



A glimpse into the Arctic future: equipping a unique natural experiment for next-generation ecosystem research

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PhD student - Early Stage Researcher (ESR4) Microbiome physiology and microbial interactions

About FutureArctic

The EU-funded Innovative Training Network [FutureArctic](#) aims to quantify how much carbon will escape from the Arctic in future climate. How do the multitude of ecosystem processes, driven by plant growth, microbial activities and soil characteristics, interact to determine soil carbon storage capacity? A group of fifteen PhD-students will study the [Forhot](#) ecosystem in Iceland, where a natural coincidence has provided us with the exceptional opportunity to actually look into the future.

Given the strong urgency of tackling and managing the climate challenge and the particularly important role herein of (sub)Arctic ecosystems, a rapid assessment of the ecosystem and ambient processes in this natural laboratory is essential. FutureArctic will achieve this challenge by adopting the fast advances made in the field of **machine learning and artificial intelligence (AI)**, **unmanned aerial vehicles (UAV)** and (remote) **sensor technology** into **environmental research at the ecosystem scale**, into a new concept of an '**ecosystem-of-things**'.

FutureArctic thus aims to channel an important evolution to automated machine-assisted fundamental environmental research. This is achieved through dedicated training of researchers with profiles at the inter-sectoral edge of computer science, artificial intelligence, environmental and agricultural science, sensor engineering and communication and social sciences. FutureArctic training ensures the **development of unique enviro-technological job profiles**, all with their own specialty, embedded in holistic knowledge on connected high-data throughput ecosystem research, ready for machine-assisted environmental ecosystem science and modelling.

About the host organization

The [University of Vienna](#) is the oldest university in the German-speaking world and one of the oldest universities in Europe. Our 650 years of experience prepare us for the issues and challenges of the future. The University of Vienna is a research university with high international visibility and a wide range of degree programmes. We are committed to basic research that is open to applications and to research-led teaching, as well as to the dialogue with economy and society. We strive to actively promote the careers of young researchers, to contribute to the education of future generations and to augment the society's ability to innovate.

The [Centre for Microbiology and Environmental Systems Science](#) is primarily dedicated to basic research focusing on microorganisms and their impact on biological systems across broad scales, from single cells to ecosystems, addresses pressing environmental issues, such as the impact of climate and land-use change on ecosystem functioning and the role of soils in the global carbon cycle and in food security. [Andreas Richter](#) is a re-known scientist focused on understanding how microbial communities deconstruct and mineralize organic matter, and among the most highly-cited researchers. [Christina Kaiser](#) is a well-known researcher, whose work is combing soil microbial ecology and theoretical modelling with ecosystem biogeochemistry. The PhD will be co-supervised by Eric Verbruggen at the Global Change Ecology Centre (GCE) of the Antwerp University.

Task description

Your PhD project

You will quantify how physiological responses of microbial taxa to warming alter C cycling in soil. iChip (isolation chip) technology will be used to incubate microbial taxa in their natural environment. You will assess growth, turnover, enzyme activity and nutrient scavenging using a range of techniques including isotope labelling (e.g., qSIP or NanoSIMS) and next generation sequencing. The goal is to elucidate in-situ metabolic capacities and life-history traits of a range of microbial taxa and their possible change in a future climate. Individual-based microbial community modelling will then be used to explore interactions among microbial groups and their effect on community response to warming, based on the data gained in the experimental part of the project.

Secondments

You will embark on secondments to other FutureArctic partners (UTARTU, UAntwerpen and CREAM), to integrate soil microbiome and rhizobiome functionality and metabolome insights in a microbial soil organic matter turnover model.

Benefits of working in an ITN

- ✎ You will be working within our international group of > 25 researchers
- ✎ You will get in contact with the other members of this international consortium and will benefit from the joint training platform to develop skills necessary for developing an “ecosystem-of-things”.

Profile and requirements

- ✎ Applicants must hold a MSc or equivalent in the field of ecology, microbial ecology, environmental sciences, biology or a related discipline
- ✎ Applicants must have a solid knowledge of microbial ecology. Experience in ecological modelling or programming is a benefit.
- ✎ Applicants can be of any nationality.
- ✎ Applicants must have an ability to understand and express themselves in both written and spoken English to a level that is sufficiently high for them to derive the full benefit from the network training.
- ✎ Applicants must be eligible to enrol on a PhD programme at the host institution (or at a designated university in case the host institution is a non-academic organisation).

In addition:

H2020 MSCA Mobility Rule: researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organisation (Belgium) for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status are not taken into account.

H2020 MSCA eligibility criteria: Early Stage Researchers (ESRs) must, at the date of recruitment by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. Full-Time Equivalent Research Experience is measured from the date when the researcher obtained the degree entitling him/her to embark on a doctorate (either in the country in which the degree was obtained or in the country in which the researcher is recruited, even if a doctorate was never started or envisaged).

Benefits

- ✎ You will be employed by the host organisation for 36 months.
- ✎ A competitive salary plus allowances. Moreover, funding is available for technical and personal skills training and participation in international research events.
- ✎ You will benefit from the designed training programme offered by the host organisation and the consortium.
- ✎ You will participate in international secondments to other organisations within the FutureArctic network and in outreach activities targeted at a wide audience.

Please, find additional information in the [Information package for Marie Curie fellows](#)

Application

Interested candidates are invited to apply for this position through the link below:
<http://ter.csb.univie.ac.at/open-positions> *Instructions for applications can be found here soon.*
Expected starting date: January 2020

More information and other vacant positions can be found on www.futurearctic.eu

Additional information

For additional information about the research project and this individual position, please contact:

Prof. Dr. Andreas Richter

Email: andreas.richter@univie.ac.at

Ass.Prof. Dr. Christina Kaiser

Email: christina.kaiser@univie.ac.at



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