

Imperial College London

Location: St. Mary's Campus (Paddington)

Job Summary

The purpose of the post is to recruit a passionate, and self-motivated **postdoctoral research associate** with expertise in the identification and characterization of antigen-specific T cells in humans to join Dr. Dominguez-Villar's laboratory at Imperial College London. The research programme led by Dr. Dominguez-Villar focuses on understanding the molecular mechanisms that maintain peripheral tolerance, with a particular focus on human regulatory T cell identity and plasticity and the regulation of CD4⁺ T cell responses in autoimmune and infectious disease settings.

The objective of the project the post holder will carry out is to determine the HLA-associated immunological mechanisms that drive natural protection to type 1 diabetes (T1D) in individuals with the protective DR15-DQ6 haplotype in the presence and absence of known HLA-associated risk alleles (DR4-DQ8 and DR3-DQ2 haplotypes). Single nucleotide polymorphisms in the DR15-DQ6 haplotype are associated with T1D protection. However, 1 in 50 individuals carrying these polymorphisms progress to T1D, representing failure in the genetic protection provided by DR15-DQ6. Understanding the underlying mechanisms by which DR15-DQ6 exerts its protective effects and how this is attenuated in people who carry the variant but still develop T1D would provide invaluable information for the design of therapies that mimic natural protection to T1D. In particular, we will be examining the frequency and functionality of autoantigen-specific CD4⁺ T cells in people with T1D that harbor risk and/or protective HLA alleles and diabetes-free relatives with similar HLA genotypes.

This project is funded by the Helmsley Charitable Trust, and the post holder will have a strong background in human T cell biology and expertise in the use of class II tetramers to identify, isolate and culture antigen-specific CD4⁺ T cells. High parameter flow cytometry, advanced flow data analysis and culture of primary human T cells are essential skills for applicants to be considered. Experience in immunometabolism is desired but not required.

Duties and responsibilities

- You will be responsible for designing, performing and analysing experiments, and share findings with colleagues.
- You will help supervise students as needed.
- You will be responsible for identifying and optimizing new techniques for the collection and analysis of data.
- You will write reports for submission to funding agencies, and manuscripts for submission to peer-review journals.

Essential requirements

- PhD in molecular or cellular immunology, or a closely related discipline
- Expertise in human T cell immunology.
- Essential techniques: high parameter flow cytometry experimental setup and analysis, single T cell clone generation and characterization, tetramer-peptide generation and tetramer staining, cell sorting.
- Statistical analysis of data.
- Willingness to work as part of a team, to collaborate and help other colleagues when necessary.
- Excellent verbal and written communication skills.

Further Information

This is a Full Time and Fixed Term post offered for a maximum of 3 years. Review of performance will be carried out during the first year before extension of the contract. You will be based at St. Mary's Campus.

For technical issues when applying online please email sjobs@ic.ac.uk

Should you require any further details on the role please contact Dr. Margarita Dominguez-Villar (m.dominguez-villar@imperial.ac.uk).

Closing date: January 15th, 2024