
PhD Fellowship in Environmental Microbiology

MINAGRIS - Micro- and Nano-Plastics in AGRicultural Soils: sources, environmental fate and impacts on ecosystem services and overall sustainability

PhD fellowship in environmental microbiology and soil microbial ecology

University of Thessaly is offering a PhD position in environmental microbiology with expected commencement in March 2022 or as soon as possible thereafter. The position is offered in the frame of the project MINAGRIS, an H2020 project funded under the call SFS-21-2020 – B EMERGING CHALLENGES FOR SOIL MANAGEMENT. It is a 5-year project started at 1.9.2021 and involves 20 partners from 13 EU countries.

Brief Project Description

Plastic use in agriculture has tremendously increased in the past decades resulting in soil pollution with plastic residues forming besides macroplastics, micro- (MP) and nano-plastics (NP). MINAGRIS aims to contribute to healthy soils in Europe by providing a deeper understanding and tools to assess the impact of MP and NP in agricultural soil health. To create an overview on the actual situation across Europe, MINAGRIS will assess the use of different plastic polymers in agricultural systems in 11 case study across Europe and identify the resulting types and concentrations of MPs and NPs. Concentrations of other stressors in soils such as pesticides and veterinary drugs will be additionally assessed. MINAGRIS will provide validated analytical tools that allow the quantification and identification of MPs and NPs in soils. Based on the results of the case study sites, controlled experiments will be conducted to analyse the impact of MPs and NPs on physico-chemical soil properties, soil biodiversity, plant productivity, and Ecosystem Services, as well as their potential transfer to other parts of the environment and plants. Furthermore, synergistic effects with other stressors are assessed. Quantification of the impacts of MNP on soil biodiversity and agricultural productivity, their transport and degradation in the environment, their impacts on socio-economic components, and synergies between all of them will make it possible to identify, in a multifactorial vision, the benefits and risks associated with the use of plastics in agriculture. Based on the results, MINAGRIS will quantify the economic, environmental, and social consequences of unsustainable soil management at the field and farm level in different biogeographical regions and, through a Multi-Actor Approach (MAA), develop a practical toolbox for and with farmers for the rapid assessment of soil exposure, at the same time raising relevant stakeholders' and end-users' awareness of the issue.

Principal supervisor: Prof. Dimitrios Karpouzas, dkarpouzas@uth.gr, +30-2410565294

Collaborating Partners: Prof. Stefan Geisen, Wageningen University, The Netherlands

Job description

The position is available for 36 months with a possible extension of 12 months.

The main working tasks of the successful candidate will be:

- To determine the composition of plastisphere and identify the components determining its composition
- To explore the functional capacities of the plastisphere microbial community and the interactions with the soil biota using metagenomic approaches
- To disentangle the role of plasmidome on the evolution of novel catabolic traits by microbes on the plastisphere against soil pollutants and the plastics themselves
- To evaluate the role of plastics as carriers for the transport and dispersal of plant and human pathogens including antibiotic resistance genes
- To isolate and genomically characterize bacteria from the plastisphere with potential role in the degradation of xenobiotics interacting with the plastics
- To determine the effects of microplastics on the soil food web using advanced omic tools and manipulated soil microcosm studies
- To analyse the data using appropriate bioinformatic and ecological statistical tools,

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- To write scientific papers and present the research in scientific conferences,

Key criteria for the assessment of candidates

- First degree in Biology, Biochemistry and Biotechnology, Molecular Biology or other relevant biosciences
- MSc in Molecular Biology, Biotechnology and other relevant subject
- Experience in molecular tools used in microbial ecology (e.g. q-PCR, amplicon sequencing)
- Experience in bioinformatics and ecological statistics
- Experience with plastics handling and/or soil related-experimentation will be a merit

Terms of employment

Recruitment and Terms of appointment will be done according to the national rules and regulations. The stipend of the fellow will be covered through a research fellowship up to 1200 € net monthly (depending on qualifications of the fellows).

Place of Employment

University of Thessaly, Department of Biochemistry and Biotechnology, Laboratory of Plant and Environmental Biotechnology, Larissa, GREECE, Website: <https://plantenvlab.bio.uth.gr>

It is expected that the successful candidate will spend parts of his/her PhD in Wageningen University under the supervision of Prof. S. Geisen.

Application Procedure

The application, must be submitted by mail to dkarpouzias@uth.gr and stefan.geisen@wur.nl.

Please include

- Full CV including studies, research experience, work experience and publications if available
- 3 professional referees (Name, address, telephone & email)

The University of Thessaly wish our staff to reflect the diversity of society and thus welcomes applications from all qualified candidates regardless of age, gender, race, religion or ethnic background.

The deadline for applications is 31.3.2022. Applications received later than this date will not be considered.

Recruitment Process: After the expiry of the deadline for applications, the project manager will provide all applications to the members of the recruitment committee which will evaluate all applications and select the best three candidates based on the quality of the candidates' previous training, qualifications and skills (as listed above), CV. The best three candidates will be interviewed by the recruitment committee which will select the best applicant for the position. The applicants will be notified of the final selection and will be given 7 days to accept or decline.

Questions

For specific information about the position, please contact Prof. Dimitrios Karpouzias (dkarpouzias@uth.gr Tel. +3024105652904)



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