Kempe INUPRAG Post doc project (UPSC-INRA)

Enabling scale-up of somatic embryogenesis (SE) plant production by physiological analysis of embryos processed in bioreactors and the R&D SE System for harvest

Project summary: The project will analyze biochemical compositions of different somatic embryo types in spruce and larch. Key findings on metabolites related to the physiological status of germination-permissive embryo types that coincide in Norway spruce and larch would indicate underlying processes generic for the conifer SE process. Such finding will help improve SE protocols and provide candidates for marker development to enable early selection of embryos capable of germinating and forming plants.

Project description: The physiological state of mature somatic embryos of Norway spruce and larch will be analysed and correlated to capacity to maturation and germination. Large amounts of mature embryos will be generated in bioreactors, to provide sufficient number of embryos of different types/developmental stages/ for in depths biochemical analyses (carbohydrates, total proteins, lipids). Different types of embryos related to different stages of development can be selected, sorted and harvested with the R&D SE system at UPSC, Umeå. Each of the different types of embryos identified for biochemical analyses will be described with respect to capability to germinate and form plants. Analyses of carbohydrates, total proteins and lipids are carried out at INRA Orleans.

Work tasks: The suitable candidate will work in a Swedish-French team on a time limited project. The goal for the project is to increase our understanding of conifer embryo development such that methods for SE plant production can be improved by selection of high-potential mature embryos for germination and plant formation. The objectives are to utilize the instrumentation for embryo selection and characterization available at UPSC in combination with the expertise on analyses of physiological status of mature embryos at INRA. The candidate is expected to spend time both at UPSC, Umeå, and INRA, Orleans. Specific tasks within the project are focused on analyses of carbohydrates, storage proteins and lipid contents, plant tissue culture work, image analyses data processing, ultrastructural studies and physiological studies of both tissue culture material and plants.

Qualifications: Strong documented background in **plant developmental biology**. Experience in conifer somatic embryogenesis methods is desirable. Documented experience from biochemical analyses of plant physiology. Excellent sterile techniques is a requirement. Fluent in written and spoken English. Good working knowledge for computer based data management. Applicant for the position with a background in animal/human sciences **will not be considered**.

Required degree: PhD in a relevant area (plant physiology)

Application: should contain (**1**) CV with full publications and copiers of the relevant degree certificates, (**2**) description of research experiences, (**3**) a statement of scientific interests as well as (**4**) contact information of referees. Please **send full application** to Drs Ulrika Egertsdotter (Ulrika.Egertsdotter@slu.se) and Marie-Anne Lelu-Walter (marie-anne.lelu-walter@inra.fr) **not later than 15th of May**

Position specifications: The position is shared between Umeå Plant Science Center (www.upsc.se) and INRA (www.inra.fr) in the laboratories of Drs. Egertsdotter and Lelu-Walter. The post doc position is supported by a stipend for an 18-month period starting July 1, 2018.

For questions, please contact Ulrika.Egertsdotter@slu.se or marie-anne.lelu-walter@inra.fr