and peptide purification. The organization has a mass spectrometry facility as well as instruments such as UV-vis, fluorescence and FTIR spectrometers and an advance microscopy unit with atomic force microscope, fluorecent and confocal microscopes. There is also access to high perforamce computing infrastructure (supercomputer Bura).
EU-funded project experience	I am grant holder of a national research founding program HRZZ, through which I was able to employ 3 PhD students (two of them will defend their PhD in 6 months) and have aDN Horizon project application under evaluation, a Horizon Pathfinder application in preparation, and a COST action in evaluation. I participated in one Erasmus+ project and was a Marie-Curie cofund post-doc at IRB Barcelona.
Research Interests	Improvement of the peptide search space exploration and prediction of peptide self-assembly (SA) into nanostructures using in silico methods including molecular dynamics (MD) and artificial intelligence methods such as Machine and

	Deep Learning (ML, DL). Exhaustive search of the huge peptide chemical space is intractable using MD, therefore ML complements its endeavour to obtain knowledge guided solutions to complex chemical problems. MD and ML complement each other in dataset expansion and method validation offering a unique opportunity to sustainable progress of the peptide self-assembly problem. Moreover, experimental validation is an important part of the processfor which we have a complete laboratory setup.
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