

RESEARCH AND  
INNOVATION /  
NEUROSCIENCE, AGING  
AND OPHTHALMOLOGY





Kent

# KENT AND MEDWAY MEDICAL SCHOOL

A beacon for first-class medical education and research, attracting the most talented aspiring doctors from within the local community and beyond.

# RESEARCH AND INNOVATION / NEUROSCIENCE, AGING AND OPHTHALMOLOGY

**We have a wealth of cutting-edge research and expertise in neuroscience, aging and ophthalmology here at the University of Kent.**

This brochure provides an introduction to just some of Kent's academic experts and their areas of research activity.

**Get in touch** with our experienced and professional business and innovation gateway team who are here to help you connect with our experts, access funding for innovative projects or discuss how the University's technology or facilities could benefit you.

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University of Kent -  
Research and Innovation



## / ANTHROPOLOGY

**Dr Martha Newson**  
*Future Leaders Fellow*

Martha's highly inter-disciplinary research working with modern human populations draws from anthropology, psychology, evolutionary theory and criminology. In her UKRI funded position, she plans to develop the field of **Applied Cognitive Anthropology**. Insights from her recent research into the psychology behind group bonding and prosocial behaviours at raves could prove relevant to clinical therapies.



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## / KENT AND MEDWAY MEDICAL SCHOOL

*An exciting collaboration between us and Canterbury Christ Church University*

**Dr Rafey Faruqi**  
*Senior Lecturer - Clinical Advisor in Ethics, Law and Professionalism*

Rafey organizes the Brain Health Research Group in Kent and is supervising academic projects on Prevalence of **alcohol-related brain damage, head injury pathways** in Kent and co-production of symptom self-management strategies for people with traumatic brain injury.



**Professor Sukhi Shergill**  
*Professor of Psychiatry*



Sukhi's research primarily uses **neuroimaging techniques** to explore functions and structures of the brain. He founded and leads the [CSI Lab](#), virtual home to researchers and clinicians from around the world where the aim is to use the results of this research to help develop new and effective treatments and to improve services, and the organisations that deliver them. The CSI Lab initially concentrated on investigating the brain mechanisms involved in the symptoms of **schizophrenia** – both the 'positive symptoms' (unusual experiences such as hallucinations and paranoia) that are characteristic of episodes of psychosis and the ongoing cognitive and 'negative' symptoms that affect memory and attention, making it difficult for people to interact socially and sustain relationships.

## / BIOSCIENCES

### Dr Marina Ezcurra *Lecturer in the Biology of Aging*

Marina's work illustrates how **ageing and age-related diseases** can be the result of run-on of wildtype **gene function** rather than stochastic molecular damage. Current research in Marina Ezcurra's group focuses on how **host-microbiome interactions** affect host ageing and is funded by The Wellcome Trust and Royal Society. Marina Ezcurra is a trustee board members of The British Society of Research on Ageing.



### Dr Campbell Gourlay *Reader in Cell Biology*



Campbell's research areas include: the regulation of mitochondrial health and production of reactive oxygen species; the role of translational accuracy in **healthy ageing and apoptosis**; roles for the actin cytoskeleton in regulating stress response mechanisms; yeast as a model for **motor neuron disease**; using yeast to understand the development of multi-drug resistance; the role of mitochondrial function in the pathogenicity of *Candida albicans*; and the detection and management of biofilms on airway management devices.

### Professor Neil Kad *Reader in Molecular Biophysics*

Neil's research interests include: **Alzheimers DNA repair**; single molecule biophysics; muscle contractility **amyloid disease** and inhibition; and molecular motors. His lab are really interested in advanced technologies for probing single molecules, such as the use of **nanoprobes** in collaboration with the Rutherford Appleton Labs in Harwell.



### Dr Ben Goult *Reader in Biochemistry*



Ben, a structural mechanobiologist, has developed an international reputation for his work on the **protein talin**, and his lab's work has defined talin as a major mechanosensitive signalling hub. More recently they have discovered that talin has "molecular memory" and so **provides organisms with a way to store data**, through persistent alterations in protein conformation.

# / CENTRE FOR HEALTH SERVICES STUDIES

## **Ann-Marie Towers** *Reader*

Ann-Marie has a special interest in how we might employ qualitative methods, such as observations, supported interviewing techniques and forms of adapted communication, to try and ascertain the views and **experiences of care home residents** and people with **cognitive and communication difficulties**. She also leads a programme of work to develop, test and support the **Adult Social Care Outcomes Toolkit** (ASCOT)).



