

CONNECT to Collaborate: Discipline Hopping Project List 2024

Note: There are 14 project placements listed below. On your online application, please select three that you are interested in doing and rank them in your order of preference:

Project	Supervisor details / Point of Contact	Project details	Notes / Information
1	<p>Dr Sarah Keating, Principal Research Software Developer</p> <p>Email: s.keating@ucl.ac.uk</p> <p>The Centre for Advanced Research Computing (ARC)</p>	<p><u>Project Title:</u> Research Software Engineering</p> <p><u>Project Outline:</u> Learn how to write code – the process of creating instructions that tells a computer what to do and how to do it, in order to replace repetitive tasks and support researchers to work more efficiently.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	<p>The centre for Advanced Research Computing (ARC) is UCL's research, innovation and service centre for the tools, practices and systems that enable computational science and digital scholarship.</p> <p>ARC works in close collaboration with research teams in many disciplines ranging from Law to Physics, as well as pursuing our own research interests which are also very diverse. We have a strong collaboration with UCLH</p>
2	<p>Dr Sarah Keating, Principal Research Software Developer</p> <p>Email: s.keating@ucl.ac.uk</p>	<p><u>Project Title:</u> Research Web Development</p>	<p>ARC works in close collaboration with research teams in many disciplines ranging from Law to Physics, as well as pursuing our own research interests which are also very diverse. We have a strong collaboration with UCLH</p>

	The Centre for Advanced Research Computing (ARC)	<p><u>Project Outline:</u> Create a webpage to inform other people of your work, help them to visualise data or develop an application that they can run.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	and build pipelines for accessing data and working with the data itself. We are a collection of Research Technology Professionals who work on multiple projects at any given point in time.
3	<p>Dr Sarah Keating, Principal Research Software Developer</p> <p>Email: s.keating@ucl.ac.uk</p> <p>The Centre for Advanced Research Computing (ARC)</p>	<p><u>Project Title:</u> Research Data Science</p> <p><u>Project Outline:</u> Use machine learning/artificial intelligence to analyse data and abstract information that is not obviously visible.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	Since there are a wide range of areas within ARC, all of which have multiple active projects at different stages, individual placements will be discussed on a one-by-one basis.
4	<p>Dr Sarah Keating, Principal Research Software Developer</p> <p>Email: s.keating@ucl.ac.uk</p> <p>The Centre for Advanced Research Computing (ARC)</p>	<p><u>Project Title:</u> Research Data Stewardship</p> <p><u>Project Outline:</u> Organise data in a structured fashion, curate it so that you know it's accurate, and save it in a way that makes it easy for other people to explore and share.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	Point of contact for all ARC projects and for any queries, please email, Dr Sarah Keating.
5	<p>Dr Sarah Keating, Principal Research Software Developer</p>	<p><u>Project Title:</u> Research Infrastructure Development</p>	

	<p>Email: s.keating@ucl.ac.uk</p> <p>The Centre for Advanced Research Computing (ARC)</p>	<p><u>Project Outline:</u> Get involved with creating platforms that facilitate researchers.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	
6	<p>Dr Sarah Keating, Principal Research Software Developer</p> <p>Email: s.keating@ucl.ac.uk</p> <p>The Centre for Advanced Research Computing (ARC)</p>	<p><u>Project Title:</u> PRISMS - Professional Research Investment and Strategy Managers</p> <p><u>Project Outline:</u> Get involved with understanding and providing support for a wide range of projects.</p> <p><u>Project Outcomes:</u> To be defined with applicant.</p>	
7	<p>Dr Nathan Davies, Associate Professor and Director of the Centre for Ageing Population Studies.</p> <p>Primary Care & Population Health; Institute of Epidemiology and Health Care (IEHC); Faculty of Population Health Sciences (FPHS),</p> <p>Email: n.m.davies@ucl.ac.uk</p>	<p><u>Project Title:</u> Supporting Healthy Ageing in Primary Care</p> <p><u>Project Outline:</u> The successful applicant will have the opportunity to work across a series of different projects we operate within the Centre for Ageing Population Studies (CAPS), using a range of different methods. We will work with the applicant to understand what they would like to achieve from their placement. One such project is a qualitative project exploring the role of clinical pharmacists in general practice to support people living with dementia. This involves semi-structured interviews data collection,</p>	

