



Sainsbury Wellcome Centre

Research Fellow (Barry, Burgess, Cacucci Labs)

Information for Candidates



Sainsbury Wellcome Centre for Neural Circuits and Behaviour at UCL



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JOB DESCRIPTION

Vacancy Reference:	1879081
Job Title:	Research Fellow
Department:	Sainsbury Wellcome Centre
Salary:	£36,770- £44,388 per annum inclusive of London Allowance.
Grade:	7
Hours:	36.5 per week (full-time, 1.00 FTE)
Reports to:	Professors Neil Burgess, Caswell Barry & Francesca Cacucci.

About the Sainsbury Wellcome Centre

The [Sainsbury Wellcome Centre](#) (SWC) brings together world-leading scientists to investigate how brain circuits process information to generate perception, form memories and guide behaviour. Developed through the vision and partnership of the Gatsby Charitable Foundation and Wellcome, and with substantial investment from these partners, the mission of the SWC is to generate experimentally testable theories of brain function.

The Centre comprises 12 highly interdisciplinary experimental research groups accommodated in a new, purpose-designed building, offering an outstanding and unparalleled research environment. SWC scientists use a broad spectrum of the latest advances in molecular and cellular biology, imaging, electrophysiology and behavioural techniques and enjoy state-of-the-art research laboratories, cutting-edge scientific equipment, technologically-advanced prototyping and fabrication laboratories and custom in-house high-performance computing facilities. The full complement of scientists in the Centre is expected to reach around 150 together with circa 50 dedicated support staff.

SWC Centre is part of the [UCL School of Life and Medical Sciences](#) (LMS). LMS brings together four UCL Faculties to create one of the largest and most prestigious aggregations of academics in biomedical, life and population health sciences worldwide. The School has a global reputation for teaching, informed by cutting-edge research. SWC is most closely linked with the Faculties of Brain Science and Life Sciences, and is aligned administratively with Life Sciences. The Faculty of Life Sciences leadership team works closely with

the SWC leadership to support and enable their mission and facilitate research excellence.

Further details about UCL can be found at www.ucl.ac.uk.

Background, Mission and Research Environment

Neuroscience is entering a new and exciting period in which it will be possible to decipher the neural codes underlying perception, cognition and action. The Sainsbury Wellcome Centre for Neural Circuits and Behaviour is positioned at the heart of this development

The Centre, located within University College London (UCL) and close to its main campus in central London, fosters a culture of bold, innovative research and collaboration. Experimental groups benefit from interaction with the Gatsby Computational Neuroscience Unit located within the Centre, facilitating collaborations in data analysis, computational modelling and theory.

SWC staff interface closely with academic staff within the Faculties of Life Sciences and Brain Sciences and are part of the UCL Neuroscience Domain which brings together over 450 principal investigators and offers extensive opportunities for interaction and collaboration. The Centre offers additional opportunities for collaboration, networking and intellectual stimulation through its visitor programme, regular seminar series and the hosting of world-class scientific conferences and workshops.

The Centre provides extensive conceptual and methodological bridges between areas of existing

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neuroscience strength at UCL, from which it directly benefits. Existing work at UCL is closely interwoven via the cross-cutting themes of development, behaviour and plasticity, and with the creation and use of transgenic models. A strong culture of close interaction between experimental and theoretical approaches is a thread running through the Centre, tying together complex phenomena at different levels of description, by linking informational and computational concepts to their circuit and cellular counterparts, all in relation to model behaviours.

Sainsbury Wellcome Centre Scientific and Administrative Support

The Centre and its staff are provided with significant administrative, technical and scientific support. There are dedicated managers for the Centre's scientific support services, including for its state-of-the-art prototype and fabrication laboratories, animal facilities and high-end computing facilities, and on-site managers responsible for the building, its maintenance, facilities and services.

