

FINAL REPORT 2014-2021 ARC CENTRE OF EXCELLENCE FOR INTEGRATIVE BRAIN FUNCTION

The ARC Centre of Excellence for Integrative Brain Function acknowledges the support of the Australian Research Council



Australian Government

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CONTENTS

Ctratagia abigativas	
Strategic objectives	4
Messages	6
Highlights	10
Governance	14
RESEARCH PROGRAM	
Research reports	19
Publications	26
Presentations	20
CENTRE PROGRAMS	
ECR professional development	35
Education	36
The Brain Dialogue	38
Neuroethics	40
Neuroinformatics	42
Enterprise	44
Sponsored events	45
Gender, equity and diversity	46
Personnel	48
Key performance indicators	64
Finance	68



Understanding how the brain interacts with the world is one of the greatest challenges of the 21st century.

To address this challenge, Centre researchers investigated brain structure and function at multiple scales, from single cells and synapses, to circuits and networks, to whole brain systems.

About

Understanding how the brain interacts with the world is one of the greatest challenges of the 21st century. The Australian Research Council Centre of Excellence for Integrative Brain Function (Brain Function CoE) was established in 2014 to address this challenge by facilitating collaborations amongst Australia's leading brain researchers in the fields of brain anatomy and physiology, neural networks, neural circuits, brain systems, human behaviour and neurotechnologies. Led by Monash University, the Centre brought together researchers from The University of Queensland, The University of New South Wales, The University of Sydney, The Australian National University, and The University of Melbourne, alongside QIMR Berghofer, and eleven international Partner Organisations across Europe, Asia and North America.

The overarching aim of the Centre was to investigate brain structure and function at multiple scales, from single cells and synapses, to circuits and networks, to whole brain systems; increasing our understanding of how the brain integrates information across these levels. Key to this process was the development of new experimental paradigms, instruments and computational tools. The new insights obtained have also provided a basic-science foundation for the development of approaches to repair and restore function to the damaged brain.

Our Centre researchers undertook fundamental investigations into the principles of brain structure and function with a key focus on complex brain functions underlying attention, prediction and decision-making; across on four interconnected themes: Cells and Synapses, Neural Circuits, Brain Systems, and Models and Technologies. The research program explored brain activity and behavior across multiple spatial and temporal scales, from nerve cell electrical and biochemical activity, through patterns of activity in large scale circuit networks, to build an integrated model of how attention, prediction and decision-making occurs.

Beyond research outcomes, the Centre was committed to maximising influence by establishing new and strengthening existing connections between our stakeholders, both within academia and across the broader community. This was achieved through a variety of non-research programs designed to engage and support our network of users. These included targeted programs to develop outstanding early career researchers (ECRs) through training and career development opportunities; public outreach activities designed to build a community to share research achievements with and foster discussion of emerging issues; educating the next generation of brain researchers by engaging students from primary to secondary and tertiary levels; bringing together leading Australian practitioners in neuroscience, law, ethics, and other end-users to examine the ethical and social implications of neuroscience research through our neuroethics program; and creating opportunities for new interdisciplinary research providing linkages to the broader scientific community and industry both within Australia and globally.

The Centre remained at the forefront of international research by engaging with international neuroscience initiatives, to ensure Australian neuroscientists provide an influential voice in the ethical, social and economic impact of brain research to the wider community.

STRATEGIC OBJECTIVES

- 1. Reveal how the brain integrates information in large-scale networks to yield complex
- 2. Develop neural technologies and translate them into patentable devices and software; Ensure that Australians benefit from the rapid advances being made in
- 3. Maximise dissemination and exploitation of research findings across the education, facilitate social change and progress.
- 4. Mentor a new generation of future leaders at the interfaces between neuroscience, physics, and engineering, to create an international competitive culture of combined theoretical and experimental neuroscience.
- **5.** Position Australia amongst the world leaders in the international drive to expand the understanding of the brain. Serve as an Australian focal point for interactions with leading international neuroscience initiatives, including the Human Brain Project and the

VISION

To understand how the brain interacts with the world.

MISSION

Undertake fundamental investigations into the principles of brain structure and function, by focusing on the complex brain functions that underlie attention, prediction and decision-making.

KEY INTEGRATIVE BRAIN FUNCTIONS

Neural Basis of Attention

Understanding how information processing in the brain.

Neural Basis of Prediction

Testing the brain as a through multi-scale brain imaging experiments.

Neural Basis of Decision

Quantify the link between sensory signals, resulting neuronal activity and generated perception manifested in behaviour.

RESEARCH THEMES

Cells & **Synapses**



combine their inputs to produce an output signal for communication to other brain

Networks & Circuits

How the circuits sensory processing and cognitive functions organised into large networks.

Brain Systems

parallel investigations in humans and

Models. **Technology** & Techniques



and biochemical); Behavioural, neuroimaging, and techniques Models (Bayesian coding and error correction



world."

Director's message

Despite decades of research, how the brain interacts with the world is still one of the greatest challenges of the 21st century.

To address this challenge, Australia's leading brain researchers investigated brain structure and function at multiple scales, from single cells and synapses, to circuits and networks, to whole brain systems.

The Australian Research Council Centre of Excellence for Integrative Brain Function (Brain Function CoE) included neuroscientists, engineers and computer scientists, and covered a multitude of topics ranging from ion channel function in single neurons to sensory information processing within neural networks. The overarching aim of the research was to increase our understanding of how the brain integrates information across multiple levels. Key to this process was the development of new experimental instruments and computational tools. The new insights obtained have also aided the development of approaches to repair and restore function to the damaged brain.

The Centre of Excellence for Integrative Brain Function research program studied the relationship between brain activity and behaviour at multiple spatial and temporal scales – from single cell electrical and biochemical activity to patterns of activity in large scale circuits and networks. In doing so they have contributed to the development of an integrated model of how the brain processes information and thereby advanced our understanding of how the brain interacts with the world.

The 2021 annual and final report describes the Centre's continued research efforts to advance the neuroscience discipline in Australia in its final year of operation. Furthermore, this report showcases a summary of the Centre's outstanding research outcomes and magnificent supplementary achievements throughout its seven-year duration. From the Centre's commencement in mid-2014, the research output grew from 37 journal articles at the end of that year to a total of 514 journal articles, 10 conference papers, 15 book chapters and 10 books at 31 December 2021, the conclusion of the Centre.

The Centre remained dedicated to uphold as many of our programs as possible in 2021, despite the challenges due to the COVID pandemic and the ceasing of further funding. Once again, the Centre supported and hosted the Australian Brain Bee Challenge (ABBC) in collaboration with the Australasian Neuroscience Society and supported the 2019 ABBC winner, Peter Susanto, to participate in the 2021 International Brain Bee Championship where he placed 3rd. On a primary school level, the Centre's 2021 creative art competition, held annually to encourage children to think about the brain and its function, received over 1100 entries.

As part of our legacy, the Centre has produced a coffee table book that features research discoveries from the past seven years that were published via the Brain Dialogue, accompanied by the most prominent art works created as part of the annual creative art competition. The Central Theme has also created a legacy website that features the Centre's key achievements: www.brainfunction.edu.au and established a LinkedIn Alumni page to help Centre researchers and staff stay in touch with each other beyond 2021.

My sincere thanks to Prof Lyn Beazley AO, Chairperson, and to all of the Centre Advisory Board members for their incredible commitment, oversight and guidance to myself regarding the Centre's research and other programs over the past seven years. I would also like to extend my thanks to the Centre's Executive who were exceptional in the provision of incisive scientific critical analysis of the Centre's research activities, as well as advice and support for the Centre Leadership team. My particular thanks to the Central Theme team for their outstanding support for all of the Centre's activities. Their expertise and highly efficient administrative support at each of the Collaborating Organisation nodes enabled the Centre to operate smoothly and effectively. Finally, I would like to sincerely thank the Australian Research Council for their generous funding that enabled the establishment and operations of this Centre.

Gang F Egon

Professor Gary Egan, Centre Director



Chair's message

The ARC Centre of Excellence for Integrative Brain Function has been a highly multi-disciplinary research centre addressing the question of how the brain interacts with the world.

The Centre's researchers investigated brain activity at multiple scales in order to understand how neural processes associated with attention, prediction and decision-making are integrated and manifest in higher cognition and, ultimately, in behaviour.

The Centre met this significant challenge over the past seven years through important discoveries that provided insights into the mechanisms of integrative brain function. It has been most heartening to see the high quality of the scientific publications by the Centre's researchers. The increasing number of publication citations confirm the impact of the research within the scientific community as well as the media reports that reflect the level of public interest in the research outcomes. Centre researchers have also presented plenary and keynote addresses at national and international conferences throughout the duration of the Centre. The presentations have highlighted the unique strengths of the Centre's collaborative and multiscale research program.

During 2021, and in spite of the pandemic, the Centre researchers have maintained their excellent scientific productivity with many outstanding research outputs throughout the year: 78 journal articles, 1 book and 1 book chapter.

The Centre has achieved so much in seven years. I well remember having the privilege, as Chair of the Advisory Board, of visiting many of the research nodes at the outset, along with the Director Professor Gary Egan. We met brilliant researchers, as well as the next generation in training, and witnessed their ground-breaking research.

It was exciting and enriching, illustrating to me the potential of the Centre to facilitate strategic collaboration between the teams. Our legacy website: www.brainfunction.edu.au and coffee table book 'How the Brain Interacts with the World: A Journey Of Brain Discovery Through Science And Art' give an overview of how successful that approach has proven to be.

At a time when humankind is facing so many challenges and opportunities, it is vital that we understand better how our brains interact with the world to shape our behaviour. Australia has a proud tradition as one of the leaders of brain research worldwide and our Centre's research has helped to add another chapter to that story.

We also set out to enrich the neuroscience discipline in Australia in ways beyond our integrated program of research. These included championing diversity and inclusion, supporting researchers early in their careers via mentoring, workshops and retreats, and encouraging science communication via initiatives such as The Brain Dialogue. We also reached out to the community to 'demystify' brain research by way of well subscribed public events and engaged with young people via the Brain Bee competition and a delightful art-meets-science competition in schools.

The Centre is justifiably proud of these achievements that leave a legacy on which our researchers and others can build, not only in terms of scientific discoveries, but also in relation to the culture we have championed.

I feel privileged to have been Chair of the Centre Advisory Board. Many thanks once again to all my fellow Board members for their inspiring commitment over the years to provide governance, support and advice for the Centre. The combined experience of the Board in scientific research nationally and brain science globally, as well as in broader cultural and financial issues, has been a wonderful resource for the Centre. The passion and experience the Board have brought to the Centre's education, outreach and non-research programs over the years, is particularly energising to all.

I would also like to thank all of the Centre's researchers, support staff, research students, post-doctoral research fellows and supporters for their outstanding efforts and wonderful contributions throughout the duration of the Centre. Thank you in particular to the Centre's Director, Professor Gary Egan, for his inspired leadership of the Centre, and to the Central Theme administrative team for their tireless work, professionalism and dedication to achieving the Centre's goals.

Finally, I would like to join the Director and sincerely thank the Australian Research Council for their funding and support throughout that enabled the establishment and operation of a Centre of which Australia can be justifiably proud.

Hyn Beatley

Highlights 2014-2021

2014

- » The Centre was officially launched by the Honourable Josh Frydenberg, Parliamentary Secretary to the Prime Minister and Member for Kooyong.
- » First public event "Who's in Charge of Your Brain?" was held at the State Library of Victoria with over 200 registered attendants.
- Established our outreach and communication platform 'The Brain Dialogue' to build a community of interest and to share knowledge, featuring research findings 'In a nutshell'.

2015

- The Centre held a joint meeting with the EU funded Human Brain Project in Prato, Italy, fostering international collaboration with the Centre's European counterparts.
- The first Centre funded book 'MRI/DTI Atlas of the Rat Brain' was published, by Centre investigators CI George Paxinos, AI Charles Watson and PI Allan Johnson.
- » Our cohort of Early Career Researchers (ECRs) formed an executive committee to facilitate professional development activities, contributing to their inaugural ECR career development workshop held in Cairns.

2016

- » The Centre launched 'The Marmoset Brain Architecture Project', a publicly available and fully interactive digital repository for data on the cellular connectome in the primate brain.
- Our education program expanded into the primary school sector with the launch of our inaugural primary school's art competition in conjunction with Brain Awareness Week, inviting primary school aged children from all over Australia to create an artwork inspired by the thought "I use my brain to...".
- » The Centre partnered with the Victorian Government and other organisations to host the 'Bridge to MassChallenge Australia' a global start-up accelerator competition.

2017

- » Centre researchers developed their first functional bench prototype of an implantable wireless neural microchip capable of concurrent neural stimulating and recording.
- The ECR Executive committee hosted their inaugural 'Pitch Competition', with winners awarded seed funding to conduct their own independent research project.
- » The Centre's most prominent public event was held with internationally acclaimed brain researchers, Prof Christof Koch, President and Chief Scientific Officer of the Allen Institute for Brain Science, and Prof Karlheinz Meier, Co-Director and Vice Chair of the Human Brain Project. The free public lecture 'Brains and Computers: the future of neuroscience and understanding the complexity for the human mind' was held at the Melbourne Convention and Exhibition Centre.
- » A multi-node Centre delegation (Monash University, University of Melbourne, Australian National University and University of Queensland) attended 'Israel BrainTech 2017 – Converging Technologies Conference' and met with multiple Israeli start-ups to foster collaborations and industry partnerships with Centre researchers.

The Centre was granted hosting rights of the Australian and New Zealand Brain Bee Challenge, an annual neuroscience competition for Year 10 students inspiring them to pursue brain-related careers in medicine and research.

- » Centre members were integral in driving the formation of the Australian Brain Alliance (ABA), a consortium of research institutes, higher education providers, and business leaders in the brain science and technology industry brought together to campaign for support for the Australian Brain Initiative (ABI): A multi-disciplinary, collaborative neuroscience research and translation program that will increase our understanding of the brain and seed Australia's neurotechnology industries for decades to come.
- » The Centre's Neuroethics Program held the highly successful engagement event 'Brave New Brains', a free public discussion about the future of brain-computer interfaces and the challenges they raise for Australian society.
- » Centre researchers together with Advisory Board member Ulf Eysel hosted the international event 'Receptive Fields: Analysis, Models and Applications', an official satellite meeting of the 11th FENS Forum in Neuroscience held in Berlin, Germany.

» Centre researchers George Paxinos, Teri Furlong and Charles Watson discovered a previously unknown region of the brain they termed the endorestiform nucleus, located within the inferior cerebellar peduncle, thought to relay information from the spinal cord to the cerebellum. This discovery was picked up by over 600 media outlets, and was published in the comprehensive, diagrammatic and photographic atlas 'Human Brainstem: Cytoarchitecture, Chemoarchitecture, Myeloarchitecture'.

- Centre researchers Sharna Jamadar and Gary Egan developed a new radiotracer administration protocol for FDG-PET, with constant infusion techniques improving temporal resolution of up to 16s, making it possible to measure the dynamic use of glucose energy in the brain. This protocol was made publicly available, as was their full data set of simultaneous BOLD-fMRI and constant infusion FDG-PET of the resting human brain
- The Centre hosted a four-day international masterclass given by world-renowned neuroanatomist Emeritus Professor Luis Puelles from the University of Murcia Spain. The workshop addressed neuromorphology, the neuromeric model and practical examples of basic morphologic analysis.
- » The Centre's researchers collectively published 11 articles in Nature journals in 2020.
- The Centre's response to the pandemic and the introduction of stay-at-home orders saw a seamless transition into an online based system of remote meetings and delivery of online professional development and wellbeing sessions.
- » Centre PhD candidate Winnie Orchard published a ground-breaking study on the neuroprotective effects of parenthood on the brain, which lead to media coverage in over 650 outlets and included interviews with breakfast television shows across multiple channels, radio interviews, podcasts and print media.
- The winner of the Australian Brain Bee Competition hosted by the Centre in 2019, went on to compete against a total of 43 students representing 31 nations, placing 3rd overall in the International Brain Bee Challenge.
- » As a legacy of the Centre, a coffee table book 'How the brain interacts with the world: A journey of brain discovery through science and art' was published. The book was a compilation of many of the artworks received through our annual primary school art competition, alongside featured research discoveries summarised 'In a nutshell'.
- The Centre ended in December 2021, with events held across each node (in-line with state restrictions), to celebrate the success of the Centre.

2018

2019

2020

2021

KPI Highlights **2014-2021**

RESEARCH OUTPUT

Each year the Centre has consistently exceeded its research output targets. most notably journal articles, exceeding the target by 300%.



JOURNAL ARTICLES PUBLISHED BY CENTRE MEMBERS BETWEEN 2014-2021



BOOKS PUBLISHED BY CENTRE MEMBERS BETWEEN 2014-2021



BOOK CHAPTERS PUBLISHED BY CENTRE MEMBERS BETWEEN 2014-2021



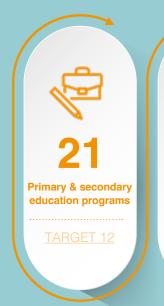
CITATIONS BETWEEN 2014-2021

AVERAGE IMPACT FACTOR OF JOURNALS IN WHICH THE CENTRE PUBLISHED

12.01

AVERAGE ALTMETRIC SCORE

COMMUNITY ENGAGEMENT









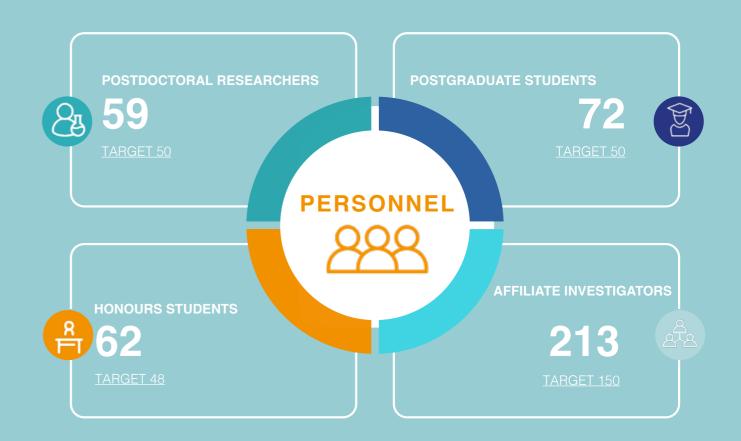


INTERNATIONAL PROFILE



CENTRE PERSONNEL

The Centre has supported 131 postgraduate students and postdoctoral researchers. 213 additional researchers were affiliated with the

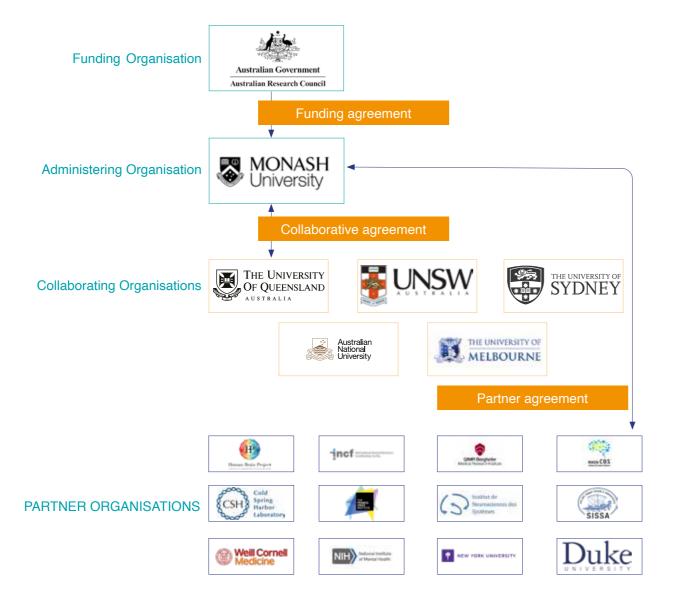


INTRODUCTION Organisation & management

Organisation & management

CENTRE STRUCTURE

The Brain Function CoE was funded by the Australian Research Council with contributions from six universities across Australia, one Australian partner organisation and eleven international partner organisations.



GOVERNANCE

Advisory Board

The Advisory Board was responsible for providing strategic direction and advice regarding all aspects of the Centre's activities to the Executive Committee, and was comprised of Australian and international members of the neuroscience and broader research community. Advisory Board members had significant experience in collaborations involving multiple large organisations, as well as international research activities, industry, and government engagement. Their support and guidance were invaluable to Centre operations.

Advisory Board Members:

- » Prof Lyn Beazley, Chair, Past Chief Scientist of Western Australia
- » Dr Amanda Caples, Lead Scientist, Victorian State Government
- Prof John Funder, Senior Fellow, Hudson Institute of Medical Research
- » Prof David van Essen, Director, Human Connectome Project
- » Prof Ulf Eysel, Principal Investigator, Department of Neurophysiology, Ruhr University, Bochum, Germany
- » Dr Allan Jones, CEO, Allen Brain Institute, Seattle, USA
- » Dr Jeanette Pritchard, Executive Officer, The Garnett Passe and Rodney Williams Memorial Foundation
- Dr Stella Clark, Executive Director, Stella Connect Pty Ltd

Senior Leadership

Centre Director Professor Gary Egan oversaw the Centre's research and operations while playing a key role in the development of industry engagement activities. Deputy Director Professor Marcello Rosa was instrumental in the development of international collaborations and partnerships and acted as an alternate for Professor Egan. Associate Director Professor Jason Mattingley played a critical role in the strategic development of key initiatives in the Education and Training Program and acted as an alternate for Professor Rosa.

Executive Committee

The Executive Committee oversaw the Centre's operations and included representatives from each research theme, collaborating institution and senior Centre personnel. The Executive Committee met monthly and comprised:

- » Prof Gary Egan, Brain Function CoE Director, Monash University
- » Prof Marcello Rosa, Brain Function CoE Deputy Director, Monash University
- » Prof Jason Mattingley, Brain Function CoE Associate Director, Brain Systems Theme Leader, University of Queensland

- » Prof Pankaj Sah, Networks and Circuits Theme Leader, University of Queensland
- » Prof Greg Stuart, Cells and Synapses Theme Leader, Australian National University
- Prof Peter Robinson, Technologies and Techniques Theme Leader, University of Sydney
- » Prof Michael Ibbotson, University of Melbourne
- Prof George Paxinos, University of New South Wales
- » Dr Glenn Papworth, Chief Operating Officer, Brain Function CoE, Monash University (ex officio)

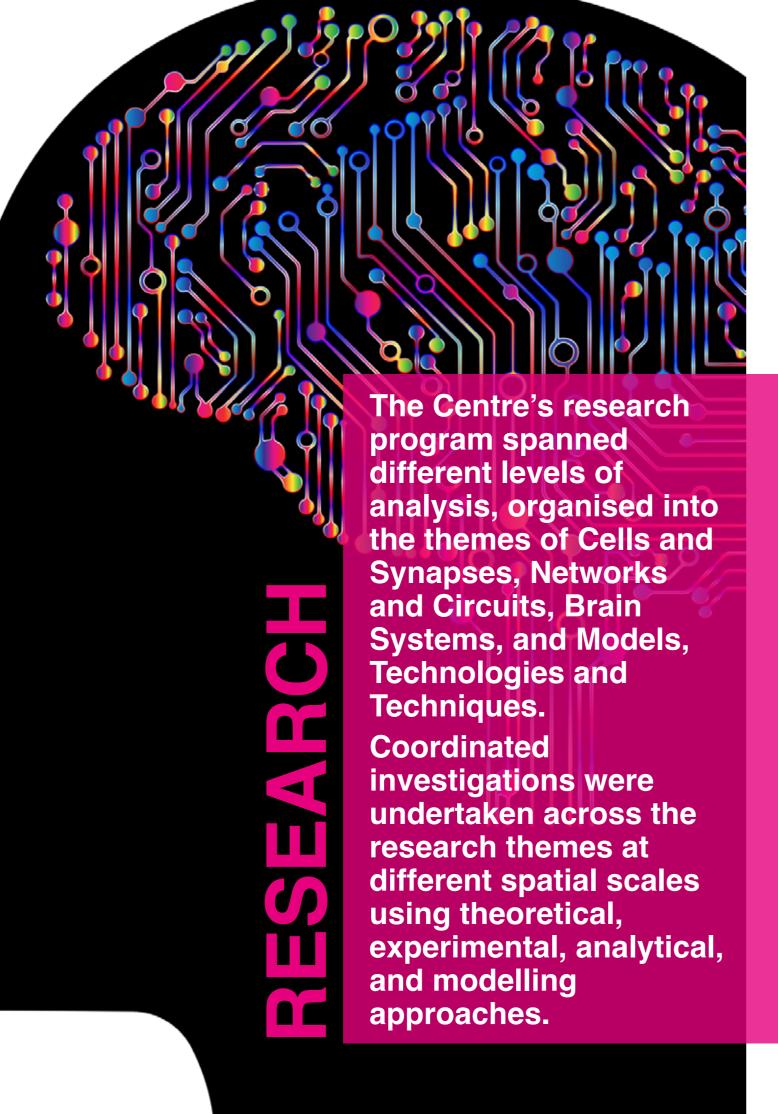
Administrative team – Management and operations

The Administrative Team comprised of administrative and management personnel providing support to the Director and Executive Committee in the conduct, communication and administration of research. Personnel were located at each of the collaborating organisations throughout Australia, and met monthly to review, plan and conduct activities across the Centre. Central Theme staff, including the Director and Centre Manager, were based at Monash University, and were responsible for managing and overseeing Centre finances and ensuring the effective collection and reporting of project information according to timeframes, deliverables and key performance indicators. The Central Theme also undertook special projects at the request of the Director to pursue new opportunities to maximise the scope, reach or impact of the Centre. Central Theme staff organised both internal and external activities and programs, including development, training, media and communications, industry engagement and public education and outreach.

