Unit 1011: Nuclear Receptors, Cardiovascular Diseases and Diabetes

Prof. Bart STAELS

Team 3: Nuclear Receptors, Immuno-inflammation and Cardiovascular Diseases

Dr. David DOMBROWICZ

Post-doctoral position in INSERM UMR1011 in Lille, France

Project: "Regulation of dendritic cell function in psoriasis: the hexosamine biosynthetic pathway at the crossroad between glucose and glutamine metabolism"

Project overview: We are seeking a motivated post-doctoral fellow to participate in a terrific project combining immunometabolism, state-of-the-art molecular technologies and original preclinical models.

We demonstrated that psoriasis, a chronic skin inflammatory disease, was exacerbated by high fat diet (HFD) through an extensive metabolic reprogramming of dendritic cells (DC) involving inhibition of glycolysis and glutaminolysis. Our analysis of pathways differentially regulated by palmitic acid (PA) evidences alterations in the expression of all the enzymes involved in the Hexosamine Biosynthetic Pathway (HBP), located at the crossroad between glucose and glutamine metabolism. However, the contribution of HBP to DC subsets functions, its role in psoriasis development and metabolic exacerbation are unknown. Thus, we aim to 1. *characterize DC subsets upon psoriasis exacerbation by disease-contributing metabolites.* 2. *elucidate how HBP regulates cDC subset functions in vitro*. 3. *To determine the contribution of DC-intrinsic HBP in the regulation psoriasis and its exacerbation in vivo*.

The post-doctoral fellow will be in charge of performing experiments on mouse models and analyzing skin, metabolic and molecular parameters using state-of-the-art techniques.

The project will be performed in UMR1011, an research unit affiliated to the laboratory of excellence-labeled European Genomic Institute of Diabetes (EGID), INSERM, Institut Pasteur de Lille, CHU de Lille and Lille University. The unit develops interdisciplinary research at the interface of physiology, cell biology, biochemistry and medicine, hosts state-of-the art scientific technological platforms and attracts students from around the world by offering high level training in biomedical sciences.

We offer a (renewable) 1 year contract as soon as possible. This position is supported funds from the Fondation pour la Recherche Médicale (FRM). Remuneration and social benefits will be based on the salary scale for public-sector employees considering past experience. The applicant will integrate a multidisciplinary group including basic scientists, clinicians and bioinformaticians, and participate in international collaborations.

Requirements. Applicants should hold a PhD in any biological science as well as an EU FELASA C authorization. Excellent written and spoken English are also important. A background in immunology, metabolism or skin physiology would be highly appreciated.

Responsibilities will include:
- Performing experimental psoriasis experiments in mice;
- Immunological, molecular and biochemical analysis of cells and tissues of genetically modified mice;
- Bioinformatic/statistical analyses;
- Preparation of scientific articles and presentation at local and international meetings.

Application procedure. Candidates should send a CV with a publication list, a short summary of research achievements and mastered techniques, and contact information of at least two references, to: David Dombrowicz (david.dombrowicz@inserm.fr>)

INSERM U1011 - Institut Pasteur de Lille - 1 rue du Professeur Calmette - B.P 245 - 59019 Lille Cedex
INSERM U1011 - Faculté de Médecine - Pôle Recherche - Bâtiment J&K - Boulevard du Professeur Leclerc - 59045 Lille Cedex
INSERM U1011 - Faculté des Sciences Pharmaceutiques et Biologiques - 3 rue du Professeur Laguesse - B.P 83 - 59006 Lille Cedex

Selected publications of the hosting team:

1. L'homme L, Sermikli BP, Haas JT, Fleury S, Quemener S, Guinot V, Barreby E, Esser N, Caiazzo R, Verkindt H, Legendre B, Raverdy V, Cheval L, Paquot N, Piette J, Legrand-Poels S, Aouadi M, Pattou F, Staels B, Dombrowicz D. Nat Commun. 2024.15:7173.

2-Ninni S[$], Dombrowicz D[$], Kuznetsova T, …, Geissmann F, Staels B*, Montaigne D*: Hematopoietic somatic mosaicism is associated with an increased risk of postoperative atrial fibrillation. *JACC,2023,81,1263-1278* (*co-senior authors; [$]co-first authors) (with editorial)

3- Paumelle R, Haas JT, Hennuyer N, …., Guillou H, Dombrowicz D, Staels B: Hepatic PPARα is critical in the metabolic adaptation to sepsis. *J.Hepatol., 2019;70, 963-973*

4-Haas JT, Vonghia L, Mogilenko DA, …., Staels B*, Francque S*, Dombrowicz D*: Transcriptional network analysis implicates altered hepatic immune function in NASH development and resolution. *Nature Metab., 2019;1,604-614* (* co-senior authors)

5-Mogilenko DA, Haas JT, Lhomme L, …., Aksoy E, Staels B, Dombrowicz D: Metabolic and innate immune cues merge into a specific inflammatory response via the UPR. *Cell, 2019;177,1201-1216* (with editorial)