		<p>thematic analysis, descriptive analysis of a survey, and creation of a research network.</p> <p>Alongside this project we are also running to randomised control trials in Parkinson's disease and frailty. There will be opportunity for the placement to observe trial meetings and processes.</p> <p><u>Project Outcomes:</u></p> <ul style="list-style-type: none"> - Understanding of ageing in primary care. - Understanding of dementia and the multi-disciplinary approach to this. - Experience of qualitative methods including interviews and data analysis. - Experience of RCT methods. - Contributing to publications (where appropriate). 	
8	<p>Prof Sarah Garfinkel, Professor of Cognitive Neuroscience</p> <p>Psychology and Language Sciences; Institute of Cognitive Neuroscience (IoN); Faculty of Brain Sciences (FBS)</p> <p>Email: s.garfinkel@ucl.ac.uk</p>	<p><u>Project Title:</u> The biological basis of empathy in ADHD</p> <p><u>Project Outline:</u> Emotions are experienced in both body and brain; we process not only how we feel, but we can also experience the emotions of others. Empathy, in particular 'affective empathy', is the experience of other peoples' emotions, and this can be reflected by autonomic change in our own bodies</p>	

		<p>that mirror the emotional change in others. Empathy differs between people, with some people demonstrating high empathy, and others having lower empathy. This can be objectively monitored using psychophysiological techniques e.g. does your heart race with the fear, joy and pain of others? This project is specifically interested in whether individuals with ADHD have <i>more</i> empathy. ADHD is typically associated with differences in attention and impulsivity. The emotion differences in ADHD have historically been overlooked despite increasing evidence that these may be core to this condition. This project involves testing empathy reactions using psychophysiology (techniques that focus on the heart, beat-to-beat blood pressure change and skin conductance) in individuals with high and low ADHD traits.</p> <p><u>Project Outcomes:</u> This project would suit someone who has an interest in learning lab-based psychophysiological monitoring techniques (heart/ECG, beat-to-beat systolic and diastolic blood pressure monitoring, skin conductance responses) in the context of clinical research. They will be given full training in physiological autonomic monitoring. They would be working towards data collection to contribute to a published paper. Due to the training required, this project is only offered for 3 months.</p>	
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9	<p>Dr Tchern Lenn, Microscopy and Imaging Senior Technician</p> <p>Cancer Institute, Faculty of Medical Sciences (FMS)</p> <p>Email: y.lenn@ucl.ac.uk</p> <p>Second point of contact: Jiten Manji, Translational Technology Platform (TTP) Manager Email: j.manji@ucl.ac.uk</p>	<p><u>Project Title:</u> How microscopes and image analysis are used in biomedical research</p> <p><u>Project Outline:</u> The Microscopy and Image Analysis TTP at the cancer institute manages 13 optical instruments and supports users across a range of disciplines within cancer biology. We offer an experience of being facility staff, with the opportunity to gain expertise in one or more specialist fluorescence microscopy techniques, including Zeiss AiryScan pixel reassignment based super resolution microscopy, with a technical project aimed at gaining the best performance from a particular instrument, by understanding the details of its operation and empirical experimentation. Through job shadowing, the participant will also connect with researchers at the cancer institute who use the facility and be exposed to the many projects we support.</p> <p>We also provide support in image analysis and deep areas of our work in this area could suit a participant with a computational or bioinformatics background. The participant would work with common bioimage analysis software and potentially script new image analysis algorithms in ImageJ Macro language or python.</p>	

		<p><u>Project Outcomes:</u></p> <ol style="list-style-type: none"> 1. Gain technical understanding of how a range of optical microscopes work and a deep appreciation for how to design good microscopy experiments. 2. Exposure to a range of topics and scientists in cancer research. 3. Gain first-hand experience of facilities work. 4. Possible credit for contribution to research (including authorship). 	
<p>10</p>	<p>Dr Haiyan Zhou, Associate Professor in Genetic Therapy</p> <p>Email: Haiyan.zhou@ucl.ac.uk</p> <p>Second point of contact: Dr Jinhong Meng Senior Research Fellow Email: Jinhong.meng@ucl.ac.uk</p>	<p><u>Project Title:</u> Developing RNA-based novel therapies for genetic disorders and personalized medicine</p> <p><u>Project Outline:</u> The Zhou lab is working on developing RNA oligonucleotide therapy for rare genetic disorders, by using nucleic acid technology and to translate these experimental therapies to clinical applications. Research projects in our lab covers areas including: 1) design of different RNA therapeutic approaches, such as gene silencing ASO, allele-specific silencing ASO, splice-switching ASO, siRNA, microRNA, mRNA and RNA editing; 2) evaluation of RNA compounds in different in vitro model systems, including primary or cell lines, iPSC-</p>	

