

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF BIOLOGY, MEDICINE & HEALTH
SCHOOL OF MEDICAL SCIENCES
DIVISION OF DIABETES, ENDOCRINOLOGY & GASTROENTEROLOGY
RESEARCH ASSOCIATE IN NEUROSCIENCE
VACANCY REF: BMH-022780

Salary: Grade 6 £35,308-£36,333 per annum depending on relevant experience

Hours: Full Time (1 FTE)

Duration: Fixed Term For 36 Months

Location: Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

Dr David Lyons

Email: david.lyons@manchester.ac.uk

Introduction to the University of Manchester and the Faculty of Biology, Medicine and Health

The University of Manchester is the largest single-site university in the UK with around 38,000 students and more than 11,000 staff. We aim to become one of the top 25 research universities in the world and are committed to delivering an outstanding teaching and learning experience; contributing to the social and economic success of local, national and international communities; producing the highest calibre graduates; and developing our staff to be amongst the very best of their peers.

To achieve our ambitious goals we aim to attract and retain the very best people to work across a range of academic disciplines and support functions.

The Faculty of Biology, Medicine and Health

The integrated structure of our faculty enables a truly translational approach to biology, medicine and health - from pure discovery science through to clinical application and patient care. It also encourages collaborative working, enabling staff to deliver innovative, world-leading research that has a very real and positive impact on people's lives, as well as high-quality education and training to over 11,000 undergraduate and postgraduate students.

Our Strategic Partnerships

The faculty has established a number of key strategic partnerships that underpin its ambitions to develop ground-breaking research.

Working alongside six local NHS Trusts, the Faculty is a key member of the <https://mft.nhs.uk/withington/research/manchester-academic-health-science-centre-mahsc/> - a federation of equal partners that unites leading healthcare providers with world-class academics and researchers. It aims to be a global centre for the delivery of applied health research and education and provide leadership for our local and regional health systems.

We also play a leading role in <https://healthinnovationmanchester.com/>, which was launched in September 2015, as part of the UK Government's decision to devolve health and social care responsibilities to Greater Manchester. HInM offers a unique opportunity to bring together health and social care, academic and life science related business resources across the region to deliver an innovative health ecosystem that can help accelerate innovation into our local health and social care systems, enhance our global scientific standing and act as a magnet for inward investment.

Key partnerships in the charitable sector include Cancer Research UK; Diabetes UK; and the Wellcome Trust; and the faculty also has research and funding links to a number of commercial organisations including Unilever, AstraZeneca, GlaxoSmithKline and Boots, who help us to bring new drugs and products to the market.

Working for the University of Manchester

The University of Manchester strives to make our community a welcoming, caring and enthusiastic one, fuelling ambition with opportunities and support to help us all achieve our personal and professional goals.

Our diverse job opportunities include an attractive <https://www.staffnet.manchester.ac.uk/people-and-od/benefit/> with family-friendly policies that provide for flexible working. We care deeply about career and personal development, offering a structured induction programme for new staff, an annual performance and development review, staff training for all career stages and mentoring opportunities to support your career development.

We have a genuine commitment to <http://www.manchester.ac.uk/connect/jobs/equality-diversity/awards/> for our staff and students, and are proud to employ a workforce that reflects the diverse community we serve.

As a global institution, situated at the heart of a lively, <http://www.manchester.ac.uk/study/experience/student-life/city/>, we welcome applicants of all nationalities. To help international job applicants plan for life in the UK, we have put together some useful <http://www.staffnet.manchester.ac.uk/employment/joining-the-university/international-staff/> travel to the UK, accommodation and a number of other practical considerations.

Division of Diabetes, Endocrinology and Gastroenterology

The Division comprises over 20 principal investigators - basic scientists and clinicians with national and international reputations in their respective fields. Much of the work, which is mainly UKRI funded, concerns fundamental biological processes and mechanisms. We also work to translate our understanding of the cellular, molecular and genetic processes underlying relevant disease into improved clinical treatments and patient care.

Our Key Drivers are:

- To produce world-leading research outputs.
- To provide the highest quality research training and teaching for postgraduate and undergraduate students, to develop the next generation of basic and clinical scientists and equip them with the skills to conduct integrative research.

The scale and success of our research can be seen in:

- Current major personal awards and grant funding from the MRC, BBSRC, NIHR, Wellcome Trust, Diabetes UK, Versus Arthritis and Industry.
- Successful NIHR Academic Clinical Fellowship and Academic Clinical Lectureship programmes.

Our basic science research labs are based on the main university campus in our core facilities, known as the Biomedical Corridor, which comprises the AV Hill and Smith Buildings. This means you will be immersed in a thriving environment consisting of contiguous, flexible lab space, state-of-the-art equipment, conferencing facilities, offices and dedicated write-up areas. The campus is immediately adjacent to the major teaching hospitals of the Manchester Foundation NHS Trust.

About the Research in Dr Lyons' Group

The successful candidate will work under the guidance of Dr Dave Lyons, with additional support from Prof. Simon Luckman and Dr Giuseppe D'Agostino. The Lyons laboratory's primary interest centres on understanding how the mammalian brain co-ordinates physiology and behaviour to give both males and females the best chance of successful reproduction and the subsequent rearing of offspring.

As a great many of these, often dramatic adaptations, are driven by the reproductive hormone prolactin (Prl), we focus our attention upon Tuberoinfundibular Dopamine (TIDA) Neurons – the highly specialised hypothalamic cells that control the release of Prl from the anterior pituitary.