Program Coordinators and Committee Chairs

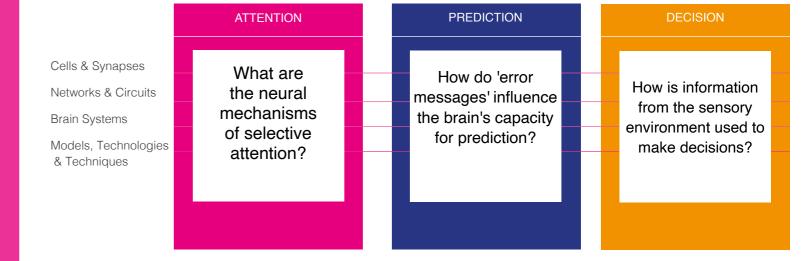
In addition to scientific research, the Centre developed a non-research program aimed at interacting with the end-user community. These programs were spearheaded by coordinators/chairs to address societal, ethical, educational, computational and industry matters raised by brain research.

- » Neuroethics Coordinator A/Prof Adrian Carter, Monash University
- » Chair, Gender, Equity and Diversity Committee Dr Sharna Jamadar, Monash University
- » Neuroinformatics Co-Coordinators -Dr Pulin Gong, University of Sydney Dr Wojtek Goscinski, Monash University



The research program of the Centre was structured to allow researchers to work on unique, multi-scale approaches to address the three key integrative brain functions of attention, prediction and decision.

The research program addressed the following critical cross-theme research questions:





Introduction

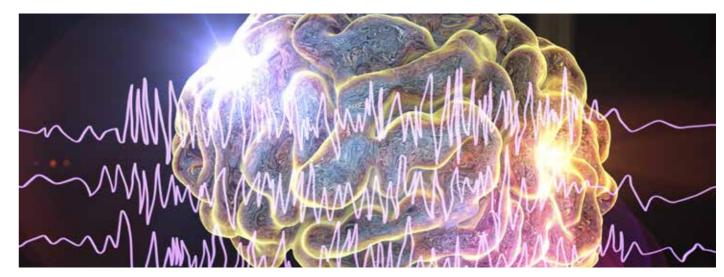
In order to understand integrative brain function, it is critical to understand how the brain processes information. Information processing in the brain relies on spiking activity in single neurons, which requires the movement of charged ions through ion channels in neuronal membranes. Brain Function CoE researchers have investigated ion flow through small conductance calcium-activated potassium channels which contribute to the after hyperpolarization that follows spike activity in many neuronal cell types.

To further gain insight into information processing in the brain, an understanding of how populations of neurons encode information in their patterns of spiking activity is essential. Methods for extracting variables that quantitatively describe how sensory information is encoded, such as for estimating receptive fields, modelling neural population dynamics and inferring low dimensional latent structure from neuronal populations, are crucial. Centre researchers have developed analytical approaches to make inferences from population recordings in multiple brain areas, such as dimensionality reduction and changes in correlated variability.

The brain integrates and processes a massive amount of sensory information to guide behaviour crucial for survival. Recent discoveries have provided evidence that the brain continually predicts incoming sensory events based on past experience in order to respond to unexpected events in a fast and efficient manner. Centre researchers have explored how the visual system codes visual stimuli based on biologically plausible models to investigate how complex experimental phenomena, such as the shapes of receptive fields and contrast invariance of orientation tuning, can be implemented in primary visual cortex by sparse coding. Other studies have compared the representations of space and motion in the visual and auditory cortex, and examined how single neurons in these two areas encode the direction of motion.

A key objective of the Centre's research was to support the development of new technologies and approaches to build better models of integrative brain function. BrainFunction CoE researchers have identified how neural activity across different cortical areas can boost synchronized oscillations between brain areas. A nonlinear, hierarchical model that provides unique insights into the brain architecture underlying the representation and appraisal of perceptual belief and precision have also been developed. These approaches can be used to gain a greater understanding of functional encoding within sub-nuclei during memory formation and may prove advantageous for studying the cellular basis of addiction as well as pathological memory models. An investigation of gene expression patterns associated with hub connectivity in neural networks has presented evidence that some expression patterns are conserved across species and scales. Together, these studies provide new models of brain networks which aids our understanding of how the brain integrates information across multiple brain regions.

Research programs



The Centre's scientific aims were to reveal how the brain integrates information in large-scale networks to yield complex behaviour, and develop neural technologies and models to understand the complexity of dynamic brain processes.

SENSORY DECISION-MAKING

Our understanding of the way that neurons in the brain process sensory information was advanced. We discovered new pathways critical for processing sensory information as well as a deeper understanding of how different brain states impact on the activity of neuronal populations during sensory decision-making behaviour. We characterised how prediction changes neuronal activity in the primary sensory cortex and in turn affects the amount of information individual neurons carry about the sensory input.

The superior colliculus was identified as a key brain region involved in attention, as well as the way that brain states and attention modulate the efficiency of sensory processing. We established new technologies for recording large populations of neurons using multi-channel Neuropixels probes as well as novel methods for manipulating neurons using optogenetics. The research provided a clearer picture of how neurons and neural systems process information, which has in turn advanced our understanding of how our brains work.

DECISION-MAKING AND MEMORY FORMATION

Our research evaluated decision-making during fear conditioning and extinction, in a brain network that engages the hippocampus, amygdala and prefrontal cortex. We established the nature and activity of circuits that transmit information between these three regions and how information is processed within these regions. Entirely new circuits in the prefrontal cortex were discovered with inter-neuronal connections that were not previously known. A new type of interneuron called the chandelier neuron was revealed to form a small population with wide-spread connections. The research brings to light how neural networks are engaged during decision-making, and memory formation and consolidation.

In fear extinction, neurons in the hippocampus project to the medial prefrontal cortex that drive a particular set of interneurons that then inhibit cells that send projections to the amygdala. Characterisation of this novel neural circuit opens avenues to investigate how danger is evaluated in the environment. Memories of events are formed and consolidated by network oscillations. The circuits and neurons that initiate these oscillations and maintain their structure were discovered, as well as the circuits that drive the particular frequencies and how they terminate. The research revealed new insights into how the nervous system processes information and how memories are formed and updated. The findings provide crucial foundational knowledge upon which to build innovative ways to treat disorders such as addiction, which are in part due to problems with memory formation and retrieval.



VISUAL CORTICAL PROCESSING

The study of receptive fields in the visual cortex is a long-standing and complex endeavour. A non-linear input model of visual cortical processing was developed and implemented. The model is a sophisticated neural network that incorporates concepts linked to deep neural networks and predictive coding. Our development of the non-linear input model has revolutionised understanding of visual receptive fields in the visual cortex. Prior to this research, our understanding of visual computations was based on theoretical models that were compared with data. The use of data-driven modelling to reveal how neural processing occurs promises to have a major impact on the field of visual processing in the next decade.

We initiated the use of a range of new multi-electrode recording devices using new materials to make the devices functional. Novel technologies were developed to analyse hundreds of times more data than was previously possible. The research produced an unanticipated technology development that utilised flexible carbon-based recording materials instead of metal electrodes. The devices are in development for medical grade equipment for use in human brain implants, as carbon-based electrodes have the potential to survive and function in the brain for a lifetime. The development of new carbon-based, high-density electrode recording devices is expected to revolutionise the ability to communicate with the human brain.

BIOPHYSICAL NEURON MODELS

Biophysically detailed neuron models revealed that tonic inhibition can increase excitability in somatostatin interneurons. whereas until now tonic inhibition was thought to reduce excitability of all neurons. The discovery has significant implications for the role of gap junctions in controlling cortical network activity. By combining realistic neuron models with patch clamp measurements featuring Dynamic Clamp analysis, the impacts of mutations in two genes (SCN1A and SCN2A coding for sodium channels Nav1.1 and Nav1.2) were elucidated. The dynamic action potential clamp (DAPC) system was shown to provide clear benefits over conventional voltage clamp for rapid and definitive prediction of neuronal channelopathies. The model also provides insight into the impact of tonic inhibition upon neural activity, and suggests a mechanism through which GABA, the predominant inhibitory neurotransmitter of the mammalian brain, may modulate the excitability of neurons in a selective manner

BRAIN DYNAMICS

Brain models of attention and prediction using decision and control functions based on brain physiology has placed brain dynamics in a form compatible with engineering control systems. The modelling research focused on the formulation of a theory of brain dynamics and connectivity in terms of eigenmodes and their resonances to simultaneously analyze brain activity, structure and function. Analytical approaches for linear and nonlinear brain waves were developed using state tracking and brain modelling algorithms. Links between evoked brain responses and the underlying dynamics, especially in the context of gain-mediated attention, were revealed. The research has applications to vision and brain stimulation methodologies, as well as brain disorders such as epileptic seizures and Parkinson's disease.

Novel quantitative approaches to interrelate brain phenomena and measurements across brain scales led to the discovery of hemodynamic waves in the cortex. Furthermore, brain modes were discovered to be locked into remarkably stable fixed orientations by the brain's convolutions. Modelling of the clearance of waste products from the brain was revealed as a critical factor to understand arousal dynamics which contribute to cognition. Models of brain connectivity shifted the field away from phenomenology toward physically based approaches. Phenomenological methods are prone to artefact, whereas methods to obtain eigenmodes from data are of immense practical benefit to compactly describe and monitor brain states and connectivity.

BRAIN COMPUTATION

Studies of perceptual learning and the underlying connectivity of distributed neural architectures responsible for evoked brain responses were undertaken. Dynamic causal models of event-related potentials provide a non-invasive method to investigate experience-dependent coupling among brain regions. Computational models were applied to investigate the challenging question of rapid stimulus appraisal and the functional role of subcortical pathways to the amygdala. A longstanding debate in the field of affective neuroscience was resolved by demonstrating that a subcortical pathway to the amygdala bypasses cortical pathways to provide rapid information about visual and auditory objects.

Our research extended foundational connectivity models into disorders of consciousness. Empirical tests of predictive coding models were applied in altered states of cognition. Foundational work using a dynamic causal modelling examined key questions about the specific roles of forward and backward connections in the brain and their relation to exogenous and endogenous brain process. A specific network disruption associated with perturbed consciousness in coma was identified, whereby a top-down connection between frontal and temporal cortices was discovered to be disrupted in vegetative patients but preserved in patients in a minimally conscious state and in healthy controls.



SELECTIVE ATTENTION

A central research goal was to understand how the human brain filters and integrates information from the principal sensory modalities - vision, audition, somatosensation and olfaction and how these processes regulate perceptual and cognitive processes. We examined the role of neural oscillations in the regulation of sensory and attentional processes. Multivariate analysis approaches were used to characterise how simple feature information, including orientation, motion and spatial location, was affected by changes in attentional state. We discovered that both the frequency and phase of endogenous neural activity, particularly in the alpha and gamma bands, affects attentional allocation and detection thresholds in attentional cueing and multiple-object tracking tasks, and that these oscillations either predict or correlate with perceptual awareness. We developed a novel paradigm for use with neuroimaging approaches whereby multiple, concurrent sensory events were counter-phased or flickered at unique frequencies. The signatures of the stimuli were recovered individually via Fourier analysis to simultaneously track the activity patterns from multiple attended and ignored stimuli.

The influence of attentional load on visual and auditory attention was examined using neural signatures of attentional tracking during approach and avoidance behaviour, to determine how the brain represents attended and ignored sensory events that have been masked from awareness. A brain computer interface system acquired neural activity with ~300 millisecond delay to provide a feedback signal to participants. The approach enabled examination of the extent to which people are able to modulate their own brain activity to achieve specified task goals via neurofeedback, and whether such strategies can be harnessed to drive implicit and explicit learning of attentional control.

PREDICTIVE CODING OF PERCEPTUAL FEATURES

According to predictive coding theory, neural responses to sensory stimuli arise from an active Bayesian inference mechanism, which generates predictions (or 'beliefs') about the world and compares these with incoming sensory inputs. If the evidence matches the prediction, the model is retained. If there is a mismatch – also known as a prediction error – the model is updated. Research was undertaken aimed at understanding how the brain establishes and tests models of the world against current sensory inputs, and whether such processes are governed by or determine attentional selection. Studies examined how the statistical properties of sequential stimuli generate surprise responses in the brain, whether these responses are influenced by attention and task-relevance, and whether neural responses to elementary visual features are encoded differently for unpredicted and predicted stimuli.

To understand how predictive coding alters activity at the level of individual neurons, neurophysiological data were recorded from visual areas of the brain in awake mice using two-photon calcium imaging.

We examined when and how neuronal responses are altered by changes in the predictability of simple stimuli. The work used computational modelling to relate patterns of neural activity at the level of single neurons with wider brain networks, across tasks and species in an integrative framework, to understand predictive coding in the mammalian brain.

ATTENTIONAL AMPLIFICATION OF NEURAL ACTIVITY

An enduring question is whether and to what extent focused attention is required to accumulate statistical information about sequence regularities. Our research found that even under high concurrent attentional load the human brain tracks the statistical properties of ignored auditory events and shows an enhanced prediction-error response to oddball events. Bayesian model selection was used to determine the effects of attention on mismatch responses in an auditory selective listening task, which revealed that attention amplifies neural responses equally to predicted and unpredicted events. Multivariate forwardencoding models determined that representations of elementary visual features, such as colour, orientation and motion, are encoded differently for predicted and unpredicted visual stimuli. Significantly, an approach to measure feature-specific tuning of neural responses to elementary visual features based on forward-encoding modelling revealed that the amplification of a visual feature increased with prediction violation, whereas there was no effect on the sharpness of the visual feature.

PERCEPTUAL DECISION-MAKING

Virtually every aspect of waking life requires a decision. What are the brain processes that underlie decision making in humans? A range of approaches was used to investigate the neural and behavioural correlates of simple and complex perceptual decisions in the visual modality. For studies of simple decision making transcranial random noise stimulation was used to test a key prediction from stochastic resonance theory, which postulates that the addition of an optimal amount of external or internal noise to a sub-threshold stimulus can push the stimulus above threshold and thus improve perceptual performance. Consistent with stochastic resonance theory, an enhancement of simple perceptual decisions when transcranial random noise stimulation was delivered in conjunction with subthreshold motion signals was discovered. A model of the behavioural data under a hierarchical drift diffusion framework revealed that the addition of neural noise specifically increased the drift rate of evidence accumulation.

Bayes' theorem postulates that the probability of a hypothesis given an observation is a weighted sum of the probability of the hypothesis on its own and the probability of the observation given the hypothesis. Bayes' rule has been used successfully to model different aspects of human cognition, from shape constancy to spatial navigation. A Bayesian approach was used to understand complex perceptual decision-making, which

entails the integration of sensory information from two or more sensory sources. In one approach, participants viewed two or more sequential stimuli embedded in dynamic noise and judged the average of the stimuli, which required participants to weight and integrate sensory evidence from two or more different signals. A number of key properties of the sensory events that contributed to the final decision, both in terms of behaviour and corresponding neural activity, were discovered consistent with Bayesian theory.

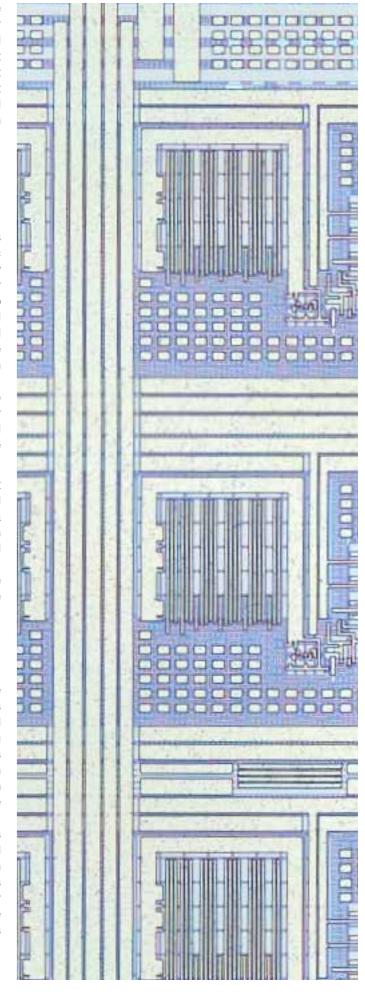
BRAIN MAPS

The primate cortex is separated into dozens of visual areas that form a mosaic of individual visual maps. Topographic brain maps have been classified according to whether they represent visual information as a mirror image or a non-mirror image of the object being viewed. The classification is used to determine the transition between different areas in the visual cortex. Research to model how topographic maps are formed during brain development was undertaken to investigate the interaction between two maps as they develop in adjacent brain areas. Some configurations of brain areas were discovered, suggesting a previously unknown, 'twisted' type of map that combined regions that represent images as both mirror images and non-mirror images. Advanced electrophysiological techniques showed that this third type of map within a single brain area exists in the primate brain.

This line of work demonstrates that the formation of two adjacent brain areas can create new types of organisation that would not be predicted by modelling the formation of each area independently. To capture the full complexity of the human brain it is necessary for models to incorporate multiple areas and take into account the fact that they develop at different times. Understanding order in which brain areas develop across the visual cortex is important for understanding differences in the organisation of the cortex between species, including humans.

ATLASES

Scientists use brain atlases to navigate seamlessly between the central nervous system of humans and experimental animals to test hypotheses inspired by human considerations and observations. Atlases have traditionally been developed using post-mortem brain tissue. Our research used in-vivo MRI images to construct a high-resolution atlas of the living human brain and the rat brain. Brain regions in MRI post-mortem brainstem images were delineated to identify the boundaries of more than 300 different structures across approximately 60 levels. The level of delineation was highly significant as all structures identified in previous histological atlases were revealed and the greatest number of delineations achieved compared with any previous brain atlas or tool. Notably, a nucleus that was previously unknown (endorestiform) was identified as well as four homologies between the human and rat brain. A comprehensive set of atlases of the adult human brain and spinal cord of humans and experimental animal models in rat, mouse, rhesus monkey, and marmoset were completed.

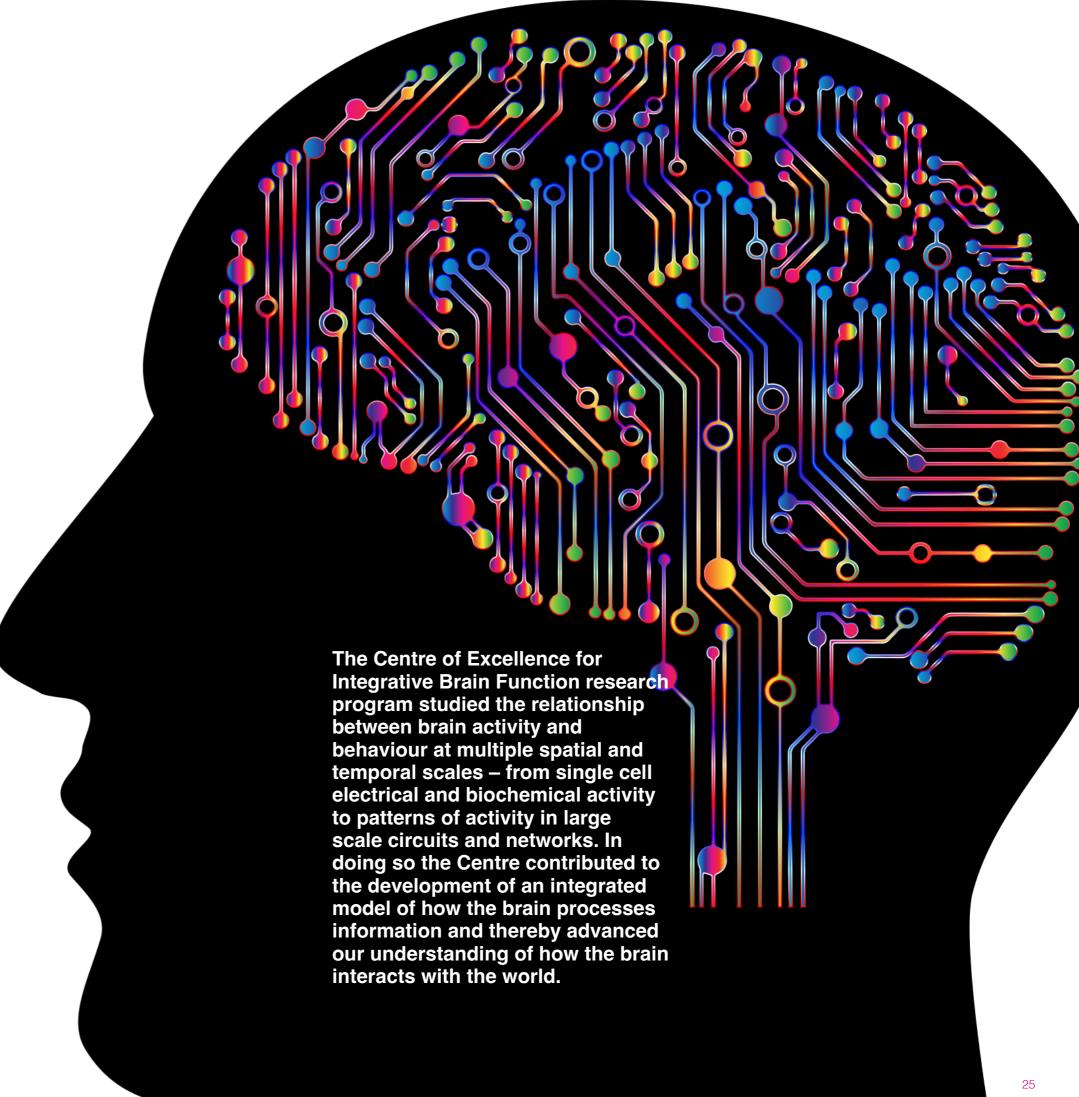


LIGHTSHEET MICROSCOPE

A custom lightsheet imaging microscope that provides high resolution images of specific brain regions was built, compatible with many brain clearing techniques to generate numerous data sets. The design and construction of our microscopes for dynamic imaging included the control software and analysis tools to process the images into opto-physiology data sets. The microscope was used to identify novel morphological changes in a model of Dravet Syndrome that were consistent with known cognitive and behavioural co-morbidities in this neurodevelopmental disease model. The instrument was used to establish a novel methodology to clear, label, image and automatically register images to a mouse brain atlas. Statistical analyses of regional differences identified a time point prior to the onset of seizures in an epileptic encephalopathy mouse model of Dravet syndrome. The lightsheet microscope findings demonstrated that the glass-brain imaging methodology provides a valuable adjunct tool for anatomical analysis of neurodevelopmental disease models.

NEURAL MICROCHIPS

Existing neural microchips either rely of the use of sub-threshold circuit designs to achieve low power consumption at the expense of manufacturing yield, or come with the requirement for batteries or wires to satisfy high power requirements. A novel low-power neural implantable in-vivo recording microchip and associated external transmitter/receiver hardware was built to record Local Field Potentials and Action Potentials. Low-power techniques for signal amplification and analogue-to-digital conversion driven from a wireless power supply were developed. The microchip design enables volume production and channel scalability of low-power wireless recording implants, and facilitates closedloop implant operation for self-optimising systems such as bionic eye systems where significant patient training is not required. A manufacturable design which achieves a calculated balance of performance and power consumption was demonstrated.



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Books

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CENTRE PRESENTATIONS

2014-2021

289
INTERNATIONAL PRESENTATIONS

184
NATIONAL PRESENTATIONS

385

2021 Presentations

International Presentations

- 1. Arabzadeh, E. Information processing in neural circuits. Institute for Fundamental Research. Virtual (India). Dec 2021.
- 2. Deeba, F., Sanz-Leon, P., Robinson, P.A. Unified dynamics and interrelations of interictal events and absence seizures. *European Society of Medicine General Assembly*. Virtual (Germany). 20-21 Aug 2021.
- Garrido, M.I. What can sensory prediction errors tell us about altered states of consiousness? 5th Montreal AI and Neuroscience conference. Virtual (Canada). 29-30 Nov 2021.
- Garrido, M.I. Using M/EEG paradigms, dynamic causal modelling and pharmacological manipulations to investigate altered brain computations in schizophrenia. 9th European Conference on Schizophrenia Research (ECSR). Virtual (Sweden). 23-25 Sept 2021.
- Garrido, M.I. From sensory prediction errors to computational psychiatry. *Virtual Open House - Krembil Centre for Neuroinformatics* Virtual (Canada). 21 Jun 2021.
- 6. Garrido, M.I. The insight of blindsight. *EmoSenses Talk, University of Aveiro*. Virtual (Portugal). 28 May 2021.
- Jamadar, S.D. Introduction to simultaneous MR-PET:
 Opportunities, Challenges, and Applications. 27th Annual Meeting of the Organisation for Human Brain Mapping Virtual (Global). 21-25 June 2021.
- 8. Mansouri, F.A. Emergence of abstract rules in the primate brain. *NeuroTalk International Seminar Series Higher Brain Functions*. Virtual (Iran). 20-22 Jul 2021.
- 9. Mansouri, F.A. The role of prefrontal cortex in rule-based behaviour. *Basic and Clinical Neuroscience Conference. Virtual* (Iran). 22-24 Dec 2021.
- **10.** Mattingley, J.B. Investigating the impact of brain stimulation on brain function in healthy adults. *Australasian Brain Stimulation Society*. Virtual (Brisbane). 14 Jul 2021.
- Pawar, K., Egan, G.F., Chen, Z. Estimating uncertainty in deep learning MRI reconstruction using a pixel classification image reconstruction framework. *International Society for Magnetic Resonance in Medicine. Virtual* (Global). 15-20 May 2021.
- 12. Pawar, K., Zhong, S., Chen, Z., et al. Brain tumor segmentation using two stage convolutional neural network for federated evaluation. *24th International Conference on Medical Image Computing and Computer Assisted Intervention*. Virtual (France). 27 Sept 1 Oct 2021.

