POSTDOCTORAL RESEARCH FELLOWSHIP IN PLANT BIOTECHNOLOGY AND BIOCHEMISTRY

A postdoc position in plant biotechnology and biochemistry is available at the university of Orléans (Laboratoire de Biologie de Ligneux et des Grandes Cultures, UPRES EA 1207 / USC INRA 1328) as part of the CosmetoPop research project **"Valorization of Poplar Root Exudates as a Source of Bioactive Ingredients for Cosmetics"**

This project is funded by the Region "Centre Val de Loire" (ARD-CVL Cosmetosciences research program) and involves two academic partners (LBLGC, Univ. Orléans and Glyco-MEV, Univ. Rouen-Normandie) and two industrial partners (GLYcoDiag and Alban Muller).

CONTEXT:

To meet the strong consumer expectations for natural ingredients, the cosmetics industry is increasingly commited to active sourcing for molecules and preservatives from plant diversity. This search for active plant molecules must be carried out in a sustainable and eco-responsible development approach. The CosmetoPop research project is aimed at identifying antimicrobial and prebiotic compounds in mucilage and exudates produced by poplar (*Populus nigra* L.) root cultures. These compounds could be further used respectively as preservatives or protectors of the skin microbiota and be incorporated as active ingredients in formulas developed by the Alban Muller company for cosmetic application.

The project is divided into 5 tasks.

- Task 1 will be focused on the cytological and biochemical characterization of the poplar Root Extracellular Trap (RET: Border cells detached from the root cap and their secreted mucilage).
- Task 2 will be focused on the molecular characterization of genes involved in biosynthesis pathways of molecules secreted by the RET.
- Tasks 3 and 4 will aim to produce the molecules of interest at the pre-pilot scale and to characterize the antimicrobial or prebiotic properties of these molecules.
- Task 5 will be to expand a scaling-up of the selected production process in task 3.

POSTDOCTORAL POSITION DUTIES:

The postdoctoral fellow will be involved in different tasks of the program and will be the link between the different partners (academic and industrial partners).

- The postdoctoral fellow will participate in **task 1** (cytological and biochemical characterization of the poplar RET) by means of microscopical methods (light or fluorescence) in collaboration with the academic partner (Glyco-MEV) which is an expert in this field.

- She / he will be in charge of establishing a poplar root cultivation system allowing the production of exudates at a pre-pilot scale and being also adaptable to industrial scale (**Task 3 and 5**). Root cultures will be obtained by different biotechnological processes

(hydroponic and aeroponic cultures, root poplar agrotransformation for hairy root production and further cultivation in a bioreactor)

- She / he will participate in the development of biochemical methods to collect, fractionate and characterize root exudates by means of classical colorimetric biochemical methods. A non-targeted metabolomics analysis of root exudates fractions will be also carried out. The fractions obtained will be subjected to micro-challenge tests which will be performed by the GLYcoDiag company in order to identify antimicrobial or prebiotic properties (**Task 4**).

- She / he will be in charge of the technological transfer of the production method and fractionation of root exudates to the industrial partner Alban Muller (**Task 5**).

PROFILE AND EXPERTISE REQUIRED:

The applicants should have a PhD degree in Plant Biology, with good experience in plant biotechnologies (*in vitro* culture, transgenesis). Good knowledge of plant cell biology and plant metabolism is also required. Experience in characterizing root exudates would also be appreciated.

Research areas: plant biotechnologies (micropropagation, transgenesis), plant cell biology, plant biochemistry, microbiology
Duration: 1-3 years (One-year contract, renewable twice)
Starting date: from November 1, 2020
Monthly salary: 1,900 – 2,200 € net salary according to experience

Applications should include: cover letter + CV, and the contact details of 2-3 references
Employer: University of Orleans
Job location: Université d'Orléans, LBLGC, bâtiment Physique-Chimie, 1 rue de Chartres - BP 6759, 45067 ORLEANS Cedex 2
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