For the present project, the successful candidate will have assistance from a Research Technician and dedicated access to a state-of-the-art electrophysiology rig equipped for whole cell recording, calcium imaging, and optogenetics. The candidate will also benefit from regular interactions with the Luckman and D'Agostino Groups (~10 researchers), all of whom share related interests and complimentary skillsets. Additionally, this formidable training and development opportunity is further enhanced by access to the University of Manchester's impressive array of core facilities, and close association with numerous other groups from the Division of Diabetes, Endocrinology, and Gastroenterology and the adjacent Division of Neuroscience.

Background and Overall Purpose of the Job

The pituitary hormone Prl co-ordinates physiology to give mammals the best chance of reproduction and parental success. Reproduction and parental behaviours are expensive, state-dependent processes - demanding enormous resources and complex adaptations. If Prl is to effectively organise animal physiology and marshal the means necessary to meet these dynamic reproductive requirements, then TIDA neurons must be able to both respond to what is happening in the present and anticipate what is needed in the future. This BBSRC funded project is designed to investigate the role of neuropeptide signalling in driving the remarkable cellular and circuit plasticity that enables the TIDA network to fulfil these computational tasks. To this end the successful candidate will employ a range of genetically targeted, anatomical, electrophysiological,

optical, and behavioural approaches to map, monitor, and manipulate these reproductive network interactions in both *ex vivo* and *in vivo* settings.

Application of these cutting-edge techniques will allow the successful candidate to:

- Clarify the ability of the TIDA system to respond to peptide expressing neurocircuits – many of which are prominent regulators of reproduction-relevant processes such as energy and fluid homeostasis, thermoregulation, and stress.
- Investigate state-dependent changes in the TIDA system's expression of peptide signals.
- Determine the role this phenotypic plasticity plays in driving the TIDA system's switch from inhibiting Prl release during baseline conditions to promoting Prl release during pregnancy – a key anticipatory step that prepares the mother for the enduring physiological and behavioural changes required for gestation, parturition, and nursing.

This project represents a fantastic opportunity for the successful candidate to develop skills in the latest neuroscience techniques and will reveal novel multi-level understanding regarding the adaptive dynamism of the neuroendocrine networks governing Prl release and reproductive behaviour, potentially uncovering new mechanisms of signal plasticity by which neuronal networks adapt circuit performance to both prevailing circumstance and future requirement.

Key Responsibilities, Accountabilities or Duties:

- To perform electrophysiological and optical recordings, behavioural analysis, and stereotaxic injections of viral vectors in mice
- To take initiatives in the planning of research.
- To identify, develop and employ suitable techniques for the analysis of data.
- To always ensure the validity and reliability of data.
- To maintain accurate and complete records of all findings.
- To prepare material for presentation in oral and poster formats.
- To present findings to colleagues and at conferences.
- To attend relevant workshops and conferences as necessary.
- To draft publications and publish in refereed journals.
- To assist in the preparation of proposals and applications to external bodies (e.g. for funding and contractual purposes).
- Collaborate with academic colleagues on areas of shared research interest, as required.
- To provide guidance to staff and students.
- To undertake instruction of PhD and MSc students (as agreed).
- To supervise practical work and advise students on techniques.
- To be an active team-member and set positive examples by showing a commitment to achieving results, encouraging and supporting junior members of the team, and raising suggestions for continuous improvement.
- To work alongside the PI and other colleagues in a collegiate manner and build rapport within the team and the wider Faculty.

- To develop contacts and research collaborations within the Faculty and the wider community.
- To promote the reputation of the laboratory, Faculty and wider University.

Other Duties:

- To undertake appropriate administrative tasks
- To undertake any necessary training and/or development
- Actively read the scientific literature relating to (and around) the project
- To maintain safe workplace practice and procedures in accordance with the requirements of Health and Safety legislation
- Any other duties commensurate with the grade of the post as directed by PI/supervisor

Person Specification

Essential Skills, Knowledge, and Experience:

- Hold (or expect to hold shortly) a PhD in Neuroscience or a related area of the Life or Physical sciences
- Extensive experience with at least one of the following:
 - Ex vivo electrophysiological recording techniques (e.g. patch/multi-/sharp electrode recording).
 - In vivo and ex vivo imaging approaches (e.g. Ca²⁺ imaging/fibre photometry).
 - Small animal surgery (e.g. stereotaxic surgery).
 - Rodent behavioural assays.
- Ability to use initiative to efficiently plan, optimise and drive project progress.
- Excellent interpersonal and communication skills and ability to work independently or with colleagues at all levels.
- Good written and spoken English with the ability to present in both written and oral formats.
- Excellent organisational and time management skills with the ability to meet deadlines.
- Ability to evaluate complex data.
- Ability to contribute to broader management and administrative processes.
- Commensurate journal publication record.
- Ability to assess and organise resources.
- Ability to contribute intellectually to the research project.
- A willingness to contribute to the work of others by offering practical and intellectual help.

Desirable Skills, Knowledge, and Experience

- Hold or have held a Home Office Personal Licence
- Experience with programming (e.g. MATLAB/Python/LabVIEW)
- Background in Neuroendocrinology or Hypothalamic Neuroscience

Successful candidates may be subject to pre-employment screening carried out on our behalf by a third party. The offer of employment will be dependent on the successful candidate passing that screening. Whilst you will be required to provide express consent at a later stage, by continuing with your application now you acknowledge that you are aware that such screening will take place, and agree to take part in the process.