- 13. Peiris, E., Chen, Z., Egan, G.F., et al. Duo-SegNet: adversial dual-views for semi-supervised medical image segmentation. 24th International Conference on Medical Image Computing and Computer Assisted Intervention. Virtual (France). 27 Sept 1 Oct 2021.
- 14. Renton, A.I. Real-time neurofeedback training of spatial and feature-based attention selectively enhances visual processing. *Australasian Cognitive Neuroscience Society Conference*. Virtual (Melbourne). 18-19 Nov 2021.
- **15.** Stuart, G. Cellular and circuit mechanisms underlying binocular vision. *Basic and Clinical Neuroscience Congress*. Virtual (Iran). Dec 2021.
- **16.** Stuart, G. Cellular and circuit mechanisms underlying binocular vision. *Scuola Internazionale Superiore di Studi Avanzati* Virtual (Italy). Jul 2021.
- Zhong, S., Morris, A., Chen, Z., et al. Federated multi-task image classification on heterogeneous medical data with privacy perversing. *International Society for Magnetic Resonance in Medicine*. Virtual (Global). 15-20 May 2021.

National Presentations

- **18.** A-Izzeddin, E.J., Mattingley, J.B., Harrison, W.J. Contextual influences of perceptual inferences. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- Arabzadeh, E. Predictive coding and perception of music. Seminar for the School of Music, ANU. Canberra, Australia. Dec 2021
- 20. Arabzadeh, E. Neural coding. *Australian Course in Advance Neuroscience*. Virtual (Melbourne). 11-22 Oct 2021.
- **21.** Broersen, R., Thompson, G., Stuart, G. Binocular visual processing in superior colliculus. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **22.** Dyce, G., Mattingley, J., Tang, M., et al. Neural correlates of spatial attention in mice. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- 23. Egan, G.F. VBIC Introduction. *Victorian Biomedical Imaging Capability Annual Network Meeting*. Virtual (Melbourne). 26 Nov 2021.
- **24.** Egan, G.F. MELTHERA: HZDR Monash joint international laboratory. *6th German-Australian Science and Innovation Day.* Virtual (Melbourne). 6 Oct 2021.
- **25**. Garrido, M.I. Keynote presentation. *Melbourne Psychiatry Symposium*. Virtual (Melbourne). 2021.
- **26.** Garrido, M.I. Keynote presentation. *Cognito*. Virtual (Melbourne). 17 Oct 2021.
- **27.** Grünert, U. Neural circuitry of rod mediated vision. *Centre for Eye Health, UNSW.* Virtual (Sydney). 23 Feb 2021.

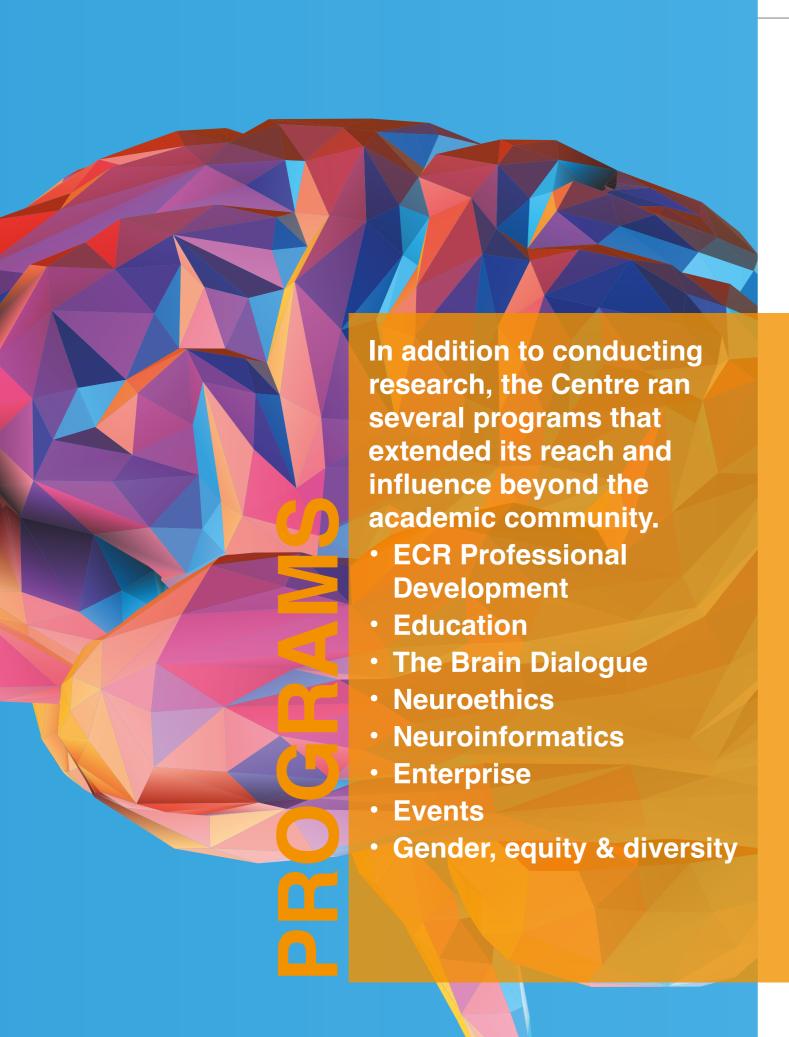
- 28. Harris, A.M., Mattingley, J.B. Additive effects of theta and alpha phase in predicting the timing of pro- and antisaccades. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021
- 29. Harrison, W.J., Stead, I., Wallis, T.S.A., et al. The remarkably precise coordination of shifts of spatial attention and saccadic eye movements. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- **30.** Mafi, A., Tang, M., Arabzadeh, E. Temporal precision of decision making in humans and rodents. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **31.** Mattingley, J. Understanding the role of prediction in sensory encoding. *Monash Biomedical Imaging Webinar Series*. Virtual (Melbourne). 29 Jul 2021.
- **32.** Mattingley, J.B. Plenary. *QUT Centre for Robotics, Retreat.* Brisbane. Australia. 13 Dec 2021.
- 33. McIntyre, M.E., Rangelov, D., Mattingley, J.B. Beyond simple perceptual decision making: an investigation of feature-based attention and motion integration in twoalternative decisions. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- **34.** Mishra, W., Kheradpezhouh, E., Arabzadeh, E. Cholinergic modulation of sensory coding and behaviour. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **35.** Mitchell B., Tang, M., Mattingley, J., et al. Uncertainty and barrel cortex neurons: our predictions violated? *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **36.** Partridge-Madsen, T., Stuart, G. Role of inhibition in controlling neuronal output. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **37**. Paxinos, G. A river divided. Neuroscience & Non-Communicable Diseases Seminar Series. Sydney, Australia. 17 Sept 2021.
- **38**. Rangelov, D., Fellrath, J., Galligan, D., et al. Neural mechanisms of sensory integration across space. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- 39. Renton, A.I., Painter, D.R., Mattingley, J.B. Implicit neurofeedback training of feature-based attention promotes biased sensory processing during integrative decision-making. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 2021.
- 40. Renton, A.I., Painter, D.R., Mattingley, J.B. Understanding the neural bases of attention, prediction and decisionmaking in health and disease. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- **41.** Renton, A.I., Painter, D.R., Mattingley, J.B. Neurofeedback training of visual selective attention. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.

- **42.** Rideaux, R. Exploring and explaining biological motion processing with nueral networks. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.
- **43.** Sah, P. The cell biology and biophysics of associative learning and fear conditioning. *University of NSW, School of Psychology Behavioural Neuroscience Research Seminar.* Sydney, Australia. 5 Mar 2021.
- **44.** Sah, P. Welcome and introduction. *Joint SUSTech-UQ Centre for Neuroscience and Neural Engineering (CNNE) Symposium.* Virtual (Brisbane). 25 Jun 2021.
- **45.** Sah, P., Hu, S. Final comments. *Joint SUSTech-UQ Centre for Neuroscience and Neural Engineering (CNNE) Symposium.* Virtual (Brisbane). 25 Jun 2021.
- **46.** Stuart, G. The electrical structure of neurons. *Australian Course in Advance Neuroscience*. Virtual (Melbourne). 11-22 Oct 2021.
- **47**. Stuart, G., Testa-Silva, G., Rosier, M., et al. NMDA spikes in human pyramidal neurons. *ANU CIBF Finale Science Meeting*. Canberra, Australia. 14 Dec 2021.
- **48**. West, R., Matthews, N., Mattingley, J.B., et al. Comparing confidence across sensory modalities. *The Australasian Experimental Psychology Society Annual Meeting*. Virtual (Brisbane). 9-11 April 2021.

Poster Presentations

- **49.** Bryson, A. *35th Annual Scientific Meeting of the Epilepsy Society of Australia.* Virtual (Tasmania). 2-4 Nov 2021.
- **50.** Jamadar, S.D. Monash rsfPET-fMRI and Monash visfPET-fMRI: Two publicly available simultaneous MR-PET datasets. *27th Annual Meeting of the Organisation for Human Brain Mapping*. Virtual (Global). 21-25 June 2021.
- **51.** Randeniya, R., Vilares, I., Mattingley, J.B., et al. Increased functional activity and altered effective connectivity during sensory learning in autism. *27th Annual Meeting of the Organisation for Human Brain Mapping*. Virtual (Global). 21-25 June 2021.
- **52.** Rideaux, R. Exploring and explaining properties of motion processing in biological brains using a neural network. *Vision Science Society Meeting*. Virtual (USA). 21-26 May





ECR PROFESSIONAL DEVELOPMENT

A major focus of the Centre has been its commitment to provide a network of support for our Early Career Researchers (ECRs) with the aim of enhancing their career progression through professional development and mentorship opportunities, as well as providing funding opportunities for conference travel, lab exchanges, and collaborative experiments.

To ensure adequate representation of ECR interests, in 2015 an ECR executive committee of elected representatives was established. The purpose of this committee was to plan and drive activities to support their research interests and professional development requirements, with professional guidance and financial support facilitated by the Central node.

From a cohort of seven ECRs in 2014, our network grew to support over 115 funded fellows and scholars, with an additional 141 affiliate ECRs, all of whom were invited to participate in, and benefit from the various initiatives organised by the ECR Executive committee each year.

WORKSHOPS AND RETREATS

Each year, the ECR executive committee were charged with coordinating programs for a series of face-to-face events, most often a two-day mid-year retreat, followed by an end-of-year workshop as part of our annual AGM and science meeting activities. These events had a combined attendance of over 300 ECRs, and were utilised to display the breadth of scientific expertise and technological resources accessible across the Centre, with the goal of fostering multi-institutional collaborations. In addition, the events also incorporated a series of professional development and training courses, with recurrent themes including grant writing technique, science communication and media training, industry engagement and entrepreneurship, career pathways through academia and beyond, with a major focus on wellbeing and achieving work-life balance.

MENTORSHIP

In 2019, a program was established to facilitate a mentorship network to connect ECRs with each other, and with Chief Investigators and Associate Investigators. This opt-in program ensured those who wanted to be involved were connected with suitable mentors who offered support and encouragement, along with advice to help navigate their individual career goals.

SEED FUNDING GRANTS

In 2017, the ECR executive committee ran their inaugural Pitch Competition, other times referred to as the Three Minute Fellowship. Throughout the years the format of the event changed, however the premise remained consistent. Each year ECRs were invited to partake in an event to pitch their project proposal to a panel of judges, with winners awarded independent seed funding to conduct a pilot experiment or a proof-of-principle study to improve the feasibility of an innovative idea that could lead to future grant applications. Since its inception, over \$55,000 has been awarded to ECRs to fund their innovative independent research programs.

TRAVEL AWARDS

The first and longest running initiative of the ECR executive committee was their travel award program. Each year there would be a competitive process to judge applications for funding to facilitate travel that were proven to benefit the ECRs' research or careers. Travel could be national or international, and could be for the purpose of a lab exchange, to enable collaborative research or to attending/ present at a renowned conference. This program ensured all ECRs had access to funding to pursue integral research opportunities they might otherwise miss out on. Over the life of the Centre over \$50,000 was awarded to ECRs to support their travel.

EDUCATION

A major goal of the Centre has been to support the next generation of brain researchers. Beginning at a primary school level, our education program was designed to introduce brain research to students across all levels, and encourage them to think about the brain and its functions. The program brought together neuroscientists and students, engaging them in active learning and providing resources with the latest information on how the brain functions.

PRIMARY SCHOOLS

We introduced brain research to primary school aged children through our annual creative art competition. Each year the competition took place as part of Brain Awareness Week, a global campaign led by The Dana Foundation that aims to increase awareness of the importance and current state of brain research in the world. We would invite primary school students from around Australia to create an artwork inspired by thoughts about the brain such as: "I use my brain to..."; "I love my brain because", or "what makes 'sense' in the brain".

Each year artworks would be shortlisted by a panel of judges, before all Centre members were invited to vote for the winning entries. Prizes were awarded for 1st, 2nd and 3rd place across three age categories; Foundation year (Prep) - Year 1, Years 2 – 4 and Years 5 – 6. All winners received a prize pack containing brain-related books, activities, puzzles and games, with each winner's school receiving a brain-related resource pack and a voucher to purchase additional educational resources. Beyond the vouchers and prizes, the 1st place winners were treated to a special visit by Centre researchers to award their prizes in person, and deliver an age appropriate interactive educational lesson about the brain to the winner's class.

Since its inception in 2016, we received over 4,000 submissions across six years, from every state and territory in Australia. The student artworks have been so well received that many have been placed on display around the Centre Nodes. With the aim of sharing our resources with the general public, a selection of these works were also included in an exhibition that was displayed throughout several public libraries. Many artworks were also utilised in our promotional material (including annual report cover images), and a coffee table was published in 2021 which featured several student artworks alongside our summarised research highlights.

SECONDARY SCHOOLS

After previously sponsoring the event, the Centre was awarded hosting rights of the Australian and New Zealand Brain Bee Challenge in 2017. The Brain Bee Challenge is an annual neuroscience competition for students in year 10 in Australia and New Zealand. The competition tests students' knowledge of the human brain and how it works, aiming to dispel myths about the brain and to inspire students to pursue brain-related careers in medicine and research.

The competition commences each year with an online quiz open to all year 10 students, with high achievers selected to attend and compete in regional finals across each state and territory in Australia; and both North and South Islands of New Zealand. Winners from each regional final come together to compete in a National Final that takes place as part of the Australasian Neuroscience Society's Annual Meeting program, where one overall winner is decided upon for each nation.

The grand prize for each national champion each year was an all expenses paid trip to an international location to compete in the International Brain Bee Championships.

TERTIARY

Throughout the life of the Centre, several specialised workshops and training courses have been offered to tertiary students to share knowledge and skills with the broader academic community. These training sessions have been offered both in person and online and have included content that draw on the Centre's unique expertise. These have included neuroanatomy workshops hosted by world-renowned expert Professor Charles Watson; technical workshops on operating equipment available at each node including Magneto Encephalography (MEG), Transcranial Magnetic Stimulation (TMS), functional Magnetic Resonance Imaging (fMRI) and Radiotracers in Positron Emission Tomography (PET); as well as advanced programming workshops educating students in using software such as MATLAB and Python. These workshops were offered on an as requested basis, to ensure these niche skills were shared with those in need.



PROGRAMS The Brain Dialogue

THE BRAIN DIALOGUE



The Centre's outreach program 'The Brain Dialogue', was established to share knowledge and engage with those interested in our work to strengthen connections between our researchers and endusers, thereby maximising the social, economic and scientific benefits of brain research.

This was achieved throughout the life of the Centre via three main strategies:

- Extending our reach by building a network though social media engagement, to share ideas with a global audience of researchers, end-users and the general public.
- Sharing knowledge and making it accessible to all by translating our scientific outputs into plain language summaries and promoting them through our website and social media channels.
- Engaging our community by hosting a series of public events to facilitate mutual learning of both researchers and non-scientists, keeping our network abreast of the rapid progress in brain research and the issues and opportunities it offers.

SOCIAL NETWORK

The Brain Dialogue developed an integrated social media presence allowing unrestricted access and republication of our research content, broadcasting our discoveries to the scientific community, industry, end-users and the wider public both Australia-wide and globally.

Throughout the lifetime of the Centre, our social network grew to over 4,000 users across Facebook, Twitter and LinkedIn, with our content viewed over 650,000 times across all platforms. This maximised impact by disseminating our research findings to a global community, evidenced by the high altmetric scores of our research outputs (a measurement of the online attention an article garners), averaging an altmetric attention score of 20 per published paper. This translated to an increase in republication across additional social platforms and users, as well as an increase in likelihood the output would receive mainstream media coverage.

KNOWLEDGE SHARING

A major objective of the Brain Dialogue was to share Centre research with the public in a comprehensible format to ensure everyone had access and could benefit from our findings.

To achieve this, we translated over a third of our research outputs into plain language summaries, which included a single-sentence take-away from the article 'In A Nutshell'; 'Big Picture' translations that explain the paper and its significance in plain English; and 'Next Steps' to encourage further exploration. Communicating our research in this way not only informed the broader community as to what the Centre does, but also created opportunity for interdisciplinary research and linkage within the scientific community and industry.

Over the life of the Centre, 160 plain language summaries were published on our website which were also shared across all our social media channels, meaning each of our published discovery pieces inadvertently reached our network of over 4.000 users.

PUBLIC EVENTS

Throughout the life of the Centre we hosted and presented at a series of public events, lectures, debates, panel discussions, demonstrations and Q and A sessions, aimed at engaging the general public, to ensure the wider community could participate and contribute to the conversation surrounding the social and ethical issues emerging from brain research discoveries.

In its six years' operating prior to the introduction of pandemic restrictions in 2020, the Centre presented a total of 21 public events, with an average audience of 300 attendees per event (most often the maximum venue capacity). Each event was specifically designed to generate thoughtful discussion on the status of brain research, where it currently stands, where advances in technology could potentially lead, and the societal and ethical considerations of these advances in technology and research. Many of these events garnered significant traction with media, leading to news articles, radio interviews, and entire podcasts episodes invoking further discussion on the key topics raised in these events.

Some featured events presented by The Brain Dialogue included:

Who's in charge of your Brain? - A 'Q and A' style event chaired by media personality Jane Caro, focussed on the topic of attention (one of the Centre's key research themes). Discussion centred around examining attention in terms of manipulation and deception (magic, advertising, etc) as well as from a more general scientific view including attentional control, distraction, deception, and the philosophical or ethical implications of this kind of research.

- Zap My Brain A series of events, articles, media, and online discussions exploring the impact of a rapidly changing, disruptive brain technology, including non-invasive brain stimulation such as transcranial Direct Current Stimulation (tDCS) and Transcranial Magnetic Stimulation (TMS). The event included a demonstration of TMS, as well as audience directed panel discussion of the real-world applications and benefits of such technology, as well as the safety and ethics of electrodoping.
- Machines That Read Your Mind a series of events and online discussions focused on the impact of brain-computer interfaces on modern society. The event included a real-life demonstration of a sophisticated EEG-based brain-machine interface, giving a unique and authentic insight into what these technologies can do, before a panel discussion explored the extensive possibilities of how this technology could be utilised in future, including to move prosthetic limbs with thoughts alone, or using brain scans to reveal a person's thoughts or memories, as well as the moral and ethical considerations of 'reading' someone's brain.
- Brains and Computers a public lecture given by two internationally acclaimed brain researchers, Prof Christof Koch, and Prof Karlheinz Meier, coming together to discuss some of the latest international efforts to understand the brain including the US based Allen Institute for Brain Science, and the European Human Brain Project. The event featured a short presentation by each brain researcher in an effort to address some of the developments and challenges of the latest international endeavours in brain research, followed by an interactive discussion with the audience moderated by ABC media personality Bernie Hobbs.
- » Brain Control brought together leading international and national scientists, ethicists, lawyers and marketing and communication experts to discuss the ethical implications of health metadata, how it's continuously captured by smartphones and other wearable devices, where its stored, and who could potentially access it. The event took place in the format of a panel discussion led by ABC Radio personality Jon Faine, with the audience invited to ask questions and debate the ethical implications and risks associated with digital health data being captured and used by others, addressing concerns about privacy, whether data could be sold to or accessed by third parties, and whether it could be used to discriminate against vulnerable populations.

 38

NEUROETHICS

Neuroethics is an internationally recognised field that aims to successfully translate brain research in ways that maximise social benefit while minimising harm.

The need for Neuroethics has been recognised by all major brain projects around the globe, incuding the US BRAIN initiative, and EU Human Brain Project, and other brain initiatives in Japan, Korea, China, Canada and Australia. The Australian Brain Alliance has made Neuroethics a key priority for the Australian Brain Initiative. The leadership of the Centre has greatly facilitated this development.

Over the past seven years, under the leadership of A/Prof Adrian Carter, the Centre's Neuroethics program aimed to create an interdisciplinary collaborative Australian Neuroethics Network that brought together leading Australian practitioners in neuroscience, law, ethics, policymaking, clinical practice, patient populations, the public and other end-users to examine the ethical and social implications of neuroscience research. We have undertaken a range of activities during the past years to achieve this.

THE AUSTRALIAN NEUROETHICS NETWORK

We formed the Australian Neuroethics Network (ANN) in 2016, with the aim of:

- » supporting new interdisciplinary collaborations examining the ethical, legal and social challenges raised by advances in neuroscience research and technology
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- » providing links to international neuroethics initiatives
- » providing a platform to bring together researchers and practitioners interested in the nexus between neuroscience, ethics, philosophy, the law and policy, holding a Neuroscience and Society conference annually.
- » providing recommendations and guidance to policy makers and other leading decision makers on the impact of neuroscience for Australian society.

INTERNATIONAL ENGAGEMENT

In 2016 the Centre's Neuroethics Program Coordinator, A/Prof Adrian Carter, was the Australian Ambassador at the International Neuroethics Society (INS) meeting, held in San Diago. The INS president, Prof Judy Illes (University of British Columbia) also invited A/Prof Carter to join the INS Response Action Task Force to provide guidance and recommendations on important and timely issues raised by neuroscience research.

The following year, the Neuroethics program hosted a special symposium at the Organisation for Human Brain Mapping meeting in Vancouver: The neuroethical implications of human brain mapping, chaired by the Centre Director, Prof Gary Egan. In addition, A/Prof Carter was invited to participate in two global neuroethics initiatives in 2017. The first was a workshop looking at the ethics of emerging neurotechnologies and artificial intelligence in Columbia University, New York in June, the results of which were published in Nature. The second was a Global Neuroethics Summit in Deagu, South Korea in September to look at different cultural perspectives to ethical issues raised by neuroscience research. A/ Prof Carter also attended a meeting of Neuroethics Program leaders at the International Neuroethics Society (INS) meeting (a satellite of the Society for Neuroscience) in Washington DC in November, as the Australian Ambassador to the Society.

In 2018, A/Prof Carter was invited to present at the second Global Neuroethics Summit on the Australian development of a neuroethics framework as part of the Australian Brain Alliance in 2018. He was also invited by the Organisation for Economic Co-operation and Development (OECD) to represent the Australian government on one of the workshop panels for their two-day workshop in Shanghai on responsible innovation of neurotechnology.

In 2019, he again participated in the Global Neuroethics Summit in Uppsala, Sweden on community engagement in neuroethic and also represented Australian neuroethics and the BrainFunction CoE at the 2019 Annual Meeting of the International Neuroethics Society in Chicago at a panel discussion on "Dilemmas in Global Neuroethics.

Next, in 2020, A/Prof Carter was elected to the Board of Directors for the International Neuroethics Society and co-chaired the Program Committee for the virtual 2020 International Neuroethics Society Meeting.

These events highlight the well-deserved international recognition of the Centre's leadership in neuroethics in Australia and our success in fostering local researchers.

The developments above have put the Centre's Neuroethics program at the heart of international activities in neuroscience.

PUBLIC ENGAGEMENT

The Neuroethics program has held numerous highly successful engagement events throughout the duration of the Centre.

Conferences

- » Neuroethics Down-Under 2014 (two-day event)
- The Inaugural Australian Neuroscience and Society Conference, September 2017 two-day conference called Neuroscience and Society: Ethical, Legal and Clinical Implications of Neuroscience Research in Sydney – sold out event with 110 registrants
- Australian Neuroscience and Society Conference two-day conference in August 2018
- » Third annual two-day conference in 2019 NEUROFUTURES: Neuroscience and Responsibility – another successful event with over 90 registrants

Public debates

- » 2016: Co-hosted a public debate about the impact of neuroscience research of addiction on society. Drugs, desire and disease: How neuroscience is changing our understanding of addiction, examined the important question – is addiction a brain disease, and does it matter? Over 400 registrants at the National Gallery of Victoria with co-hosts the David Winston Turner Foundation Endowment and Monash Institute of Cognitive and Clinical Neurosciences
- 2017: Public lecture Is neuroscience relevant to criminal responsibility?
- 2018: Brave New Brains, free public discussion about the future of brain-computer interfaces and the challenges they raise for Australian society, held on 27 August at the State Library Victoria
- 2018: Do we have a right psychological privacy
- 2018: Crime, remorse and punishment
- Brain Control: The impact of science and technology on our mental health, law and privacy, free public event at the State Library of Victoria in December 2019 with over 400 registrants
- » Virtual film screening and panel discussion in 2020 looking at the feature documentary "I am Human", which premiered at the 2019 Tribeca Film Festival. – over 600 participants attended, largest audience reached

Symposia

- » Electrodoping? Stimulating debate about cognitive enhancement at the Australasian Brain Stimulation Conference in Melbourne 2016
- » Hosted a symposium at the Australasian Cognitive Neuroscience Society in Newcastle, November 2016
- Hosted a special symposium at the Organisation for Human Brain Mapping meeting in Vancouver: The neuroethical implications of human brain mapping. June 2017
- Workshop looking at the ethics of emerging neurotechnologies and artificial intelligence in Columbia University, New York in June 2017, the results of which was published in Nature.
- Workshop in Global Neuroethics Summit in Deagu, South Korea in September 2017 to look at different cultural perspectives to ethical issues raised by neuroscience research.
- 2018 Neuroscience and Society; Ethics, Law and Technology sold out event with over 100 registrants
- 2018 The ethics of neurotechnological innovation in Melbourne in May 2018 with over 100 attendees
- » 2018 Symposium The brain in context
- 2018 Symposium The neuroethics of brain-computer interfaces

Other

- Formed the Australian Neuroethics Network (ANN) 2017 includes over 120 members
- A different lens video discussing the importance of investigating the capabilities of neuroscience and asking the ethical questions that will determine how far we can push the science of mind and behaviour

NEUROINFORMATICS

The instrumentation and equipment used to image and record integrative brain activity generates vast amounts of digital data that present data storage and analysis issues for researchers.

