

## EXPRESSION OF INTEREST – CANDIDATE FOR PF GLOBAL

### Researcher Profile:

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**Name and Surname:** Joel Nieto Felipe

**Position:**

**Department/Unit/Centre:**

- a) Describe your qualifications and experience. Provide information regarding your level of experience on the research topic proposed and your track record of publications, invited talks, and conference participation relative to your career stage (e.g., papers, projects, main international collaborations, patent etc.), highlighting which scientific, technical and soft skills you will transfer to the TC Hosting Institution during the implementation of the Outgoing Phase in your research project.

My training phase includes a Bachelor's degree in Biochemistry Degree (2019) and the Master's degree in Cellular and Molecular Biology with Human specialty (2020). My research began in 2021 and has since focused on the study of Store-Operated Calcium Entry (SOCE) and its role in biological process critical to cellular and tumor development, mainly in breast cancer. In this context, I have contributed to the generation of original knowledge by identifying new mechanisms and pathways for the activation of transcription factors, as well as characterizing new regulatory pathways of SOCE both in tumor and non-tumor cells, providing evidence of its role in the pathophysiology of breast cancer.

During the course of this line of research, I participated in two competitively funded research projects, which have yielded high-quality and scientific relevance results possible. These results have led to a total of 15 scientific papers, including 11 original papers and 4 bibliographic reviews. Within original papers, in 6 of them I am listed as the lead author or co-author, reflecting my active participation in generation of knowledge. I have presented these results at national and international congresses and symposia, promoting the exchange of knowledge and the establishment of new scientific collaborations. Additionally, I completed a predoctoral stay in Dr. Rainer Schindl's group (University of Graz), which has enhanced my training in an international setting and expanded my network of scientific collaborators.

I have developed strong technical expertise in cellular and molecular biology, including methodologies such as cell culture, protein isolation and cell lysates via biotinylation, immunoprecipitation and Western blotting, cell transformation using plasmids, flow cytometry and confocal and fluorescence microscopy. I have also applied functional assays for the study of the pathophysiology of cancer, such as wound-healing assay to study the migratory capabilities of tumoral cells, and biomedical image analysis techniques using Fiji/ImageJ.

During my postdoctoral research, I have developed a high degree of scientific autonomy through an active participation in experimental design, data analysis and interpretation, the formulation of new working hypothesis and the development of innovative lines of research.

My experience in multidisciplinary collaborative surroundings has enabled me to develop skills in teamwork, scientific communication and adapting to different research contexts. These skills will help strengthen the host institution's scientific and collaborative capabilities during the implementation of the project's fieldwork phase.

My researcher profile focuses on calcium signaling in cancer, with special interest in the molecular mechanism linking calcium homeostasis to transcriptional regulation and tumor progression, within a context of potential translational relevance.

- b) Show your level of independence and demonstrated capacity for leading projects, for example by securing funding, and mentoring students.

During my research, I have developed a high degree of scientific independence, taking direct responsibility for experimental design, the definition of methodological strategies and the critical interpretation of results. This autonomy is reflected in my participation in scientific decision-making within the projects in which I have been involved, as well as in my ability to initiate and structure my own lines of research inside collaborative settings.

I have made substantial contributions to competitively funded research projects, participating in the planning, execution and analysis of scientific objectives and ensuring the production of high-quality publishable results. This involvement demonstrates a proven ability to lead key experimental components within competitive projects and to independently manage complex scientific activities.

I have also gained experience in supervising students, including advising on a total of four undergraduate theses and providing guidance to students in the laboratory setting. I have also participated in the research group's teaching activities, contributing to students' practical training by providing technical and conceptual support in experimental design and the acquisition of methodological skills. This experience has strengthened my scientific leadership, communication, and knowledge-sharing skills in highly demanding academic settings.

Overall, my career shows a clear consolidation of my independence as a researcher and a growing ability to take on scientific leadership roles in competitive projects, positioning me well to coordinate and carry-out larger-scale research activities.

## **Project idea, if any (scientific requirements, topic, discipline):**

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The SOCE mechanism is one of the primary processes responsible for intracellular  $\text{Ca}^{2+}$  homeostasis and plays a key role in regulating numerous physiological processes, including tumor-related mechanisms such as epithelial-mesenchymal transition and resistance to chemotherapy. In this regard, breast cancer is one of the types of cancer in which the role of SOCE in its development is best characterized. However, these studies have been largely limited to *in vitro* studies without a clear focus on more translational aspects, or even *in vivo* studies using breast cancer samples obtained from patients in hospitals. For this reason, I propose as a potential line of research a mixed *in vivo* and *in vitro* study in which, using samples obtained from patients, the results obtained *in vitro* can be translated to an *in vivo* model. An *ex vivo* model using chicken embryos could even be employed as an intermediate step to assess the potential viability of the *in vitro* methodology in an *in vivo* context. Given that breast cancer is classified into different subtypes, and considering the aggressiveness of some of them—such as triple-negative breast cancer—it would be worthwhile to conduct research on this subtype, since the only treatment option for this form of breast cancer is chemotherapy. This makes the search for new therapeutic strategies that serve as alternatives to chemotherapy and help treat this highly aggressive form of cancer, particularly compelling