Unité 1109 – CRBS
Centre de **R**echerche en **B**iomédecine de **S**trasbourg
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Instituts thématiques

Inserm
Institut national
de la santé et de la recherche médicale

TUMOR BIOMECHANICS LAB

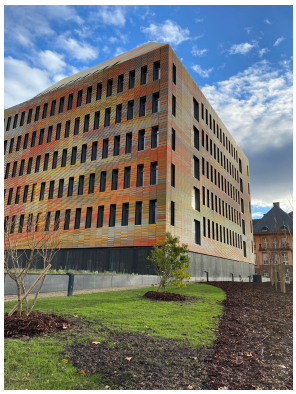
Open position

Dissecting the impact of aging on metastatic progression and therapy

The **Goetz Lab at INSERM U1109** (Tumor Biomechanics, www.goetzlab.fr, CRBS, Strasbourg) is seeking a talented postdoctoral fellow with background in **Cancer biology**. The candidate will lead a collaborative project aiming at dissecting the impact of **aging on metastatic progression and therapy.**

Environment

Our lab uses advanced imaging techniques coupled to microfluidics and animal models to study **tumor metastasis at multiple scales**. The lab is actively investigating the contribution of mechanical forces as well as extracellular vesicles in metastasis onset and recently identified therapeutic targets for treating metastatic progression. Our approach permits real-time imaging ranging from single-cell metastatic events to whole body tumor progression. Doing so, we aim at understanding how metastasis occurs in relevant and controlled animal models (Goetz et al., 2011, 2014; Follain et al., 2018; Hyenne et al., 2019; Osmani et al., 2019; Ghoroghi et al., 2021), with the ultimate goal of impairing it (ex : Follain, Osmani et al. 2021). In addition, our lab is part of the **NANOTUMOR consortium** (www.nanotumor.fr), which is a French national multi-disciplinary workforce that aims to study cancer initiation and progression at molecular and subcellular level, by combining cutting-edge technologies in various cellular and animal models



Our lab has recently relocated into the **Center for Biomedical Research of Strasbourg (CRBS)**, a new institute that is equipped with multiple platforms and facilities (mouse and zebrafish husbandry, imaging facility, sequencing platform). We benefit from a proximity and regular collaborations with the **multiple platforms for both photonic and electron microscopy, proteomic analysis, etc...**

Project

We recently realized that there is an urgent need to design pre-clinical strategies that integrate the aging aspect of the disease. In this collaborative project launched in the context of an INCa-funded scheme (French National Cancer Institute) and in collaboration with the teams of M.G. FERREIRA (IRCAN, Nice) and Y.COLLETTE & C.GINESTIER (CRCM, Marseille), the fellow will study the aged microenvironment and its effect on metastatic progression and therapy of breast cancer. For that, we will take use of unique premature aging models in zebrafish, mouse models at different ages and humanized PDX models. Our proposal will not only evaluate the efficacy of standard. The successful candidate will thus join an interdisciplinary team made of cell and cancer biologists, molecular biologists and physicist. The candidate will **study several aspects of the metastasis cascade, including i) high-resolution and longitudinal imaging of metastasis in zebrafish and mouse models, ii) priming of metastatic niches by extracellular vesicles, iii) molecular characterization of the aged microenvironment and iv) test combinatorial pharmacological strategy to identify relevant therapeutic tools that integrate the aging aspect of the disease.**

The candidate will develop his project independently, under the close supervision of O.LEFEBVRE (mouse models and drugs), V.HYENNE (Extracellular vesicles and -omics), N.OSMANI (zebrafish & imaging) and J. GOETZ (metastasis). The candidate is also expected to present his results in the form of publications and international conference presentations, and to participate to writing of grant applications.

For more information on the group's research, see www.goetzlab.fr

All applications must be sent to: Jacky G. Goetz (jacky.goetz@inserm.fr)

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Contract: The position is full time with an initial one-year contract with strong prospects for renewal. The salary will be adapted to the experience of the candidate. The candidate will apply to additional funding (at national and European level). **We are interested in candidates who recently defended their Ph.D (early post-doctoral fellow).**

About the candidate

Skills

- Mouse (handling and classical procedures) and experimental metastasis models
- Whole-animal longitudinal imaging in mice
- Experience with photonic microscopy (confocal, spinning-disk, 2PEM and light-sheet)
- Ability to work independently and collaboratively with biologists and physicists in the team
- Being a team player, organized and curious, and able to drive the dynamics of the project
- Great communication and writing skills
- Fluency in English (lab comp. of people from France, Iran, Spain, Argentina, Czech Republic,...)
- Experience in Image analysis software
- Experience with zebrafish and or microfluidics (although not essential)

Please include the following in your application:

- A cover letter
- Your resume including at least 2 referees with supporting letters/contact details

This position will remain open until filled.

We are reviewing applications as they are received:
as such candidates are encouraged to **submit their application as soon as possible**.

Starting date: **as soon as possible**
(note: 2 months administrative delay before recruitment)

Relevant bibliography:

Follain, G., Osmani, N., et al. (2018). Hemodynamic Forces Tune the Arrest, Adhesion, and Extravasation of Circulating Tumor Cells. ***Developmental Cell***, *45*(1), 33-52.e12.

Ghoroghi, S., et al. (2021). Ral GTPases promote breast cancer metastasis by controlling biogenesis and organ targeting of exosomes. ***ELife***, *10*.

Goetz, J. G., et al. (2011). Biomechanical Remodeling of the Microenvironment by Stromal Caveolin-1 Favors Tumor Invasion and Metastasis. ***Cell***, *146*(1), 148–163.

Goetz, J. G., et al. (2014). Endothelial Cilia Mediate Low Flow Sensing during Zebrafish Vascular Development. ***Cell Reports***, *6*(5), 799–808.

Hyenne, V., et al. (2019). Studying the Fate of Tumor Extracellular Vesicles at High Spatiotemporal Resolution Using the Zebrafish Embryo. ***Developmental Cell***, *48*(4), 554-572.e7.

Karreman, M. A., et al. (2016). Intravital Correlative Microscopy: Imaging Life at the Nanoscale. ***Trends in Cell Biology***, *26*(11), 848–863.

Karreman, M. A., et al. (2014). Correlating Intravital Multi-Photon Microscopy to 3D Electron Microscopy of Invading Tumor Cells Using Anatomical Reference Points. ***PLoS ONE***, *9*(12), e114448.

Osmani, N., et al. (2019). Metastatic Tumor Cells Exploit Their Adhesion Repertoire to Counteract Shear Forces during Intravascular Arrest. ***Cell Reports***, *28*(10), 2491-2500.e5.

Follain, Osmani, et al.. Impairing flow-mediated endothelial remodeling reduces extravasation of tumor cells. Sci Rep., 2021, 11, Article number: 13144