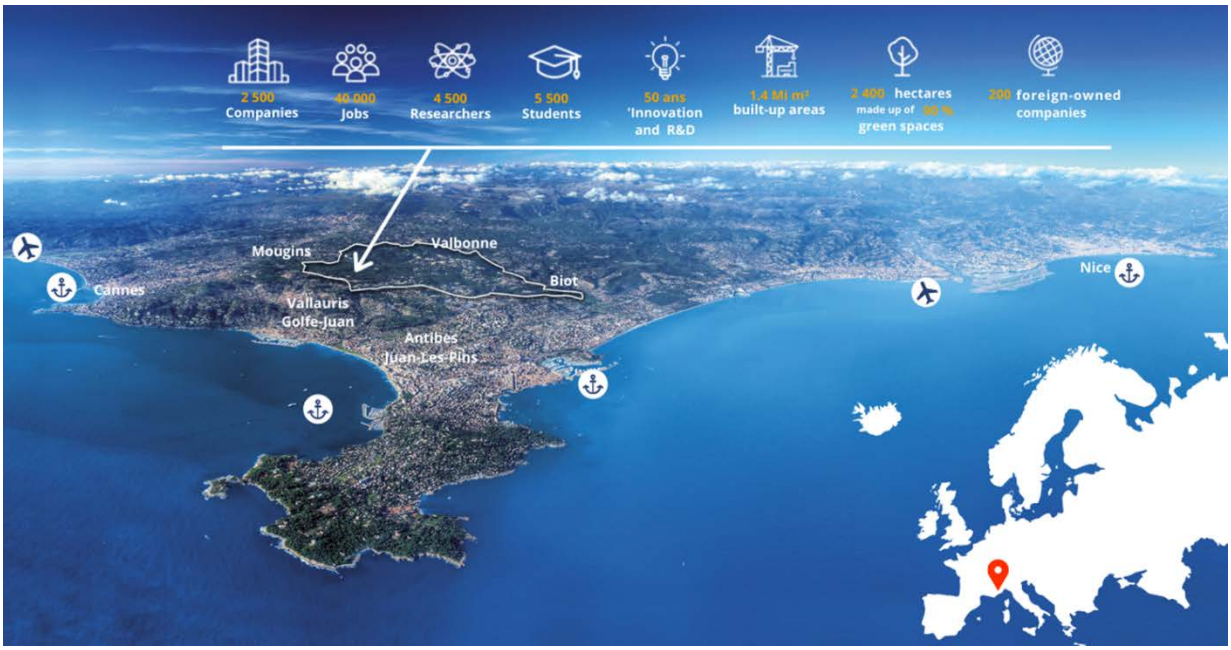
INSTITUT DE PHARMACOLOGIE MOLÉCULAIRE ET CELLULAIRE

ipmc

Two phD position available

The University "Côte d'Azur" is ideally situated at the heart of an exceptionally beautiful and diverse territory (Nice and the surrounding area), between sea and mountain https://youtu.be/uBtez5rCufI. It is one of France's top 10 research-intensive universities and gathers 35,000 students of over 100 different nationalities. https://univ-cotedazur.eu/

The Institute of Molecular and Cellular Pharmacology (IPMC) https://www.ipmc.cnrs.fr is a multidisciplinary research center composed of 20 international research teams working on subjects ranging from basic research to human pathologies such as brain, cardiovascular diseases or cancer. The IPMC is located on the exceptional site of **Sophia Antipolis**, Europe's leading technology park: 2,500 companies, 10,000 students and researchers https://www.sophia-antipolis.fr/en/ and has cutting-edge facilities: lipidomic, proteomic, DNA/RNA/single cell sequencing, microscopy, cytometry, etc.



Our emerging team **« cell mechanics from molecular to tissues scale »** (no website available yet) is fast-growing and will ultimately (2023) be a 10 members group (3 permanent researchers + 1 technician + 6 phD/post-doc and engineers). Our research focuses on how cells perceive and interpret their physical environment in development and disease.

Applicant profile

• Master or equivalent in cell biology

• Strong self-motivation, organizational skills

• Scientific curiosity, analytical thinking, and interest in contributing to projects

• Ability to work in a team of young scientists, to be flexible, and flourish in a fast-paced environment

• Strong communication and interpersonal skills, ability to work collaborate effectively with individuals of different backgrounds in a multidisciplinary team, team orientated with excellent organizational skills

• Fluent English

• The ability to condense and present scientific results to both scientific and non-specialist audiences

• Experience in tissue culture especially with in human pluripotent stem cell culture and/or organoids will be appreciated

• Experience in confocal imaging and image analysis, CRISPR/Cas9 genome editing, lentiviral production and molecular biology will be a plus.

