

The *Laboratory of Biochemistry*, Bioengineering Department at the Institut Químic de Sarrià, University Ramon Llull in Barcelona offers a

PRE-DOCTORAL FELLOWSHIP / CONTRACT (FPI)
from the Plan Estatal de Investigación Científica y Técnica y de Innovación del
Ministerio de Ciencia e Innovación

to undertake a PhD thesis in the framework of the funded project:

PID2019-104350RB-I00. *PROTEIN ENGINEERING AND METABOLIC ENGINEERING OF GLYCOZYMES FOR THE PRODUCTION OF BIOACTIVE GLYCANS AND GLYCOCONJUGATES TARGETING BIOMEDICAL APPLICATIONS. (GLYCODESIGN)*

Project Abstract

Carbohydrate Active Enzymes (CAZYmes) are a ubiquitous class of enzymes that catalyze the biosynthesis, breakdown and transformation of glycan structures. They are a paradigm with regard to substrate recognition and specificity owing to the large diversity of glycan and glycoconjugate structures in nature. They are highly selective and able to recognize subtle differences in the sequence and stereochemistry of their carbohydrate substrates. The structural information encoded by glycans is particularly apparent in molecular recognition events such as cell-cell interactions, pathogen-host interactions and signaling events. The purpose of the project is to understand and modify substrate specificity of target CAZymes. Through protein engineering of CAZYmes and metabolic engineering using CAZYmes, the goal is to produce targeted, high-value glycans and glycoconjugates for applications in biotechnology and biomedicine.

The PhD project in the field of GLYCOBIOLOGY will focus on the discovery, characterization and engineering of CAZYmes (such as deacetylases, glycosidases and glycosyltransferases) involved in bacterial and fungal cell wall metabolism with a dual objective: a) unravel structure-function relationships to identify key enzymes as therapeutic targets against pathogenic microorganisms, b) engineer substrate specificity (rational design and directed evolution approaches) to develop biocatalysts for programmed chemoenzymatic synthesis of glyco-conjugates.

Candidate's profile:

- Graduate in Biochemistry, Biotechnology, Biology or Chemistry
- Master in Biochemistry, Biotechnology or related areas
- Experience in molecular biology and / or protein biochemistry during an internship in a company, university or research institution or collaboration in a research group

Functions to perform:

- Join a multidisciplinary research group composed of chemists, chemical engineers, biochemists and biotechnologists to carry out a doctoral thesis in a collaborative project with other team members, and enroll the PhD Program in Bioengineering by the University Ramon Llull
- The project involves the use of interdisciplinary techniques of molecular biology, expression and purification of proteins, chemical biology, biochemical and biophysical techniques, bioinformatics and molecular modeling.



PERSONA CIENCIA EMPRESA
UNIVERSITAT RAMON LLULL

If you are interested in doing a doctoral thesis, motivated for research, with the ability to work in a dynamic group team, send your detailed curriculum vitae, academic record and cover letter detailing your experience in laboratory techniques before **October 15, 2020** by e-mail to:

Dr. Antoni Planas
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UNIVERSITAT RAMON LLULL
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in order to apply to the FPI call from the Ministerio de Ciencia e Innovación, where submission will be accepted from October 13th to October 27th, 2020.

For further information and application forms:

<https://www.ciencia.gob.es/portal/site/MICINN/menuitem.dbc68b34d11ccbd5d52ffeb801432ea0/?vgnextoid=490233572bed4710VgnVCM1000001d04140aRCRD&vgnnextchannel=115222e988f75610VgnVCM1000001d04140aRCRD>

Barcelona, 6 October 2020