PhD MARTA POPOVIĆ – CURRICULUM VITAE

Present position: **Principal investigator, Tenure-track Research Associate**, Group and projects' leader, Institute Ruder Boskovic, Croatia. E-mail: mpopovic@irb.hr

CURRENT POSITION

08.11.2017 – now **Group leader**, Tenure-track Research Associate (Equivalent to Assistant Professor), Institute Ruder Boskovic, Croatia

PREVIOUS POSITIONS

2014 – 2017 **Postdoctoral** Researcher in the DNA Damage and Repair Group, PI Prof. Kristijan Ramadan at CRUK/MRC Oxford Institute for Radiation Oncology, University of Oxford, UK

2008 – 2014 Research Assistant (**PhD** student) in the Laboratory for Molecular Ecotoxicology with Dr. Tvrtko Smital, Ruder Boskovic Institute, Zagreb, Croatia

2010 **Guest PhD** student (5 months) in the Laboratory of Prof. Karl Fent, University of Applied Sciences, Basel, Switzerland

Research experience

ONGOING RESEARCH GRANTS

- **Project co-leader: 2020-2023** 'Structural characterization of factors involved in DNA-protein crosslink repair. Slovenian-Croatian Bilateral Project (IPS-2020-01) (200,000 EUR)**, Institute** Ruder Boskovic, Croatia and National Chemistry Institute, Slovenia. Project co-leader from Slovenian side: dr.sc Marjetka Podobnik (300,000 EUR)**.**
- **Project leader: 2018-2023** 'Deciphering DNA-Protein Crosslink Repair *in vivo* using CRISPR/Cas9 genome editing in zebrafish model 'Croatian Science Foundation Installation project grant (250,000 EUR), Institute Ruder Boskovic, Croatia

Group members: Cecile Otten, PhD; Christine Supina, MSc; Ivan Anticevic, MSc; Marin Kutnjak, MSc
Group website: https://martafry.wixsite.com/popoviclab

Projects website: https://www.irb.hr/eng/Divisions/Division-for-Marine-and-Environmental-Research/Laboratory-for-molecular-ecotoxicology/Projects/DNAPRO-Deciphering-DNA-Protein-Crosslink-Repair-in-vivo-using-zebrafish-model

Editor – Associate guest editor for the special issue in Frontiers in Cell and Developmental Biology (IF 5.186, Q1, 15%): '**Genome Instability: old problem, new solutions', 2020/2021, ebook published March 2022** Citation: Kahl, V., Hoch, N., Popovic, M., eds. (2022). Genome Instability: Old Problem, New Solutions. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88974-691-0

Reviewer: Comparative Biochemistry and Physiology, Bioorganic & Medicinal Chemistry, BMC Genomics, PlosOne

Board member of the Croatian Society of Biochemistry and Molecular Biology (HDBMB) a member of the Federation of European Biochemical Societies (FEBS) and International Union of Biochemistry and Molecular Biology (IUBMB) **– 2021-2023**

Education

Feb 2014 **PhD** in Molecular Biosciences, **Ruder Boskovic Institute**, Zagreb, Croatia

2008 - 2014 Doctoral studies in Molecular Biosciences (GPA 5.0/5.0), joint interdisciplinary postgraduate programme - University of Osijek, University of Dubrovnik and Ruder Boskovic Institute, Zagreb

2006/2007 **MSc** in Environmental Sciences, Master thesis mentor: Rosa Maria Roman-Cuesta (MSc thesis - *distinction*), Oxford University Centre for Environment (OUCE), **University of Oxford**, UK

1999 – 2005 **MSc** in Biology, Master thesis mentor: Sanja Gottstein, Faculty of Science, **University of Zagreb** (GPA 4.9/5.0), Zagreb, Croatia

Publications

Author of **27 scientific** publications out of which 23 original articles, 3 review articles and 1 ebook, 13 published as a first author, 25 in Q1 journals, 1 in Q2 and 1 in Q4. Articles published as a first author are published in journals with very high impact factors (IF 9.8 - 16.9). Number of **citations 686, h indeks 15** (Scopus, 24.02.2022).