## **Dr Stacey Rand** *Senior Research Fellow*



Stacey's research interests include the measurement and application of **social care** outcomes for service users and carers in policy and practice, unpaid care, and the quality and safety of social care. She is also a member of the **Adult Social Care Outcomes Toolkit** (ASCOT) team, with a focus on the development and psychometric evaluation of new or adapted ASCOT measures (eg ASCOT-Carer, ASCOT-ER and ASCOT-Proxy), as well as supporting translation and cross-cultural adaptation.

## **Dr Vanessa Abrahamson** *Research Associate*

Vanessa has expertise in occupational therapy and **neuro-rehabilitation**, primary and community care, inter-disciplinary working, **end-of-life care** in the community, realist methodology and implementation science.



## **Dr Wenjing Zhang** *Research Associate*



Wenjing's research expertise and interests focus on health and social care, **ageing** and social policy. With experience using both qualitative and quantitative methods over 9 years studying the health and social care sector, she has worked on a few policy- and practice- oriented research projects. Straddling the fields of social gerontology and public policy implementation, she adapts and extends concepts developed in a Western context to the study of **East Asian policy** implementation.

## / COMPUTING

### Professor Howard Bowman *Professor of Cognition and Logic*

Howard's main research focus is **cognitive, computational and applied neuroscience**, although he has mainly worked on formal methods. He is interested in how the mind emerges from the brain to generate a spectrum of **cognitive capacities** and undertakes work focusing on the following capacities: perception, consciousness, attention, language, emotions and decision-making.



### Jim Ang *Senior Lecturer in Multimedia/Digital Systems*



Jim's research approach is centred around **co-design healthcare systems** to achieve real-world impacts through an in-depth understanding of stakeholders and healthcare organisational contexts. Currently, his research focuses on designing, developing and deploying digital technologies, such as **virtual/augmented reality, sensing technologies** integrated with **machine learning** in real-world settings to improve the quality of healthcare and ultimately to improve human wellbeing.

### Palaniappan Ramaswamy *Reader*

Palaniappan's research expertise includes **signal processing** (biomedical such as EEG, ECG and other signals) and **lectrophysiological analysis** (for various mental and cardiovascular disorders brain-computer interface).



### Professor Gareth Howells *Professor of Secure Electronic Systems*



Gareth has been involved in research relating to **security, biometrics and pattern classification techniques** for over twenty five years. His recent work has investigated the comfort of powered wheelchairs and developed a dataset containing objects of interest for powered wheelchair users, such as door handles, key slots and buttons.

## / KENT BUSINESS SCHOOL

### Professor Chidiebere Ogbonnaya *Professor of Human Resource Management*

Chidi's research covers a broad range of topics on job quality, employment relations, workplace values, ethical leadership, **psychological well-being** and employee productivity. He is currently studying the leadership and management experiences of disadvantaged workers in low- and middle-income economies.



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## / PHYSICS AND ASTRONOMY

### Dr Adrian Bradu *Lecturer in Applied Optics*

Adrian is interested in developing **medical imaging tools** able to produce images of what tissue 'feels' like by evaluating its elastic properties using **optical coherence elastography**. He aims to develop techniques that can offer not only structural but also functional information of biological tissues with excellent resolution and high contrast, by listening to the sound produced when a laser pulse interacts with the absorbing tissue (photo-acoustics tomography).



### Professor Adrian Podoleanu *Professor of Biomedical Optics*

Adrian has expertise in **non-invasive imaging** of the tissue, especially optical coherence tomography and confocal microscopy, optical sensing, fast optoelectronics.

## SIGNATURE RESEARCH THEMES/ **FUTURE HUMAN**

The Future Human team are exploring the use of science and technology for future human development. They are doing this by creating a broad and interdisciplinary understanding of the opportunities, limits, challenges, and risks of using science and technology to overcome the limits of our bodies and restore or improve performance and function.



# / MEDWAY SCHOOL OF PHARMACY

An unique collaboration between us and the University of Greenwich

## Dr Gurprit S. Lall *Reader in Neuroscience*

Gurprit's research interests lie within biological rhythms and **circadian neurobiology**. His most recent studies have looked at the neural basis of circadian entrainment and retinal photoreceptor contribution to non-image forming circadian responses.