The Centre's Neuroinformaticsp rogram, led by Dr Pulin Gong and Prof Wojtek Goscinski, supported the Centre's neuroscience research in three areas:

1. The provision of access to data processing, advanced analysis and visualisation resources.

MASSIVE

By partnering with the Multi-modal Australian ScienceS Imaging and Visualisation Environment (MASSIVE), our researchers had access to large data storage, fast data processing, and advanced visualisation systems to efficiently manage and process the computationally intensive brain datasets, via the Cloud.

Human Connectome Project

Incollaboration with MASSIVE, we created an Australian mirror for data collected by the Human Connectome Project (HCP). This ambitious project continues to be one of the world's largest brain imaging studies to map the networks underlying brain function and their relationship to genetics. Our mirror site hosted HCP brain imaging data to allow researchers to conduct their own brain functional network analyses.

Research tools and data

Our research tools and data repository housed experimental data and computational models, providing brain researchers around Australia access to these important resources. We provided 100TB of storage space and used GitLab, a Cloud repository, to help manage complex projects.

2. Supporting the development of software and analysis tools to be shared with the general public.

Marmoset Brain Connectivity Atlas

The marmoset brain connectivity atlas is a systematic, publicly available digital repository for data on the connections between different cortical areas, in the primate species.

NeuroPatt

NeuroPatt is a MATLAB toolbox to automatically detect, analyse and visualise spatiotemporal patterns in neural population activity, developed by Dr Pulin Gong's group at the University of Sydney.

SpikeNet

Spikenet provides a computational and mathematical platform for studying the working mechanisms of cortical microcircuits.

NFTsim

NFTsim (Neural Field Theory simulator) is written in C++ and implements streamlined standard methods to solve hyperbolic partial differential equations such as the damped 2D wave equation; time stepping methods to solve ordinary differential equations; and procedures for delay differential equations.

BrainPalimpsest

Brain Palimpsest is a Matlab toolbox to deconvolve BOLD-fMRI data. It produces the underlying spatiotemporal neural and hemodynamic activity.

Braintrak

Braintrak is a real-time brain states tracking system and corticothalamic neural field parameter estimation.

catch22 - CAnonical Time-series CHaracteristics

catch22 is a collection of 22 time-series features coded in C that can be run from Python, R, Matlab, and Julia. The catch22 features are a high-performing subset of the over 7000 features in hctsa. Features were selected based on their classification performance across a collection of 93 real-world time-series classification problems.

NeuroDesk/condaenvs

NeuroDesk is a Conda environment to use for EEG, MEG and physiological data analysis in python.

CVI-MRI

CVI-MRI is a composite vein imaging for susceptibility-based magnetic resonance imaging. A set of tools for generating composite vein images from SWI and QSM images.

ICF - Iterative Cylindrical Fitting

Improved Quantification of Cerebral Vein Oxygenation Using Partial Volume Correction.

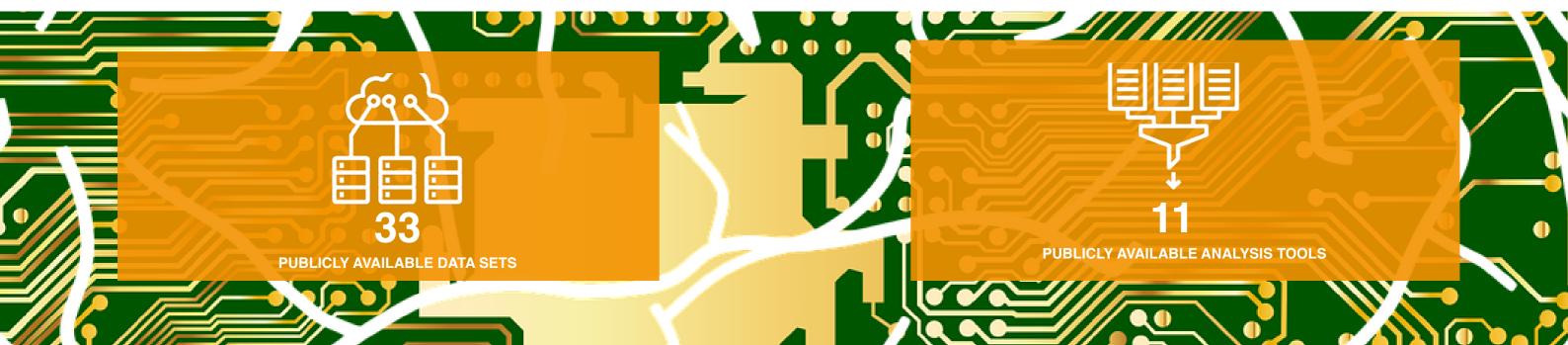
ShMRF- Shape-based Markov Random Field

A tool designed to segment blood vessels from MRI images.

3. Building partnerships with international neuroinformatics initiatives

INCF

The Centre partnered with the International Neuroinformatics Coordinating Facility (INCF) and served as the Australian (and a Governing) Node. Operating across four continents, the INCF develops collaborative neuroinformatics infrastructure and promotes the sharing of data and computing resources to the international research community.



ENTERPRISE



The Centre encouraged innovation and entrepreneurship for our researchers at all stages of their careers through our Industry Engagement program.

The program also supported the management and commercial exploitation of intellectual property developed from Centre research. We secured industry and end-user representation, as well as representation from the commercialising group of each collaborating organisation.

A multi-node Centre delegation (Monash University, University of Melbourne, Australian National University and University of Queensland) travelled to Israel in March 2017, in cooperation with the Israel Brain Technologies organisation. Facilitated by Austrade's Israel "Landing Pad' in Tel Aviv, the delegation attended the Israel BrainTech 2017 'Converging Technologies' conference and met with multiple Israeli start-ups to foster collaborations and industry partnerships with Centre researchers

The Centre established the Victorian arm of the 'Bridge to MassChallenge Australia' accelerator program in 2016. The Centre partnered with the Victorian Government and other organisations to bring this global start-up accelerator competition to Australia, with winners provided access to resources, mentors, and business training they need to catalyse entrepreneurial activity and help them succeed.

In 2018, The Centre, alongside a consortium of research institutes, higher education providers, and business leaders in the brain science and technology industry, came together to form the Australian Brain Alliance (ABA). Brought together under the auspices of the Australian Academy of Science, the ABA have rallied over the past four years with the aim to secure support for the Australian Brain Initiative (ABI): A multi-disciplinary, collaborative neuroscience research and translation program that will increase our understanding of the brain and seed Australia's neurotechnology industries for decades to come. In addition to advocating to the federal government for major investment in Australian brain research and technology, they also represent Australian interests in the International Brain Initiative, working alongside representatives of the large-scale international brain research programs of the United States, United Kingdom, Japan, China, Europe, Korea and Canada.

SPONSORED EVENTS

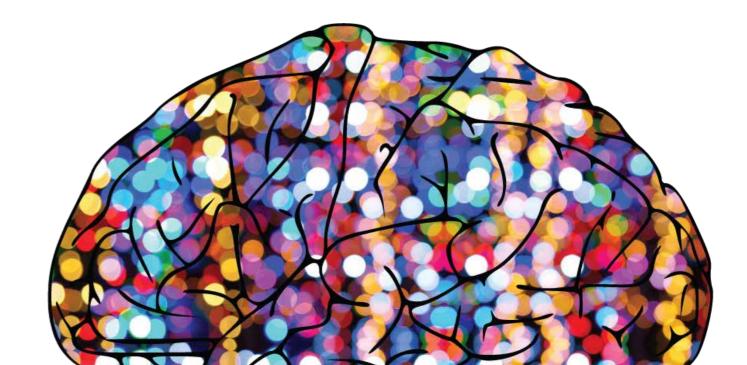
A major focus of the Centre has been to promote brain research and support the neurosciences to ensure education and collaboration opportunities were made broadly accessible to the wider community. One way this was achieved was through sponsorships and endorsements.

Throughout the seven-year period from 2014-2021, the Centre supported 46 events totalling over \$115,000. Events sponsored ranged from workshops and master classes, satellite meetings of larger international conferences, independent conferences or meetings and social networking events. These financial commitments contributed to an array of activities, including travel expenses to retain international presenters, catering and venue expenses, and awards and prizes for ECRs including travel grants to attend conferences or visit labs. The financial support offered by the Centre often meant that event registrations were significantly reduced, if not made freely available.

Some key beneficiaries over the years have included:

Students of Brain Research (SoBR) Network - an academic and social network that facilitates knowledge and skill development between students across Australia with an interest in brain research, each year hosting both a professional development and networking dinner, and an annual symposium offering students an opportunity to present their work and hear from expert keynote speakers.

- Australasian Course in Advanced Neuroscience (ACAN) an intensive three-week course aimed at graduate students, postdoctoral fellows and junior faculty that teaches the theory and practice of electrophysiological recording and optical imaging techniques, including patch-clamp recording, calcium imaging, optogenetics, and many other techniques through unbridled access to state-of-the-art equipment.
- Systems & Computational Neuroscience Down Under (SCiNDU) a leading forum for systems and computational neuroscientists to interact and share their insights into the function of neural circuits and systems.
- NeuroEng: The Australian Association of Computational Neuroscience and Neural Engineering bringing together Australasian researchers with a common interest in computational neuroscience and neuromorphic engineering.
- Neuroscience Downunder an annual networking event bringing together Australasian researchers with their international counterparts, held as part of the USA's annual Society for Neuroscience (SfN) conference each year.



GENDER, EQUITY AND DIVERSITY

Our Centre has been extremely passionate about the growth and future of brain research in Australia. Key to this aim was training, supporting and promoting the next generation of researchers and scientific leaders through the early and mid-stages of their career, irrespective of background, culture, age, gender, religion, disabilities or sexual orientation.

The Centre was committed to creating an environment where all staff and students were equally respected and valued and enjoyed equity of both opportunity and outcomes.

A range of barriers affect career progression and equitable access to opportunities for a range of groups in society. Studies show that women researchers make up about 50 percent of PhD students and post-docs in many scientific research fields, but their career progression is negatively impacted by structural barriers, which results in a significant loss of knowledge, talent and investment. Women occupy less than 20 percent of senior researcher positions in Australian universities and research institutes, and are significantly underrepresented in achieving funding success. Furthermore, people with sensory or physical impairments, people of colour, people with English as a second language and some religious groups may not have equitable access to opportunities as other groups.

The Centre's Gender, Equity and Diversity Committee was established in 2017, comprising volunteers from both outside and within the Centre, including Chief Investigators, early and mid-career researchers and administration staff, who developed the following policies and initiatives to improve gender balance, equity and diversity in the Centre.

Our commitments to improve gender balance, equity and diversity through the Centre's Gender, Equity and Diversity policy included:

EMPLOYMENT CONSIDERATIONS

The Centre worked to ensure all Brain Function CoE positions advertised offered flexible working arrangements, including part-time or working-from-home options where possible.

All advertisements for Centre positions were read with a careful eye to ensure they used inclusive language with regards to gender, race and culture.

All Centre representatives on interview/ employment panels had received unconscious bias training followed up with appropriate resources and support.

CENTRE-FUNDED CONFERENCES AND WORKSHOPS

Centre members were urged to consider cultural, racial and gender diversity when choosing a conference venue, to ensure unrestricted attendance. For example, some countries have travel restrictions, laws or customs that make it difficult for some people to attend; such as on the basis of religion or sexual orientation.

All presenters and Centre members were encouraged to follow the recommendations made in the Centre's Accessibility Guidelines, ensuring oral presentations were accessible to all members of an audience and were as inclusive as possible for individuals with accessibility issues.

All Centre-supported conferences aimed for a target of no fewer than 30 percent men or women on the local organising committee and scientific organising committee.

All Centre-supported conferences aimed for a target of no fewer than 30 percent men or women as invited speakers, chairpersons and for selected presentations.

Where possible, all Centre-supported events ensured breast feeding/ pumping facilities were accessible, and events catered to families where feasible.

CAREGIVER TRAVEL GRANT

This initiative was designed to support Centre fellows, researchers and professional staff with caregiver responsibilities, to participate in significant national and international conferences, workshops, symposia or Centre-related events as per the Centre Caregiver Travel Grant Top-up. Acknowledging that the underrepresentation of women at senior levels can be connected to the ongoing tension both men and women experience between caring responsibilities and career advancement, the grant was offered to support parents of any sex to facilitate their attendance at conferences and the like, without being burdened by the cost of childcaring arrangements.

CORE MEETINGS

All core Centre meetings were scheduled between the hours of 10am – 2pm where practical or preferable for participants of that particular meeting. Centre meetings were made available for remote attendance by Zoom or similar as required.

FAMILY FRIENDLY WORK HOURS

Staff were not required to work and send or answer emails outside of normal work hours, and this behaviour was modelled by CIs as far as was practicable.

Staff were permitted to work from home where practicable.

All staff were encouraged to take their annual leave and were not expected to work during this time.

ACCESSIBILITY GUIDELINES

We created a set of guidelines for all speakers to ensure that their presentations were accessible for everyone in the audience. We focused on providing simple guidance on how to make presentations accessible for hearing- and vision-impaired audience members.

These guidelines were well-received by the scientific community, and formed the basis of initiatives by other neuroscientific groups, including the Australasian Cognitive Neuroscience Society.

ENHANCING DIVERSITY

For Centre members for whom English is a second language various services were available through our administrative and collaborative institutions.

EMPLOYEE ASSISTANCE PROGRAMS

Our administrative and collaborative institutions offered a wide range of professional counselling and support programs to help improve the overall wellbeing of our Centre members.

Further initiatives undertaken by the Gender, Equity and Diversity Committee included:

UNCONSCIOUS BIAS TRAINING

Unconscious Bias workshops were delivered at the 2018 and 2019 annual meetings by Psynapse Psychometrics Pty Ltd. In addition, an online training module in unconscious bias was offered to all Centre members in 2020 and 2021.

COVID-19 SUPPORT

In the final two years, the Committee developed various initiatives to support Centre members during the COVID pandemic, providing additional support above and beyond the scope of the Committee, to students or postdocs identified as most at risk of food/home/health security from reduced income due to COVID-related delays in their research.

OPPORTUNITY FORUM

In the final two years of the Centre, the committee created a forum where senior CIs and research staff could advertise opportunities for research. This forum was established following a survey of Centre members, where the primary concern was inability to continue research during the 2020-2021 lockdowns.





Our CIs led the

Centre's research and

were supported by a

team of management

personnel located at

Partner and associate

based at the partner

Australia, Europe and

the USA, supported the

and collaborating

Centre's research.

organisations in

each of our collaborating

and administrative

organisations.

investigators,

CHIEF **INVESTIGATORS**



Gary Egan Director Monash University



Deputy Director Monash University



Associate Director University of Queensland



Chief Investigator



Chief Investigator



University of Melbourne



Ulrike Grünert Chief Investigator University of Sydney



Michael Ibbotson Chief Investigator
University of Melbourne



Arthur Lowerv Chief Investigator Monash University



Chief Investigator University of Sydney



George Paxinos Chief Investigator University of New South



Steve Petrou Chief Investigator University of Melbourne



Peter Robinson Chief Investigator University of Sydney



Pankaj Sah Chief Investigator University of Queensland



Stan Skafidas Chief Investigator University of Melbourne



Chief Investigator Australian National University

62 HONOURS STUDENTS

59 FELLOWS

PARTNER INVESTIGATORS

MANAGEMENT

- Masha Perry, Chief Operating Officer, Monash (2021)
- Glenn Papworth, Chief Operating Officer, Monash (2017-2021)
- Lisa Hutton, Centre Manager, Monash (2014-2017)
- Richard Huysmans, Acting Manager, Monash (2014-2015)

ADMINISTRATORS

- Jessica Despard, Senior Administration Officer, Monash University (2015-2021)
- Merrin Morrison, Communications Officer, Monash University (2016-2021)
- Masha Perry, Senior Administration Officer, Monash University (2017-2021)
- Hatice Sarac, Senior Administration Officer, Monash University (2016-2021)
- Teri Furlong, Node Administrator, University of New South Wales (2016-2021)
- Cindy Guy, Node Administrator, University of Sydney (2014-2021)
- Roxanne Jemison, Node Administrator, University of Queensland (2014-2021)
- Tenille Ryan, Node Administrator, University of Melbourne (2016-2021)
- Danielle Ursino, Node Administrator, Australian National University (2014-2021)
- » Katja Gutwein, Central Administrator (maternity leave position), Monash University (2019)
- Maria del Mar Quiroga, Outreach and Education Officer, Monash University (2016-2018)
- Elizabeth Paton, Outreach and Education Officer, Monash University (2014-2016)
- Vicky McAuliffe, Senior Administration Officer, Monash University (2014-2016)
- Emma Schofield, Node Administrator, University of New South Wales (2014-2016)
- Janelle Giling, Central Administrator, Monash University (2014-2016)
- Trudi Gilmore, Central Administrator (maternity leave position), Monash University (2016)
- Silvia Pongracic, Central Administrator, Monash University (2016)
- Cill Gross, Node Administrator, University of Melbourne (2014-2015)
- Sam Goode, Central Administrator, Monash University (2014-2015)

PROGRAM COORDINATORS

- Adrian Carter, Neuroethics Coordinator, Monash (2016-2021)
- Sharna Jamada, Chair, Gender, Equity and Diversity Committee, Monash University (2020-2021)
- Ramesh Rajan, Education/ Brain Bee Coordinator, Monash University (2014-202)
- Pulin Gong, Neuroinformatics and Computational Resources Coordinator, University of Sydney (2015-2020)
- Wojtek Goscinski, Neuroinformatics and Computational Resources Coordinator, Monash University (2014-2020)
- Melinda Fitzgerald, Chair, Gender, Equity and Diversity Committee, Curtin University (2017-2020)
- Jakob Hohwy, Neurophilosophy Coordinator, Monash University (2014-2017)
- Rachel Nowak, Director, The Brain Dialogue, Monash University (2014-2017)
- Sarah Dunlop, Equity & Diversity Coordinator, University of Western Australia (2014-2017)
- Jeanette Pritchard, Industry and Engagement Coordinator Monash University (2014-2015)

ASSOCIATE INVESTIGATORS

- Derek Arnold, University of Queensland (2014-2021)
- Sofia Bakola, Monash University (2014-2021)
- John Bekkers, Australian National University (2014-2021)
- Anthony Burkitt, University of Melbourne (2014-2021)
- Vincent Daria, Australian National University (2014-2021)
- Paul Dux, University of Queensland (2014-2021)
- Alex Fornito, Monash University (2014-2021)
- Geoff Goodhill, University of Queensland (2014-2021)
- Ted Maddess, Australian National University (2014-2020)
- Farshad Mansouri, Monash University (2014-2021)
- Nic Price, Monash University (2014-2021)
- Ramesh Rajan, Monash University (2014-2021)
- Fabio Ramos, University of Sydney (2014-2020)
- Olaf Sporns, Indiana University, USA (2014-2020)
- Nao Tsuchiya, Monash University (2014-2021)
- Trichur Vidyasagar, University of Melbourne (2014-2021)

51

Charles Watson, Curtin University (2014-2021)

PARTNER INVESTIGATORS

- Michael Breakspear, QIMR Berghofer Medical Research Institute, Australia (2014-2021)
- Matthew Diamond, International School for Advanced Studies, Italy (2014-2021)
- Sean Hill, International Neuroinformatics Coordinating Facility (INCF), Sweden (2014-2020)
- Viktor Jirsa, Aix-Marseille University, France (2014-2020)
- G. Allan Johnson, Duke University, USA (2014-2020)
- David Leopold, NIH: National Institute of Mental Health,
- Troy Margrie, The Francis Crick Institute, UK (2014-2020)
- Henry Markram, Blue Brain Project, Switzerland (2014-2020)
- Partha Mitra, Cold Spring Harbor Laboratory, USA (2014-
- Tony Movshon, New York University, USA (2014-2020)
- Keiji Tanaka, Riken Brain Institute, Japan (2014-2021)
- Jonathan Victor, Weill Cornell Medicine, USA (2014-2020)

& CENTRE FELLOWS

- » Romesh Abeysuriya, University of Sydney (2015)
- » Mehdi Adibi, Australian National University (2015)
- » Massoud Aghili Yajadda, University of Sydney (2017-2020)
- » Wayne Anderson, Monash University (2021)
- » Nafiseh Atapour, Monash University (2015-2021)
- » Tahereh Babaie, University of Sydney (2015-2021)
- » Madhusoothanan Bhagavathi Perumal, University of Queensland (2017-2020)
- » Robin Broersen, Australian National University (2019-2021)
- » Gursharan Chana, University of Melbourne (2015-2016)
- » Spencer Chen, University of Sydney (2014-2015)
- » Oliver Cliff, University of Sydney (2020-2021)
- » Shaun Cloherty, University of Melbourne/ Monash University (2014-2020)
- » Bill Connelly, Australian National University (2015-2018)
- » Ilvana Dzafic, University of Queensland/ University of Melbourne (2017-2021)
- » Calvin Eiber, University of Sydney (2015-2021)
- » Kristen Farrell, Australian National University (2017-2019)
- » Timothy Feleppa, Monash University (2016-2021)
- » Yuhong Fu, University of New South Wales (2015)
- » Teri Furlong, University of New South Wales (2016-2021)
- » Natasha Gabay, University of Sydney (2019-2021)
- » Demi Gao, University of Sydney (2017-2019)
- » Kelly Garner, University of Queensland (2018-2021)
- » Saba Gharei, Australian National University (2017-2021)
- » Leonardo Gollo, QIMR Berghofer Medical Research Institute (2015-2017)
- » Veronika Halasz, University of Queensland (2016-2017)
- » Joan Holgate, Australian National University (2017)
- » Sharna Jamadar, Monash University (2015-2021)
- » Tim Karle, University of Melbourne (2014-2021)
- » Steve Kassem, University of New South Wales (2018-2021)

- » Ehsan Kheradpezhouh, Australian National University (2015-2021)
- » Stuart Knock, University of Sydney (2017-2019)
- » Melissa (Kit) Larsen, University of Queensland (2017-2021)
- » Sammy Lee, University of Sydney (2014-2019)
- » Andy Liang, University of New South Wales (2015-2018)
- » Sophie (Chin-Hsuan) Lin, University of Melbourne (2020-2021)
- » Anton Lord, University of Queensland (2016)
- » Piotr Majka, Monash University (2015-2016)
- Roger Marek, University of Queensland (2014-2021)
- » Rania Masri, University of Sydney (2019-2021)
- » Hamish Meffin, University of Melbourne (2014-2019)
- » Anand Mohan, Monash University (2015-2021)
- » Babak Nasr, University of Melbourne (2015-2019)
- Christopher Nolan, University of Queensland (2015-2021)
- » David Painter, University of Queensland (2015-2021)
- » Bryan Paton, Monash University (2014-2016)
- » Sander Pietersen, University of Sydney (2014-2021)
- » Sivaraman Purushothuman, University of Sydney (2014-2015)
- » James Roberts, QIMR Berghofer Medical Research Institute (2015-2021)
- » Zoltan Ruzsnak, University of New South Wales (2015)
- » Emma Schofield, University of New South Wales (2014-2016)
- Guilherme Silva, Australian National University (2015-2018)
- » Selina Solomon, University of Sydney (2015)
- » Matthew Tang, University of Queensland/ Australian National University (2015-2021)
- » Shane Tonissen, University of Melbourne (2019-2020)
- » Cong Wang, University of Queensland (2020-2021)
- » Phillip Ward, Monash University (2017-2019)
- » Dongping Yang, University of Sydney (2015-2020)
- » Molis Yunzab, University of Melbourne (2020)
- Natalie Zeater, University of Sydney (2017-2019)

© CENTRE SCHOLARS

- » Ali Almasi, University of Melbourne (2016-2017)
- » Sahand Assadzadeh, University of Sydney (2015-2019)
- » Elissa Belluccini, University of Sydney (2019-2021)
- » Alexander Bryson, University of Melbourne (2016-2021)
- » Ashleigh Chandra, University of Sydney (2015-2018)
- » Guozhang Chen, University of Sydney (2017-2021)
- » India Cowie-Kent, Monash University (2019-2021)
- » Farah Deeba, University of Sydney (2015-2018)
- » Yadeesha Deerasooriya, University of Melbourne (2015-2020)
- Guthrie Dyce, Australian National University (2018-2021)
- » Daniel Fehring, Monash University (2016-2019)
- Mariya Ferdousi, University of Sydney (2016-2019)
- » Natasha Gabay, University of Sydney (2015-2018)
- » Saba Gharaei, Australian National University (2015-2017)
- » Richard Gillies, University of Melbourne (2019)
- » Yifan Gu, University of Sydney (2015-2018)
- » Bassam Hassan, University of Melbourne (2015-2019)
- » Trent Henderson, Monash University (2021)
- » Surag Honnuraiah, Australian National University (2016-2020)
- » Sarah Hunt, University of Queensland (2015-2016)
- » Jason (Young Jun) Jung, University of Melbourne (2017-2020)
- » Adam Keane, University of Sydney (2015-2017)
- » Shivam Kalhan, University of Melbourne (2019-2021)
- » Thomas Lacy, University of Sydney (2015-2020)
- Liliana Laskaris, University of Melbourne (2015-2019)
- » Conrad Lee, Australian National University (2015-2017)
- » Ting Ting Lee, University of Melbourne (2015-2019)
- » Tianzhi Li, University of Melbourne (2019-2021)
- » You Liang, University of Melbourne (2015-2019)
- » Lucinda Lilley, University of Sydney (2020-2021)

