Post-doctoral position
AI-based analysis of the tumor extracellular matrix

3IA Côte d'Azur Research Axis : AI for Computational Biology and Bio-Inspired AI

Applications are invited for a 2-year 3iA Côte d'Azur postdoctoral position in tumor/ECM biology to study functional and structural features of the extracellular matrix (ECM) in the immunosuppressive tumor microenvironment of head and neck cancer. Immunomodulatory therapies are promising for this tumor type, yet resistance rates are high since less than 20% of patients respond. We are specifically interested in exploring the tumor ECM environment, together with immune cell signatures, for gaining mechanistic insights into invasive disease and resistance to immunotherapy. Our previous work on ECM topology based on confocal images of cell-derived ECM has provided a framework for quantitative description and modeling of matrix features associated with disease states. The present project involves quantitative characterization of ECM architecture in *in vitro* models and human tumor tissue using multiplex immunofluorescence imaging, empowered by deep learning approaches.

Biological studies will be carried out in the [Institute of Biology Valrose](#), a leading Research Center of the Université Côte d'Azur (UCA) equipped with state of the art core facilities and a dynamic scientific environment. Computational analyses will be performed in close collaboration with biological image processing experts of the [I3S Laboratory, UCA (MORPHEM group)](#) and clinical partners, thus providing interdisciplinary training at the crossroads of ECM/tumor biology, computational biology and human tumor pathology.

Profile: The candidate should be a creative, quantitatively-minded biologist with a strong background in cell/tissue imaging. Previous experience in tumor biology and the ECM are an advantage. Excellent communication skills, both written and oral (English), are required.

Please send applications (motivation statement, full CV, 2 letters of recommendation including one from PhD thesis advisor) to : [Ellen Van Obberghen-Schilling](#). Further information is available on the 3IA Côte d'Azur [website](#).

Selected recent publications of the host team:

Spenlé C et al. Tenascin-C Orchestrates an Immune-Suppressive Tumor Microenvironment in Oral Squamous Cell Carcinoma. **Cancer Immunol Res.** 2020 Sep;8(9):1122-1138.

Efthymiou G et al. Shaping Up the Tumor Microenvironment with Cellular Fibronectin. **Front Oncol.** 2020 Apr 30;10:641.

Efthymiou G et al. Fibronectin Extra Domains tune cellular responses and confer topographically distinct features to fibril networks. **Journal of Cell Science** 2021 : jcs.252957 doi: 10.1242/jcs.252957