Recruitment timeline and how to apply. Please submit a cover letter describing your motivation to apply, curriculum vitae, a list of 2-3 references to send directly to Stephan.clavel@unice.fr. **To submit before September 5th.**

Project funding & salary. "project-based funding agency for research" (ANR) 2022-2025. PhD (3 years). Gross salary 1975€/month- 1540€ net salary (after taxes).

Location. Institute of Molecular and Cellular Pharmacology (IPMC), SOPHIA ANTIPOLIS (closed to Antibes and Nice), Cote d'Azur, South of France. https://www.ipmc.cnrs.fr/cgi-bin/site.cgi

Project 1: Organoid Phenotypes Mapping and Modeling: Toward an Endocrine Disruptors Classification

Supervisor: Dr S. Clavel

Endocrine disruptors (EDCs) are a category of pollutants that stems essentially from human activities (chemical industry). Human exposure to low doses of EDCs occurs, from fetal life to old age, primarily through the consumption of products contaminated by these substances from plastics, pesticides, etc. To limit risks associated with these chemical compounds, the European Union (EU) is trying to regulate marketing of new synthetic molecules with potential endocrine disrupting activity. To tackle this problem and unlock technical leverage, we propose to use the cutting-edge organoid technology to test the toxicity of EDCs on human organs. "Organoid" is an emerging and fast-growing technology opening a new era in human physiology and medicine. An organoid is a three-dimensional construction composed of multiple cell types that originates from stem cells or organ-specific progenitors by means of self-organization and is capable of simulating the architecture and functionality of native organs. The aim of our proposal is to develop computational tools and models to allow the use of organoid technology for EDC toxicity testing. The project is thus divided in two main objectives: to build up and analyze a phenotypic landscape of EDC effect on organoid and to develop explicative or predictive models for their growth.

Project 2: UBTD1: an ubiquitin scaffold protein at the cross roads of cell mechanics and cell metabolism

Supervisor: Dr S. Clavel & Dr T. Bertero

Tissue dynamics in living organisms — morphogenesis, collective migration and self-organization — emerge from cellular interactions within a tissue. Understanding the spatiotemporal control of cell behavior thus requires the information transmission from structural complexity of tissues to their constituent cells. Mechanotransduction enables this transmission by sensing mechanical environments and adapting cellular behaviors. Recently we identified UBTD1, an ubiquitin domain-containing protein as a crucial regulator of mechanotransduction and as a regulator of lipid homeostasis. UBTD1 functions remain largely unknown, especially regarding its role in mechanotransduction. Also remain enigmatic whether and how UBTD1 controls cell metabolism to match the metabolic needs of hyperproliferative cells. The goal of this proposal is to unveil the metabolic circuit controled by UBTD1 in cell mechanics.

Selected publications

Metabo-reciprocity in cell mechanics: feeling the demands/feeding the demand. Torrino S, Bertero T. Trends Cell Biol. (2022)

Mechano-induced cell metabolism promotes microtubule glutamylation to force metastasis. Torrino S, Grasset EM, Audebert S, Belhadj I, Lacoux C, Haynes M, Pisano S, Abélanet S, Brau F, Chan SY, Mari B, Oldham WM, Ewald AJ, Bertero T. Cell Metab. (2021)

UBTD1 regulates ceramide balance and endolysosomal positioning to coordinate EGFR signaling. Torrino S, Tiroille V, Dolfi B, Dufies M, Hinault C, Bonesso L, Dagnino S, Uhler J, Irondelle M, Gay AS, Fleuriot L, Debayle D, Lacas-Gervais S, Cormont M, Bertero T, Bost F, Gilleron J, Clavel S. Elife. (2021)

UBTD1 is a mechano-regulator controlling cancer aggressiveness. Torrino S, Roustan FR, Kaminski L, Bertero T, Pisano S, Ambrosetti D, Dufies M, Uhler JP, Lemichez E, Mettouchi A, Gesson M, Laurent K, Gaggioli C, Michiels JF, Lamaze C, Bost F, Clavel S. EMBO Rep. (2019)