



A 3-YEAR DOCTORAL SCHOLARSHIP IN MOLECULAR ENZYMOLOGY APPLIED TO THE DEVELOPMENT OF ENZYMES FOR BIOREFINING PROCESSES

RESEARCH SUBJECT

It is widely acknowledged that industrial biotechnology offers powerful tools and processes that are progressively altering the traditional practices of the chemical industry and will provide innovative solutions for the harnessing of renewable energy and carbon resources. In the area of biofuels, enzymes will play increasingly important roles in the fractionation and the optimal transformation of the different biomass components. To develop new enzyme tools the Laboratory of Systems Biology and Chemical Engineering (Laboratoire d'Ingénierie des Systèmes Biologiques et Procédés or LISBP) in Toulouse is employing two complementary strategies : (i) the search for new enzymes via a functional metagenomics approach and (ii) the adaptation of enzymes using state of the art enzyme engineering technologies, including random mutagenesis and DNA shuffling. In the framework of a French national R&D programme, Futuro^l aimed at developing new technologies for the production of bioethanol, the LISBP is contributing its know-how in this area in order to create new biomass-hydrolyzing enzymes.

The doctoral research that will be performed will form part of the Futrol R&D programme and will form part of an on-going research effort. Beyond the applied aims of the project, the research work that will be undertaken will contribute to a better understanding of structure-function relationships in biomass-degrading enzymes and to a deeper knowledge enzyme action on complex biomass.

Keywords: Enzymology; metagenomics; protein engineering; biomass hydrolysis

THE HOST LABORATORY

The LISBP is a pluridisciplinary laboratory, based on the campus of the INSA in Toulouse. The activities of the laboratory are situated at the interface between life sciences and chemical engineering. The knowledge that is generated by the different LISBP research teams, who work at different scales (from the molecule to the reacto) converges towards a better understanding of the interactions between biological entities and their physico-chemical and mechanical environment. Equipped with state of the art core facilities (e.g. Transcriptomics-DNA chips, Metabolomics-Fluxomics, HTS enzyme discovery and engineering) the laboratory offers to its numerous doctoral community and stimulating research environment that favors top quality research.

THE HOST TEAM

The successful candidate will perform his/her research within the O'DONOHUE group (13 members led by Dr. Mike O'DONOHUE), which is one component of a large Biocatalysis team (55 members) that is jointly led by Prof. Pierre MONSAN and Prof. Magali REMAUD. The activities of the Biocatalysis group are linked to the study of industrially useful enzymes.

TO APPLY



Laboratoire d'Ingénierie des Systèmes Biologiques et Procédés

People wishing to apply should possess (minimum) a BSc (hons) in Biochemistry or related subject and possibly an MSc in an appropriate research subject. Foreign candidates should be fluent in English. This post is open to all candidates irrespective of gender or nationality.

Candidates should note that the scholarship is for a strictly limited period of 3 years.

To send in your candidature please e-mail (sujet du message : « THESE FUTUROL ») a full curriculum vitae (including the names of three referees) to Dr. M. O'Donohue (michael.odonohue@insa-toulouse.fr), sending a copy to Dr. Claire Dumon (claire.dumon@insa-toulouse.fr). For more information, please contact M. O'Donohue on + 33 6 32 29 27 97.

ⁱ For more information see: http://www.international.inra.fr/press/inra_participates_in_the_futurol_project