Position Offered: PREDOCTORAL RESEARCHER

Project: *Design of PROTACs for the validation of novel therapeutic strategies*

Technological and scientific fields: New medicines design

Location: Madrid, Comunidad Autónoma de Madrid, C/Juan de la cierva, 3, 28006; Instituto de Química Médica (IQM) https://www.iqm.csic.es/

Research Group/PI: Grupo de Moduladores del Sistema Endocannabinoide. Paula Morales Lázaro

PROJECT SUMMARY

Proteolysis-targeting chimeras (PROTACs) are small molecules that induce the degradation of a target protein, allowing for the design of innovative chemical probes and drugs for previously inaccessible targets. PROTACs are heterobifunctional chemical entities composed of two ligands or active groups (one binding to an E3 ligase and the other to the protein of interest) connected by a linker. These proteolysis-targeting compounds represent a significant advancement in the development of new drugs for oncological pathologies. However, due to their molecular complexity, designing such chemical entities poses numerous challenges. This project aims to combine bioinformatics, molecular modeling, and artificial intelligence to develop new in silico approaches for designing PROTACs. As a proof of concept, three targets that have not yet been explored using this strategy will be studied: two mitotic cytosolic proteins (Cdc20 and Mps1) and a membrane protein, the cannabinoid receptor type 1 (CB1R), which have proven to be privileged targets for cancer treatment.

PROFESSIONAL PROFILE

Minimum requirements:

Bachelor's Degree in Biochemistry, Master's Degree in Biochemistry, Molecular Biology, and Biomedicine. Proficient in Spanish and English.
Experience with scientific software such as Schrödinger Suite and DataWarrior.
Knowledge of computer-aided drug design tools and techniques (docking, virtual screening, scaffold hopping).

Merits to be considered:

- Experience in molecular modeling and cancer biology
- Drug design techniques and computational chemistry
- Basic knowledge of programming in R and Python
- Conference presentations
- Courses in molecular biology, databases, and artificial intelligence will be valued

WHAT IS OFFERED

We offer multidisciplinary training in the area of new drug discovery. Through this project, the predoctoral researcher will be trained in the comprehensive use of bioinformatics tools, artificial intelligence, and computational chemistry. Additionally, they will have the opportunity to undertake three internships that will complement their training: one with Javier de la Rosa's group (CIC-IBMCC) for training in server development, another with Dr. Antonio J. Pérez Pulido (UPO) for handling bioinformatics analyses, and another with Professor Victor Bolanos' group at Brookes University, UK, for training in structural biology. The predoctoral researcher will be able to attend various national and international conferences.

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

Email: paula.morales@iqm.csic.es

Phone: 670824746