- Jia Lingham, University of Melbourne (2015-2020)
- Xiaochen Liu, University of Sydney (2015-2021)
- » Yuxi Liu, University of Sydney (2016-2020)
- » Xian Long, University of Sydney (2017-2021)
- » Dan Ma, University of Sydney (2017-2018)
- » Rania Masri, University of Sydney (2015-2019)
- » Cynthia Mather, University of Sydney (2021)
- Jessica McFadyen, University of Queensland (2015-2018)
- Kamrun Mukta, University of Sydney (2015-2019)
- Eli Muller, University of Sydney (2015-2019)
- » Brandon Munn, University of Sydney (2015-2019)
- Daniel Naomenko, University of Sydney (2016-2020)
- Suba Nasir-Ahmad, University of Sydney (2018-2020)
- Shencong Ni, University of Sydney (2018-2021)
- » Edwina Orchard, Monash University (2018-2021)
- » Lachlan Owensby, Australian National University (2020-2021)
- » John Palmer, University of Sydney (2015-2016)
- James Pang, University of Sydney (2015-2018)
- » Miru Park, University of Sydney (2021)
- » Momcillo Prodanovic, Monash University (2015-2016)
- » Yang Qi, University of Sydney (2015-2019)
- > Kevin Qu, University of Sydney (2018-2021)
- Roshini Randeniya, University of Queensland (2017-2021)
- » Yadollah Ranjbar, Australian National University (2015-2017)
- » Angela Renton, University of Queensland (2017-2021)
- » Nipa Roy, University of Sydney (2015-2018)
- Jordan Sibberas, University of Melbourne (2020-2021)
- » Taylor Singh, Australian National University (2018-2021)
- » Christodoulos Skilros, University of New South Wales (2018-2019)
- » Caleb Stone, University of Queensland (2021)
- » Felix Thomas, Australian National University (2020-2021)
- Mihn-Son To, Australian National University (2015-2016)
- Rory Townsend, University of Sydney (2015-2017)
- » Nasir Uddin, University of Sydney (2020-2021)
- Asem Wardak, University of Sydney (2017-2021)
- Chalini Wijetunge, University of Melbourne (2016-20169)

Cong Wang, University of Queensland (2016-2020)

- » Yiben (Ben) Xu, University of Sydney (2021)
- Yang Yu, University of Melbourne (2018-2021)
- Jason Yon, University of Melbourne (2015-2019)
 Natalie Zeater, University of Sydney (2015-2016)
- » Shuyu (Iris) Zhu, Monash University (2014-2018)

A HONOURS STUDENTS

- Lauren Addamo, University of Melbourne (2020)
- Alyssa Baldicano, University of Sydney (2020)
- Henry Beale, University of Queensland (2021)
- Angus Begg, University of Sydney (2016-2016)
- Elissa Belluccini, University of Sydney (2017-2018)
- Asena Bingul, University of New South Wales (2021)
- Nicholas Busuttil, University of Queensland (2021)
- Alicia Cayanan, Monash University (2021)
- Aaron Chan, Monash University (2021)
- Alex Chin, Monash University (2018)
- Shena Cooke, University of Queensland (2017)
- Lachlan Coulthard, University of Melbourne (2019)
- India Cowie-Kent, Monash University (2018)
- Michael Dear, University of Queensland (2020)
- Tayla Donegan, Monash University (2018)
- Joshua Elliot, University of Sydney (2015)
- Yotam Eren, Monash University (2018)
- Lucy Ford, University of Queensland (2017)
- Jay Fradkin, Australian National University (2015)
- Dana Galligan, University of Queensland (2020)
- Erin-Louise Gibbs, Monash University (2018)
- Lachlan Gorey, University of Sydney (2018-2020) Chenyan Gu, University of Queensland (2021)
- Jess Hamley, University of Sydney (2018-2019)
- Brendon Harris, University of Sydney (2021)
- Kim Jeffrey, University of Queensland (2016)
- Shuang Jiang, Australian National University (2019)
- Jack Kelso-Ribbe, University of Queensland (2019)
- Genevieve Kieseker, University of Queensland (2016)
- Joshua Kugel, University of Melbourne (2020)
- Jake Laycock, University of Queensland (2017)
- Lily Li, University of Sydney (2017-2017)
- Alan Ly, Monash University (2018)
- Ivan Ma, University of Sydney (2020)
- Emily McCann, University of Queensland (2019)
- Alexander McInnes, University of Sydney (2020)
- Belinda Milne, Australian National University (2016)
- Xavier Morris, University of Sydney (2021)
- Mariah Mwipatayi, University of Melbourne (2019)
- Vinali Naido, Monash University (2019)
- Subha Nasir-Ahmad, University of Sydney (2016)
- Anton Newgreen, University of Melbourne (2019)
- Perri Newman, University of Queensland (2018)
- Lachlan Owensby, Australian National University (2019)
- Eloisa Perez-Bennetts, University of Sydney (2020)
- Abrar Rahman, University of Sydney (2015-2016)
- Angela Renton, University of Queensland (2015)

54

- Tanin Sepehrisadr, University of Sydney (2021)
- Edwina Shi, University of Queensland (2018)
- Pok Him Siu, University of Sydney (2020)
- Max Slattery, University of Sydney (2017)
- Zoe Stawyskyj, University of Sydney (2019)
- Imogen Stead, University of Queensland (2018)
- James Teng, University of Queensland (2015)
- Priscilla Tjokrowijoto, University of Queensland (2018) Kurt Vanstone, University of Sydney (2020)
- Asem Wardak, University of Sydney (2017)
- Anlai Wei, University of Sydney (2019)
- Rebecca West, University of Queensland (2017)
- Ben Xu, University of Sydney (2020)
- Sera Yoo, University of Queensland (2020)
- Megan Young, University of Melbourne (2017)

A PROFESSIONAL STAFF

- » Shi Bai, Monash University (2015-2021)
- Alyssa Baldicano, University of Sydney (2020)
- Ashleigh Chandra, University of Sydney (2015)
- Phillip Cheng, University of Sydney (2015-2016)
- Arzu Demir, University of Sydney (2015-2021)
- Ilvana Dzafic, University of Queensland (2018)
- Hilary Knowles, University of Sydney (2017)
- Daria Malmanova, Monash University (2016-2021)
- Annette McCleod, University of Melbourne (2014-2017)
- Alexander McInnes, University of Sydney (2021)
- Suba Nasir-Ahmad, University of Sydney (2020)
- Claire Naughtin, University of Queensland (2015)
- Valdas Noreika, University of Queensland (2015)
- Zoie Nott, University of Queensland (2015)
- Julie Pages, University of Sydney (2017)
- Elise Rowe, University of Queensland (2015-2016)
- Afsah Zaheer, University of Sydney (2017-2018)

AFFILIATE ACADEMICS

- Hassan Alinejad, University of Sydney (2017)
- James Bourne, Monash University (2015-2016)
- Adrian Carter, Monash University (2015-2016)
- Zhaolin Chen, Monash University (2016-2021)
- Michael de Veer, Monash University (2016-2021)
- Răzvan Gămănuț, Monash University (2019-2021)
- David Garret, University of Melbourne (2016-2021)
- David Grayden, University of Melbourne (2015-2021) Christine Guo, QIMR Berghofer Medical Research Institute
- Wendy Imlach, Monash University (2017-2021)
- Tania Kameneva, University of Melbourne (2015-2019)/ Swinburne University of Technology (2019-2021)
- Marc Kamke, University of Queensland (2015)
- Leo Lui, Monash University (2015-2021)

(2017-2019)

- Svetlana Postnova, University of Sydney (2015-2021)
- Steven Prawer, University of Melbourne (2016-2021)
- David Reser, Monash University (2015-2021)
- Tatsuo Sato, Monash University (2019-2021)
- Mark Schira, University of Wollongong (2015-2021)
- Francois Windels, University of Queensland (2015-2021)

AFFILIATE FELLOWS

- Chathurika Abevrathne, University of Melbourne (2015-
- Ben Allitt, Monash University (2015)
- Duwage Alwis, Monash University (2015-2016)
- Kevin Aguino, University of Sydney/ Monash University (2015-2021)
- Eleonora Autuori, University of Queensland (2015-2017)
- Corinne Bareham, University of Queensland (2015-2016)
- Oliver Baumann, University of Queensland (2015-2021)
- Alexander Bryson, University of Melbourne (2019-2021)
- Luca Cocchi, University of Queensland (2015-2016)
- Giovanna D'Abaco, University of Melbourne (2015-2018)
- Christine Dixon, University of Queensland (2015-2016)
- Mirella Dottori, University of Melbourne (2015-2018)

- Dan Fehring, Monash University (2019-2021)
- Hannah Filmer, University of Queensland (2016-2021)
- Ben Fulcher, University of Sydney (2017-2021)
- Maureen Hagan, Monash University (2015-2021)
- Clare Harris, University of Queensland (2017-2019)
- Anthony Harris, University of Queensland (2018-2021)
- Will Harrison, University of Queensland (2018-2021)
- Luke Hearne, University of Queensland (2018)
- James Henderson, University of Sydney (2017-2021)
- Helena Huang, Australian National University (2016-2019)
- Kaori Ikeda, Australian National University (2015-2017)
- Sahama Ishani, University of Queensland (2017)
- Gabriel Jones, University of Melbourne (2015-2016) Cliff Kerr, University of Sydney (2015-2021)
- Marcin Kielar, University of Queensland (2017-2021)
- Beate Knaur, Monash University (2015-2016)
- Conrad Lee, Australian National University (2017-2021)
- Delphine Levy-Bencheton, University of Queensland (2015-2020)
- Yudong Liu, University of New South Wales (2015)
- Anton Lord, University of Queensland (2016)
- James MacLaurin, University of Sydney (2015-2017)
- Snezana Maljevic, University of Melbourne (2017-2021)
- Natasha Matthews, University of Queensland (2015-2016)
- Matias Maturana, University of Melbourne (2016-2017) Jessica McFadyen, University College London (2019-
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- Cooper Smout, University of Queensland (2021)
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55

Shi (Scott) Sun, University of Melbourne (2019-2021)

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- » Emily A-Izzeddin, University of Queensland (2020-2021)
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COLLABORATION NETWORK, INTERNATIONAL

AUSTRIA



- Centre for Brain Research
- Technische Universität Wien
- Vienna University of Technology

BELGIUM



- Flanders Institute for Biotechnology
- Medical University Sofia
- St. Ivan Rilski University Hospital
- University of Antwerp
- University of Liege
- University of Louvain

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- Ceuma University
- Federal University of Rio de Janeiro
- University of Brasilia

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- Canadian Institute for Advanced Research
- Dalhouse University
- McGill University
- Rotman Research Institute
- Universite de Sherbrooke
- University of Toronto
- Western University Ontario

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- University of Valparaiso
- Universidad de los Andes

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- Beijing Computational Science Research Center
- Capital Medical University
- Chinese Academy of Sciences
- Hong Kong Baptist University
- Linyi People's Hospital
- New York University, Shanghai
- Shanghai First People's Hospital
- Southern University of Science and Technology
- Zhejiang University

DENMARK



- Aarhus University
- Copenhagen University Hospital
- Technical University of Denmark
- University of Copenhagen
- University of Southern Denmark

FINLAND



- Aalto University
- Turku University Hospital
- University of Helsinki

FRANCE



- Aix-Marseille University
- Ecole Normale Superieore
- Fondation Ophtalmologique Adolphe De Rothschild
- Hôpital des Quinze-Vingts
- Inria Sophia-Antipolis
- Institute de Neurosciences des Systèmes
- National Institute of Health and Medical
- Université Clermont Auvergne
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- University of Toulouse

GERMANY



- Bielefeld University
- Ernst Strungmann Institute for Neuroscience
- Frankfurt Institute of Advanced Studies
- Hamburg University
- Heidelberg University
- Humboldt University of Berlin
- Jülich Research Centre
- Leibniz Institute for Neurobiology
- Max Planck Institute for Brain Research
- Max Planck Institute for Human Cognitive and **Brain Sciences**
- Max Planck Institute for Medical Research
- Philipps-Universität Marburg
- Ruhr-University Bochum
- Technische Universität Darmstad
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- University Hospital Giessen
- University Medical Center Schleswig-Holstein

- University of Cologne
- University of Düsseldorf
- University of Munich
- University of Münster
- University of Osnabrueck
- University of Regensburg
- University of Tübingen

HUNGARY



» University of Pécs

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Indian Institute of Technology

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- Babol University of Technology
- Institute for Research in Fundamental Sciences
- Isfahan University of Technology
- Kerman Neuroscience Institute
- Kerman University of Medical Sciences
- Shahid Beheshti University of Medical
- Sharif University of Technology
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- Belfast Health and Social Care Trust
- Rince Institute
- » Trinity College

ISRAEL



Weizmann Institute

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- Bambino Gesù Children's Hospital
- **CNR Neuroscience Institute**
- Giannina Gaslini Institute
- Instituto Italiano Di Tecnologia
- International School for Advanced
- Sapienza University of Rome

31

COUNTRIES

225

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- Advanced Institute of Science and Technology
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- » Central Institute for Experimental Animals
- » Center for Information and Neural Networks
- » Fukuoka University
- » Graduate University of Advanced Studies, SOKENDAI
- » Institute for Physiological Sciences
- » Juntendo University
- » Keio University
- » RIKEN Brain Science Institute
- » National Institute for Materials Science
- » National Institute for Physiological Sciences
- » Osaka University
- » Seirei Hamamatsu General Hospital
- » Shizuoka Institute of Epilepsy and Neurological Disorders
- » Tanabe Monbayashi Child Clinic
- » Tokyo Women's Medical University

JORDAN



Princess Sumaya University for Technology

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- Maastricht University
- » Netherlands Institute of Neuroscience
- » University Medical Center Utrecht
- » University of Amsterdam
- » University of Groningen
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- University of Otago
- » University of Waikato
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- Norwegian University of Life Sciences
- » Oslo University Hospital
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- Jagiellonian University
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- » Polish Academy of Science
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» Alfaisal University

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- Duke-NUS Graduate Medical School
- » Singapore University of Technology & Design

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SPAIN

- » Autonoma University of Madrid
- » Hospital Universitario Basurto-Osakidetza
- » Universidad del País Vasco
- » University Hospital of San Carlos
- University of Murcia

SWEDEN



- International Neuroinformatics Coordinating Facility
- » Karolinska Institutet
- » Lund University
- » Stockholm University

SWITZERLAND



- Blue Brain Project
- » Centre Hospitalier Universitaire Vaudois
- » Ecole Polytechnique Fédérale de Lausanne
- ETH Zurich

- » Human Brain Project
- » Swiss Federal Institute of Technology
- » University of Fribourg
- » University of Zurich

TURKEY



Ege University

UK



- » European Research Council
- » Imperial College London
- » Medical Research Council Cognition and Brain Sciences Unit
- » Newcastle University
- » Regional Genetics Laboratories
- » The Francis Crick Institute
- » University College London
- » University of Birmingham
- » University of Cambridge
- » University of Kent
- » University of Manchester
- » University of Nottingham
- » University of Oxford
- » Wellcome Trust Centre for Neuroimaging

USA



- » Brandeis University
- Brigham and Women's Hospital
- » Boston Childrens Hospital
- » Boston University
- » Carnegie Mellon University
- » Cold Spring Harbor Laboratory
- Columbia University
- » Duke University
- » Emory University
- » Georgia State University
- » Harvard Medical School
- » Harvard University
- » Hennepin Healthcare Research Institute
- » Howard Hughes Medical Institute
- » Icahn School of Medicine at Mount Sinai
- » Indiana University
- Johns Hopkins University School of Medicine
- » Massachusetts General Hospital
- » National Institute of Mental Health

- » Neurolixis Inc
- New York University
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- » Oregon Health and Science University
- Princeton University
- Rush University Medical Centre
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- » Siemens Healthcare Pty Ltd
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Weill Cornell Medical College

- » Virginia Tech
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COLLABORATION NETWORK, NATIONAL

ACT



- » Australian National University, ACT
- » University of Canberra, ACT



NSW

- Charles Sturt University, NSW
- » Concord Repatriation General Hospital, NSW
- » Macquarie University, NSW
- » Neuroscience Research Australia, NSW
- » Prince of Wales Hospital, NSW
- » Royal Prince Alfred Hospital, NSW
- » The Black Dog Institute, NSW
- » University of New South Wales, NSW
- » University of Newcastle, NSW
- » University of Sydney, NSW
- » University of Technology Sydney, NSW
- » University of Western Sydney, NSW
- » University of Wollongong, NSW

QLE



- Bond University, QLD
- » CSIRO, QLD
- » Griffith University, QLD
- » James Cook University, QLD
- » Metro South Addiction and Mental Health Services, QLD
- » QIMR Berghofer Medical Research Institute, QLD
- » Queensland Brain Institute, QLD
- » Queensland University of Technology, QLD
- » Royal Brisbane and Women's Hospital, QLD
- » University of Queensland, QLD
- » University of Sunshine Coast, QLD

SA



- » Australian Wine Research Institute, SA
- » Flinders University, SA
- » University of Adelaide, SA
- » "

 » University of South Australia, SA

TAS



- » University of Hobart, TAS
- » " University of Tasmania, TAS

VIC

- Alfred Health, VIC
- » Austin Health, VIC
- » ustralian Catholic University, VIC
- » Australian College of Optometry, VIC
- » Australian Regenerative Medicine Institute, VIC
- » Baker Heart and Diabetes Institute, VIC
- » Bionic Vision Australia, VIC
- » Box Hill Hospital, VIC
- » Burnet Institute, VIC
- » Calvary Healthcare Bethlehem, VIC
- » Deakin University, VIC
- » Doherty Institute, VIC
- » Epworth Health, VIC
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- » RMIT, VIC
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- » Siemens Healthcare Pty Ltd, VIC
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- » Victorian Life Sciences Computation
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WA

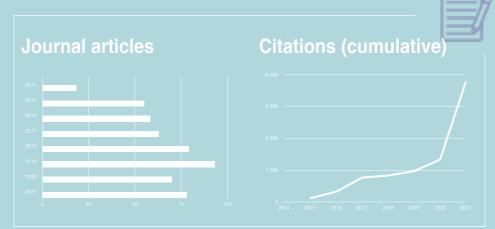


- » Curtin University, WA
- » Ear Science Institute of Australia, WA
- » Edith Cowan University, WA
- » Perron Institute for Neurological and Translational Science, WA
- » Sir Charles Gairdner Hospital, WA
- » University of Western Australia, WA

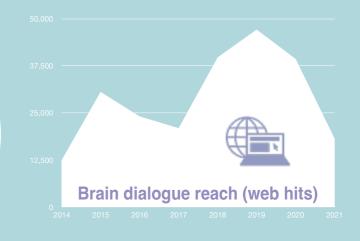


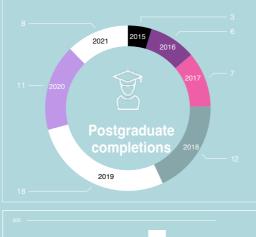
The Centre has consistently performed well in all areas of activity, exceeding KPIs in research output, engagement, outreach, research accessibility, and student and ECR support.

KPI Highlights 2014-2021

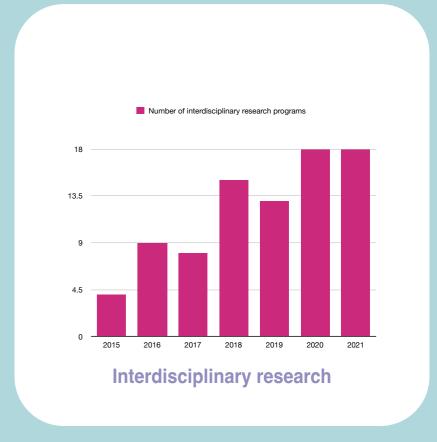




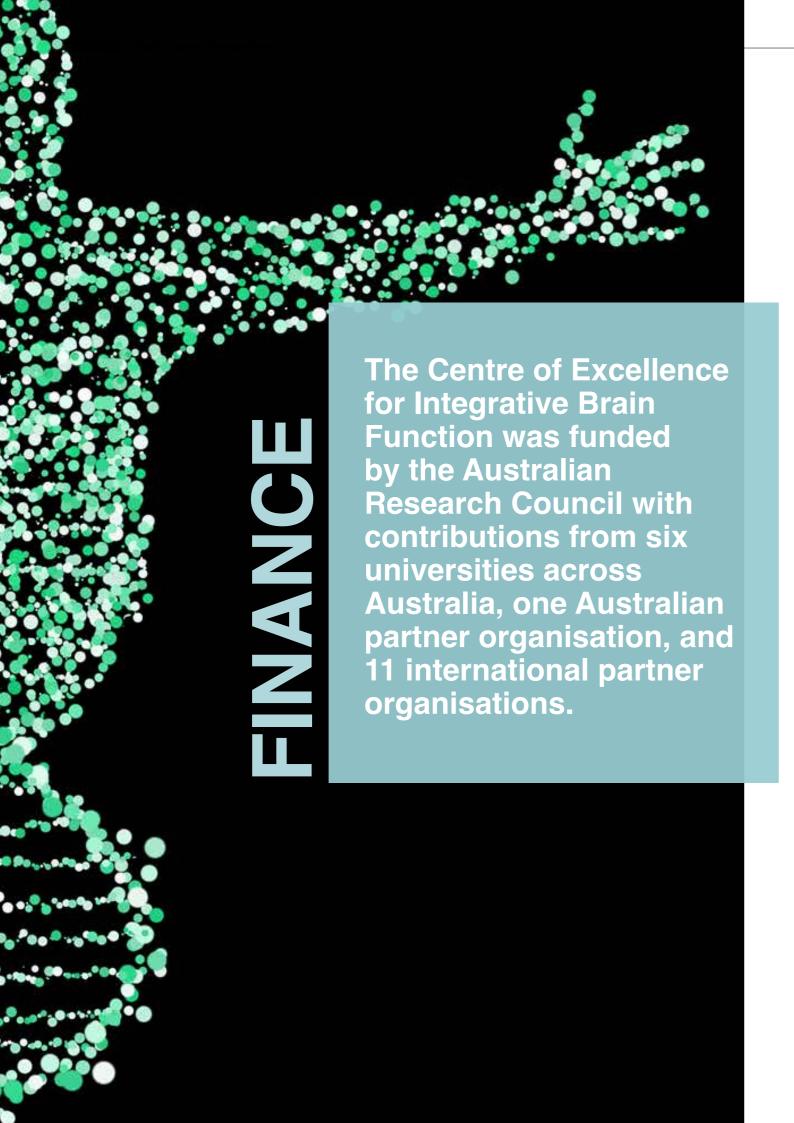




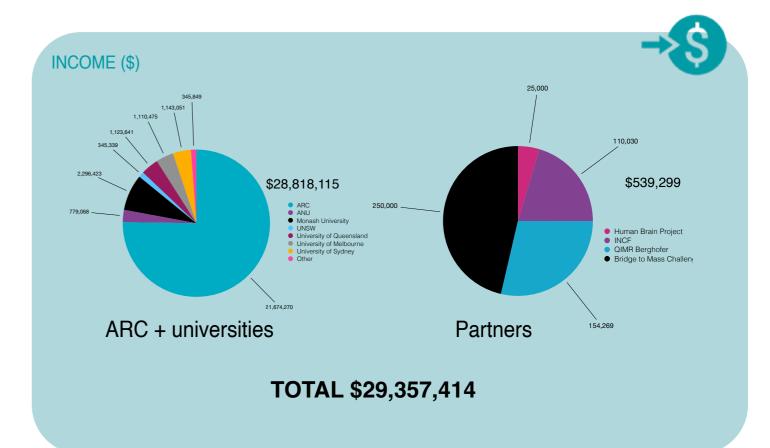


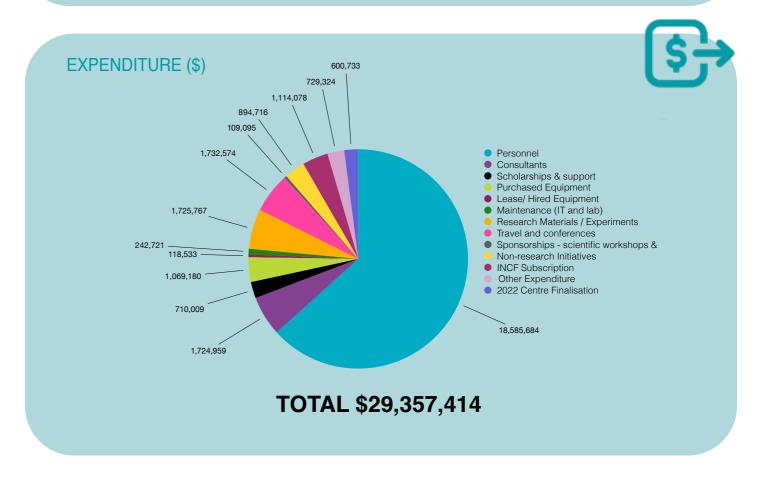


KEY PERFORMANCE INDICATORS													1		ARC CoE for Integrative Brain Function FINAL REPORT 2014-			
Key Performance Indicators	2014		2015		2016		2017		2018		2019		2020		2021		TOTAL	
	Target	Actual	Target	Actual	Target	Actual												
Research Outputs – with Centre acknowledgement or inclusion as an																		
author affiliation	10	40	0	FF	4.4	FO	14	00	40	70	40	00	40	70		70	100	E 4 4
Journal articles	13	18	8	55	14	58	14	63	40	79	40	93	40	70		78	169	514
Books			0	1	0	2	0	0	0	2	0	2	0	2		1	0	10
Book chapters	0	2	0	1	0	3	0	2	0	2	0	2	0	2		1	0	15
Conference papers	0	1	3	1	3	1	2	3	3	2	3	2	3	0		0	17	10
AV recordings							0	1	0	3	0	5	0	4				
Publication Quality – with Centre acknowledgement or inclusion as an author affiliation																		
Citations (cumulative)			15	184	45	490	74	1,150	500	1,251	600	1,456	700	2,000		5681	1934	5681
Average impact factor			3.2	4.67	3.2	4.72	4	4.98	4	4.826	4	4.842	4	6.76		4.891	3.734	5.114
Average web views per article			50	1,034	50	1,322	750	1,818	1,000	1,030	1,000	1,659	1,000	2,745		1,542	642	2,267
Average Altmetric score					2	20.64	10	15.28	10	10.39	10	12.46	10	19.88		8.679	8.4	12.008
Number of Training Courses Offered By Centre																		
Professional development training (including media training, pitch training, research translation, grant writing – online or face-to-face)	4	5	2	2	3	9	2	3	4	6	4	6	4	6		0	23	37
Number of workshops/conferences held/offered by the Centre																		
National science meeting	0	1	0	1	0	1	1	2	1	2	1	2	1	0		0	4	9
International meeting/ workshop	1	3	3	3	0	0	1	2	1	1	1	1	1	0		0	8	10
ECR workshop			0	1	0	1	1	2	1	2	1	2	1	0		0	4	8
Additional Researchers																		
Post-doctoral researchers	8	5	16	28	16	55	16	29	25	26	25	26	25	26		26	50	59
Honours students			8	5	8	6	8	9	8	13	8	11	8	13		9	48	62
Postgraduate students	0	1	12	19	16	67	16	33	25	34	25	36	25	26		27	50	72
Affiliate Investigators (students and researchers contributing to Centre							70	101	70	136	80	98	90	110		86	80	213
activities who do not receive centre funding)																		
Number of Postgraduate Completions			0	3	2	6	4	7	8	12	12	18	16	11		8	42	65
Number of Honours Completions							4	8	8	11	8	11	8	11		9	28	50
Number of Mentoring Programs Offered by Centre	1	0	1	2	1	2	2	2	3	2	3	2	3	1		0	14	11
Number of Presentations/ Briefings to the public, government, industry, business, community, end-user or other professional organisation or body	1	6	2	2	2	7	9	11	9	8	9	18	9	12		0	41	64
Number of new organisations collaborating with, or involved in the	1	1	2	109	2	29	2	23	5	20	5	20	5	9		14	22	225
Centre																		
Number of Gender, Equity and Diversity Workshops (online or face-to-face)									2	2	2	1	2	1		0	6	4
Number of Travel Grants Given to Caregivers									3	7	4	7	5	0		0	12	14
End User Impact																		
Public lectures/ events	0	3	1	2	2	7	1	3	2	3	2	3	2	0		0	10	21
Primary & secondary education programs			1	2	1	3	1	4	3	5	3	3	3	2		2	12	21
Brain Dialogue reach (number of web hits)	2,500	12,423	10,000	30,570	10,000	24,083	10,000	20,956	20,000	39,732	20,000	47,123	20,000	39,320		18,160	92500	232367
Media – articles			1	13	1	18	1	28	15	34	15	672	15	673		27	48	1465
Media – invited expert commentary			0	7	0	18	0	12	10	8	10	13	10	10		19	30	87
National/ International Awards			1	9	1	40	1	20	10	21	10	10	10	14		8	33	122
Accessibility of Research																		
Analysis tools available to centre researchers/ public							2	6	1	5	2	7	2	8			7	11
Datasets available to centre researchers/ public							2	2	1	6	2	15	2	8		2	7	33
Integrative Research																		
Number of research outputs with authors from more than one group			3	27	3	33	5	32	20	34	25	52	30	38		16	86	232
Number of interdisciplinary research programs			3	4	3	9	3	8	8	15	10	13	12	18		18	10	18
International Profile																		
Number of international visitors	3	9	9	21	5	52	5	37	10	32	10	20	10	11		0	52	182
Number of international presentations			16	43	16	38	16	51	25	58	25	50	25	23		17	123	280
Number of visits to overseas laboratories	8	17	16	22	16	23	16	22	16	23	16	22	16	8		0	104	137
			1 .5		1 .5				1 .0				1 .5				107	101



