

Project TrIFIC 1

Deep immuno-profiling of *Aspergillus* bronchitis and allergic bronchopulmonary aspergillosis in cystic fibrosis

Applications are invited for a Cystic Fibrosis Trust funded 3-year PhD studentship. This studentship is integral to a major Strategic Research Centre in Fungal Immunotherapy (TrIFIC) made to Imperial College London collaborating with the University of Manchester, University of Exeter, University of Massachusetts and Radboud University Nijmegen. The overall aim of the SRC is to systematically define the underlying mechanisms of inflammation in pulmonary aspergillosis in the context of cystic fibrosis. This will enable development of immuno-diagnostic tests to identify which patients will benefit from targeted immunotherapies that can be repurposed in CF-related fungal disease.

We are seeking a highly motivated student to join the opportunistic pathogens group led by Dr Darius Armstrong-James within the MRC Centre for Molecular Bacteriology and Infection within the Faculty of Medicine of Imperial College London at the South Kensington Campus. The project is in collaboration with Professor Stuart Elborn (Queen's Belfast), Professor Rosemary Boyton (Imperial College London), and Professor Frank van der Veerdonk (University of Nijmegen, the Netherlands)

The aim of the project is to undertake deep immunoprofiling of the host response to the major mould pathogen *Aspergillus fumigatus* in patients with allergic bronchopulmonary aspergillosis and *Aspergillus* bronchitis. This will allow us to identify those individuals who will have poor outcomes from infection and develop novel targeted immuno-therapeutic approaches for fungal disease. The outstanding international supervisory panel will allow the student the opportunity to be exposed to a range of cutting-edge immunoprofiling techniques for human disease pathogenesis and translational immunotherapy.

Dr Darius Armstrong-James (<http://www.imperial.ac.uk/people/d.armstrong>), Professor Stuart Elborn ([https://pure.qub.ac.uk/portal/en/persons/stuart-elborn\(38535ce1-33c6-4a35-8d5c-59e8e276ba21\).html](https://pure.qub.ac.uk/portal/en/persons/stuart-elborn(38535ce1-33c6-4a35-8d5c-59e8e276ba21).html)), Professor Frank van der Veerdonk (<https://www.radboudumc.nl/en/people/frank-van-de-veerdonk>) and Professor Rosemary Boyton (<https://www.imperial.ac.uk/people/r.boyton>) are the academic supervisors.

To apply: please send a single PDF document including a one-page cover letter discussing research interest and experiences, a two-page CV, a copy of transcripts, and contact information of two references to Dr Armstrong-James (d.armstrong@imperial.ac.uk) with subject line "CF_PhD_App" before the **closing date of 31st July 2019**. Successful students will be expected to begin the PhD in October 2019.

The studentship is open to UK, EU and overseas nationals, includes payment of home/EU fees and a stipend for 3 years starting at £22,278 per annum in October 2019. Overseas students are expected to cover the difference between the home/EU and overseas fee.

Applicants must have a first or upper second-class BSc degree from a UK University, or the overseas equivalent, in a relevant area of immunology, biochemistry, chemistry or microbiology. A Master's degree in one of the above fields and/or experience in immunology would be advantageous. Applicants are also required to meet Imperial College's English language requirements:

<http://www.imperial.ac.uk/study/pg/apply/requirements/english>

Subject Areas:

Fungal immunopathogenesis
Cytokine profiling
Transcriptomics
Cellular immunophenotyping
Immunotherapy

References:

1. Human NK Cells Develop an Exhaustion Phenotype During Polar Degranulation at the *Aspergillus fumigatus* Hyphal Synapse. Santiago V, Rezvani K, Sekine T, Stebbing J, Kelleher P, Armstrong-James D. *Front Immunol*. 2018 Oct 22;9:2344. doi: 10.3389/fimmu.2018.02344. eCollection 2018.
2. Ibrutinib blocks Btk-dependent NF- κ B and NFAT responses in human macrophages during *Aspergillus fumigatus* phagocytosis. Bercusson A, Shah A, Warris A, Armstrong-James D, Blood. 2018 Jul 18. pii: blood-2017-12-823393. doi: 10.1182/blood-2017-12-823393. [Epub ahead of print]
3. Armstrong-James D, Brown GD, Netea MG, Zelante T, Gresnigt MS, van de Veerdonk FL, Levitz SM. Immunotherapeutic approaches to treatment of fungal diseases. *Lancet Infect Dis*. 2017 Dec;17(12):e393-e402. doi: 10.1016/S1473-3099(17)30442-5. Epub 2017 Jul 31. Review. PubMed PMID: 28774700.
4. Shah A, Kannambath S, Herbst S, Rogers A, Soresi S, Carby M, Reed A, Mostowy S, Fisher MC, Shaunak S, Armstrong-James DP. Calcineurin Orchestrates Lateral Transfer of *Aspergillus fumigatus* during Macrophage Cell Death. *Am J Respir Crit Care Med*. 2016 Nov 1;194(9):1127-1139. PubMed PMID: 27163634; PubMed Central PMCID: PMC5114448.
5. Herbst S, Shah A, Mazon Moya M, Marzola V, Jensen B, Reed A, Birrell MA, Saijo S, Mostowy S, Shaunak S, Armstrong-James D. Phagocytosis-dependent activation of a TLR9-BTK-calcineurin-NFAT pathway co-ordinates innate immunity to *Aspergillus fumigatus*. *EMBO Mol Med*. 2015 Mar;7(3):240-58. doi: 10.15252/emmm.201404556. PubMed PMID: 25637383; PubMed Central PMCID: PMC4364943.