1. Kahl, V., Hoch, N., **Popovic, M., eds.** (2022). Genome Instability: Old Problem, New Solutions. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88974-691-0. March 2022, ebook.
2. **Popovic, M***., Kahl, V.*, Hoch, N.* Editorial: Genome Instability: Old Problem, New Solutions**.** Front. Cell Dev. Biol., 24 February 2022 (*equal contribution).
3. **Popovic, M.** *, Fielden, J.*, Ramadan, K. (2022) TEX264 at the Intersection of Autophagy and DNA repair. Autophagy 1-10 (**IF 12.04**, Q1, 10%) (*equal contribution).
4. Ruggiano, A.*, Vaz, B.*, Kilgas, S., **Popovic, M**., Rodriguez-Berriguete, G., Singh, A.N., Higgins, G.S., Kiltie, A.E., Ramadan, K. (2021) SPRTN protease and SUMOylation coordinate DNA-protein crosslink repair to prevent genome instability. ***Cell reports*** (**IF 9.42**, Q1) (*equal contribution).
5. Dragojevic, J., Marakovic, N., **Popovic, M**., Smital, T. (2021) Zebrafish (Danio rerio) Oatp2b1 as a functional ortholog of the human OATP2B1 transporter. Fish physiology and biochemistry, 47 (6) 1837-1849 (IF 2.88, Q2).
6. Dragojević, J., Marić, P., Lončar, J., **Popovic, M**., Mihaljević, I., Smital, T. 2020. Environmental contaminants modulate transport activity of zebrafish organic anion transporters Oat1 and Oat3 ***Comparative Biochemistry and Physiology* - C**: Toxicology and Pharmacology 231, 108742 (**IF 3.23**, Q1, 10%)
7. Halder, S. *, Torrecilla, I. *, Burkhalter, M., **Popovic, M**., Fielden, J., Vaz, B., Oehler, J.,..., Ramadan, K. (2019) SPRTN Protease and Checkpoint Kinase 1 Cross-Activation Loop Safeguards DNA Replication. ***Nature communications***, 3142 (**IF 14.9**, Q1, 10%) (*equal contribution).
8. Dragojevic, J., Mihaljevic, I., **Popovic, M.**, Smital, T. 2019. Zebrafish (Danio rerio) Oat1 and Oat3 transporters and their interaction with physiological compounds. ***Comparative Biochemistry and Physiology* - B**: Biochemistry and Molecular Biology (IF **2.23**, Q1).
9. Fielden, J. *, Ruggiano, A. *, **Popovic, M.**, Ramadan, K. (2018). DNA protein crosslink proteolysis repair: From yeast to premature ageing and cancer in humans. ***DNA Repair*** (Invited review article with partly original data) (*equal contribution) (**IF 4.93**, Q1).

10. Dragojevic, J., Mihaljevic, I., **Popovic, M**., Zaja, R., Smital, T. (2018) In vitro characterization of zebrafish (Danio rerio) organic anion transporters (Oat2a-e). ***Toxicology in vitro*** 46, 246-256 (**IF 3.50**; Q1).

11. **Popovic, M**.*, Vaz, B*., Ramadan, K. (2017). DNA-Protein Crosslink Proteolysis Repair. ***Trends in Biochemical Sciences*** (Invited review article with partly original data) (*equal contribution) (**IF 16.9**; Q1).

12. **Popovic, M**.*, Vaz, B*., Newman, J., Fielden, J., Aitkenhead, H., Halder., S…Gileadi, O., Ramadan, K. (2016) Metalloprotease SPRTN/DVC1 Orchestrates Replication-Coupled DNA-Protein Crosslink Repair. ***Molecular Cell***. 64, 704–719. (*equal contribution) (**IF 17.97**; Q1).

13. Mihaljevic, I., **Popovic, M**., Zaja, R., Marakovic, N., Sinko, G., Smital, T. (2017) Interaction between the zebrafish (Danio rerio) organic cation transporter 1 (Oct1) and endo- and xenobiotics. ***Aquatic toxicology*** 187, 18–28 (**IF 4.96**; Q1).