Work Environment

The SWC offers staff an award-winning work environment in the heart of Fitzrovia with an on-site brasserie, changing facilities, secure bicycle storage, and access to pleasant outdoor spaces. The Centre also offers the full range of [UCL staff benefits](#), including a generous annual leave entitlement, occupational pension schemes, excellent family-friendly policies such as occupational shared parental pay, a work-life balance policy, and a range of financial benefits such as a season ticket loan scheme and staff discounts. Further information can be found online:

About the Barry, Burgess & Cacucci labs

The Barry, Burgess and Cacucci labs seek to understand the neural mechanism supporting the acquisition of information and how it is processed to form and update internal representations of the world. To this end our labs focus on neural representations of space found in the hippocampus and associated brain regions. In the context of the current project, we approach these problems by recording activity in large ensembles of neurons while rodents perform simple spatial

tasks in real and virtual environments - in conjunction opto/chemogenetic techniques provide a means to manipulate neural activity. Together these methods allow us to test and refine specific computational theories describing the way in which the environment is sampled to form models of the world.

The Role of Research Fellow

Project Title: Organising knowledge for flexible behaviour in the prefrontal hippocampal circuitry.

SWC is looking for an outstanding researcher to be affiliated with the Barry, Burgess, Cacucci labs. Their primary role will be to carry out research on the neurophysiological basis of memory and the formation of spatial representations under a Wellcome Collaborative grant "Organising knowledge for flexible behaviour in the prefrontal hippocampal circuitry" with Behrens and Walton (Oxford).

The research will involve multi-site single unit recording and potentially two photon calcium imaging from the hippocampus and cortical regions (e.g. mEC) while animals are engaged in tasks and during subsequent reactivations, in collaboration with the Branco and Mrcic-Flogel labs. They will assist in the design and running of experimental procedures, analysing neural spike and local field potential data, writing up the results, and should have a desire to publish in prestigious journals. Other techniques being used in the lab which may become relevant to this project include rodent virtual reality, chemo/optogenetic manipulations, as well as computational modelling.

The post is funded until May 2024.

Main Duties and Responsibilities

Core Duties

- Develop and plan an area of personal research and expertise, and/or undertake research under supervision within a specific research project or as a member of a research team.



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- To set up and run experiments, ensuring that they are appropriately supervised and support.
 - Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to area of research.
 - Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicize research findings.
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 - Prepare and present findings of research activity to colleagues for review purposes.
 - Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget. These might include organisation of project meetings and documentation, financial control, risk assessment of research activities.
 - Be responsible for one or more grade 6B Research Assistants and/or technicians by allocating and supervising their work.
 - Carry out occasional undergraduate supervision, demonstrating or teaching duties within the post holder's area of expertise.
 - Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.
 - Adhere to good laboratory practice at all times and observe all required health and safety procedures.
 - Plan for specific aspects of research programmes including the use of research resources, laboratories and workshops where appropriate.
 - Plan own day-to day activity within framework of the agreed research programme to allow for deadlines for journal publications to be met. To plan and prepare presentations and papers for conferences in consultation with PI and other colleagues as appropriate.
 - Provide guidance as required to support staff and any students who may need assistance with their research.
 - Liaise on a regular basis with colleagues and students and build contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration. To contribute to UCL's public engagement programme by establishing links with local community groups, industries etc.
 - Join external networks to share information and ideas.
 - Observe all required Data Protection and Security requirements.
- Other**
- The post holder will carry out any other duties as are within the scope, spirit and purpose of the job. Job descriptions are reviewed on a regular basis including at the annual appraisal. As duties and responsibilities change, the job description may be amended in consultation with the post-holder.
 - The post holder will actively follow and promote all UCL policies including those on Equality, Diversity and Inclusion.
 - The post holder will maintain an awareness and observation of current UCL Fire and Health & Safety Regulations and procedures.
 - Meet UCL's expectations set out in the [UCL Core Behaviours Framework](#).

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The post-holder will be expected to actively follow all UCL policies and procedures including Equal Opportunities, maintain an awareness of Fire and Health & Safety Regulations, carry out duties in a resource efficient way as well as actively support UCL's Sustainability policies and objectives, attend management meetings and undertake such training and development as may be required for the post.

All staff are required to act professionally, cooperatively and flexibly in line with the requirements of the post.



PERSON SPECIFICATION

Selection Criteria

The selection criteria outline the skills, knowledge and experience required in order to perform this role. Applicants will be selected based on how well they demonstrate that they meet the essential, and if appropriate, desirable criteria for this particular role.

