imagine
INSTITUTE OF GENETIC DISEASES

Postdoctoral position on mitochondria and interferonopathies

A postdoctoral position, supervised by Dr Alice Lepelley, is available in Prof. Yanick Crow's laboratory at the *Imagine* Institute (Paris) to study the role of mitochondria in the type I interferonopathies.
The *Imagine* Institute (IHU, 'Institut Hospitalo-Universitaire', Inserm U1163) is a recently established research structure located next to the Necker Children's Hospital (Paris). Its research laboratories are focused on understanding the molecular mechanism of genetic diseases that affect the adaptive and innate immune systems, the nervous system, stem cell differentiation, kidney physiology, metabolism, etc. *Imagine* offers a unique environment in which clinical and basic science synergize to produce major contributions in clinical and translational research. *Imagine* is internationally recognized for its high-quality, well-published, multi-disciplinary outputs.

Description/activities

The Laboratory of Neurogenetics and Neuroinflammation is focused on the study of the molecular and cellular basis of the type I interferonopathies, genetic diseases characterised by chronic upregulation of type I interferon signalling. Understanding of these diseases has highlighted the critical nature of innate immune system tolerance to self-nucleic acids. When such self-nucleic acids are detected, they can activate innate sensors and thereby trigger an abnormal antiviral response mediated by type I interferons. Notably, when released from the mitochondrial compartment, mitochondrial nucleic acids can act as very potent ligands of innate immune receptors. Study of this process is of high scientific interest, with basic and translational implications for research on autoimmunity and neurodegeneration. We have recently demonstrated that patients carrying mutations in ATAD3A, causing a mitochondrial disease, display signs of enhanced interferon signalling, and that ATAD3A dysfunction leads to the release and detection of mitochondrial DNA in the cytosol (Lepelley et al. J Exp Med 2021, PMID: 34387651).
In the laboratory, Alice Lepelley (CR INSERM) focuses on the understanding of mitochondrial homeostasis maintenance to avoid interferon signalling. The postdoctoral researcher, supervised by Dr Lepelley, will study the mechanisms of mitochondrial DNA release in the context of mutated ATAD3A, and the function(s) of ATAD3A implicated e.g. relating to mitochondrial inner membrane structure, stability of the nucleoid and mitophagy etc. The project will involve the use of human primary cell cultures, cell lines and iPSCs.

Competencies required

We are looking for a highly motivated postdoctoral researcher with solid experience of molecular and cellular biology and mitochondrial studies. The candidate should have a PhD in a relevant field. Expertise in iPSC culture and differentiation into neural cells would be an advantage. The candidate should be organized, innovative, autonomous, capable of project management, and capable of communicating and work efficiently with other laboratory members and collaborators. The candidate should be fluent in English.

Contract: The position is offered for one year in the first instance, with the possibility for extension of an additional one and a half years.
Application: Please send a cover letter with a summary of previous and current research activity, detailed curriculum vitae, and the contact information for two references (to be contacted only with the express permission of the candidate) to Dr Alice Lepelley: alice.lepelley@institutimagine.org