## Dr Romina Vuono *Lecturer in Biological Sciences/Neuroscience and Brain Diseases*

Romina specialises in **neuropathology**, molecular and cellular **neuroscience**, **neurogenetics**, **cognitive neuroscience**, sleep and circadian neurobiology, **traumatic brain injury**, **alzheimer's disease**, **huntington's disease**, **parkinson's disease**, **frontotemporal dementia**, embryonic stem cell therapy - regenerative medicine, biotechnology, molecular biology and bioinformatics.

## Dr Stella Koutsikou *Lecturer in Biological Sciences*

Stella's research group are focussed on exploring the mechanisms by which **sensory information** is weighted and integrated by the central nervous system and subsequently shapes **decision-making** and guides survival behaviour. This sensory information can derive from a range of environmental stressors, such as pain, inflammation, prey-predator encounter and chronic disease states.



## / PSYCHOLOGY

### Dr Hannah Swift

#### *Senior Lecturer in Social and Organisational Psychology*

Hannah is an experienced researcher in **ageism**, attitudes to age, **age-friendly and dementia-friendly communities**, workplaces and design, prejudice, discrimination, equality, unconscious bias, intergenerational contact, nudging, diversity and arts based interventions.



### Dr Amir-Homayoun Javadi

#### *Senior Lecturer in Cognitive Psychology/Cognitive Neuroscience*



Amir-Homayoun's research interests are in non-pharmacological approaches to enhancement of **memory, learning, and decision making**, as well as **mental health**. He uses a wide variety of intervention methods (eg physical exercise, electrical and magnetic brain stimulation, music and sleep), computational methods (eg modelling and artificial intelligence), and different imaging methods (eg EEG and eyetracking).

### Professor Heather Ferguson

#### *Professor of Psychology*

Heather's primary research interest is in Cognitive Psychology. She is particularly interested in the interface between cognitive processes and **social interaction**, specifically the way that we access and represent other people's perspectives. She uses a variety of techniques, including eye-movements, event-related brain potentials and reaction times to ask questions about **intentions, beliefs and desires**, the relation between **social abilities** and **cognitive skills** and how these are impacted.



### Professor David Wilkinson

#### *Professor of Psychology*



David's main research seeks to understand how the human vestibular system shapes **cognition and mental well-being**. His group is particularly interested in developing and trialling non-invasive methods of **vestibular stimulation** to help overcome neuro-disability associated with **brain injury** and **neuro-degeneration**.

**Dr Zara Bergström**  
*Senior Lecturer in Cognitive Psychology*

Zara's research investigates the neurocognitive mechanisms underlying **long-term memory**, with particular focus on memory retrieval control, forgetting, and memory distortions.



**Dr Andrew Martin**  
*Lecturer in Cognitive Neuropsychology*

Andrew employs a translational neuroscience and experimental psychology approach to study **social cognition and executive functioning**. A strong focus of his clinical research is trying to understand **psychosis**-related conditions in terms of underlying cognition with the goal of improving existing and novel treatment options. He is also interested in how cognition changes across the healthy lifespan and in disorders of **ageing**.



**Dr Laura Smith**  
*Lecturer in Cognitive Psychology*

Laura's main research interest is in understanding the psychological and biological bases of **human cognition** with a view to developing more effective therapies for individuals with **neurological disorders**. Laura's research uses a variety of approaches including non-invasive brain stimulation, electrophysiological recordings of brain activity, behavioural assessments and cognitive interventions.



**Dr Ruben Azevedo**  
*Lecturer in Cognitive Neuroscience*

Ruben is particularly interested in studying how afferent **interoceptive information** (i.e. physiological signals arising from internal body organs such as the heart) influences the perception of social stimuli and modulate social attitudes and behaviour. Other interests include **self-awareness, empathy and visual politics**. To carry out his research he uses behavioural measurements, psychophysiology, fMRI and non-invasive vagus nerve stimulation.



**Dr Brianna Beck**  
*Lecturer in Psychology*

Brianna's research interests include **pain and somatosensory perception**, body representation and the sense of agency.



