Post Doc position in Immunology

Th17 cell heterogeneity in gut-Bone axis and its role in tissue inflammation (24 months)

Research unit: LP2M (Laboratory of Molecular PhysioMedicine), Mixed research unit Université Côte d'Azur and National Centre for Scientific Research (CNRS)

Project summary:

Since their discovery almost two decades ago, interleukin-17-producing CD4+ T cells (Th17 cells) have been implicated in the pathogenesis of multiple autoimmune and inflammatory disorders including inflammatory bowel diseases (IBD). IBD is characterized by strong asocuition between gut inflammation and bone destruction by osteoclasts.

In IBD mice and patients, we identified TNF-a+ Th17 cells activated in the inflamed gut as osteoclastogenic cells and showed that traffic of these cells as well as of inflammatory monocytes (MNs) between the gut and bone marrow (BM) is crucial for IBD-associated bone destruction. These results demonstrated the existence of a cellular dialog between the gut and the BM that modulates local and systemic inflammatory responses.

Interestingly, we showed that, while long-term anti-TNF treatment ameliorates the gut and bone status in IBD mice, it induces severe psoriatic skin lesion. Therefore, this model recapitulates the paradoxical effects observed in patients under long-term anti-TNF therapy. In addition, anti-TNF therapy induces changes in Th17 cell phenotype and function which require to be analyzed.

Our overall objective is to decipher the molecular and cellular dialog between the gut, BM and skin that contribute to the paradoxical effects of anti-TNF agents in mouse and human systems.

This project aims at understanding this phenotypic switch induced by anti-TNF agents focusing not only on IL-17-producing cells but also on their environment (monocytic cells and antigen presenting cells, local tissue stromal and epithelial cells in the gut, skin and bone marrow. Such an integrated approach has never been developed in this context and will explore a very novel concept that remains to be characterize more in details.

Qualification and skills expected:

- The applicant should be a highly motivated postdoctoral candidate with a PhD degree in Immunology and a high-quality track record assessed by publications. He/she should have a strong background in performing research in mouse immunology.
- Expertise in gut and skin immune system will be highly considered but not mandatory
- Strong experience in cell biology, flow cytometry, scRNAseq analysis, multiparametric analysis and animal experimentation. Ability to work independently, creativity, scientific rigor and excellent team spirit, communication and organization skills are essential. French or English practice is mandatory.

Host laboratory:

The team "*osteoimmunology, niches and inflammation*" in the Laboratory of Molecular PhysioMedicine (LP2M), Nice, France is depending on the CNRS, the main research body in France, and the Université Côte d'Azur labeled as "University of Excellence". The laboratory is located in the Faculty of Medicine in the heart of Nice. It provides a high-quality scientific environment with access to all required core facilities as well as interaction with clinicians.

Supervision

Abdelilah Wakkach, director of research CNRS, Responsible for the Gut-Bone axis project

E-mail: Abdelilah.WAKKACH@univ-cotedazur.fr