

MASTER 2 INTERNSHIP OFFER

URD ABI – AgroParisTech

Duration: 6 months (February 2023 – August 2023)

Creation of a process for the recovery of plant co-products through the extraction of secondary metabolites and the fermentation of macroconstituents

Host laboratory:

Located in the European Center for Biotechnology and Bioeconomy (CEBB), at the heart of the Pomacle-Bazancourt biorefinery, the URD ABI (Unit of Research & Development in Industrial Agro-Biotechnologies) is interested in the valorization of biomass through an approach combining biotechnologies, green chemistry and process engineering. Thanks to its expertise in green chemistry, microbiology/biochemistry/molecular biology, chemical engineering and separation process engineering as well as in analytical chemistry, the URD ABI is able to carry out multi- and transdisciplinary fundamental and applied research projects with the ambition of developing and optimizing sustainable industrial processes and high value-added products from agro-resources and industrial by-products.

Context and objectives:

The biorefinery concept is based on the search for optimized valorization of all the components of the transformed agro-resources. These co-products from the agro-industry are composed of macro-constituents, such as non-starch polysaccharides or fibers, lipids or proteins, as well as secondary metabolites with high added value for their antioxidant or antimicrobial activities.

The aim of this internship is to harmoniously combine the work of the Separative Process Engineering (SPE), biotechnology poles and Analytical platform carried out by the URD ABI in order to create a process for the valorization of plant biomass that meets the requirements of the circular bioeconomy. The R&D work applied to an agro-industrial biomass aims to valorize this renewable biological resource to produce antioxidants, such as ferulic acid, and to use the liquid and solid residues of this extraction as a base for culture media to cultivate microorganisms with high nutritional potential. Consequently, the extraction process of ferulic acid will be chosen in order to limit the production of toxic molecules for the microorganisms, to work on the liquefaction and saccharification or even the complementation of the extraction residues to efficiently cultivate the microorganism(s) of interest.

The key objectives are:

- Within the SPE pole, the implementation of an extraction process of ferulic acid from plant biomass and the adaptation of this process to the requirements of the culture of microorganisms.
- Within the analytical platform, the implementation of a method for sugars analysis in hydrolysates after extraction of ferulic acid and enzymatic treatment of solid residues by gas chromatography - method described in the literature.

- Within the biotechnology pole, the creation of a culture medium consisting mainly of hydrolysates from the ferulic acid extraction process.

This project will benefit from the support of a young innovative company interested in the development of more environmentally friendly and economically relevant bioprocesses.

The selected candidate will have skills in biochemistry and biotechnology (microbial cultures), a strong inclination for laboratory work and will easily integrate into a dynamic multidisciplinary team.

Candidate profile:

- Engineering or Master-level student (M2) in biochemistry/biotechnology
- Rigorous, motivated, autonomous with a good adaptability

Location:

European Center for Biotechnology and Bioeconomy, 3 Rue des Rouges-Terres, Pomacle (51110), France, located at 15 km from Reims.

Grant:

According to the current scale

To apply, please send a CV and a cover letter to nabila.imatoukene@agroparistech.fr and morad.chadni@agroparistech.fr