		<p>differentiated neurons and myoblasts, and artificial reporter lines; 3) in vivo validation in different animal model on biodistribution/ pharmacokinetics, efficacy and pilot toxicity; 4) tissue/cell-specific delivery of RNA oligonucleotides using novel bio-conjugation technology.</p> <p>In addition to the RNA therapy programme, the Zhou Lab has longstanding history in translational research in neuromuscular disorders, including spinal muscular atrophy, collagen VI-related congenital muscular dystrophy, congenital myopathies and Duchenne muscular dystrophy. Our research topics range from the identification new therapeutic targets and biomarkers for the development of novel RNA therapies.</p> <p>The Zhou lab has established strong collaborations with clinical geneticists and clinicians at GOSH and UCL on new disease targets identification and the clinical translation of personalized RNA therapy. We have applied RNA oligonucleotide technology to a wide range of genetic disorders, including muscular dystrophies, respiratory disorders, neurological conditions, inborn errors of metabolism and many other rare genetic disorders. There are currently 6 postdocs, 6 research assistants, 8 postgraduate students working on these research projects, supported by research councils, NIHR, UCL, charities and industry.</p>	
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11	<p>Dr Amal Rammah, Senior Researcher</p> <p>Population, Policy and Practice Research and Teaching Department; Great Ormond Street (GOSH) Institute of Child Health</p>	<p><u>Project Title:</u> Pesticides use in the home and respiratory illness in the Barwon Infant Study</p> <p><u>Project Outline:</u> There is growing interest in the role of chemicals in the home and children’s health, and specifically organic chemicals, which can have neurotoxic effects and impact reproductive</p>	

	<p>(ICH); Faculty of Population Health Sciences (FPHS)</p> <p>Email: a.rammah@ucl.ac.uk</p> <p>Second point of contact: Prof Pia Hardelid Email: p.hardelid@ucl.ac.uk</p>	<p>development and respiratory health. Utilizing publicly available data from the Barwon Infant Study, the project aims to examine the association between pesticide and chemical use in the home and the risk of respiratory illnesses in children. The student would have the opportunity to design an epidemiological study and conduct quantitative analysis interrogate the impact of pesticide and chemical use in the home on respiratory illness in children.</p> <p>This project would expose students to essential concepts in environmental epidemiology and provide them the opportunity to deepen their knowledge and skills in:</p> <ol style="list-style-type: none"> 1. Critical review of the literature in children's environmental health studies 2. Epidemiological study design; and 3. Data analysis. <p>Students would be introduced to and work as part of a research team of interdisciplinary scientists lead by Professor Pia Hardelid and focused on children's environmental health.</p> <p>Students are expected to have basic skills and experience in statistical analysis and epidemiology.</p>	
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12	<p>Dr Eleonora Lugarà, Translational Research Manager</p> <p>Queen Square Institute of Neurology (IoN), Faculty of Brain Sciences (FBS)</p> <p>Email: e.lugara@ucl.ac.uk</p>	<p><u>Project Title:</u> Mapping the research and innovation landscape at UCL Queen Square Institute of Neurology</p> <p><u>Project Outline:</u> The objective of this brief project is to construct a stakeholder and project map (list) for the QS IoN. The identification phase will be based on available UCL staff list (Profile). Each stakeholder (Principal Investigators) will be contacted and interviewed, while projects will be discerned and prioritized based on their TRL (Translational Readiness Scale).</p> <p>Subsequent to the formation of this map, initiatives will be formulated to foster the progression of projects in accordance with their requirements. The candidate will have the opportunity to develop:</p> <ul style="list-style-type: none"> • Strategic Innovation Identification skills: The candidate will undergo training in strategic 	