Finance overview 2014-2021





FINANCE

FINANCIAL STATEMENT

	2014	2015	2016	2017	2018	2019	2020	2021
	\$	\$	\$	\$	\$	\$	\$	
FUNDS CARRIED FORWARD FROM PREVIOUS YEAR	-	2,741,132	3,323,469	3,352,518	2,748,592	2,445,345	2,669,335	2,780,081
ADJUSTMENT TO CARRY FORWARD FROM PREVIOUS YEARS			1,976	12,984	254,354	-	-	5,818
INCOME								
ARC grant Income	2,943,492	2,996,205	3,047,140	3,092,847	3,139,239	3,198,883.78	3,256,463	
Australian National University cash contribution	111,324	111,324	111,124	111,324	111,324	111,324	111,324	-
Monash University cash contribution	318,434	318,434	371,625	318,795	318,795	318,795	318,795	12,750
University of New South Wales cash contribution	-	4,445	148,002	49,334	49,334	44,890	49,334	-
University of Queensland cash contribution	120,390	206,800	120,390	154,370	160,520	193,962	167,209	-
University of Melbourne cash contribution	153,706	155,579	146,444	162,839	154,642	188,921	148,344	-
University of Sydney cash contribution	132,711	241,810	153,706	186,745	153,706	153,706	120,667	-
Human Brain Project (École polytechnique fédérale de Lausanne- EPFL) cash contribution	-	25,000	-	-	-	-	-	
International Neuroinformatics Coordinating Facility (INCF) cash contribution	3,142	4,335	22,189	40,399	8,865	6,100	25,000	
Queensland Institute of Medical Research (QIMR) Berghofer cash contribution	-	-	42,028	31,698	24,343	26,827	29,373	
Bridge to Mass Challenge	-	-	225,000	25,000	-	-	-	
Other income	4,955	5,700	4,130	16,000	21,139	20,769	-	
TOTAL INCOME AND CARRY FORWARD	3,788,154	6,810,764	7,717,223	7,554,853	7,144,853	6,709,522	6,895,844	2,798,649
EXPENDITURE								
Personnel	657,528	1,892,966	2,585,168	2,822,705	3,152,543	2,798,945	3,084,562	1,591,265
Consultants	21,287	392,266	352,984	414,111	230,976	224,117	36,796	52,422
Scholarships & support	28,274	115,058	37,517	112,961	136,016	94,459	155,909	29,815
Purchased Equipment	35,517	132,753	147,279	259,461	39,409	59,929	269,100	125,731
Lease / Hired Equipment	4,163	65,607	4,583	15,903	3,437	16,470	6,954	1,416
Maintenance (IT and lab)	429	78,640	2,889	77,864	14,435	13,535	29,238	25,691
Research Materials / Experiments	107,769	304,054	172,246	240,924	218,983	188,313	278,140	215,337
Travel and conferences	102,608	319,067	275,872	345,879	273,676	328,058	66,476	20,937
Sponsorships - scientific workshops & conferences	4,500	10,429	11,000	20,845	20,891	23,045	17,485	900
Non-research Initiatives	80,217	151,752	259,710	134,553	130,257	75,714	21,727	40,786
INCF Subscription	-	-	339,905	311,643	332,890	83,792	39,545	6,304
Other Expenditure	4,730	22,727	175,552	49,412	145,994	133,807	109,830	87,272
TOTAL EXPENDITURE	1,047,022	3,485,319	4,364,705	4,806,261	4,699,508	4,040,187	4,115,762	2,197,876
BALANCE CARRIED FORWARD TO FUTURE YEARS	2,741,132	3,325,445	3,352,518	2,748,592	2,445,345	2,669,335	2,780,081	600,773*

IN KIND DATA

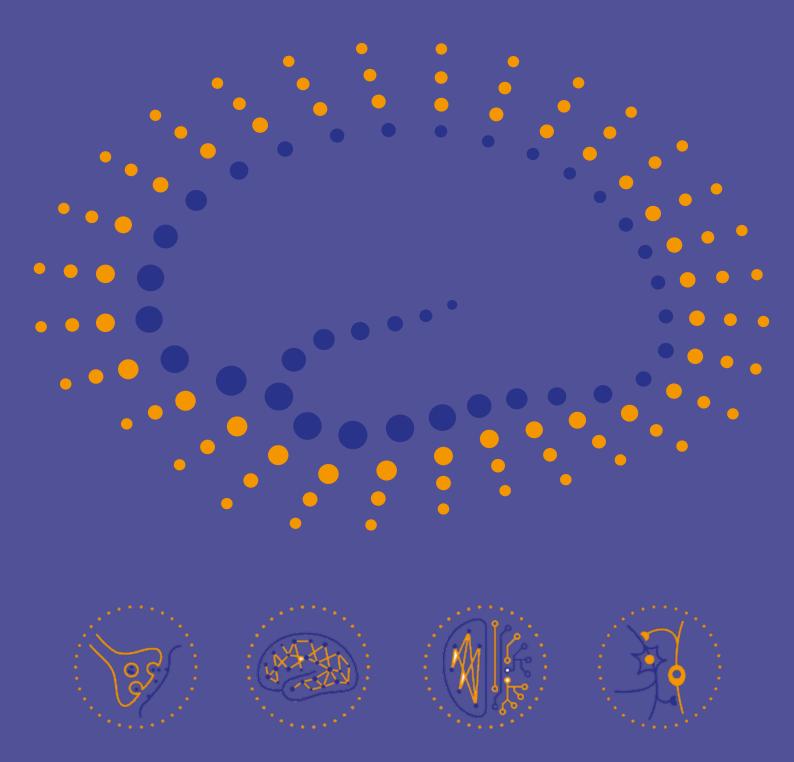
ADMINISTERING AND COLLABORATING ORGANISATION CONTRIBUTIONS	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
Monash University	887,577	833,529	756,141	729,981	742,725	742,725	746,225	698,857	6,137,760
The Australian National University	156,220	412,359	246,359	246,359	272,542	272,542	322,542	322,542	2,251,465
University of New South Wales	104,881	102,000	100,000	100,000	100,000	102,000	107,000	115,000	830,881
University of Melbourne	0	195,547	197,856	197,856	197,856	260,661	288,102	233,088	1,570,966
University of Sydney	188,580	370,146	323,696	332,687	332,687	340,015	346,397	356,070	2,590,278
University of Queensland	277,500	494,082	494,082	500,082	494,082	494,082	359,778	359,778	3,473,466
TOTAL	1,614,758	2,407,663	2,118,134	2,106,965	2,139,892	2,212,025	2,170,044	2,085,335	16,854,816
PARTNER ORGANISATION CONTRIBUTIONS									
Brain Science Institute, Riken	6,462	12,500	12,500	12,500	12,500	12,500	12,500	12,500	93,962
Cold Spring Harbor Laboratory	4,038	12,500	12,500	12,500	12,500	12,500	12,500	0	79,038
Duke University	3,231	25,000	25,000	25,000	25,000	25,000	25,000	0	153,231
International School for Advanced Studies	6,462	12,500	12,500	12,500	12,500	12,500	12,500	12,500	93,962
Karolinska Institute/INCF	6,462	227,200	125,503	107,542	94,982	71,566	57,741	0	690,996
National Institute for Health and Medical Research	6,462	12,500	12,500	12,500	12,500	12,500	12,500	0	81,462
National Institute for Medical Research	3,231	26,000	26,000	26,000	0	0	0	0	81,231
National Institute of Mental Health	3,231	12,500	12,500	12,500	12,500	12,500	12,500	0	78,231
New York University	3,231	21,703	21,703	0	21,703	21,703	0	0	90,043
QIMR	100,154	140,153	155,013	134,886	181,768	108,182	38,316	0	858,472
Swiss Federal Institute of Technology/Human Brain Project	67,846	156,500	57,000	0	0	0	0	0	281,346
Weill Cornell Medical College	3,231	17,278	14,756	17,278	17,278	17,278	17,278	0	104,377
TOTAL	214,041	676,334	487,475	373,206	403,231	306,229	200,835	25,000	2,686,351
TOTAL	1,828,799	3,083,997	2,605,609	2,480,171	2,543,123	2,518,254	2,370,879	2,110,335	19,541,167

70 71

^{*}Balance of University cash contributions carried forward funds for Centre finalisation expenses.

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FINAL OUTPUT REPORT 2014-2021 ARC CENTRE OF EXCELLENCE FOR INTEGRATIVE BRAIN FUNCTION

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- 54. Yu, H.-H., Chaplin, T.A., Rosa, M.G.P. (2015). Representation of central and peripheral vision in the primate cerebral cortex: Insights from studies of the marmoset brain. *Neurosci Res*, 93: 47-61. doi: 10.1016/j. neures.2014.09.004.
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Conference Papers

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- Arabzadeh, E., Clifford, C.W.G., Harris, J.A., et al. (2014). Single tactile afferents outperform human subjects in a vibrotactile intensity discrimination task. *J Neurophysiol*, 12(10): 2382-2387. doi: 10.1152/jn.00482.2014.
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- **12.** Hohwy, J. (2014). Elusive phenomenology, counterfactual awareness, and presence without mastery. *Cogn Neurosci*, 5(2): 127-128. doi: 10.1080/17588928.2014.906399.
- **13**. Hohwy, J. (2014). The self-evidencing brain. *Nous*, 50(2): 259-285. doi: 10.1111/nous.12062.
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- **16.** Martin, P.R. (2014). Neuroscience: Who needs a parasol at night? *Curr Biol*, 24(24): R1164-R1166. doi: 10.1016/j. cub.2014.10.075.
- 17. Pietersen, A.N.J., Cheong, S.K., Solomon, S.G., et al. (2014). Temporal response properties of koniocellular (blue-on and blue-off) cells in marmoset lateral geniculate nucleus. *J Neurophysiol*, 112(6): 1421-1438. doi: 10.1152/in.00077.2014.
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- 21. Van Doorn, G., Hohwy, J., Symmons, M. (2014). Can you tickle yourself if you swap bodies with someone else? *Conscious Cogn*, 23(1): 1-11. doi: 10.1016/j. concog.2013.10.009.

ARC CoE for Integrative Brain Function 23

International Presentations

- 1. Arabzadeh, E. Information processing in neural circuits. Institute for Fundamental Research. Virtual (India). Dec
- 2. Deeba, F., Sanz-Leon, P., Robinson, P.A. Unified dynamics and interrelations of interictal events and absence seizures. European Society of Medicine General Assembly. Virtual (Germany). 20-21 Aug 2021.
- 3. Garrido, M.I. What can sensory prediction errors tell us about altered states of consiousness? 5th Montreal Al and Neuroscience conference. Virtual (Canada). 29-30 Nov
- 4. Garrido, M.I. Using M/EEG paradigms, dynamic causal modelling and pharmacological manipulations to investigate altered brain computations in schizophrenia. 9th European Conference on Schizophrenia Research (ECSR). Virtual (Sweden). 23-25 Sept 2021.
- 5. Garrido, M.I. From sensory prediction errors to computational psychiatry. Virtual Open House - Krembil Centre for Neuroinformatics Virtual (Canada). 21 Jun 2021.
- Garrido, M.I. The insight of blindsight. *EmoSenses Talk*, University of Aveiro. Virtual (Portugal). 28 May 2021.
- 7. Jamadar, S.D. Introduction to simultaneous MR-PET: Opportunities, Challenges, and Applications. 27th Annual Meeting of the Organisation for Human Brain Mapping Virtual (Global). 21-25 June 2021.
- 8. Mansouri, F.A. Emergence of abstract rules in the primate brain. NeuroTalk International Seminar Series - Higher Brain Functions. Virtual (Iran). 20-22 Jul 2021.
- 9. Mansouri, F.A. The role of prefrontal cortex in rule-based behaviour. Basic and Clinical Neuroscience Conference. Virtual (Iran). 22-24 Dec 2021.
- 10. Mattingley, J.B. Investigating the impact of brain stimulation on brain function in healthy adults. Australasian Brain Stimulation Society. Virtual (Brisbane). 14 Jul 2021.
- 11. Pawar, K., Egan, G.F., Chen, Z. Estimating uncertainty in deep learning MRI reconstruction using a pixel classification image reconstruction framework. International Society for Magnetic Resonance in Medicine. Virtual (Global). 15-20 May 2021.
- 12. Pawar, K., Zhong, S., Chen, Z., et al. Brain tumor segmentation using two stage convolutional neural network for federated evaluation. 24th International Conference on Medical Image Computing and Computer Assisted Intervention. Virtual (France). 27 Sept - 1 Oct 2021.
- 13. Peiris, E., Chen, Z., Egan, G.F., et al. Duo-SegNet: adversial dual-views for semi-supervised medical image segmentation. 24th International Conference on Medical Image Computing and Computer Assisted Intervention. Virtual (France). 27 Sept - 1 Oct 2021.

- 14. Renton, A.I. Real-time neurofeedback training of spatial and feature-based attention selectively enhances visual processing. Australasian Cognitive Neuroscience Society Conference. Virtual (Melbourne). 18-19 Nov 2021.
- 15. Stuart, G. Cellular and circuit mechanisms underlying binocular vision. Basic and Clinical Neuroscience Congress. Virtual (Iran). Dec 2021.
- 16. Stuart, G. Cellular and circuit mechanisms underlying binocular vision. Scuola Internazionale Superiore di Studi Avanzati Virtual (Italy). Jul 2021.
- 17. Zhong, S., Morris, A., Chen, Z., et al. Federated multi-task image classification on heterogeneous medical data with privacy perversing. International Society for Magnetic Resonance in Medicine. Virtual (Global). 15-20 May 2021.

National Presentations

- 18. A-Izzeddin, E.J., Mattingley, J.B., Harrison, W.J. Contextual influences of perceptual inferences. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.
- 19. Arabzadeh, E. Predictive coding and perception of music. Seminar for the School of Music, ANU. Canberra, Australia Dec 2021.
- 20. Arabzadeh, E. Neural coding. Australian Course in Advance Neuroscience. Virtual (Melbourne). 11-22 Oct
- 21. Broersen, R., Thompson, G., Stuart, G. Binocular visual processing in superior colliculus. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021
- 22. Dyce, G., Mattingley, J., Tang, M., et al. Neural correlates of spatial attention in mice. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
- 23. Egan, G.F. VBIC Introduction. Victorian Biomedical Imaging Capability Annual Network Meeting. Virtual (Melbourne), 26 Nov 2021,
- 24. Egan, G.F. MELTHERA: HZDR Monash joint international laboratory. 6th German-Australian Science and Innovation Day. Virtual (Melbourne). 6 Oct 2021.
- 25. Garrido, M.I. Keynote presentation. *Melbourne Psychiatry* Symposium. Virtual (Melbourne). 2021.
- 26. Garrido, M.I. Keynote presentation. Cognito. Virtual (Melbourne). 17 Oct 2021.
- 27. Grünert, U. Neural circuitry of rod mediated vision. Centre for Eye Health, UNSW. Virtual (Sydney). 23 Feb 2021.
- 28. Harris, A.M., Mattingley, J.B. Additive effects of theta and alpha phase in predicting the timing of pro- and antisaccades. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April
- 29. Harrison, W.J., Stead, I., Wallis, T.S.A., et al. The remarkably precise coordination of shifts of spatial attention and saccadic eye movements. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.

- 30. Mafi, A., Tang, M., Arabzadeh, E. Temporal precision of decision making in humans and rodents. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
- 31. Mattingley, J. Understanding the role of prediction in sensory encoding. Monash Biomedical Imaging Webinar Series. Virtual (Melbourne). 29 Jul 2021.
- Brisbane, Australia. 13 Dec 2021.
- 33. McIntyre, M.E., Rangelov, D., Mattingley, J.B. Beyond simple perceptual decision making: an investigation of feature-based attention and motion integration in twoalternative decisions. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.
- 34. Mishra, W., Kheradpezhouh, E., Arabzadeh, E. Cholinergic modulation of sensory coding and behaviour. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
- 35. Mitchell B., Tang, M., Mattingley, J., et al. Uncertainty and barrel cortex neurons: our predictions violated? ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
- 36. Partridge-Madsen, T., Stuart, G. Role of inhibition in controlling neuronal output. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
- 37. Paxinos, G. A river divided. Neuroscience & Non-Communicable Diseases Seminar Series. Sydney, Australia. 17 Sept 2021.
- 38. Rangelov, D., Fellrath, J., Galligan, D., et al. Neural mechanisms of sensory integration across space. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.
- 39. Renton, A.I., Painter, D.R., Mattingley, J.B. Implicit neurofeedback training of feature-based attention promotes biased sensory processing during integrative decision-making. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 2021.
- 40. Renton, A.I., Painter, D.R., Mattingley, J.B. Understanding the neural bases of attention, prediction anddecisionmaking in health and disease. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane), 9-11 April 2021,
- 41. Renton, A.I., Painter, D.R., Mattingley, J.B. Neurofeedback training of visual selective attention. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.
- 42. Rideaux, R. Exploring and explaining biological motion processing with nueral networks. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.
- 43. Sah, P. The cell biology and biophysics of associative learning and fear conditioning. University of NSW, School of Psychology Behavioural Neuroscience Research Seminar. Sydney, Australia. 5 Mar 2021.
- 44. Sah, P. Welcome and introduction. Joint SUSTech-UQ Centre for Neuroscience and Neural Engineering (CNNE) Symposium. Virtual (Brisbane). 25 Jun 2021.

- 45. Sah, P., Hu, S. Final comments. Joint SUSTech-UQ Centre for Neuroscience and Neural Engineering (CNNE) Symposium. Virtual (Brisbane). 25 Jun 2021.
- 46. Stuart, G. The electrical structure of neurons. Australian Course in Advance Neuroscience. Virtual (Melbourne). 11-22 Oct 2021.
- 32. Mattingley, J.B. Plenary. QUT Centre for Robotics, Retreat. 47. Stuart, G., Testa-Silva, G., Rosier, M., et al. NMDA spikes in human pyramidal neurons. ANU CIBF Finale Science Meeting. Canberra, Australia. 14 Dec 2021.
 - 48. West, R., Matthews, N., Mattingley, J.B., et al. Comparing confidence across sensory modalities. The Australasian Experimental Psychology Society Annual Meeting. Virtual (Brisbane). 9-11 April 2021.

Poster Presentations

- 49. Bryson, A. 35th Annual Scientific Meeting of the Epilepsy Society of Australia. Virtual (Tasmania). 2-4 Nov 2021.
- 50. Jamadar, S.D. Monash rsfPET-fMRI and Monash visfPETfMRI: Two publicly available simultaneous MR-PET datasets. 27th Annual Meeting of the Organisation for Human Brain Mapping. Virtual (Global). 21-25 June 2021
- 51. Randeniya, R., Vilares, I., Mattingley, J.B., et al. Increased functional activity and altered effective connectivity during sensory learning in autism. 27th Annual Meeting of the Organisation for Human Brain Mapping. Virtual (Global). 21-25 June 2021.
- 52. Rideaux, R. Exploring and explaining properties of motion processing in biological brains using a neural network. Vision Science Society Meeting. Virtual (USA). 21-26 May 2021.

International Presentations

- 1. Adibi, M., Nematollahzadeh, F., Yazdian, E. The link between the spatiotemporal dynamics of mesoscale and microscale activity in sensory cortex. *43rd Annual Meeting of the Japan Neuroscience Society JNS2020*. Virtual, Japan. 29 Jul-1 Aug 2020.
- 2. Almasi, A., Meffin, H., Sun, S.H., et al. How stimulus affect the receptive fileds of cells in primary cortex. *29th Annual Computational Neurosciences Meeting*. Virtual, International. 18-22 Jul 2020.
- 3. Arabzadeh, E. Neural coding. *Webinar on Advanced Electrophysiology*. Virtual, Iran. 14 Oct 2020.
- D'Souza, J.F., Cloherty, S.L., Price, N.S.C., et al. Spatial cueing reduces marmoset reaction times in a sixtarget centre-out saccade task. *Marmoset Bioscience Symposium*. Virtual, International. 18-22 Jul 2020.
- Fulcher, B.D. A practical guide to working reproducibly. OHBM Australian Chapter Webinar. Virtual, Australia. 26 May 2020.
- Fulcher, B.D. Characterizing neural dynamics using highly comparative time-series analysis. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- Garner, K., Barth, M., Garrido, M. 7T Sequences for imaging the basal ganglia. *Neuromatch Computational Neuroscience*. Virtual, International. 26-30 Oct 2020.
- 8. Garrido, M. From prediction errors to computational psychiatry. *Computational Psychiatry Course Zurich*. Virtual, Switzerland. 7-12 Sept 2020.
- Grünert, U. Neural circuitry of rod mediated vision. Association for Research in Vision and Ophthalmology Education Course: Night vision in aging, AMD, and beyond: basic and clinical aspect. Virtual, International. 2 May 2020.
- Hagan, M.A. Untangling the laminar architecture of feedforward inputs: marmosets as a model for studying neural communication. *Marmoset Bioscience Symposium*. Virtual. International. 22 Oct 2020.
- 11. Ibbotson, M.R. Early visual pathway. *Machine Intelligence and Brain Research Winter Course/Workshop on Computational Brain Research at IIT Madras*. Chennai, India. 2-10 Jan 2020.
- 12. Jamadar, S. Introduction to functional MRI. *European Summer School on Eye Movements*. Virtual, International. 7-11 Sept 2020.
- **13.** Kalhan, S., McFadyen, J., Tsuchiya, N., et al. Neural correlates of accelerated perceptual awareness: A 7T-fMRI study. *New Horizons in Human Brain Mapping*. Hawaii, USA. 4-6 Feb 2020.
- 14. Mansouri, F.A. Emergence of abstract rule in the primate brain. *International Conference of Basic and Clinical Neuroscience*. Virtual, Iran. Dec 2020.

