

ACF IMT Programme Details in conjunction with the University of Liverpool

Recruitment to posts starting in August 2021

Post availability

There is one post available in Haematology. You can apply at ST1, ST2 or ST3 level in this round of recruitment.

Please note if you are appointed at ST1 or ST2 level, you will be placed in an appropriate Core Medical Training track until you reach ST3 level.

Overview

You can find generic information about Academic Clinical Fellowships in the North West plus links to the National Institute for Health Research's guidance via <https://www.nwpgmd.nhs.uk/nih-academic-clinical-fellowships-glance>

You will join the Mersey Specialty Training Programme in Haematology, with 75% of your time allocated to clinical training and 25% to research. You will receive clinical training across the full spectrum of haematology including haemato-oncology, stem-cell transplantation, blood transfusion, haemostasis and thrombosis, haemoglobinopathy and general haematology. Your clinical training will include attachments at the Royal Liverpool University Hospital and the brand new Clatterbridge Cancer Centre (Liverpool) both of which are directly adjacent to the University of Liverpool main campus.

The research component of the post will be in Haemato-oncology under the supervision of Professors Andrew Pettitt and Nagesh Kalakonda, both of whom have extensive experience of clinical and translational research and supervising clinical trainees through to successful Clinical PhD Fellowship applications. The designated research themes are Platform Science and Clinical Pharmacology and Therapeutics.

Academic Training

The successful applicant will be part of a large and vibrant community of PhD students and post-doctoral scientists. He/she will acquire a broad range of generic and specific research skills. These include basic laboratory techniques such as cell culture, microscopy, PCR, Western blotting and flow cytometry, as well as more advanced techniques such as mass cytometry and advanced imaging. In addition, the successful applicant will learn a range of techniques to analyse and visualise clinical and laboratory data including "big data". The post will also include training in the basic principles of research planning, experimental design and project management, as well as verbal and written communication in

scientific and lay language. More broadly, the ACF will also have access to career advice and mentorship.

Research Areas / Research Environment

Platform Science and Bioinformatics

In collaboration with colleagues in Pharmacology, the Liverpool Haemato-oncology group has led the way in applying proteomics to CLL (Mol Cell Proteomics, 2015;14:933–945). Using a technique called SWATH-MS, the group has generated a CLL-specific spectral library comprising >1,500,000 spectra and >150,000 peptides to enable the quantification of 7736 proteins and is now in the process of applying the technique to CLL trial samples. Other research platforms established by the group include kinome profiling which can simultaneously pull down and quantify 185 active kinases, as well as a powerful mass cytometry technique called PLAYR-CyTOF which can simultaneously measure up to 40 separate antigens and/or mRNAs in individual cells (Nat Protoc 2019;14:901-920), thereby allowing the interrogation of specific transcriptional programmes in small, highly defined cell populations. In partnership with the Computational Biology Facility (CBF), the Haemato-oncology group has also established capability in single-cell RNA sequencing using the 10x Genomics platform. The CBF is a highly successful interdisciplinary research group comprising data scientists and software developers who have pioneered a wide range of computational approaches for the discovery of biological mechanisms and biomarkers. As such, it provides a full range of bioinformatics capability including the integration and modelling of large biological datasets. The latter is a particular interest of the CBF co-Lead (Prof Francesco Falciani) who has pioneered data-driven pathway reconstruction approaches and led research projects ranging from chemical risk assessment to cancer and ageing. The group is also collaborating with Profs Vitali Kurlin and Frans Coenen in the UoL Department of Computer Science to explore deep learning, machine learning and artificial intelligence in the analysis of big data generated by whole-genome sequencing, mass cytometry and radiological imaging.

Clinical Pharmacology and Therapeutics

The Haemato-oncology group's research programme has Clinical Pharmacology and Therapeutics at its core. For example, the group includes two MRC North West England Clinical Pharmacology and Therapeutics PhD Fellows and shares laboratory space with the UoL Department of Pharmacology. Collaboration with colleagues in Pharmacology has led to the establishment of genome-wide CRISPR-Cas9 technology as a tool for investigating drug resistance and identifying new drug targets in cell-line models. The group also makes extensive use of clinically annotated patient samples via the Liverpool Blood Diseases Biobank (funded by the BlooM Appeal) and UK CLL Biobank. The latter is funded by Blood Cancer UK and was established in 2008 as a GCLP-compliant sample

repository for multiple clinical trials developed through the NCRI CLL Subgroup. It was pivotal in securing substantial investment from Genomics England Ltd (GEL) to perform WGS on trial samples as one of three Pilots for the 100K Genomes Project and forms the basis for an ongoing national collaboration in which layers of functional genomics data (including from Liverpool) are added to the core WGS dataset to generate an unparalleled resource for data mining. It was selected as an impact case study by the National Cancer Research Institute. Liverpool also hosts sample collections linked to two Liverpool-led clinical trials in follicular lymphoma plus a clinical trial and associated observational study in diffuse large B-cell lymphoma, as well as observational studies in mantle-cell lymphoma and peripheral T-cell lymphoma. These sample collections are now mature enough to support clinical correlative studies, and a programme of collaborative research is being co-ordinated under the auspices of the NCRI Lymphoma Research Group. The Liverpool Haemato-oncology group is also working with Professor Iain Buchan who leads the University of Liverpool Institute of Population Health to access routinely collected England-wide data curated by the National Cancer Registration and Analysis Service (NCRAS) to investigate the impact of COVID on blood cancer.

Research Facilities

The group's research is supported by a wide range of locally available enabling technologies including high-throughput DNA and RNA sequencing, proteomics, metabolomics, kinome profiling and mass cytometry, many of which are provided via the UoL Technology Directorate. Other supporting infrastructure includes the regional Haematological Oncology Diagnostic Service (HODS), the Liverpool Cancer Trials Centre (LCTC), the Liverpool Good Clinical Laboratory Practice (GCLP) Facility, the Liverpool CR-UK/NIHR Experimental Cancer Medicine Centre (ECMC), the UoL Computational Biology Facility (CBF), the MRC Centre for Drug Safety Science (CDSS) and the Liverpool early-phase Clinical Research Unit (CRU).

Clinical Training

You can find out more about the clinical training programmes in the North West via the following link - <https://www.nwpgmd.nhs.uk/specialty-schools>

Clinical person specifications can be found via the following link - <https://specialtytraining.hee.nhs.uk/Recruitment/Person-specifications>.

Useful Links

<https://www.oriel.nhs.uk/Web/Vacancies>

<https://www.nwpgmd.nhs.uk/nihr-academic-clinical-fellowships-glance>

<https://specialtytraining.hee.nhs.uk/Recruitment/Person-specifications>

<https://www.nwpgmd.nhs.uk/specialty-schools>

https://www.nwpgmd.nhs.uk/Specialty_Schools/Medicine/Haematology

<https://www.liverpool.ac.uk/translational-medicine/staff/andrew-pettitt/>
<https://www.liverpool.ac.uk/translational-medicine/staff/nagesh-kalakonda/>
<https://www.ncri.org.uk/ncri-blog/improving-access-to-chronic-lymphocytic-leukaemia-samples/>
<https://www.liverpool.ac.uk/technology-directorate/facilities/cbf/>
<https://www.liverpool.ac.uk/population-health/>
<https://www.liverpool.ac.uk/systems-molecular-and-integrative-biology/>

Last reviewed: 23 October 2020