Job Title: Research Associate in mass spectrometry multi-omics for early detection of heart failure
Grade: 7
Salary: £39,906 to £43,482 per annum, pro-rata
Department: Cardiovascular Sciences
Hours/Contract: Part-time (0.5FTE, 18.75 hours per week), or job share considered, fixed term contract until 31 July 2029
Job Family: Teaching and Research
Reference: 12104

Role Purpose

The post holder will drive the OMICs work stream of Prof Gerry McCann's recently awarded British Heart Foundation (BHF) Programme Grant. This prestigious and strategically important award for the College of Life Sciences (CLS) is entitled "*Understanding progression from asymptomatic type 2 diabetes to symptomatic heart failure with preserved ejection fraction through multidimensional phenotyping*". The work is one of the flagship projects of the NIHR Leicester Biomedical Research Centre and is in collaboration with the Leicester Institute for Precision Health and the Leicester Diabetes Centre.

The post will support the bridge between the successful Cardiovascular Sciences (CVS) Imaging group (led by Prof McCann) and the Leicester van Geest MultiOMICs facility (led by Profs Don Jones and Leong Ng) and will contribute to key objectives set-out in the programme grant. This post is integral to the delivery of the programme and thus delivering 4* publications and subsequent follow on funding.

The post holder will be based within the Leicester van Geest MultiOMICs facility, at the Hodgkin Building, which houses cutting edge liquid handling systems the Andrew+ and Bravo, and the state-of-the art timsTOF HT mass spectrometer. This outstanding environment is supported by a strong clinical research infrastructure that includes a NIHR Biomedical Research Centre (BRC), a BHF funded Clinical Research Centre, a BHF Centre of Research Excellence award and 4-year PhD programme, a NIHR Clinical Research Facility including a dedicated 3T MRI research scanner (BHF funded Siemens Vida with multinuclear capability) and a recently built Translational Medicine Facility for clinical research to support translational studies in cardiovascular MRI (CMR).

You will work closely with Professors Leong Ng, Don Jones and Gerry McCann and other staff working on a programme of research around the early detection, diagnosis and prevention of heart failure in people with Type 2 diabetes. The primary project is to identify molecular markers of progression from early (Stage B Heart Failure (SBHF)) to overt Heart Failure (Heart Failure with preserved Ejection Fraction (HFpEF)) in patients with Type 2 Diabetes. Several ongoing trials within Leicester and externally, through both national and international collaborations, are providing the basis for this molecular assessment.

You will lead on the acquisition of mass spectrometry data for small molecule and proteomic analysis of plasma samples from the aforementioned trials with downstream bioinformatics analysis of this high dimensional data, and perform pathway enrichment analyses to delineate the most impacted disease processes contributing to the progression of early to overt heart failure in type 2 diabetes.

We are looking for an individual who has both Proteomic and small molecule analytical experience which includes sample preparation, ideally using automated liquid handling systems, and mass spectrometric acquisition of data.

Resources Managed

- Data collected for study.

- Post holder will be trained to use of several high value pieces of equipment, for example the Agilent Bravo and Andrew+ liquid handling systems, Waters Xevo TQ-XS Triple quadrupole MS, the Evosep One LC, and the timsTOF HT mass spectrometer.

- The post holder will also contribute to the efficient day-to-day operation of the mass spectrometry laboratory. This includes maintaining and organising reagent and consumable inventories, ensuring standard operating procedures (SOPs) are up-to-date and followed, managing laboratory space and equipment allocation, and contributing to training and induction of students.

Main Duties and Responsibilities

Research

Your main role will be to bridge Professor McCanns Cardiovascular imaging group with the Leicester van Geest MultiOMICs facility. Duties will include:

- **Automated Small Molecule/Proteomic Sample Preparation:** Perform sample preparation for clinical studies. This will involve the operation of advanced liquid handling systems, including the **Agilent Bravo** and **Andrew+**, to ensure accurate and efficient workflows.

- **Sample Analysis:** With the assistance of post-doctoral researchers and technicians in the group, help analyse these samples using the Waters Xevo TQ-XS for lipidomics and our new state-of-the art liquid chromatography-mass spectrometry system the **Evosep One – Bruker timsTOF HT** for proteomics. .

- **Sample Management:** Aliquotting, organisation, and randomisation of plasma samples in 96-well plate format.

- **Quality Control:** Implementation of stringent quality control protocols to ensure data integrity.

- **Lab Organisation:** Contribute to organisation of consumables required for the Waters TQ-XS, timsTOF, Evosep, Bravo, and Andrew+, ensuring smooth day-to-day operations.

- **Training and Mentorship:** Assist with the induction and training of BSc, MSc, and PhD students, sharing knowledge and best practices in omics workflows.