	Essential	Desirable
Qualifications, experience and knowledge		
PhD in neuroscience or a related field, or have submitted your thesis before commencing in post.	Essential	
Practical experience in behavioural neuroscience with proven knowledge of research techniques and methodologies.	Essential	
Demonstrable comprehensive knowledge in the subject area.	Essential	
Evidence of completed research (e.g. presented posters at conferences and publications in good quality journals).	Essential	
Experience of quantitative behavioural assays and testing of animals – ideally rodents.	Essential	
Experience with two photon calcium imaging in live head-fixed rodents.		Desirable
Experience supervising more junior lab members, for example undergraduates and Research Assistants.		Desirable
Experience of neural signal analysis programming – ideally in Matlab, Python or similar packages.		Desirable
Experience developing computational models of neural networks, machine learning or virtual environments.		Desirable
Practical experience of working with optogenetic techniques and pharmacological manipulations.		Desirable
Practical experience of working with rodent virtual reality systems.		Desirable
Skills and abilities		
Competence in electrophysiological single unit recordings (surgery and data collection) – ideally from freely moving rodents.	Essential	
Excellent oral and written communication skills with demonstrable ability to present complex information to a range of audiences	Essential	
Proven ability to analyse and write up data.	Essential	
Personal attributes and UCL Core Behaviours		
Able to work both collaboratively and independently.	Essential	
A commitment to high quality research.	Essential	
Commitment to UCL's policy of equal opportunity and the ability to work harmoniously with colleagues and students of all cultures and backgrounds.	Essential	
	Essential	

HOW TO APPLY

Contact Us

If you have any queries relating to the vacancy or how to apply please contact the SWC HR team, swc.hr@ucl.ac.uk

All candidates will be notified of the outcome of their application.

Applying for the Role

Redeployment candidates

To begin the online application process, please access the advertisement by searching for it via the [UCL Redeployment Service](#) using the vacancy reference number.

Please complete the online application form, and use the supporting statement section to outline how you meet the selection criteria. Applications will be shortlisted based on the strength of the examples used to demonstrate that the applicant meets the selection criteria.

All candidates will be notified of the outcome of their application.

External candidates

To begin the online application process, please access the advertisement by searching for it on the [UCL vacancy search](#) page using the vacancy reference number, and click on the “Apply Now” button at the bottom of the vacancy advertisement.

Please complete the online application form, and use the supporting statement section to outline how you meet the selection criteria. Applications will be shortlisted based on the strength of the examples used to demonstrate that the applicant meets the selection criteria.

Please note that there is a limit of 2,500 words to explain how you meet the essential criteria, and a limit of 2,500 words to explain how you meet the desirable criteria.

In addition to completing the online application form please also upload the following supporting documents to your application:

- A current CV
- Any supporting documents that you wish to include as evidence of completed research.

TERMS OF APPOINTMENT

Pre-employment Checks

Confirmation of appointment will be subject to receipt of satisfactory references, verification of proof of right to work in the UK and to satisfactory pre-employment health and security screening.

Salary

Starting salary will be on the Grade 7 scale. Staff incrementally progress along the salary scale; the effective date of incremental progression is 01 August each year. You must have completed the period of service stipulated in your contract of employment (typically your probationary period) to be eligible to increment. Incremental progression does not include the discretionary contribution points on the salary scale. Cost of living pay awards are negotiated nationally and are normally effective from 1 August each year.

Pension

Post-holders will be eligible to join the Universities Superannuation Scheme (USS), subject to the Scheme's rules and eligibility conditions.

Conditions of Service

Conditions of Service for Research, Teaching and Professional Services Staff can be found online [here](#).

Probation

Appointments are subject to a probationary period of 9 months.

Hours of Work and Overtime

UCL's full time working week is 36.5 hours per week. SWC is willing to consider flexible-working arrangements, subject to discussion and agreement with your line manager.

Pre-agreed overtime will be offered as equivalent time off in lieu.

Annual Leave

Staff are entitled to 27 days annual leave per year (pro rata for part-time staff). In addition, staff are entitled to 8 days public and statutory holidays, and around 6 UCL closure days with pay per year.

Location

The Sainsbury Wellcome Centre is located in the heart of London around five minutes' walk from the main UCL campus. The mainline railway stations at Euston, King's Cross, St Pancras, Marylebone and Paddington are within easy

reach as are the London Underground stations located at Warren Street and Gode Street.