# / PERSONAL SOCIAL SERVICES RESEARCH UNIT

## Dr Barbora Silvarova *Research Officer*

Barbora's background is in clinical and health psychology and her research focuses on two projects: 'Developing a scale of **work-related wellbeing** at work for adult **social care** staff' led by Professor Shereen Hussein; and 'Measuring the social care outcomes of people with **dementia** and their carers' led by Stacey Rand. Before joining the University of Kent, her main research interest centered on understanding how we can use digital tools to support people to have a healthy lifestyle in order to decrease their risk of getting cardiovascular disease, cancer and dementia.



## Dr Robin Darton *Senior Research Fellow*



Robin has a background in psychology and statistics, and has worked on a range of research projects concerning health and **social services provision for older people**, including several major surveys of care homes. Between 2003 and 2011 he was part of the PSSRU team commissioned by the Department of Health to evaluate extra care housing schemes supported by the Extra Care Housing Fund, and was a member of the University of Sheffield/PSSRU team that developed the EVOLVE tool for the evaluation and assessment of **extra care housing design**, funded by the EPSRC.

Since 2012 he has been working with a range of partners to explore the provision and delivery of adult social care in **housing with care schemes** in England.

# / ARCHITECTURE AND PLANNING

## Professor Marialena Nikolopoulou *Professor of Sustainable Architecture*

Marialena's research interests concentrate on **environmental performance of buildings and urban spaces**, thermal comfort in different operational contexts, along with occupant perception and use of space, with particular regard for the environment for aging communities.





The Personal Social Services Research Unit is one of the leading social care research groups, not just in the UK, but internationally. Since its establishment, PSSRU has had considerable impact on national social care policy in the UK and in a number of other countries.

The PSSRU's mission is to conduct high quality research on social and health care to inform and influence policy, practice and theory.



## / SPORTS AND EXERCISE SCIENCE

### Professor Glen Davison *Head of Sport and Exercise Sciences*

Glen is involved in research relating to **Parkinson's** and provides particular expertise in monitoring changes in biomarkers.



### Dr Lex Mauger *Director of Research and Innovation*



Lex's principal research focuses on the regulation of work rate during **exercise**, and specifically how conscious sensations arising from intense exercise influences this process. This overarching theme influences his main area of study - the role of **exercise-induced pain in fatigue and endurance performance**. This work explores how the naturally occurring and non-pathological muscle pain that occurs when we exercise intensely for a sustained period impacts both our physiological ability and our psychological desire to exercise. Lex's expertise in this area is the basis for a research grant award from the World Anti-Doping Agency, to study the performance enhancing **effects of tramadol**.

### Dr Steve Meadows *Senior Lecturer in Sport and Exercise Science*

Steve runs **exercise classes** to help those with **Parkinson's** manage their symptoms. He does this both face-to-face and online, and the classes he works with often provide data for studies which examine the impact of exercise on the management of Parkinson's. There are also PhD's, MRes and UG students involved with both the running of these classes and the research studies which are run alongside. Steve also works with other clinical groups including **stroke** and **cardiac patients**.



# / SOCIAL POLICY, SOCIOLOGY AND SOCIAL RESEARCH

**Marica Gatt**  
*PhD Student*

Marica is interested in communicative interactions between **mothers, siblings and children with communication disabilities** who use **augmentative and alternative communication** (AAC).



**Professor Peter McGill**  
*Emeritus Professor of Clinical Psychology of Learning Disability*

Peter's research interests include: understanding the causes of **challenging behaviour** with particular reference to the role of motivating operations; prevention of challenging behaviour through system-wide positive behaviour support; and transition of children and young people with intellectual and **development disabilities** from residential education.



**Suzi Sapiets**  
*Postdoctoral Research Associate*

Suzi is establishing and coordinating a special interest research group Embracing Complexity in Neurodevelopmental Conditions and Mental Health with the Embracing Complexity coalition, funded by Emerging Minds. Her research interests include: **neurodevelopmental conditions** and **developmental disabilities**, primarily **autism** and intellectual disabilities; improving access to support, service accessibility, early intervention, **mental health**, and positive behavioural support; early intervention for children with developmental disabilities; mental health in people with developmental disabilities; positive behavioural support across the lifespan for people with developmental disabilities.



## UNIVERSITY OF KENT/ **PARKINSONS CENTRE FOR INTEGRATED THERAPY**

The Centre will offer groundbreaking new neurostimulation techniques delivered by Professor David Wilkinson's team with wrap-around support including: group exercise, physiotherapy, occupational therapy, mental health advice, nutritional guidance, speech and sound therapy, group singing, Reiki, acupuncture and massage.

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