

## DC 3 | New generation of CCzymes based on natural and artificial DMSP-lyases

### ORGANISATION

IQAC-CSIC carries out research of excellence in chemical sciences to address and solve problems of socio-economic relevance, mainly those related to human health and the sustainability of chemical processes and products. The research developed at IQAC is organized around two main nodes: Biological chemistry and surfactants and nanotechnology. The biological chemistry node carries out fundamental and applied chemical research involving the development of cutting-edge chemical methods among them biocatalysis. Biocatalysts for the obtaining of molecules of interest in different fields, their modification by means of genetic engineering assisted by computational design and the creation of a toolbox of enzymes with a la carte activities and selectivity, in one of the relevant research lines in IQAC. The position we offer will be embedded in the Institute for Advanced Chemistry of Catalonia (IQAC) within the [Department of Chemical Biology in the Biotransformation and Bioactive Molecules group \(BTBM\)](https://pereclapes.wordpress.com/) (<https://pereclapes.wordpress.com/>). The BTBM research is focused on elucidate novel stereoselective biocatalysts based on natural and artificial metallolyses for new-to-nature C–X (X = C, N, O, S) bond formation. Metagenomic prospecting and directed evolution is used to identify hits, followed by focused mutagenesis to fine tune their activity, selectivity and stereoselectivity. The new evolved biocatalysts are screened toward diverse transformations using key enabling high-throughput screening (HTS) tools. Our final goal is to provide a ground-breaking biocatalyst platform to perform C–X bond formation reactions for a wide variety of molecules, expanding the portfolio of available biocatalytic reactions and opening new biosynthetic routes inaccessible by conventional biocatalysis.

### ROLES AND RESPONSIBILITIES

The main part of your PhD research (3 years in total) will be carried out at **the Institute for Advanced Chemistry of Catalonia** under the supervision of **Prof. Dr. Pere Clapés** in the Department of Chemical Biology and in the Biotransformation and Bioactive Molecules group. Within these three years, an industrial secondment will take place at the company **Prozomix** (Haltwhistle, UK) under the supervision of **Prof. Simon Charnock**. The Horizon Europe Marie Skłodowska-Curie Actions (MSCA) – Doctoral Network (DN) project starts in January 2023. The date of recruitment and start of the PhD project is planned for May 2023 and latest in December 2023. Your **PhD degree** will be awarded at **University of Barcelona** based on successful completion of the research work in the **IQAC-CSIC**. You will also be required to participate in the **training events and workshops** organized by the DN program. As a MSCA fellow, you are also expected to **contribute your time in the dissemination of your PhD project's result** through public engagement and other scientific platforms.

#### The PhD research will focus on:

- (i) Interdisciplinary project on biocatalysis and organic chemistry
- (ii) Genome-guided identification of novel carbon-carbon bond forming enzymes (Industrial secondment),
- (iii) Cloning, expression and biochemical characterization of identified candidates,
- (iv) Elucidation of enzyme promiscuity,
- (v) Optimization of the activity and selectivity of selected candidates by directed evolution techniques

Primary supervisor: Prof. Dr. Pere Clapés (<mailto:pere.clapes@iqac.csic.es>, <http://pereclapes.wordpress.com/>)

Recruiting institution: National Research Council (CSIC) (Spain)

### QUALIFICATIONS

- An outstanding M.Sc. degree in Chemistry, Biological chemistry, Biotechnology, or related field
- Eligible as PhD student at University of Barcelona (Spain)
- Research experience in organic synthesis, analytical methods (HPLC, GC, MS, NMR etc.), enzyme purification and assays and notions of molecular biology (molecular cloning)
- Ability to work in an international team,
- Inter- and multidisciplinary thinking,
- High motivation,
- An integrative and cooperative personality with excellent communication and social skills,
- Fluency in English – written and oral.

## CONDITIONS OF EMPLOYMENT

We offer you in accordance with the National Research Council (CSIC) in Spain

- A salary of ca € 3,719 gross per month (tentative depending on the rules for 2023)
- Prolongation of the contract is contingent on sufficient progress in the first year to indicate that a successful completion of the PhD thesis within the next two years is to be expected.
- The preferred starting date is between May 1<sup>st</sup> and July 1<sup>st</sup> 2023.

## APPLICATION PROCEDURE

To apply for the position, kindly provide:

- (i) A letter of motivation including a statement of your research interests, relevant skills and experience and an explanation for the choice of position(s);
- (ii) A CV including publication list (if applicable);
- (iii) Names and contact details of three referees willing to write confidential letters of recommendation;
- (iv) Copies of relevant diplomas including explanation of international grades.

Please upload applications only according to instructions at <http://www.biodeccodinng.eu/>.

Address applications to: Prof. Pere Clapés

The IQAC-CSIC strives to be a research institution in which students and staffs are respected and feel at home, regardless of differences in background, experiences, perspectives, and identities. We believe that working on our core values of inclusion and equality are a joint responsibility and we are constructively working on creating a socially safe environment. Diversity among students and staff members enriches academic debate and contributes to the quality of our training and research. Our selection procedure follows the guidelines of the European Commission's European Code of Conduct for recruitment of researchers, <https://euraxess.ec.europa.eu/jobs/charter/code>.

Unsolicited marketing is not appreciated.

## APPLICATION DEADLINE

You may apply until 10<sup>th</sup> of January 11:59pm / before 11<sup>th</sup> of January 2023 Dutch local time (CET) for this position by means of the online application form (click on "Apply" below on the advertisement on the BiodeCCodiNng website).

MARIE SKŁODOWSKA-CURIE ACTIONS  
Doctoral Networks (DN)



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