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MAIL@VAL-K.SCIENCE

VAL KARAVAEVA

(they/he)

EXPERIENCE

Genome Evolution and Ecology Group, University of Vienna, Austria - *Graduate researcher*

2022 – PRESENT

- I study the evolution of tetrapyrrole biosynthesis in bacteria and archaea, specifically heme and cobalamin. I have completed the cobalamin project as a collaboration with a team in Germany, resulting in a first co-author publication; I have also collaborated on two projects regarding heme-containing proteins with a team in Portugal, resulting in two publications where I am a middle author; I have also done a project on bioinformatic tool usage for archaea, resulting in a first author publication; I am a first co-author on an opinion paper on bioenergetics and evolution; I am currently finalizing the heme biosynthesis project
- I am supervising three Master's students (one has already successfully defended), and have successfully supervised three students that have done 1-3 month internships with our group
- I am also a tutor in two university courses on genome analysis

Genome Evolution and Ecology Group, University of Vienna, Austria - *Undergraduate researcher*

2020 – 2022

- I learned the methods of comparative genomics and studied the evolution of succinate dehydrogenases and fumarate reductases in archaea and bacteria, which resulted in a first author publication

EDUCATION

University of Vienna, Austria - *PhD student, Vienna Doctoral School of Ecology and Evolution*

2022 – PRESENT

University of Vienna, Austria - *MSc, Molecular Microbiology, Microbial Ecology and Immunobiology (Major: Microbial Ecology)*

2019 – 2022

University of Salzburg, Austria — *BSc, Biology*

2015 - 2019

PUBLICATIONS

Karavaeva V., Padalko A., *et al.* *"Bioenergetics Evolution: The link between Earth's and Life's history".*

Accepted on Jan 21st, 2025, *Philosophical Transactions of the Royal Society B*

Zamarreño Beas J., Karavaeva V., *et al.* *"A novel type of hemoglobin confers host-derived nitric oxide resistance to the opportunistic pathogen Acinetobacter baumannii".*

2025, *Nature Scientific Reports,* doi: 10.1038/s41598-025-88123-z

Karavaeva V., Modjewski L., *et al.* *"Evidence for corrin biosynthesis in the last universal common ancestor".*

2024, *The FEBS Journal*, doi: 10.1111/febs.17367

Karavaeva V., Sousa F.L. *"Navigating the archaeal frontier: Insights and projections from bioinformatic pipelines"*.

2024, *Frontiers in Microbiology* 15, doi: 10.3389/fmicb.2024.1433224

Zamarreño Beas J., Videira M.A.M., Karavaeva V., *et al*. *"In Campylobacter jejuni, a new type of chaperone receives heme from ferrochelatase"*.

2023, *Frontiers in Genetics* 14, doi:10.3389/fgene.2023.1199357

Karavaeva V., Sousa F.L. *"Modular Structure of Complex II: an Evolutionary Perspective"*.

2023, *Biochimica et Biophysica Acta - Bioenergetics* 1864, doi:10.1016/j.bbabio.2022.148916

ADDITIONAL EDUCATION

Rencontres Exobiologiques pour Doctorants (Astrobiology Introductory Course), France — *Alum*

MARCH 2023

Future Leaders Exchange Program (FLEX), Harmony High School, the United States of America — *Exchange student, Alum*

AUGUST 2012 - AUGUST 2013

Future Leaders Exchange Program (FLEX) is sponsored by the US Department of State, merit-based student exchange scholarship for high-school students from post-Soviet countries, acceptance rate: 1 in 50

EXTRACURRICULAR ACTIVITIES

NASA LIFE Research Coordination Network - *Early Career Committee member*

FEBRUARY 2025 - PRESENT

- LIFE provides a conceptual framework in which researchers can address questions about the complex, bi-directional cause-and-effect relationships of life with dramatic changes in a planet's climate, oceans, its solid surface, and its emerging continents. Ultimately, we seek to foster a "science of living worlds" that integrates views of the evolution of life and its planetary context through a single holistic lens.
- As an ECC member, I help organize seminars and facilitate communication between the scientists across various disciplines

Origin of Life Early Career Network (OoLeN) - *Executive Board member, Virtual Meeting organizer*

JUNE 2024 - PRESENT

- OoLEN brings together early-career scientists to strengthen and accelerate the scientific output in origin of life research; as a member of the executive board, I represent the organization and take part in key decisions regarding the network; as the lead organizer of the Virtual Meeting Workgroup, I work together with my team to provide a platform for scientific exchange for early career researchers working in the field of origin of life worldwide, in forms of virtual talks, showcases, discussions and tutorials
- Currently we are collaborating with Astrobiology Graduates in Europe (AbgradE) to organize a first joint astrobiology and origin of life conference for early career researchers FALCON 2025 (https://abgrade.eu/falcon2025/)

Pint of Science Austria - *Regional Coordinator, Vice Secretary*

NOVEMBER 2022 - PRESENT

- I am a regional coordinator for the Viennese branch of the international science communication festival, coordinating 8 different teams of scientists to help them organize numerous events of connecting local scientists with general public in an informal atmosphere of pubs and bars

Center for Cultural Interchange, the United States of America — *Volunteer*

OCTOBER 2012 - JUNE 2013

- I worked in an intercultural team, improved communication skills, helped with projects in the following areas: farming and animal care, cultural exchange, human rights education

Regional Social Foundation "International Standard" (NGO), Russian Federation — *Volunteer*

2011 - 2015

- I helped with projects concerning human rights, legal education, cultural exchange, which helped me develop communication, team-working, and team-building skills

CONFERENCES

Microcosm Earth Center Symposium: Carbon Through Time, Germany — *Scientific poster*

SEPTEMBER 2024

Title: "Evidence for corrin synthesis in the last universal common ancestor"

European BioEnergetics Conference 2024, Austria — *Scientific poster*

AUGUST 2024

Title: "Evolution of heme biosynthesis in prokaryotes"

Vienna Doctoral School of Ecology and Evolution Symposium 2024, Austria — *Scientific poster*

FEBRUARY 2024

Title: "Comparative genomics of heme synthesis in prokaryotes"

Federation of European Microbiological Societies Conference 2023, Germany — *Scientific poster*

JULY 2023

Title: "Comparative genomics of heme biosynthesis in prokaryotes"

Molecular Origins of Life 2023, Germany — *Scientific poster*

JUNE 2023

Title: "Modular evolution of succinate: quinone oxidoreductases"

European BioEnergetics Conference 2022, France — *Scientific poster*

AUGUST 2022

Title: "Modular structure of complex II: an evolutionary perspective"

Conference of Young Ecologists & Evolutionary Biologists 2021, Poland — *Scientific poster, 2nd place award*

SEPTEMBER 2021

Title: "Comparative genomics of succinate: quinone oxidoreductases"

GRANTS

Vienna Doctoral School of Ecology and Evolution — *Travel Grant (1500 Euro)*