- **Protocol Development:** Collaborate with established PhD and post-doctoral researchers to develop and implement new protocols for clinical and exploratory studies.

- **Manuscript preparation:** Draft papers for high quality peer-review publication, taking responsibility for research papers.

- **Dissemination:** Present research at scientific meetings and workshops to improve the reputation of the group and post holder.

- **Maintain internal Collaboration:** You will work with Profs McCann, Jones and Ng and Dr Brady and the omics group to develop novel research questions, seek collaborators and obtain independent funding to execute such work.

Teaching

- Occasional lectures and small group teaching for students/ junior doctors/post-graduate staff.

Student Supervision

- You will take a supervisory role for at least 1 or more doctoral students working within the van Geest MultiOMICs facility.

- You will be expected to devise projects for and supervise intercalating medical students, BSc and MSc students undertaking research projects within the College.

Internal and External Relationships

The post requires frequent and close collaboration with the following:

Internal:

- Multi-disciplinary team at University of Leicester van Geest MultiOMICs facility, comprising 2 professors, 3 senior technicians, 4 post doctoral fellows, 8 PhD students.
- Multi-disciplinary team at Glenfield Hospital. The Academic Clinical Cardiovascular Imaging Group currently comprises a Clinical Associate Professor, one NIHR Clinician Scientist/ Honorary Consultant, a post doctoral researcher, two NIHR academic clinical lecturers, six Clinical Research Fellows and six PhD students. There are a number of additional early translational studies as well as a number of phase III clinical trials.

External:

- Collaborators in Leeds, Manchester, Copenhagen, Bethesda and Pennsylvania, USA. Industrial collaborators include Bruker, EvoSep, Waters Corporation, Non-linear Dynamics, SISCAPA Assay Technologies, and Sphingotec GmbH.

Planning and Organising

- Plan and perform research on a day to day basis

- Completion of probation and annual reports

- Collect, process and analyse data for key studies

- Planning research publications and presentations incorporating own data and that of others

Qualifications, Knowledge and Experience

Essential

- Track record of leading on peer-reviewed publications in high quality journal papers (or equivalent)
- Have a completed a PhD programme (thesis to be submitted within 3 months of start of post) in a related discipline (e.g. mass spectrometry, small molecule analysis, lipidomics, proteomics)*
- A BSc or MSc in Biochemistry, Chemistry, Biological Sciences, Biomedical Sciences, or a related field.
- Strong organisational skills and attention to detail, particularly in sample management and quality control.

- Excellent communication skills and a collaborative mindset to work effectively within a multidisciplinary team.
- Experience in keeping accurate and thorough lab notebooks.
- Strong record in Proteomic/small molecule LC-MS platforms, particularly the Bruker timsTOF and Synapt G2/S platforms and the TQ- XS triple quadrupole instrument.*
- Sound statistical and bioinformatics knowledge, with aptitude to program in R and Python, and preprocessing and handling of high dimensional data and pathway analytical methods*
- Significant experience of free-to-use and proprietary software such as e.g. PLGS, Progenesis QI, DIA-NN, Spectronaut, Metaboanalyst and Metlin *
- Experience with other MS software such as Skyline (proteomics and small molecules) or Lipidblast.
- A strong background in omics with an intention to progress to be an independent researcher in this field*
- Academic potential as evidenced by undergraduate/postgraduate performance*

Desirable

- Experience with proteomics/lipidomic/small molecule sample preparation.
- Familiarity with automated liquid handling systems.
- Experience performing colorimetric protein assays (e.g. BCA, Bradford).
- Experience with broader analytical chemistry techniques (e.g. chromatography, mass spectrometry, IR spectroscopy, NMR).
- Successful supervision of undergraduate and postgraduate students

Skills, Abilities and Competencies

Essential

- Excellent, fluent oral communication skills and evidence of good written communication skills in English* sufficient to undertake research, teaching and administrative activities and communication with patients as required
- Proven ability to write high-quality manuscripts*
- Ability to plan, prioritise and work on own initiative*
- Flexible attitude to work
- Desire to learn
- The ability to constructively interact with other members of the research group
- The ability to complete work on time and to work to deadlines
- Self-motivation
- Good organisational skills
- Enthusiasm and desire to become an independent researcher

Desirable

- Willingness to present work at international and national meetings
- Proven ability to manage projects.
- Ability to work independently

Criteria to be used in shortlisting candidates for interview

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

NHS Research Governance

Where it is determined that the duties of this post for the purposes of research involve work with the NHS, it is necessary to ensure that the performance of the duties attached to the post are covered by NHS research governance arrangements and the appointee must comply with all such arrangements, which may include occupational health clearance and DBS clearance.

Supporting University Activities

As a University of Leicester citizen, you are expected to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We expect all staff as citizens to work flexibly across the University if required.

University Values

Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equity support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equity, diversity and inclusion.