14. **Popovic, M**.*, Mihaljevic, I.*, Zaja, R., Smital, T. (2016) Phylogenetic, syntenic, and tissue expression analysis of slc22 genes in zebrafish (Danio rerio). ***BMC genomics***. 17:626. (*equal contribution) (**IF 4.39**; Q1).

15. **Popovic, M**.*, Lončar, J*., Krznar, P., Zaja, R., Smital, T. (2016) First characterization of MATE (Multidrug and Toxin Extrusion) proteins in zebrafish. ***Scientific Reports***. Article number: 28937. (*equal contribution) (**IF 5.58**; Q1).

16. Zaja, R., **Popovic, M**., Loncar, J. Smital, T. (2016) Functional characterization of rainbow trout (*Oncorhynchus mykiss*) Abcg2a (Bcrp) transporter**. *Comparative Biochemistry and physiology C*-***Toxicology & Pharmacology.* 190 (2016) 15–23. (**IF 3.23**; Q1).

17. **Popovic, M**., Zaja, R, Fent, K., Smital, T. (2014). Interaction of environmental contaminants with zebrafish uptake transporter Oatp1d1 (Slco1d1). ***Toxicology and applied pharmacology***, 280 (1), 149-158. (**IF 4.45**; Q1).

18. Glisic, B.*, Mihaljevic, I.*, **Popovic, M**., Zaja, R., Loncar, J., Fent, K., Kovacevic, R., Smital, T. (2014) Characterization of glutathione-S-transferases in zebrafish (Danio rerio). ***Aquatic toxicology,*** 158, 50–62. (*equal contribution) (**IF 4.96**; Q1).

19. **Popovic, M**., Zaja, R., Fent, K., Smital, T. (2013) Molecular characterization of zebrafish Oatp1d1 (*Slco1d1*), a novel organic anion transporting polypeptide. ***Journal of Biological Chemistry,*** 288 (47) 33894-33911. (**IF 5.33**; Q1).

20. Zaja,R., Terzić, S., Senta,I., Lončar J., **Popovic, M**., Ahel, M., Smital, T. (2013) Identification of P-Glycoprotein Inhibitors in Contaminated Freshwater Sediments. ***Environmental Science and Technology***, 47(9), 4813-21. (**IF 9.03**; Q1).

21. Smital, T., Terzić, S., Lončar, J., Senta, I., Žaja, R., **Popović, M**., Mikac, I., Tollefsen, K.-E., Thomas, K.V., Ahel, M. (2013) Prioritisation of organic contaminants in a river basin using chemical analyses and bioassays. *Environmental Science and Pollution Research* 20 (3), 1384-1395. (**IF 4.22**; Q1).

22. Zaja, R., Lončar, J., **Popovic, M.**, Smital, T. (2011) First characterization of fish P-glycoprotein (abcb1) substrate specificity using determinations of its ATPase activity and calcein-AM assay with PLHC-1/dox cell line. ***Aquatic toxicology*** 103 (1-2), 53-62. (**IF 4.96**; Q1).

23. Smital, T., Terzic, S., Zaja, R., Senta, I., Pivcevic, B., **Popovic, M.**, Mikac, I., Tolllefsen, K.E., Thomas, K.V., Ahel, M. (2011) Assessment of toxicological profiles of the municipal wastewater effluents using chemical analyses and bioassays. *Ecotoxicology and Environmental Safety* 74 (4), 844-851. (**IF 6.29**; Q1).

24. **Popovic, M**., Zaja, R., Smital, T. (2010) Organic anion transporting polypeptides (OATP) in zebrafish (*Danio rerio*): phylogenetic analysis and tissue distribution. *Comparative Biochemistry and physiology-A: Molecular & Integrative Physiology* 155 (3), 327-335. (**IF 2.32**; Q1).

25. **Popovic, M**., Zaja, R., Loncar, J., Smital, T. (2010) A novel ABC transporter: The first insight into zebrafish (*Danio rerio*) Abch1. *Marine Environmental Research* **69 (SUPPL. 1**), pp. S11-S13. (**IF 3.45**; Q1).