		<p>innovation identification to recognize and assess potential translational projects. Additionally, the candidate will be able to participate (in an observational capacity) in initial meetings with PIs to evaluate projects and their readiness levels. The candidate, alongside the primary supervisor, will attend preparatory and follow-up meetings to gain insights into the background and future strategy.</p> <ul style="list-style-type: none">• Due diligence and marketing insights: The candidate will conduct due diligence exercises and conduct light-touch marketing analyses, with support from connections with UCLB.• Ecosystem development: The candidate will cultivate strategic relationships with both clinical and non-clinical academics, industry partners, and key support offices (such as UCLB, UCLC, TRO, I&E, etc.). <p><u>Project Outcomes:</u> For the project:</p> <ul style="list-style-type: none">• Develop a stakeholder map for innovations at the QS IoN.• Create a development and action plan for prioritised projects. <p>For the candidate:</p>	
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		<ul style="list-style-type: none"> • Develop communication and networking skills. • Develop stakeholder management skills. • Practice multitasking, adaptability and proactive mindset in a matrix system. • Understand of scientific and strategic due diligence. 	
13	<p>Dr Frances Wiseman, Principal Research Associate UK Dementia Research Institute; Neurology (IoN), Faculty of Brain Sciences (FBS)</p> <p>Email: f.wiseman@ucl.ac.uk</p> <p>Second point of contact: Sevda Boyanova, Research Fellow Email: s.boyanova@ucl.ac.uk</p>	<p><u>Project Title:</u> Controlling for Sensory Confounds during cognitive testing of a series of amyloid-accumulation mouse models (data analysis only)</p> <p><u>Project Outline:</u> Amyloid-β accumulation and the formation of plaques is an early feature of Alzheimer’s disease biology. The UK Dementia Research Institute Animal Models Programme has undertaken a detailed longitudinal behavioural characterization of the widely used AppNL-G-F, AppNL-F mouse model of amyloid-β accumulation (and the Appem1bdes control line). Here the student will analyse sensory function (olfaction task and optokinetic drum (vision task)) data acquired from animals that have also undertaken behavioural tests, to understand if differences in sensory functions have impact on behavioural performance in these key models. The other behavioural tasks the mice have been tested in include three-chamber task for social preference,</p>	

		<p>touch screen task for cognitive abilities, Y-maze for short term spatial memory, amongst others. The project will involve the use of video scoring software, and statistical software for analysis.</p> <p>We are particularly interested in hosting students who have an interest in developing and using computational methods for pose estimation for neuroscience research applications.</p> <p><u>Project Outcomes:</u> Understanding the behavioural tests used to assess olfaction and hearing in mice. Depending on the progress of the project, data will be included in a publication planned for 2025.</p>	
14	<p>Dr Owen Vaughn, Lecturer Maternal & Fetal Medicine, Institute for Women's Health; Faculty of Population Health Sciences (FPHS)</p> <p>Email: o.vaughan@ucl.ac.uk</p>	<p><u>Project Title:</u> How does microRNA-142 impact fetal cardiac development in pregnancies complicated by maternal obesity?</p> <p><u>Project Outline:</u> We want to understand how metabolic disease in mums impacts health in their children. Obesity and gestational diabetes in pregnancy increase obstetric complications and lead to childhood hypertension and obesity. We are investigating the microRNA mechanisms linking</p>	

		<p>maternal obesity with changes in fetal heart and placenta development, funded by MRC.</p> <p>The rotation project will test whether blocking microRNA-142 prevents the adverse effects of obesity on placental and fetal cardiac development. Using a mouse model of maternal obesity combined with knockdown of microRNA-142, you will:</p> <ul style="list-style-type: none">• Use imaging to assess placental and fetal cardiac function in mouse embryos e.g. high-resolution ultrasound, MRI, photoacoustics.• Quantify fetal tissue-specific microRNA expression.• Measure morphological and molecular hallmarks of development in individual fetal tissues e.g. placenta (vascularity, nutrient transport), heart (hypertrophy, metabolism, fibrosis) and brain (cellular composition, appetite pathways). <p><u>Project Outcomes:</u></p> <ul style="list-style-type: none">• You will learn skills: <i>in vivo</i>, preclinical imaging, qPCR, immunofluorescence, viral vectors.• Data will be included in a publication.	
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