Equal Opportunities

SWC is committed to the promotion of equality, diversity and inclusion for its staff, students and visitors and is fully supportive of UCL's policy; the full equality policy statement is available [online](#).

SWC is currently working towards an [Athena SWAN](#) award.

OUR FUNDING PARTNERS

Background Information

The Gatsby Charitable Foundation (www.gatsby.org.uk)

Gatsby is a Trust set up by David Sainsbury to realise his charitable objectives.

We focus our support on a limited number of areas:

- Plant science research
- Neuroscience research
- Science and engineering education
- Economic development in Africa
- Public policy research and advice
- The Arts

We are proactive in devising projects to achieve our aims.

We are enthusiastic about supporting innovation.

We are analytical as we believe it is important to understand the opportunities and problems we tackle.

We take a long-term view as we do not think much can be achieved by short, one-off projects.

We are always eager to form partnerships with organisations who share our goals.

Gatsby Neuroscience

“Supporting world-class theoretical and experimental research on neural circuits and behaviour, and activities which further enhance our investments in this area.”

Gatsby's pioneering investment in neuroscience began in the 90s with the establishment of the Gatsby Computational Neuroscience Unit (GCNU) at UCL. A small number of research projects and meetings were supported across the UK over the following years until in 2007 the Trustees made the decision to expand Gatsby's efforts, specifically to link the GCNU with experimental neuroscience. For this new endeavour Gatsby has continued to be bold and innovative. In a funding partnership with Wellcome it has developed a new research institute, the Sainsbury Wellcome Centre (SWC) for Neural Circuits and Behaviour at UCL. As part

of this new initiative the Foundation has invested in a number of innovative collaborative research programmes in the broad area of neural circuits and behaviour around the world. These programmes reflect the types of research we envision in the SWC and the people we support bring a wealth of expertise to help our thinking and development of the scientific focus.

OUR FUNDING PARTNERS

Wellcome (www.wellcome.ac.uk)

Wellcome is the largest medical charity in the United Kingdom and presently, after the Bill and Melinda Gates Foundation, the second largest such charity in the world. It funds a wide variety of biomedical science, including research in developing countries, with its mission being to achieve extraordinary improvements in human and animal health. In pursuit of this the Trust supports the brightest minds in biomedical research and the medical humanities.

Wellcome funds a significant portfolio of neuroscience and mental health research - ranging from studies of molecular and cellular components to work on cognition and higher systems. It also has strong interests in applied clinical research on neurological and mental health disorders and support activities that explore historical, ethical, social and artistic perspectives on the mind and mental health. Current major investments include Wellcome Trust Centre for Neuroimaging at UCL, the Wellcome Trust Centre for Mitochondrial Research at Newcastle University, the Oxford Centre for Neural Circuits and Behaviour and the Behavioural and Clinical Neurosciences Institute at the University of Cambridge.

Wellcome has several grant schemes including Investigator Awards and numerous prestigious Fellowship schemes ranging from the most senior Principal Research Fellowships for world-class scientists through to the new Henry Wellcome Fellowship scheme for recent PhD graduates. These Awards and Fellowships are awarded competitively and judged by peer review through the Neuroscience Expert Review Groups.

The Neuroscience Environment at UCL

The UCL student community comprises 29,000 students from 150 countries. UCL currently offers 275 undergraduate programmes and more than 220 taught postgraduate programmes as well as the opportunity to carry out postgraduate research in all of its subjects.

In the 2014 Research Excellence Framework, which evaluates research performance in all UK universities, UCL was ranked the top higher education institution for research strength.

UCL is consistently rated among the top five universities in the UK (alongside Cambridge, Imperial College and Oxford) and in the top 25 universities in the world. The 2018 QS global rankings placed UCL seventh among the world's top ten universities.