26. Loncar, J., **Popovic, M**., Zaja, R., Smital, T. (2010) Gene expression analysis of the efflux transporters in rainbow trout (*Oncorhynchus mykiss*). *Comparative Biochemistry and physiology C-Toxicology & Pharmacology.* (**IF 3.29**; Q1).

27. **Popović, M**., Gottstein-Matočec S. (2006). Biological aspects of the Spinicaudata (Branchiopoda, Diplostraca) in the largest alluvial wetland in Croatia. ***Crustaceana*** 79 (4), 423-440. (**IF 0.79**; Q4).

Fellowships

2006/2007, **OSI/FCO Chevening Scholarship** (Open Society Institute/Foreign Commonwealth Office), fully funded for MSc at **Oxford University**, UK.

2002 - 2004, **City of Zagreb Scholarship** for exceptionally gifted students, during the 3th and 4th year of graduate studies.

Mentorships

Direct supervisions

PhD thesis 2021-ongoing, MSc Marin Kutnjak. Structural characterization of DNA-protein crosslink repair factors, Ruder Boskovic Institute, Zagreb, Croatia.

PhD thesis 2019-ongoing, MSc Ivan Anticevic. The role of tyrosyl-DNA-phosphodiesterases in DNA-protein crosslink repair, Ruder Boskovic Institute, Zagreb, Croatia.

PhD thesis 2018-ongoing, MSc Christine Supina. The role of ACRC protease and nucleotide excision repair pathway in the repair of DNA-protein crosslinks (DPCs), Ruder Boskovic Institute, Zagreb, Croatia.

Master thesis 2021-ongoing, Luka Vinković, graduate program molecular biology, Department of Biology, Faculty of Sciences, University of Zagreb, Croatia.

Master thesis 2020-2021, Matea Ersetić, 'Creation of animal models using the CRISPR system to study the role of SPRTN and Tdp2a enzymes in DNA-protein crosslink repair using zebrafish (*Danio rerio*)' graduate program molecular biology, Department of Biology, Faculty of Sciences, University of Zagreb, Croatia.

Master thesis 2020-2021, Marin Kutnjak, 'The role of ACRC (GCNA) protein in the DNA-protein crosslink repair in zebrafish (*Danio rerio*) model organism', graduate program molecular biology, Department of biology, Faculty of Sciences, University of Zagreb, Croatia.

Master thesis 2020-2021, Vanna Medved, 'Expression profiling of DPC repair factors', graduate program biochemistry and molecular biology, Department of Chemistry and Biochemistry, Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia.

Master thesis 2021, Luka Jukić, 'Characterization of tyrosyl-DNA-phosphodisterases (Tdp1 and Tdp2) in DNA-protein crosslink repair in zebrafish model organism, graduate program biochemistry, Department of Chemistry, Faculty of Sciences, University of Zagreb, Croatia.

Master thesis 2020, Valentin Dakić, 'The role of p97/VCP AAA ATPase in the repair of DNA-protein crosslinks', graduate program biochemistry, Department of Chemistry, Faculty of Sciences, University of Zagreb, Croatia.

Student internship 2021. Marta Paladin, undergraduate program molecular biology, Department of Biology, Faculty of Sciences, University of Zagreb, Croatia.
Student internship 2021. Petra Špicar, integral undergraduate and graduate biology and chemistry program, Department of Chemistry, Faculty of Sciences, University of Zagreb, Croatia.
Student internship 2021. Marina Hukelj, graduate program experimental biology, Department of biology, Faculty of Sciences, University of Zagreb, Croatia.
Student internship 2021. Lovro Marjanović, undergraduate program biotechnology, Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia.
Student internship 2021. Iva Vrbanec, undergraduate program molecular biology, Department of Biology, Faculty of Sciences, University of Zagreb, Croatia.
Student internship 2018. Ljudevit Luka Boštjančić, University undergraduate study Molecular Biology, Faculty of Sciences, University of Zagreb, Croatia.
Student internship 2018. Barbara Puzek, University undergraduate study Molecular Biology, Faculty of Sciences, University of Zagreb, Croatia.

