Mechanisms and consequences of idiosyncrasies in regulatory T cell-development in the type 1 diabetes-prone NOD mouse

Postdoctoral position in immunology, Toulouse, France

Regulatory T cells ("Treg") play a central and even vital role in the control of immune responses and thus contribute to the prevention of autoimmune and chronic inflammatory diseases. Defects in Treg-activity are thought to be involved in the aetiology of these pathologies but the molecular mechanism of only one has been revealed. In the type 1 diabetes ("T1D")-prone NOD mouse, we identified idiosyncrasies of the differentiation of Treg. One of these traits is controlled by a genetic T1D-susceptibility locus containing a very limited number of annotated genes. Our recent results suggest that these particularities limit the capacity of Treg to control the development of T1D.

The to-be-recruited postdoctoral researcher will work on the identification of the gene(s) responsible for the particularities of Treg-differentiation in the NOD mouse and the mechanisms involved. Our laboratory fully masters the manipulation of Treg-differentiation in *in vitro* and *in vivo* models. He/She will also further investigate the link between these idiosyncrasies and the incapacity of NOD Treg to control the immune-responses leading to T1D (*e.g.* through analysis of function, transcriptomes, epigenetics, and TCR-repertoire diversity). The host-laboratory has several lines of sophisticated mutant NOD mice and has excellent experience in *in vivo* research on T1D and other immunopathologies. Finally, the postdoc will set up a procedure to study to which extent similar pecularities may be involved in the aetiology of T1D in paediatric patients. Our team has solid experience in human T cell-immunology. The postdoc will thus contribute to a better understanding of the complex role of inherited functional defects of Tregs in the aetiology of T1D in NOD mice and in humans, and will help the development of innovative approaches for the treatment of T1D.

Candidates should have a PhD in immunology and excellent experience in fundamental research. They should master most of the following: flow-cytometry analysis, cell-sorting, *in vitro* T cell-cultures, transcriptomic analysis, bio-informatics, and animal-experimentation. They should have good communication-skills and show aptitude to work in a collaborative manner within a research-team. They should provide evidence that they have performed productive research during their doctoral studies. Please provide contact details of the thesis-supervisor.

The collaborative TregNOD project is financed by the French national agency for research. A one-year contract will be offered to the selected candidate, renewable twice. Remuneration will be according to the salary-scale of the Inserm and depend on experience. The putative starting date is January 2nd 2024.

Applications should be sent, by E-mail, to:

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