

We are seeking a PhD student or post-doctoral researcher for our Momentum CSIC Project.

Momentum CSIC Revolutionizing Protein Drug Development AI-driven Protein Engineering for Next- Generation Enzyme Therapy



Molecular Biology Institute of Barcelona (IBMB-CSIC), Barcelona Science Park (PCB), Barcelona, Spain

Web: <https://ibmb.csic.es/> | | [Synthetic Structural Biology Group](#) | | [Protein Design and Modeling Lab](#)

Project Summary:

Enzymes are invaluable tools for biotechnology and medicine, but their structural complexity poses significant challenges for optimization and practical use. While directed evolution and structural bioinformatics can improve enzyme catalytic efficiency and specificity, these methods fall short for reducing structural complexity, increasing solubility, and enabling large-scale expression in bacteria. We plan to develop an AI-driven computational pipeline for enzyme design and optimization, integrating structural bioinformatics, deep learning-based protein structure prediction and design, high-performance computing, and experimental feedback. Our goal is to transform complex enzyme drugs, typically produced in costly mammalian systems, into robust proteins for high-yield production in bacterial systems, potentially revolutionizing the protein drug industry by providing sustainable biotechnological and medical solutions.

Candidate profile:

We are looking for a highly motivated scientist with a strong motivation in combining computational techniques (protein design, docking, molecular dynamics) with experimental testing for protein drug development. The candidate must have studies in Biology, Biochemistry, Biotechnology, Computational Biology, or related disciplines. Good English communication skills are expected. Documented research experience, publications, familiarity with AI-based methods for protein structure prediction, experience with molecular modelling tools, and experience in protein expression, purification, and characterization techniques are valued merits.

Contract conditions:

Indefinite contract for a University Graduate associated with the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (37.000 € - 41.000 €). Start of contract: Before 31st of December 2024. All applications have to go through the CSIC Job Portal ([Bolsa de Trabajo](#)). Please contact [Ulrich Eckhard](#) for more detailed instructions.

Principal Investigator Contacts for more information:

E-mail: Ulrich Eckhard (ulrich.eckhard@ibmb.csic.es) and Enrique Marcos (embcri@ibmb.csic.es)