Co-supervisions

Diploma thesis (2020) Arijana Dubović. Using CRISPR/Cas9 method for Tyrosyl-DNA phosphodiesterase 1 inactivation in zebrafish (*Danio rerio*) , University undergraduate study **Biotechnology,** Department of chemistry and biochemistry, Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia.
Diploma thesis (2020) Lucija Mance. Use of CRISPR/Cas9 method for inactivation of DNA repair with Nucleotide Excision Repair in zebrafish (*Danio rerio*) University undergraduate study **Biotechnology**, Department of chemistry and biochemistry, Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia.
Master thesis, Petra Krznar (2012). Gene expression and phylogeny of MATE (Multi Drug and Toxin Extrusion) proteins in zebrafish, *Danio rerio* (Hamilton, 1822.). Faculty of Sciences, University of Zagreb, Croatia.
PhD thesis (2012 - 2016). Ivan Mihaljevic. Functional characterization of SLC22 transporters in zebrafish (*Danio rerio*). Laboratory for Molecular Ecotoxicology, Division for Marine and Environmental Research, Ruder Boskovic Institute, Zagreb, Croatia.
PhD thesis (2011 - 2016). Branka Glisic. Glutathione S-transferases in zebrafish (*Danio rerio*): phylogenetic analysis, expression profiling and functional characterization of selected enzymes. Laboratory for Ecotoxicology, Department of Biology and Ecology, University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia.
Student internship - Erasmus Mundus programme 2019. Sean YaoYao Song, Ghent University, Belgium.

Conference proceedings and platform presentations

Published in more than **20 conference proceedings**. Only platform presentations are listed below.

2022 - **FEBS 2021**, virtual. **Invited speaker**: 'Crosstalk of proteases in DNA-protein crosslink repair'.
Session organizer and chair: 'Molecular Toxicology and Environment' (early-bird session 4).

2019 - **EdinFishTech,** Edinburgh, UK. **Session chair** (Session 'Cancer'), 'Deciphering DNA-Protein Crosslink Repair in vivo using zebrafish model'.

2019 - Crossroads in Life Sciences, **HDBMB2019,** Lovran, Croatia. **Invited talk,** 'The role of proteases in DNA-protein crosslink repair'. FEBS Society conference, Croatian Society of Biochemistry and Molecular Biology (HDBMB)

2018 - 'Translating Science to Medicine - Targets and Therapeutics - **HDIR5. '**Deciphering DNA-Protein Crosslink Repair *in vivo* using zebrafish model'. Fifth meeting of the Croatian Association for Cancer Research (HDIR), a member of the European Association for Cancer Research (EACR).

2017 - **Gordon Research Conference** - Mammalian DNA Repair, Ventura, CA, USA. "DNA-Protein Crosslink Repair in Humans: SPRTN Is a Novel Mammalian Protease with the Central Role in DPC Repair Pathway (Short talk – poster previews).

2017 - Gordon Research Seminar - Mammalian DNA Repair, Ventura, CA, USA. "DNA-Protein Crosslink Repair in Humans: SPRTN Is a Novel Mammalian Protease with the Central Role in DPC Repair Pathway.

2012 - Göttinger Transporttage, Center of Physiology, Gottingen, Germany. 'Molecular characterization of a novel Organic Anion Transporting Polypeptide, zebrafish Oatp1d1 (Slco1d1)'.

2012 - FEBS3+ Meeting - From molecules to life and back, Opatija, Croatia. Molecular characterization of a novel Organic Anion Transporting Polypeptide, zebrafish Oatp1d1 (Slco1d1)'.

2011 - 16th International Symposium on Pollutant Responses in Marine Organisms (PRIMO 16), California, US. 'First characterization of zebrafish (Danio rerio) uptake transporters (Solute Carrier families SLC21 and SLC22)'.

2009 - 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO 15), Bordeaux, France (Best presentation award). 'A novel ABC transporter: first insight into zebrafish (Danio rerio) Abch1'.

