Postdoctoral or Research Engineer Position in multimodal imaging and correlative microscopy applied to intracellular signals from plant-microbe interactions

Context – The majority of plant roots are forming interactions with telluric fungi, forming a mutualistic and beneficial interaction, the arbuscular mycorrhizal symbiosis. The question on the special distribution of arbuscular mycorrhizal fungal (AMF) species is unknown in the roots. AMF species are involved in mineral plant nutrition. Some proteins, involved in the transport of nutrients, are known to be present only at the plant-AMF interface, in the plasma membrane of both partners. The question on the spatial distribution of such transporters in mycorrhizal roots is unknown. The team has developed a method for mycorrhizal root transparition, allowing to image an arbuscule without any sectioning.

Objective - We aim to develop multimodal imaging and correlative microscopy between photonic and electron imaging. Correlative microscopy makes it possible to image the same sample, in the same place, but on different imaging equipment or multimodal imaging, each providing a specific response to the overall picture. The aim of the project is to develop a better interface between the various techniques available to meet the challenges of monitoring intracellular dynamics and protein homeostasis in plant-microbe interactions. The candidate will develop a complementarity of methodologies and technologies to target a continuum of scales of tissue and cell imaging approaches in order to access information on molecular dynamics and interactions by correlating very high-resolution electron microscopy imaging as close as possible to the native state of structures.

The Unit – The Postdoctoral or Research Engineer will work in the MycoMemb team of the Plant-Microorganism Interactions department, interested in elucidating the mechanisms underlying establishment and functioning of plant-microorganism interactions. He/she will work in close interaction with the DImaCell plateform (https://dimacell.fr/) and be also involved in the functioning of this plateform (side projects).

Profile - We are looking for a motivated candidate (i) with a strong background in Biology, Plant Physiology or Plant Microbe Interactions, (ii) eager to work on a subject with a strong optical component (confocal and super-resolution imaging), (iii) with a proficiency in programming languages applied to image data analysis, and (iv) with excellent communication and collaboration skills.

Desired starting date - July 2024

Contract duration - 1.5 years

Salary - Remuneration based on experience

Instructions - Applications should include a CV, a cover letter, and contact details for 2 referees to be sent to: Pierre-Emmanuel Courty (pierre-emmanuel.courty@inrae.fr) & Claire Rosnoblet (claire.rosnoblet@u-bourgogne.fr). For further information please contact the same addresses. Applications will be considered upon submission.