- **15.** Mattingley, J. Understanding the role of prediction in sensory encoding. *Australasian Cognitive Neuroscience Society Virtual Meeting.* Virtual, Australia. 14 Oct 2020.
- Nematollahzadeh, F., Yazdian, E., Jalal Zahabi, S., et al. Spatiotemporal dynamics of mesoscale and microscale activity in sensory cortex Federation of European Neuroscience Societies Forum 2020. Virtual, International. 11-15 July 2020.
- Nematollahzadeh, F., Zahabi, S.J., Yazdian, E., et al. Spatiotemporal dynamics of mesoscale and microscale activity in sensory cortex. *Neuromatch Computational Neuroscience*. Virtual, International. 26-30 Oct 2020.
- **18.** Paxinos, G. Who is the puppet and who is the puppeteer? *Panhellenic Interscience Congress.* Virtual, Greece 25-27 Sept 2020.
- 19. Randeniya, R., Vilares, I., Mattingley, J., et al. Neural pathways of atypical sensory learning in Autism. *New Horizons in Human Brain Mapping*. Hawaii, USA. 4-6 Feb 2020.
- 20. Rangelov, D. Organize your data according to the Brain Imaging Data Structure (BIDS) your future self will thank you! *OHBM Brainhack 2020*. Brisbane, Australia 17 May 2020.
- 21. Robinson, P.A., Gao, X., Han, Y. Relationships between lognormal distributions and neural properties and connectivities. *American Physical Society*. Virtual, USA. 2-6 Mar 2020.
- 22. Sah, P. Circuit mechanisms that mediate sharp wave oscillations in the amygdala. *Global Artificial Intelligence Technology Conference*. Virtual, China. 26 Jul 2020.
- 23. Stuart, G. Cellular and circuit mechanisms underlying binocular vision. *9th Basic and Clinical Neuroscience Congress*. Virtual, Iran. 11 Dec 2020.

National Presentations

- 24. Almasi, A., Sun, S.H., Yunzab, M., et al. How do stimulus statistics change the receptive fields of cells in primary visual cortex? *Systems & Computational Neurosience Down Under (SCiNDU)*. Brisbane, Australia. 29-31 Jan 2020.
- **25**. Arabzadeh, E. State modulation of cortical activity. *NeuroSadra Neuroscience Program.* Virtual, Australia. 16 Oct 2020.
- **26.** Arabzadeh, E. Neuroscience of creativity. *School of Music, ANU*. Canberra, Australia. 25 Sept 2020.
- **27.** Dear, M. Naturalistic images in perception and working memory. *QBI Summer Scholars Symposium*. Brisbane, Australia. 7 Feb 2020.
- 28. Dzafic, I., Garrido, M. Prior belief formation and precision in the schizophrenia spectrum. *Biological Psychiatry Australia*. Virtual. Australia. 19-21 Oct 2020.
- 29. Jamadar, S. Recent advances in simultaneous MRI-PET. OHBM Australian Chapter Webinar. Virtual, Australia. 26 May 2020.

- 30. Kalhan, S., Garrido, M., Hester, R. Dependent smokers exhibit greater prefrontal cortex activity during preparatory control but blunted anterior cortex activity during reactive control with inhibiting over rewards. *Medicine, Dentistry and Health Sciences Graduate Research Conference*. Virtual, Australia. 26 May 2020.
- 31. Maljevic, S.C. Patient stem cell-derived neuronal models of SCN2A disorders. *Epilepsy Research Centre Annual Retreat*. Virtual. Australia 1-2 Oct 2020.
- **32.** Mattingley, J. Understanding the role of prediction in sensory encoding. *Institute for Social Neuroscience*. Melbourne, Australia. 27 Aug 2020.
- **33.** Mattingley, J. Understanding the role of prediction in sensory encoding. *QBI Neuroscience Semina*r. Brisbane, Australia. 16 Sept 2020.
- **34.** Mattingley, J. Understanding the role of prediction in sensory encoding. *Systems & Computational Neurosience Down Under (SCiNDU)*. Brisbane, Australia. 29-31 Jan 2020.
- **35.** Mattingley, J., Stead, I. Understanding cognitive and brain changes throughout adolescene. *Australian Council for Educational Leaders (ACEL)*. Virtual, Australia. 2 Sept 2020.
- **36**. Orchard, E. The neuroscience of late-life parenthood. *Monash Biomedical Imaging Seminar Series*. Virtual, Australia. 12 Nov 2020.
- **37.** Orchard, E. Human motherhood is neuroprotective for the late-life maternal brain. *Monash Neuroscience in a Flash.* Virtual, Australia. 14 Dec 2020.
- **38**. Orchard, E. Human motherhood is neuroprotective for the late-life maternal brain. *Students of Brain Research 2020 Student Symposium.* Virtual, Australia. 2-3 Dec 2020.
- **39.** Robinson, P.A. Interrelating multiscale brain structure and dynamics via modeling. *Monash Biomedical Imaging Seminar Series*. Melbourne, Australia. 17 Feb 2020.
- **40.** Robinson, P.A. Interrelating multiscale brain structure and dynamics via modeling. *University of Melbourne*. Melbourne. Australia. 18 Feb 2020.
- **41.** Sah, P. The science of learning. *Crestmead State School.* Brisbane, Australia. 22 Jan 2020.
- **42.** Wardak, A. Fractional diffusion theory of balanced heterogeneous neural networks. *School of Physics 2020 Symposium.* Sydney, Australia. 4 Dec 2020.

Poster Presentations

- 43. Begeng, J., Tong, W., Ibbotson, M.R., et al. Modelling the responses of ON and OFF retinal ganglion cells to infrared neural stimulation. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020
- 44. Chen, G., Gong, P. Dynamical circuit mechanisms of attention sampling. *29th Annual Computational Neurosciences Meeting.* Virtual, International. 18-22 Jul 2020.

- **45**. Cliff, O. Exact inference of linear dependence between auto correlated time series. *29th Annual Computational Neurosciences Meeting*. Virtual, International. 18-22 Jul 2020.
- 46. Cliff, O., Hernaus, D., Scholtens, L., et al. Modulation of the hierarchical gradient of cognitive information processing dynamics during rest and task. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- **47**. El-Zghir, R., Gabay, N., Robinson, P.A. Modal-polar representation of evoked response potentials in multiple arousal states. *29th Annual Computational Neurosciences Meeting*. Virtual, International. 18-22 Jul 2020.
- 48. Eskikand, P.Z., Grayden, D.B., Kameneva, T., et al. A computational neural model of pattern motion selectivity of MT neurons. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 49. Gabay, N., Robinson, P.A., Babaie-Janveier, T. Eigenmodes of cortical activity give rise to cortical standing, traveling, and rotating waves. *29th Annual Computational Neurosciences Meeting*. Virtual, International. 18-22 Jul 2020.
- 50. Henderson, J.A., Robinson, P.A., Dhamala, M. Brain structure-function relationships via spectral factorization and the transfer function. 26th Annual Meeting of the Organization for Human Brain Mapping. Virtual, International. 23 Jun-3 Jul 2020.
- 51. Henderson, J.A., Robinson, P.A., Dhamala, M. Brain dynamics and structure-function relationships via spectral factorization and the transfer function. *29th Annual Computational Neurosciences Meeting.* Virtual, International. 18-22 Jul 2020.
- 52. Jung, Y.J., Almasi, A., Sun, S.H., et al. Optically imaged map of orientation preferences in visual cortex of an Australian marsupial, the Tammar Wallaby Macropus eugeii. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 53. Kalhan, S., Garrido, M., Hester, R. Inhibitory control over reward: dependent smokers exhibit more prefrontal cortex activity during preparatory control but reducted anterio cingulate activity during reactive control. *Biological Psychiatry Australia*. Virtual, Australia. 19-21 Oct 2020.
- 54. Levichkina, E., Mohan, Y.S., Kermani, M., et al. Prediction in vision elements of predictive coding in awake and anaesthetised primates. *Cognitive Neuroscience Society Annual Meeting*. Virtual, USA. 2-5 May 2020.
- 55. Liu, X., Robinson, P.A. Analytic model for feature maps in the primary visual cortex. *29th Annual Computational Neurosciences Meeting.* Virtual, International. 18-22 Jul 2020
- 56. Long, X., Liu, Y., Marin, P.R., et al. Gamma oscillations organized as localized burst patters with anomalous propogation dynamics in primate cerebral cortex. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.

- 57. Meffin, H., Almasi, A., Ibbotson, M.R. Contrast invariant tuning in primary visual cortex. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 58. Munn, B., Zeater, N., Pietersen, A.N.J., et al. Gammaband oscillations, fractal spike dynamics, and population coupling in the primate dorsal lateral geniculate. Gordon Research Conference 2020 Thalamocortical Interactions. Ventura, USA, 16-21 Feb 2020.
- 59. Oldham, S., Fulcher, B.D., Aquino, K., et al. A spatial developmental generative model of human brain structural connectivity. 26th Annual Meeting of the Organization for Human Brain Mapping. Virtual, International. 23 Jun-3 Jul 2020.
- 60. Randeniya, R., Vilares, I., Mattingley, J., et al. Bayesian models of atypical perception in Autism. Cognitive Neuroscience Society Annual Meeting. Virtual, USA. 2-5 May 2020.
- 61. Shafiei, G., Vos de Wael, R., Bernhardt, R., et al. Hierarchical organization of local temporal dynamics across the human brain. 26th Annual Meeting of the Organization for Human Brain Mapping. Virtual, International, 23 Jun-3 Jul 2020.
- 62. Sun, S.H., Almasi, A., Yunzab, M., et al. Extracellular positive spikes in cat primary visual cortex may correspond from the axons of cells originalting in the Thalamus. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 63. Tekieh, T., Robinson, P.A., Lockley, S., et al. Modelling ipRGC-influenced light response on circadian phase, melatonin suppression and subjective sleepiness. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 64. Tong, W., Ibbotson, M.R., Meffin, H. Preventing retinal ganglion cell axon bundle activation with oriented electrodes. 29th Annual Computational Neurosciences Meeting. Virtual, International. 18-22 Jul 2020.
- 65. Wainstein, G., Cliff, O., Li, M., et al. Cognitive state and cathecolaminergic system modulates cortical information processing dynamics. 26th Annual Meeting of the Organization for Human Brain Mapping, Virtual, International. 23 Jun-3 Jul 2020.

International Presentations

- 1. Almasi, A. Feature selectivity and invariance in primary visual cortex. 28th Annual Computational Neuroscience Meeting. Barcelona, Spain. 13-17 July 2019.
- 2. Bradley, C. Dynamic changes in networks for spatial attention revealed by transcranial magnetic stimulation evoked potentials. Australasian Cognitive Neuroscience Society Conference. Launceston, Australia. 21-24 Nov 2019.
- 3. Dzafic, I., Larsen, M., Carter, O., et al. Regularity learning and prediction errors in the continuum of psychotic experiences European Conference on Schizophrenia Research. Berlin, Germany. 26-28 Sep 2019.
- 4. Egan, G.F. The Australian Brain Alliance: Update and future plans. 10th IBRO World Congress of Neuroscience. Daegu, South Korea. 21-25 Sept 2019.
- 5. Egan, G.F. Global Brain Consortium meeting summary and implementation plan. Global Brain Consortium Inaugural Meeting. Montreal, Canada. 10 May 2019.
- 6. Egan, G.F. Imaging neuroinflammation and neurodegeneration in vivo: new approaches using simultaneous MR-PET. New and Emerging Technologies -Biotech meets Medicine. Potsdam, Germany. 18-20 Sept
- 7. Furlong, T. Habitual behaviour resulting from high-calorie food is prevented by an orexin-receptor antagonist. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 8. Garner, K. Cognitive capacity limits are remediated by practice-induced plasticity between the Putamen and Pre-Supplementary Motor Area. Australasian Cognitive Neuroscience Society Conference. Launceston, Australia. 21-24 Nov 2019.
- 9. Gharaei, S. Superior colliculus modulates cortical coding of somatosensory information. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 10. Harding, I.H., et al. Brain atrophy in Friedreich ataxia preferentially manifests in cerebellar and cerebral motor areas: Results from the ENIGMA-Ataxia consortium. International Ataxia Research Conference Washington, USA. 14-16 Nov 2019.
- 11. Lee, C. State dependent changes in perception and sensory coding in the somatosensory cortex. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia, 2-5 Dec 2019.
- 12. Mansouri, F., Rosa, M.G.P., Tanaka, K., et al. The neural architecture of cognitive flexibility and control. Australasian Cognitive Neuroscience Society Conference. Launceston, Australia, 21-24 Nov 2019.
- 13. Marek, R. Neural function and connectivity to drive emotional learning. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.

- 14. Martin, P.R. Form and function in parallel pathways for colour vision. 25th Symposium of the International Colour Vision Society. Riga, Latvia. 5-9 July 2019.
- 15. Mattingley, J. The role of prediction in sensory encoding. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 16. Mattingley, J. Attention modifies the weights of competing stimulus sources during integrated visual decision making. Zangwill Club invited seminar in the department of Experimental Psychology, University of Cambridge. Cambridge, UK. 5 Apr 2019.
- 17. Mattingley, J. Attention modifies the weights of competing stimulus sources during integrated visual decision making. Invited seminar in the Department of Experimental Psychology, University of Oxford. Oxford, UK. 3 Apr 2019.
- 18. Mattingley, J. Understanding the neural processes involved in integrated perceptual decisions. Center for Biomedical Imaging (CBI), Medical University of South Carolina. Charleston, USA. 19 Jun 2019.
- 19. Nordstrom, K., Williams, S., Martin, P.R., et al. Vision, information processing and cognition. 39th Annual Meeting 33. Robinson, P.A. Multiscale brain modeling. 2nd IBRO-APRC of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 20. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? Hellenic Neuroscychology Society. Athens, Greece. 19 May 2019.
- 21. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? Institute of Public Health of the American College, Athens. Athens, Greece. 31 Oct 2019.
- 22. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? Metropolitan College, Athens, Greece, 30 Oct 2019.
- 23. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? FENS Regional Meeting Belgrade, Serbia 10-13 Jul 2019.
- 24. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? Open University of Crete. Crete, Greece 24 38. Sah, P. Prefrontal cortex, hippocampus and amygdala: June 2019.
- 25. Paxinos, G. Opening address. *Hellenic Psychology* Society. Athens, Greece. 16 May 2019.
- 26. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? GeneDis Meeting. Crete, Greece 8-11 Oct 2019.
- 27. Paxinos, G. Brain and Mind. Vascular Dementia Conference Paris. France. 22 Feb 2019.
- 28. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? Hellenic Pharmaceutical Student's Congress. Patras, Greece. 25 Apr 2019.
- 29. Randeniya, R. Bayesian models of atypical sensory perception in Autism. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.

- 30. Rangelov, D. Neurocognitive consequences of prediction violation across auditory and visual modalities. Australasian Cognitive Neuroscience Society Conference. Launceston, Australia. 21-24 Nov 2019.
- 31. Robinson, P.A. Physical brain connectomics and dynamics - Part 1. LACONEU Conference. Valparaíso, Chile. 7-11 Jan 2019.
 - Robinson, P.A. Physical brain connectomics and dynamics - Part 2. LACONEU Conference, Valparaíso, Chile, 7-11 Jan 2019.
 - Robinson, P.A. Nonlinear brain dynamics via neural field theory. American Physical Society March Meeting. Boston, USA. 4-8 Mar 2019.
 - Robinson, P.A. Quantitative modeling and analysis of multiscale brain structure and dynamics. 4th International Conference on Basic and Clinical Multimodal Imaging. Chengdu, China. 10-14 Sep 2019.
- 32. Robinson, P.A. Relating brain measurements to structure and activity via modeling. 4th International Conference on Basic and Clinical Multimodal Imaging. Chengdu, China. 10-14 Sep 2019.
- Bangladesh Associate School of Neuroscience. Dhaka, Bangladesh. 4-8 Dec 2019.
- 34. Robinson, P.A. Structure-function relationships via eigenmodes. BrainModes. Pokhara, Nepal. 12-13 Dec
- 35. Rosa, M.G.P. Marmoset brain connectivity atlas. Building and Mining Brain Cell Atlases and Connectomes. Suzhou, China, 3-19 June 2019.
- 36. Rowe, E., Tsuchiya, N., Garrido, M. Detecting (un) counscious predition errors. Australasian Cognitive Neuroscience Society Conference. Launceston, Australia. 21-24 Nov 2019.
- 37. Sah, P. Computational features of the amygdala. Amygdala Function in Emotion, Cognition and Disease. Gordon Research Conference. Easton, USA. 4-9 Aug 2019.
- a tripartite circuit for fear learning. 9th Federation of the Asian and Oceanian Physiological Societies (FAOPS) Congress; Symposium on Amygdala Neuronal Circuits in adaptive Behaviours. Kobe, Japan. 28-31 Mar 2019.
- 39. Sah, P. The science of learning: From the laboratory to the classroom. China Brain Science and Education International Summit. Qingdao, China. 10-11 May 2019.
- 40. Sah, P. Deep brain stimulation in the 21st century: Movement disorders to psychiatric disorders; Tourette's pain, depression and addiction. China-Australia Seminar of Brain Science Research and Training Course on Functional Neurosurgery & The 4th Pengcheng Minimally Invasive Neurosurgery Summit Forum. Shenzhen, China. 10 Aug 2019.
- 41. Sah, P. Neural circuits that mediate fear learning and extinction; mechanisms and issues. RIKEN Center for Brain Science seminar program. Tokyo, Japan. 26 Mar 2019.

- 42. Sah, P. How can partial reinforcement be implemented in the classroom for ideal learning? *Lund Symposium on Cognition, Communication and Learning.* Lund, Sweden. 24-26 Apr 2019.
- **43.** Stead, I. Modelling of spatial representations across eye movements reveals rapid post-saccadic updating. *Australasian Cognitive Neuroscience Society Conference*. Launceston, Australia. 2019.
- **44.** Stuart, G. Cellular and circuit mechanism underlying binocular vision. *RTG Symposium on Cortical Sensations*. Aachen, Germany. 4 Oct 2019.
- **45**. Stuart, G. Heterogeneity of dendritic properties from rodents to humans. *Gordon Research Conference on Dendrites*. Ventura, USA. 31 Mar 5 Apr 2019.
- 46. Ward, P.G.D., Liang, E., Egan, G.F., et al. Dynamic within-subject functional connectivity in the resting state using high temporal resolution simultaneous BOLDfMRI FDG-PET. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 47. Yunzab, M., Choi, V., Meffin, H., et al. Synaptic basis for contrast-dependent shifts in functional identity in mouse V1. *28th Annual Computational Neuroscience Meeting*. Barcelona, Spain. 13-17 July 2019.

National Presentations

- 48. Bryson, A. Tonic Currents and Neuronal Excitability.

 Epilepsy Research Retreat. Ballarat, Australia. 8-10 Aug 2019
- 49. Chen, G., Gong, P. Dynamical circuit mechanisms of attentional sampling. NeuroEng 2019: *The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering*. Adelaide, Australia. 29-30 Nov 2019.
- Dyce, G.P. Spatial attention in the vibrissal system of mice. *Kioloa Neuroscience Colloquium*. Kioloa, Australia. 25-26 May 2019.
- **51.** Egan, G.F. Invited presentation. *Monash Health Neuroscience Symposium*. Clayton, Australia. 28 Feb 2019.
- **52.** Egan, G.F. Emerging needs and opportunities for accelerator based production of therapeutic medical radioisotopes. *Nuclear Science & Technology for Heath Symposium.* Clayton, Australia. 31 May 2019.
- **53**. Furlong, T. Dopamine and habitual actions. *Dopamine Symposium*, UNSW. Sydney, Australia. 14 Nov 2019.
- **54.** Furlong, T. Breaking bad habits: loss of behavioural control by methamphetamine and high-calorie diet. *BOSCH young Investigator symposium*. Sydney, Australia. 29 Dec 2019.
- 55. Garner, K., Garrido, M., Dux, P. Cognitive capacity limits are remediated by pratice-induced plasticity in a striatal-cortical network. *Australian HBM Chapter meeting* Newcastle, Australia. 16-18 Oct 2019.

- **56.** Garrido, M. From prediction errors to computational psychiatry. *Biological Psychiatry Australia*. Melbourne, Australia. 27-29 Oct 2019.
- 57. Garrido, M. DCM study on coma/ vegetative states & schizophrenic patients. *Brain Mechanism of Loss of Consciousness Workshop*. Melbourne, Australia. 1 Mar 2019
- Garrido, M. From prediction errors to computational psychiatry. *Students of Brain Research Symposium 2019*. Melbourne, Australia. 12 Nov 2019.
- Garrido, M. Why can blind people "see" emotion? UNSW School of Psychology Seminar. Sydney, Australia. 8 Feb 2019.
- **60**. Gharaei, S. Superior colliculus modulates cortical coding of somatosensory information. *Kioloa Neuroscience Colloquium.* Kioloa, Australia. 25-26 May 2019.
- 61. Ibbotson, M.R. Invited panel member: The interface between wet and dry neurosciences. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 62. Jung, J., Yunzab, M., Almasi, A., et al. Orientation maps in the primary visual cortes of the Australian Tammar Wallaby *NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering.* Adelaide, Australia. 29-30 Nov 2019.
- 63. Kheradpezhouh, E., Tang, M.F., Mattingley, J.B., et al. TRPA1 activation enhances sensory coding in mouse vibrissal and visual cortices. *The Gage Conference on Ion Channels and Transporters*. Canberra, Australia. 15-17 Apr 2019.
- 64. Linghan, J. SCN2A GOF vs LOF assessed in cortical culture neuronal networks. *Epilepsy Research Retreat*. Ballarat, Australia. 8-10 Aug 2019.
- 65. Mattingley, J. Understanding the neuroscience behind attention, prediction and decision making. *Invited seminar at Cricket Australia*. Brisbane, Australia. 10 Apr 2019.
- Mattingley, J. Visual cortex hyper-excitability in individuals with Charles Bonnet hallucinations. *Invited Talk in Neurology Department, Mater Hospital*. Brisbane, Australia. 26 Mar 2019.
- 67. Mattingley, J. Human behavioural and physiological investigations of attention, prediction and decision -making in health and disease. *The Mater Research/Queensland Brain Institute Research Symposium.* Brisbane, Australia. 12 Oct 2019.
- 68. Mattingley, J. How we think: Cracking the brain's code. *Medical Moonshots*. Canberra, Australia. 26 Sept 2019.
- 69. Mattingley, J. Understanding the neural processes involved in integrated perceptual decisions. *The Research School of Psychology, ANU*. Canberra, Australia. 27 Sept 2019.

- Meffin, H., Almasi, A., Cloherty, S.L., et al. Nonlinear receptive field estimation revelas novel forms of feature invariance in primary visual cortex. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 71. Paxinos, G. Brain and Mind: Who is the Puppet and Who the Puppeteer? *APS College of Clinical Neurosphychologists* Adelaide, Australia 7 Nov 2019.
- 72. Petrou, S. Estimating neuronal conductance model parameters using dynamic action potential clamp. Epilepsy Research Retreat. Ballarat, Australia. 8-10 Aug 2019
- **73.** Rangelov, D. Behavioural and neural correlates of integrated decision making. *UQ School of Psychology Seminar Series*. Brisbane, Australia. 30 Aug 2019.
- 74. Tang, M.F. Prediction affects sensory coding. *QIMR Seminar Series*. Brisbane, Australia. 1 Nov 2019.
- **75.** Smout, C., Tang, M., Garrido, M., et al. (2019). Attention promotes the neural encoding of prediction errors. PLOS Biol, 17(7): p. e3000368. 10.1371/journal.pbio.2006812.
- **76.** Tang, M.F. Prediction affects sensory coding. *Eccles Institute of Neuroscience, Australian National University.* Canberra, Australia. 2 Aug 2019.
- 77. Wong, Y. Cortical vision prosthesis evoked spiking exhibits phase-dependency. NeuroEng 2019: The 12th Australasian Workshop on Computational Nueroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.

Poster Presentations

- 78. Almasi, A., Cloherty, S.L., Wong, W.T., et al. Almasi, A., Cloherty, S.L., Wong, W.T., Ibbotson, M.R., Meffin, H. *28th Annual Computational Neuroscience Meeting.* Barcelona, Spain. 13-17 July 2019.
- 79. Almasi, A., Sun, S., Yunzab, M., et al. How do stimulus statistics change the receptive fields of cells in primary visual cortex? 28th Annual Computational Neuroscience Meeting. Barcelona, Spain. 13-17 July 2019.
- 80. Bhattarai, A., Chen, Z., Talman, P., et al. Longitudinal assessment of white matter diffusion changes in limb-onset Amyotrophic lateral sclerosis. *Australian HBM Chapter meeting* Newcastle, Australia. 16-18 Oct 2019.
- 81. Close, T.G., Sforazzini, F., Ward, P.G.D., et al. Biomedical imaging analysis in arcana (Banana): a platform for collaborative development of neuroimaging analysis workflows. 2019 Organization for Human Brain Mapping Annual Meeting. Rome, Italy. 9-13 June 2019.
- **82.** Cong, W. Brain oscillations a way to understand memory and learning. *Brisbane Life Sciences Symposium*. Brisbane, Australia. 7 Jun 2019.
- **83**. Cong, W. Neural activity in the medial prefrontal cortex and hippocampus that encodes novel object recognition. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.