UCL is a powerhouse in neuroscience, whether measured by published output, citations, grant income, or prizes and honours. UCL Neuroscience currently includes 26 Fellows of the Royal Society and 60 Fellows of the Academy of Medical Sciences. It has over 480 neuroscience PIs from some 30 academic departments and is ranked first in Europe (and second worldwide) for ISI citations in Neuroscience and Behaviour. UCL has an existing cadre of internationally competitive research groups in the fields of neural circuits and behaviour, and numerous strengths in related aspects of neuroscience, plus allied fields such as physics, chemistry and nanotechnology. UCL is the only institution in the UK – and one of the few in the world – with sufficient concentration and infrastructure in neuroscience and related disciplines to support the ambitious goals of the Sainsbury Wellcome Centre.

The environment at UCL will be further enhanced by the development of the Francis Crick Institute and its integration with UCL and other academic institutions including Imperial College and King's College.

UCL provides an environment of excellence for training future generations of interdisciplinary researchers in neuroscience. Graduate training programmes include; the 4-year Wellcome Neuroscience programme; two further related 4-year Wellcome programmes; the Gatsby Computational Neuroscience Unit's 4-year

programme; the BBSRC London Interdisciplinary Biosciences PhD Consortium (a 4-year programme led by UCL) and the CoMPLEX PhD programme.

These surrounding strengths show UCL's capacity for bringing neuroscientists together with other biomedical scientists, plus mathematicians, physical scientists, computer scientists and engineers, to tackle the most challenging multidisciplinary problems. At the same time, UCL's unique clinical links via its major postgraduate institutes and partner hospitals facilitate eventual translation to new treatments for neural disorders.

Further details of UCL Neuroscience can be found at www.ucl.ac.uk/neuroscience

The UCL School of Life and Medical Sciences (LMS) brings together four UCL Faculties to create one of the largest and most prestigious aggregations of academics in biomedical, life and population health sciences worldwide. The School has a global reputation for teaching, informed by cutting-edge research. A full profile of the School can be found [here](#).

The School coordinates nine [Research Domains](#), which are networks that bring together researchers regardless of their host Faculty. Colleagues engage with as many of the Domains as are relevant to their area of research activity, encouraging interdisciplinarity across the School and beyond.

The UCL Faculty of Life Sciences combines the strengths of UCL's basic biological and preclinical sciences. Some of the constituent departments have long and distinguished histories that can be traced back to the early nineteenth century and the foundation of UCL. There are nine Nobel Prize winners associated with Life Sciences at UCL. It presents an unrivalled environment for students and researchers in life science disciplines, ranging from neuroscience to the biology of molecules, cells and organisms. The Faculty provides outstanding opportunities for research-led and research-based study. The Faculty is home for over 500 graduate students studying on some of the UK's most prestigious PhD programmes.



NEUROSCIENCE ENVIRONMENT

The UCL Faculty of Brain Sciences

(<https://www.ucl.ac.uk/brain-sciences/>)

undertakes world-leading research and teaching in neurology and neural pathways, neuroscience, language, cognition, psychology and psychiatry. It takes an integrative approach to the study of mind and brain by focusing on the determinants of human perception, cognition, emotion and behaviour. The Faculty and its component parts create an outstanding and vibrant environment for study and research.

In order to make use of basic science discoveries, UCL works closely with major Hospital Trust partners to develop further its outstanding academic health science environment. UCL Partners is an academic health science partnership that brings together UCL with four of its NHS partner Trust organisations (Great Ormond Street Hospital for Children NHS Trust (GOSH); Moorfields Eye Hospital NHS Foundation Trust; Royal Free Hampstead NHS Trust; University College London Hospitals NHS Foundation Trust) in order to create Europe's leading health research powerhouse; see <http://www.uclpartners.com/> The intention is to deliver real improvements in health for patients in London, and around the world. UCL Partners will support over 3,500 scientists, senior researchers and consultants, with a combined annual turnover of around £2 billion. By pooling resources and expertise, UCL Partners, which together treat over 1.5 million patients every year, is able to produce world-class research in key areas, each of which poses a major health challenge. These include the nervous system, children's health, heart disease, transplantation, immunology, ophthalmology, deafness and hearing impairment, dental and oral disease, cancer and women's health.

The Sainsbury Wellcome Centre for Neural Circuits and Behaviour is critical to the ambition of UCL to enhance its international leadership in neuroscience. It will deliver the conceptual and technological focus necessary for providing a casual account of how specific patterns of activity in neural circuits process information to direct behaviour to transform understanding of brain function.