



UNIVERSITY
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Joint Ph.D. position from the University of Poitiers (France) and the University of Turku (Finland) - Cancer cell biology

The **4CS Unit (CNRS ERL7003/University of Poitiers - France)** and the **Cell migration lab (Turku Bioscience Centre, University of Turku – Finland)** are looking for **a joint Ph.D. student to study the role of mechanosensitive calcium channels during melanoma cancer progression**. The position is partly funded by the European Campus of City-Universities (EC2U) project.

The 4CS Unit focuses on identifying new biomarkers for aggressive cancers, while the cell migration lab uses leading-edge microscopy and bioimaging approaches to elucidate the mechanisms by which cancer cells sense their environment and move to spread throughout the body. These two laboratories are building together an ambitious research project to tackle how melanoma cells metastasis.

Context: Despite recent improvements in cancer therapies, metastasis still poses significant issues, limiting treatments efficacy and accounting for more >90% of cancer-related deaths. To disseminate, cancer cells have to detect and adapt to permanent changes in the mechanical constraints of their microenvironment. In that context, mechanosensitive calcium channels strike as efficient molecular systems to translate mechanical changes (e.g., matrix stiffness or constraints applied to cell protrusions) into intracellular biochemical signals for a fast adaptive response. Yet, while recent evidence has demonstrated that calcium channel-dependent processes are required to sustain cell movement, the molecular mechanisms involved remain poorly characterized.

Aims:

The proposed Ph.D. program aims to decipher how different mechanosensitive calcium channels orchestrate cell adhesion and migration in the general context of cancer metastasis. Therapeutic strategies based on channel inhibition will also be evaluated for their interest in preventing cancer progression.

To that end, the selected Ph.D. candidate will have to:

- Develop and validate molecular/cellular/pharmacological tools for the study
- Conduct *in vitro* and *in vivo* experiments to determine the impact of the pharmacological/genetic inhibition of channel activity on cell adhesion, migration, and metastasis formation
- Study the spatiotemporal dynamic of channel trafficking/activity in 2D/3D migrating cells, determine their activation mechanisms, and characterize how they regulate migration/invasion at the molecular level.

The selected candidate will be working in a dynamic environment and be trained to master various techniques, including but not limited to:

- Cellular biology (transfection, transduction, CRISPR/Cas9 genome editing...).
- Molecular biology (qPCR, DNA cloning...).
- Biochemistry (Immunoblot, co-immunoprecipitation, proteomics).
- Cell-based assays (xCELLigence, wound-healing...).
- Leading-edge microscopy and image analysis approaches (time-lapse, confocal, TIRF, calcium videomicroscopy, ...).
- Animal experimentation (Mouse and zebrafish models).

Requirements:

- Master's degree (or equivalent) in life science, cell biology, cancer, or any related area. The qualifications should satisfy the requirements for admission to the doctoral degree programs at both the University of Poitiers and Turku.
- Strong interest in mechanobiology and cell signaling challenges applied to the development of new anti-cancer therapies.
- Hand-on experience in cell biology approaches, including solid bench expertise in cell culture.
- Knowledge in molecular biology and techniques such as immunocytochemistry, fluorescent microscopy. Knowledge of electrophysiology would be an asset.
- We are looking for an enthusiastic and motivated team player who enjoys bench work and has a can-do attitude, innovative thinking, demonstrated organizational skills, a keen sense of responsibility. The candidate is expected to be highly rigorous, reliable, and easily adapt to different working environments.
- Excellent English written and oral communication skills are mandatory.

We offer:

- An international research experience under the auspices of an EC2U joint Ph.D. program (co-tutelle)
- A joint supervision by two young and dynamic group leaders
- An International Dual degree Ph.D. from the University of Poitiers (France) and the University of Turku (Finland). Note that The candidate should also satisfy the requirements for awarding a doctoral degree from both Universities.
- 18 months secure source of funding from the French government/EC2U alliance and assistance with funding applications to gain additional financing

Dates & Places: During their thesis project, the selected Ph.D. student will spend time in the 4CS unit located in Poitiers and the cell migration lab in Turku. The starting date is January 3rd, 2022 in Poitiers.

Application file: Please send by E-mail your résumé, a cover letter, your grades, and two references letters as a single pdf file.

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