

PhD student position - Plant biology/evolution/genomics

Title: Cell-specific elucidation of the metal homeostasis network in the pseudometallophyte *Arabidopsis halleri*

In a collaborative project, a PhD student position is available from July 1st 2022 in the Translational Plant Biology group of Prof. Marc Hanikenne (University of Liège, Belgium) as a primary host, and the group of Prof. Nathalie Verbruggen as co-supervisor (Université Libre de Bruxelles, Belgium). The candidates are expected to start as early as possible and by July 1st 2022 at the latest.

Project

The project aims at tackling important gaps in our understanding of metal homeostasis in plants using single cell approaches on roots of *Arabidopsis halleri*, a pseudometallophyte closely related to *A. thaliana*. *A. halleri* is indeed regarded as a model to reveal homeostatic mechanisms controlling metal distribution in plants.

Plants have developed a sophisticated and tightly regulated metal homeostasis network of transporters and chelating molecules to ensure sufficient metal supply while avoiding their toxicity. Our comprehension of the mechanisms controlling metal distribution in plants has so far been limited by our capacity to access tissular complexity and cell-specific processes in each plant tissue. The recent development of single cell (sc) sequencing technologies and of a root map in *A. thaliana* offers new research perspectives.

To accurately describe metal pathways in plant roots, the project will apply scRNA-Seq to *A. halleri* populations, that present different Cd and Zn accumulation strategies, but also contrasting mineral profiles (in particular for Fe, Cu and Ca). Cell-specific gene expression profiling will be complemented by state-of-the-art metal imaging in roots.

The resulting knowledge will be key for translational application to mineral biofortification and phytoremediation biotechnologies.

Profile

The student will hold a Master degree in Biology and/or Biochemistry. Experience in Plant Science or Genomics/Bioinformatics is an asset. The candidate should be fluent in English, while knowledge of French would facilitate integration into the working environment. The position is funded for one year by the FNRS. Continuation of the appointment for another 36 months will be based on performance evaluation (FNRS-FRIA call).

Contact

Application, including motivation letter, CV, contact details (with name, email, address, phone number) of at least 2 references and copies of relevant certificates (e.g. MSc, BSc, language), should be addressed to marc.hanikenne@uliege.be, by February 28, 2022, or contact the same address with any questions.