Awards and scholarships

2014 - Annual award for the best publication by young scientists in the field of molecular biology 'Zeljko Trgovcevic' given by **Croatian Genetics Society** (Popovic et al., JBC, 2013).

2014 - Departmental award for best publication in 2013, **Institute Ruder Boskovic**, Zagreb, Croatia.

2013 - **FEBS** (Federation of European Biochemical Societies), **EMBO** (European Molecular Biology Organization) and **IUBMB** (International Union of Biochemistry and Molecular Biology) joint scholarship for the attendance at Spetsai summer school 'Protein interactions, assemblies and human disease', Greece.

2012 - Student scholarship given by **FEBS** and Croatian society for biochemistry and molecular biology for the attendance (oral presentation) at the FEBS3+ Meeting – From molecules to life and back, Opatija, Croatia.

2011 - Student scholarship for the attendance (presentation) at the 16th International Symposium on Pollutant Responses in Marine Organisms (PRIMO 16), Long Beach, California.

2010 - **FEBS scholarship** for the attendance (poster and short presentation) at the 35th Annual meeting of Federation of European Biochemical Societies – ' FEBS - Molecules of Life' and YSF (Young scientist Forum), Göteborg, Sweden.

2009 - **Scholarship given by '**European Biophysical Societies' Association (**EBSA**)**'** for the attendance at 10th International Summer School on Biophysics 'Supramolecular Structure and Function', Rovinj, Croatia.

2009 - **Best presentation award** for young researchers at the 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO 15), Bordeaux, France.

2009 - Student scholarship for the attendance (presentation) at the 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO 15), Bordeaux, France.

Public outreach and media coverage

Invited interview/comment on Nobel prize for chemistry awarded in 2020 for discovery of CRISPR/Cas9 genome editing in Radio show on Croatian Radio 1 'I like Platon', 09/10/2020 (https://radio.hrt.hr/aod/drag-mi-je-platon/356904/).

Teaching activities

Invited lecturer at the educational workshop for mentors 'The Importance of Mentoring and of Being Mentored', organized by interdisciplinary postgraduate programme ' Molecular Biosciences', 16/11/2019, Ruder Boskovic, Zagreb, Croatia.

Project grants

I am lead or co-lead on two ongoing projects (2018-2023 i 2019-2023) shown in detail on page 1. I was working on eight projects during my PhD and postdoctoral studies, while selected are shown below.

2014 – 2017 *Characterization of SPRTN protease in DNA-protein crosslink repair* – Cancer Reasearch UK (CRUK) and Medical Research Council (MRC) project, PI: Prof Dr K. Ramadan, **University of Oxford**, UK.

2015 - 2018 *Identification and functional characterization of (eco)toxicologically relevant polyspecific membrane transport proteins in zebrafish (Danio rerio)* – **Croatian Science Foundation Project**, PI: dr.sc.T.Smital

2008 - 2013 *Ecotoxicological significance of ABC transport proteins in aquatic organisms* – **Ministry of Scinece, Education and Sport research project,** PI: dr.sc.T.Smital, IRB, Zagreb.

2009 - 2012 *Establishing and developing of an ecotoxicology platform in Serbia and Croatia: a focus on zebrafish (Danio rerio)* – Swiss National Science Fondation, SNSF project within the **SCOPES** program, PI: Dr T.Smital and K. Fent, IRB, Zagreb and Basel, Switzerland.

Trainings

2014 – **FELASA** (Federation of European Laboratory Animal Science Associations) certificate for work with laboratory animals (mouse), University Oxford, UK.

2013 - Summer school on 'Protein interactions, assemblies and human diseases', Spetses, Greece.

2012 - Education and Training in Basic Radiation Safety for Radiation Workers (to work with radiation sources used in scientific and research laboratories), University of Applied Health Studies, Zagreb, Croatia.

2009 - 10th International Summer School on Biophysics: Supramolecular Structure and Function, Rovinj, Croatia.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

Croatian society of biochemistry and molecular biology (Board member from April 2021, member since 2008)
Croatian biophysical society (2008 - now)
Croatian Association for Cancer Research (HDIR) (2008 - now)
Croatian genetic society (2008 - now)