Date 21/12/2022

**Applications are invited for TWO Ph.D. positions within the SCHOOL OF SCIENCE, ATLANTIC TECHNOLOGICAL UNIVERSITY (ATU), SLIGO, IRELAND**

**PROJECT TITLE**: Microbial and MEtabolite-based indicators for Soil Health (MMeSH).

**SUPERVISORY TEAM**: Dr. Shane O’Reilly (co-PI, ATU Sligo), Dr. Seán Jordan (co-PI, Instituto Superior Técnico, Portugal and ATU Sligo).

**DURATION**: Funded for 48 month, full-time.

**LOCATION**: ATU Sligo, Ash Lane, Sligo, F91 YW50, Ireland.

**DESCRIPTION**:

An exciting opportunity for two PhD candidates to join a multidisciplinary international team led by *Atlantic Technological University, Sligo* to conduct research in the area of soil health, metabolomics and metagenomics. **MMeSH** is an ambitious multidiscplinary project funded by the Irish *Environmental Protection Agency* as part of the strategic research theme “Protecting and Restoring Our Natural Environment”. Healthy soils are essential in achieving climate neutrality, reversing biodiversity loss, providing healthy food and safeguarding human health. Yet, despite decades soil research, we still cannot adequately evaluate soil health to ensure and enhance soil ecosystem services. The aim of this project is to use an ‘omics’-based approach, using metabolomics and genomics, to create new insights into soil biodiversity and function. We will exploit the data and knowledge gained by national soil mapping programmes in Ireland (the *Tellus Survey*) to provide the most detailed characterisation to-date of soil microbial biodiversity and metabolic activity in soil samples from key land-use types in the west and northwest of Ireland. It is envisaged that novel soil health indicators will be discovered and existing indicators (or combinations thereof) validated, which will then be used within soil quality monitoring programmes.

The MMeSH project requires two PhD students in:

* *Position 1)* Mass-spectromety and nuclear magnetic resonance approach to study soil lipidomics and metabolomics
* *Position 2)* Culture-indepentent genomic techniques to characterise the micorbial diversity of soils.

Both students will be involved in Geographic Information System (GIS)-based mapping activities for designing sampling campaigns and producing final research outputs in the form of maps, datasets etc.

**PROFILE REQUIREMENTS**: Motivated candidates with strong interests in soil science, microbial ecology, ‘omics’ technologies and analytical and bioanalytical chemistry. The candidate must have at least a 2.1 honours B.Sc. (essential) and/or a M.Sc. (desirable) in chemistry, analytical science, microbiology, environmental science or related disciplines. Candidates with experience in mass spectrometry instrumentation and data analysis and/or next generation sequencing and bioinformatics will be considered favourably, as will previous experience with GIS applications. The candidate must be fluent in English with excellent oral and written communication skills (see conditions below). The candidates will be expected to work on their own initiative as part of a multidisciplinary and dynamic team, to work with project collaborators and to be willing to acquire the broader skills necessary for the successful completion of a PhD project.

**EXPECTED STARTING DATE**: 01st April 2023

**PROJECT DURATION:** 48 Months

**CONDITIONS:**

* Scholarship €16,000 (4 years) and the fees will be paid
* Postgraduate fees for EU and for Non-EU students will be covered by the project.
* Material costs and any necessary national and international travel as part of the project will be covered by the project.
* IELTS/TOEFL certificate is required for candidates applying from non-English speaking countries. ATU Sligo’s approved [English Language Entry Requirements](https://www.itsligo.ie/international/homepage-it-sligo-international/english-language-requirements/) for postgraduate students is IELTS 6.0 (Overall) with no component score less than 5.5.

**TO APPLY**: Interested applicants are required to, read the terms & conditions, complete an application form (both available on the research page <https://www.itsligo.ie/research/>) that will include (in a single document):

* Curriculum Vitae (to include 2 referees)
* A copy of transcript of results.
* Proof of English language competency, if English is not the native language.
* A cover letter outlining personal motivation to pursue a PhD and how you meet the requirements of the position(s).

Completed applications should be submitted to to the Research office, Atlantic Technological

University Sligo Campus, at sean.walker@atu.ie

**FURTHER INFORMATION:**

For queries relating to this opportunity , please contact Dr. Shane O’Reilly (shane.oreilly@atu.ie) or Dr. Seán Jordan (sean.jordan@atu.ie).