- 84. Deeba, F., Sanz-Leon, P., Robinson, P.A. Unified dynamics of interictal events and absence seizures. *International Conference for Technology and Analysis of Seizures*. Exeter, UK. 2-5 Sep 2019.
- 85. Dyce, G.P., Tang, M.F., Mattingley, J.B., et al. Investigating the neuronal correlates of spatial attention in mice. *39th Annual Meeting of the Australasian Neuroscience Society*. Adelaide, Australia. 2-5 Dec 2019.
- 86. Eiber, C.D., Huang, J.Y., Belluccini, E.A., et al. Deploying iterative tomography for fast retinal receptive field mapping. NeuroEng 2019: *The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering*. Adelaide, Australia. 29-30 Nov 2019.
- 87. Eiber, C.D., Huang, J.Y., Pietersen, A.N.J., et al. Visual receptive field mapping of linear and nonlinear responses using temporal decomposition and iterative tomography. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 88. Faiz, A. Environment is a significant parameter in the switch between defensive behavioural responses. *39th Annual Meeting of the Australasian Neuroscience Society.* Adelaide, Australia. 2-5 Dec 2019.
- 89. Furlong, T., Merlin, S., Paxinos, G., et al. Dopaminergic lesions of the dorsolateral striatum prevent habitual actions resulting from extended training and L-dopa exposure. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 90. Furlong, T., Merlin, S., Paxinos, G., et al. Habitual behaviour resulting from high-calorie food is prevented by an orexin-receptor antagonist. *International Behavioural Neuroscience Society Annual Meeting*. Cairns, Australia. 23-27 June 2019.
- 91. Furlong, T., Merlin, S., Paxinos, G., et al. Dopaminergic lesions of the dorsolateral striatum prevent habitual actions resulting from extended training and L-dopa exposure. *International Behavioural Neuroscience Society Annual Meeting*. Cairns, Australia. 23-27 June 2019.
- 92. Grünert, U., Nasir-Ahmad, S., Lee, S.C.S., et al. Nonclassical ganglion cell types in primate retina. *European Retina Meeting 2019*. Helsinki, Finland. 12-14 Sep 2019.
- 93. Hasiuk, M., Pawar, K., Zhong, S., et al. Deep learning based motion estimation from highly under-sampled EPI volumetric navigators. *International Society for Magnetic Resonance in Medicine 27th Annual Meeting*. Montreal, Canada. 11-16 May 2019.
- 94. Henderson, J., Robinson, P.A. Transfer function synthesis of brain studies at the mesoscale and above. NeuroEng 2019: *The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering.* Adelaide, Australia. 29-30 Nov 2019.
- 95. Jamadar, S.D. Functional connectivity in the ageing human maternal brain, and the neuroprotective effects of motherhood. *39th Annual Meeting of the Australasian Neuroscience Society.* Adelaide, Australia. 2-5 Dec 2019.

30 PRESENTATIONS 2014-2021

- 96. Jamadar, S., Li, S., Ward, P.G., et al. High temporal resolution resting-state metabolic connectivity using simultaneous BOLD-fMRI/FDG-PET. 2019 Organization for Human Brain Mapping Annual Meeting. Rome, Italy. 9-13 June 2019.
- 97. Jung, J., Yunzab, M., Almasi, A., et al. Orientation maps in the primary visual cortex of an Australian marsupial, the Tammar Wallaby Macropus engenii. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- 98. Kassem, S., Paxinos, G. The endorestiform nucleus of the human brainstem. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- 99. Kheradpezhouh, E., Tang, M.F., Mattingley, J.B., et al. The contribution of cortical TRPA1 in sensory processing in mouse vibrissal and visual systems. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 100. Lee, S.C.S., Martin, P.R., Grünert, U. Characterization of ganglion cells that express Special AT-rich sequence binding protein 1 (SATB1) in primate retina. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. Vancouver, Canada. 29 Apr-3 May 2019.
- 101.101.Lerche, C., Egan, G.F., Shah, N.J., et al. Design and construction of a high resolution and high sensitivity BrainPET insert for 7T MRI. PSMR 2019 8th Conference on PET/MR and SPECT/MR. Munich, Germany. 15-17 April 2019
- 102. Li, S., Jamadar, S.D., Ward, P.G., et al. Spatio-temporal association between simultaneously BOLD and FDG resting state networks. *International Society for Magnetic Resonance in Medicine 27th Annual Meeting*. Montreal, Canada. 11-16 May 2019.
- 103. Lian, Y., Meffin, H., Grayden, D., et al. Learning the receptive field properties of complex cells in V1. 28th Annual Computational Neuroscience Meeting. Barcelona, Spain. 13-17 July 2019.
- 104. Lilley, L., Chen, G., Gong, P. Criticality of cortical state: A modelling study. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 105. Liu, X., Sanz-Leon, P., Robinson, P.A. Gamma-band correlations in primary visual cortex. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 106. Long, X., Martin, P.R., Solomon, S.G., et al. Spatiotemporal organisation properties of neural oscillations in primate cerebral cortex. *NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering*. Adelaide, Australia. 29-30 Nov 2019.
- 107. Martin, P.R., Pietersen, A.N., Eiber, C.D., et al. Blue-OFF cells in marmoset lateral geniculate nucleus show suppressed-by-contrast properties. *European Retina Meeting 2019*. Helsinki, Finland. 12-14 Sep 2019.

- 108. Martin, P.R., Pietersen, A.N., Zeater, N., et al. Blue-off cells show suppressed-by-contrast properties in lateral geniculate nucleus of anesthetized marmosets. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. Vancouver, Canada. 29 Apr-3 May 2019.
- 109. McKendrick, A.M., Pitchaimuthu, K., Chan, Y.M., et al. Interindividual differences in psychophysical measures of "cortical inhibition": a behavioural and 1H-MRS study. *European Conference on Visual Perception*. Leuven, Belgium. 25-29 Aug 2019.
- 110. Monfared, O., Tahaori, B., Freestone, D.R., et al. Modelling the electrical impendence of neural tissue based on its cellular building blocks. *NeuroEng 2019:* The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- **111.** Mukta, K., Robinson, P.A., Pages, J.C., et al. Eigenmode analysis of brain activity in a convoluted cortex via neural field theory. *BrainModes. BrainModes.* 12-13 Dec 2019.
- 112. Naoumenko, D., Gong, P. Complex dynamics of propagating waves in a two-dimensional neural field. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide. Australia, 29-30 Nov 2019.
- 113. Nasir-Ahmad, S., Lee, S.C.S., Martin, P.R., et al. Characterisation of ganglion cell types in human retina expressing the transcription factor SATB2. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 114. Nasir-Ahmad, S., Lee, S.C.S., Martin, P.R., et al. Identification of retinal ganglion cell types expressing the transcription factor special AT-rich binding protein 2 (Satb2) in macaque and human. Annual Meeting of the Association for Research in Vision and Ophthalmology. Vancouver, Canada. 29 Apr-3 May 2019.
- 115. Oakley, B.H., Zavitz, E., Hagan, M.A., et al. Action potentials representing visual motion direction are phase-locked to the LFP in area MT in anaesthetised marmosets. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- 116. Pawar, K., Chen, Z., Shah, N.J., et al. Enforcing structural similarity in deep learning MR image reconstruction.

 International Society for Magnetic Resonance in Medicine 27th Annual Meeting. Montreal, Canada. 11-16 May 2019.
- 117. Pietersen, A.N.J., Eiber, C.D., Zeater, N., et al. State-dependence of gamma-band spiking activity in 'blue-OFF' cells in marmoset lateral geniculate nucleus. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 118. Pozaruk, A., Pawar, K., Li, S., et al. MR based PET attenuation correction using a deep learning approach and evaluation in prostate cancer patients. *International Society* for Magnetic Resonance in Medicine 27th Annual Meeting. Montreal, Canada. 11-16 May 2019.
- **119.** Randeniya, R. Bayesian models of atypical sensory perception in Autism. *Computational Psychiatry Symposium* lowa, USA. 24 Apr 2019.

- 120. Rosa, M.G.P., Atapour, N. GFAP reactivity in the lateral geniculate nucleus following lesions of primary visual cortex in adult primates. *XIV European Meeting on Glial Cells in Health and Disease*. Porto, Portugal. 10-13 Jul 2019.
- 121. Schwenk, J., Zavitz, E., Vanarullen, R., et al. Neural correlates of perceptual echoes in marmoset primary visual cortex. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- **122.** Singh, T. Bilateral integration of information in the whisker sensory system. *39th Annual Meeting of the Australasian Neuroscience Society.* Adelaide, Australia. 2-5 Dec 2019.
- 123. Skliros, C., Ashwell, K., Johnson, A., et al. High resolution MRI/DTI and tractography study of the postmortem human basilar pons. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- 124. Soto-Breceda, A., Yunzab, M., Maturana, M., et al. Investigating preferential activation of rat ganglion cell classes with electrical stimulation. *Annual Meeting of the Association for Research in Vision and Ophthalmology.* Vancouver, Canada. 29 Apr-3 May 2019.
- 125. Stamp, M., Tong, W., Ganesan, K., et al. A 3D diamond electrode array for high acuity stimulation in retinas. *4nd Engineering in Medicine and Biology Conference*. Berlin, Germany. 23-27 July 2019.
- 126. Sudarshan, V.P., Fernandez, A., Pawar, K., et al. Synthesis of standard dose FDG PET images from low dose acquisition using a combination of atlas and CNN based method. International Society for Magnetic Resonance in Medicine 27th Annual Meeting. Montreal, Canada. 11-16 May 2019.
- 127. Sun, S., Almasi, A., Yunzab, M., et al. Positive-going spikes recorded extracullularly in cat visual cotex correspond to thalmic axons. *NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience* and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 128. Sun, S., Almasi, A., Yunzab, M., et al. Extracellular spike waveform predicts whether single units recorded in visual cortex are tunes to orientation. *28th Annual Computational Neuroscience Meeting*. Barcelona, Spain. 13-17 July 2019.
- 129. Sun, S., Meffin, H., Wong, Y., et al. Strong correlation between extracellular spike waveform and spatial receptive field type in cat visual cortex. *Neuroscience* 2019. Chicago, USA. 19-23 Oct 2019.
- 130. Tekieh, T., McCloskey, S., Lockley, S.W., et al. Modelling melanopsin-dependent effects of light on circadian phase and alertness. *NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering.* Adelaide, Australia. 29-30 Nov 2019.
- 131. Wang, C. Neural correlates of novel object in the medial prefrontal cortex and hippocampus. 39th Annual Meeting of the Australasian Neuroscience Society. Adelaide, Australia. 2-5 Dec 2019.
- 132. Ward, P.G., Jamadar, S., Oldham, S., et al. Identifying confounds in human brain functional connectomes: physiological and cognitive contributions. *International Society for Magnetic Resonance in Medicine 27th Annual*

- Meeting. Montreal, Canada. 11-16 May 2019.
- 133. Ward, P.G., Jamadar, S., Oldham, S., et al. Physiological elements in the elderly functional connectome. *2019 Organization for Human Brain Mapping Annual Meeting*. Rome, Italy. 9-13 June 2019.
- 134. 134. Ward, P.G., Orchard, E., Oldham, S., et al. Individual differences in haemoglobin concentration influence BOLD-fMRI functional connectivity and its correlations with behaviour. 2019 Organization for Human Brain Mapping Annual Meeting. Rome, Italy. 9-13 June 2019.
- 135. Ward, P.G.D., Liang, E., Parkes, L., et al. Dynamic within-subject metabolic connectivity using high temporal resolution simultaneous BOLD-fMRI FDG-PET. 2019 Organization for Human Brain Mapping Annual Meeting. Rome, Italy. 9-13 June 2019.
- 136. Wardak, M.A., Gong, P. A normative model of neural computation by fractional diffusion. NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering. Adelaide, Australia. 29-30 Nov 2019.
- 137. Wei, A.J., Lee, S.C.S., Martin, P.R., et al. Characterisation of Forkhead Protein (Foxp1) expressing cells in the marmoset retina. *39th Annual Meeting of the Australasian Neuroscience Society.* Adelaide, Australia. 2-5 Dec 2019.
- 138. Wong, Y. A Wireless Recorrding Microchip for Brain Machine Interfaces. *NeuroEng 2019: The 12th Australasian Workshop on Computational Nueroscience and Neural Engineering.* Adelaide, Australia. 29-30 Nov 2019.
- 139. Yajadda, M.M.A., Robinson, P.A. Neural field theory of the formation of ocular dominance columns in the primary visual cortex. *NeuroEng 2019: The 12th Australasian Workshop on Computational Neuroscience and Neural Engineering.* Adelaide, Australia. 29-30 Nov 2019.
- 140. Yap, H., Pozaruk, A., Pawar, K., et al. How Accurate is Ga68 PSMA PET/MR in localizing primary prostate cancers compared to multiparametric MRI, Ga68 PSMA PET/CT and whole-mount histopathology. 34th Annual European Association of Urology Congress. Barcelona, Spain. 15-19 Mar 2019.
- 141. Zavitz, E., Hagan, M.A., Oakley, B.H., et al. Stimulus statistics restructure correlated variability within and between visual areas. *Neuroscience 2019*. Chicago, USA. 19-23 Oct 2019.
- 142. Zehra, S., Meffin, H., Hicks, D., et al. V1 visual neurons: receptive fields analysis vs spike shapes. 28th Annual Computational Neuroscience Meeting. Barcelona, Spain. 13-17 July 2019.
- **143**. Zheng, G., de Veer, M., Egan, G.F. In vivo 19F-isoflurane chemical shift imaging in mouse lung. *International Society for Magnetic Resonance in Medicine 27th Annual Meeting.* Montreal, Canada. 11-16 May 2019.
- 144. Zheng, G., Lee, T., de Veer, M., et al. Depolarization changes in magnitude and phase images of hyperpolarized 129Xe induced by MR imaging. International Society for Magnetic Resonance in Medicine 27th Annual Meeting. Montreal, Canada. 11-16 May 2019.

32 PUBLICATIONS 2014-2021

International Presentations

- Arabzadeh E. Information processing in the rodent sensory cortex: population dynamics across behavioural states. Neurons, Synapses & Circuits: From Function to Disease. 16-18 Aug 2018; Sydney, Australia.
- Dzafic I. The predictive brain in the schizophrenia spectrum. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- 3. Dzafic I. Neural dynamics underlying psychotic experiences in healthy people. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 4. Egan GF. Molecular Imaging-Translational PET/MRI. *12th*Congress of the World Federation of Nuclear Medicine and

 Biology. 20-24 Apr 2018; Melbourne, Australia.
- Egan GF. Novel approaches for investigating brain function in health and disease using simultaneoud MR-PET imaging. International Society of Neurosciencce Annual Meeting. 16-17 Jun 2018; Kowloon, Hong Kong.
- Egan GF. Investigating brain function in health and disease using novel simultaneous neurovascular and cerebral metabolism neuroimaging approaches. *Monash-Newcastle Neuroscience Symposium*. 27 Sep 2018; Kuala Lumpur, Malaysia.
- Filmer H. For a minute there I lost myself... Dosagedependent increases in mind wandering with prefrontal tDCS. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- 8. Fulcher B. Feature-based time-series analysis. *NII Shonan Meeting: Analysing Large Collections of Time Series.* 22 Jun 2018; Shonan Village, Japan.
- Garrido M. Keynote: Shortcuts to the amygdala. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- Garrido M. Dynamic causal modelling. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- 11. Garrido M. Garrido, M. 8th Mismatch Negativity
 Conference MMN2018. 12-15 Jun 2018; Helsinki, Finland.
- 12. Garrido M. Young Investigator Award Keynote: The insight of blindsight: Shortcuts to the amygdala. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 13. Garrido M. An afferent subcortical white matter pathway to the amygdala facilitates fear recognition. *Neurons, Synapses & Circuits: From Function to Disease.* 16-18 Aug 2018; Sydney, Australia.
- 14. Gong P. An integrated model linking structural and dynamical properties of cortical microcircuits. *Annual Meeting of the Society for Mathematical Biology* 8-12 Jul 2018; Sydney, Australia.

- Grünert U. Introduction to: 'Retinal architecture and function; new insights'. Annual Meeting of the Association for Research in Vision and Ophthalmology. 29 Apr - 3 May 2018; Honolulu, Hawaii.
- 16. Grünert U. Nina Kondelos Award Seminar; Visual pathways: from the retina to the brain. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 17. Harris C. Learning under conditions of uncertainty and threat. Australasian Neuroscience Society, *38th Annual Scientific Meeting*. 3-6 Dec 2018; Brisbane, Australia.
- 18. Hearne L. Multivariate lesion-network mapping in stroke patients reveals connectivity patterns related to specific and global behavioural deficits. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- Ibbotson MR. Non-linear receptive fields in visual cortex: structure and adaptive characterists. FENS Satellite Meeting: Receptive Fields, Models and Applications. 6 Jul 2018; Berlin, Germany.
- Lee SCS, Martin PR, Grünert U. Retinal ganglion cell types expressing the transcription factor FoxP2 in primate retina. Annual Meeting of the Association for Research in Vision and Ophthalmology. 29 Apr - 3 May 2018; Honolulu, Hawaii.
- 21. Lee SCS, Martin PR, Rosa MGP, et al. Multiple types of ganglion cells express the transcription factor SATB1 in marmoset retina. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 22. Liu Y, Long X, Gong P. Gamma oscillation organize as propagating patterns in cortical circuits. *11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience*. 27-29 Nov 2018; Sydney, Australia.
- 23. Mansouri F. The role of prefrontal cortex in executive control of behaviour. *Australasian Neuroscience Society,* 38th Annual Scientific Meeting. 3-6 Dec 2018.
- 24. Mansouri F. The role of prefrontal cortex in cognitive flexibility and control. *Japan Cognitive Neuroscience Meeting*. 1 Jun 2018; Miura, Japan.
- 25. Marek R. What the hippocampus tells the prefrontal cortex during extinction. *4th Queensland Brain Institute & Munich Center for neurosciences symposium.* 13 Jul 2018; Brisbane. Australia.
- 26. Martin PR. Receptive field diversity in primate lateral geniculate nucleus. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. 29 Apr 3 May 2018; Honolulu, Hawaii.
- 27. Martin PR. The first steps in visual processing: Retina and subcortical vision, and an introduction to color vision.

 Machine Intelligence and Brain Research Winter Course/
 Workshop on Computational Brain Research at IIT Madras.
 2-9 Jan 2018; Madras, India.
- 28. Martin PR, Pietersen ANJ, Eiber CD, et al. Brain-state dependent properties of color-coding cells in marmoset lateral geniculate nucleus. *Optical Society of America Fall Vision Meeting*. 21-23 Sep 2018; Reno, USA.

- 29. Masri RA, Martin PR, Grünert U. Topography of cone bipolar cells in human retina. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. 29 Apr 3 May 2018; Honolulu, Hawaii.
- **30.** Mattingley J. Bayesian inference as a model of complex perceptual decision making in humans. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 31. McFadyen J. The influence of prior expectations on conscious face perception depends on emotion 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- 32. McFadyen J. Expecting the unexpected: Emotional modulation of prediction and conscious awareness. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 33. Meffin H. The structure of non-linear receptive fields in cat primary cortex. *CNS Workshop: Integrative Theories of Cortical Function*. 18 Jul 2018; Seattle, USA.
- 34. Morris A, McFadyen J. Stable population codes for eye position despite unstable tuning of single neurons. Workshop on Sensorimotor Prediction. 1 Oct 2018; Dusseldorf, Germany.
- **35.** Paxinos G. Brain and mind: who is the puppet and who the puppeteer? *10th International Conference on Vascular Dementia*. 22-23 Feb 2018; Paris, France.
- **36.** Paxinos G. Brain and mind: who is the puppet and who the puppeteer? *1st Panhellenic Conference on Neuropsychology*. 27-29 Apr 2018; Athens, Greece.
- **37**. Paxinos G. Closing remarks. *23rd Annual Seminar for Continuing Medical Education of Evangelismos Hospital*. 14 Mar 2018; Athens, Greece.
- **38.** Paxinos G. The dramatic changes on the planet and the Hellenic roots of ecological ethics. 2nd International Conference, University of Patras. 17-20 Jun 2018; Patras, Greece.
- **39**. Paxinos G. Brain and mind: who is the puppet and who the puppeteer? *Genetics, Geriatrics and Neurodegenerative Diseases Research*. 25-28 Oct 2018; Toronto, Canada.
- Petrou S. Channelopathies GOF and LOF in SCN2A. 3rd Dianalund International Conference on Epilepsies. 28-29 Jun 2018; Ringsted, Denmark.
- **41.** Petrou S. Channelopathies GOF and LOF in SCN2A. *Channelopathies 2018.* 26 Jun 2018; Denver, USA.
- 42. Pietersen ANJ, Eiber CD, Zeater N, et al. Linear summation of cone inputs to LGN suppressed-by-contrast cells in marmosets. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 43. Robinson PA. Physical brain dynamics: Activity, structure, and function via neural fields and eigenmodes. 36th SPP Physics Conference 6-9 Jun 2018; Puerto Princesa City, Palawan, Phillipines.
- 44. Robinson PA. Physical brain connectomics and dynamics. *BrainModes*. 3-4 Dec 2018; Havana, Cuba.

- **45**. Robinson PA. Nonlinear dynamics In systems neuroscience via neural field theory. *The 10th Dynamics Days Asia-Pacific*. 1-5 Nov 2018; Xiamen, China.
- 46. Robinson PA. The physical brain: New approaches to brain structure, activity, and function. *The American Physical Society - March Meeting*. 5-9 Mar 2018; Los Angeles, USA.
- 47. Sah P. Probing the eternal sunshine: Memories and fears. 2018 World Science Festival. 21-25 Mar 2018; Brisbane, Australia.
- **48.** Sah P. The amygdala, prefrontal cortex and hippocampal circuit in fear learning. *Neurons, Synapses & Circuits: From Function to Disease.* 16-18 Aug 2018; Sydney, Australia.
- **49**. Sah P. Partial reinforcement and learning. *World Life science Conference Symposium on Multiscale Brainnetome Atlas.* 27-29 Oct 2018; Beijing, China.
- 50. Sanz-Leon P. Low- and high-waking modes in the corticothalamic system. *Annual Meeting of the Society for Mathematical Biology* 8-12 Jul 2018; Sydney, Australia.
- **51.** Stuart G. Backpropagating action potentials boost dendritic inhibition. *European Institute for Theoretical Neuroscience: Dendritic integration and computation with active dendrites.* 8-9 Feb 2018; Paris, France.
- **52.** Stuart G. Cellular and circuit mechanisms underlying processing of binocular visual information. *Neurons, Synapses & Circuits: From Function to Disease.* 16-18 Aug 2018; Sydney, Australia.
- **53**. Tang M. How does prediction affect sensory coding in single neurons and populations? *31st Annual Barrels Meeting*. 1-2 Nov 2018; California, USA.
- 54. Viventi S, Alshawaf A, Farusin S, et al. Developing regenerative therapies for Friedreich's Ataxia using sensory neurons derived from induced pluripotent stem cells. QMB/AWCBR Satellite on Rare Brain Diseases. 30-31 Aug 2018; Queenstown, New Zealand.
- 55. Wang C. The role of the mPFC and HPC in fear learning and extinction. *ELSC Annual Retreat Kibbutz Ein Gedi*. 11-13 Mar 2018; Jerusalem, Israel.
- 56. Ward PGD. High temporal resolution measurement of brain function and metabolism using simultaneous dynamic PET and functional MR. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 57. Ward PGD, Sforazzini F, Jamadar SD, et al. Separating BOLD into local and non-local components using a novel simultaneous fMRI-fPET dual analysis. *26th Annual Meeting of the International Society for Magnetic Resonance in Medicine*. 16-21 Jun 2018; Paris, France.
- 58. Yang D-P, Robinson PA. Unified analysis of global and focal aspects of absence epilepsy via neural field theory of corticothalamic system. *The 10th Dynamics Days Asia-Pacific.* 1-5 Nov 2018; Xiamen, China.
- 59. Zavitz E. Sensory and motor processing in cortical circuits in vivo. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.

60. Zavitz E. Naturalistic stimulus structure reveals nonlinear spatial integration in primate V1 and V2. FENS Satellite Meeting: Receptive Fields, Models and Applications. 6 Jul 2018; Berlin, Germany.

National Presentations

- 61. Arabzadeh E. Neural coding. *Australian Course in Advanced Neuroscience*. 8-28 Apr 2018; North Stradbroke Island, Australia.
- Arabzadeh E. Assessment and ROPES. Brain Function CoE ECR Workshop. 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 63. Arabzadeh E. Information processing in the rodent sensory cortex: neuronal population dynamics across behavioural states. Neuroscience & Non-Communicable Diseases Seminar Series, University of New South Wales. 12 Oct 2018; Sydney, Australia.
- 64. Arabzadeh E. Information processing in the rodent sensory cortex: population dynamics across behavioural states. Paint a Great Big Picture: Science Meeting of the Brain Function CoE. 2 Dec 2018: Brisbane. Australia.
- 65. Dyce G. Frequency tagging in the mouse vibrissal cortex. *Brain Function CoE ECR Workshop.* 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 66. Fulcher B. Grant craft tips and tricks. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.
- 67. Garrido M. Career development. *Brain Function CoE ECR Workshop*, 30 Nov 1 Dec 2018; Brisbane, Australia.
- 68. Garrido M. Connectivity mechanisms underpinning learning in the healthy and psychotic brain. *Florey Institute of Neuroscience and Mental Health Seminar Series*. 17 Jul 2018; Melbourne, Australia.
- 69. Garrido M. Connectivity mechanisms underpinning learning in the healthy and psychotic brain. *The University of Melbourne Seminar Series*. 14 Feb 2018; Melbourne, Australia
- 70. Gharaei S. In vivo recording techniques. *Australian Course in Advanced Neuroscience*. 8-28 Apr 2018; North Stradbroke Island, Australia.
- 71. Gharaei S. Superior colliculus modulates cortical coding of somatosensory information. *Brain Function CoE ECR Workshop.* 30 Nov 1 Dec 2018; Brisbane, Australia.
- 72. Grünert U. Retinal ganglion cells in marmoset. *Festschrift, Bogdan Dreher.* 12 Jul 2018; Sydney, Australia.
- 73. Jamadar SD. The first page. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.
- 74. Jamadar SD. Towards multimodal imaging of cognitive reserve: Development of simultaneous MR-PET for the study of cognitive reserve in healthy ageing. *Monash Biomedical Imaging Seminar Series*. 7 Jun 2018; Melbourne, Australia.

- 75. Jung YJ. Orientation maps in the primary visual cortex of an Australian marsupial, the Tammar Wallaby Macropus eugenii. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.
- 76. Karle T. Combining light-sheet imaging and molecular profiling to investigate neuron populations in models of genetic epilepsy. *Datablitz Epilepsy*. 26 May 2018; Melbourne, Australia.
- 77. Kheradpezhouh E. TRPA1 modulates evoked neuronal responses in mouse somatosensory (barrel) cortex. Brain Function CoE ECR Workshop. 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 78. Lowery A. Bionic vision: The brain-machine interface. *2018 Joint Lecture with Australian Academy of Technology and Engineering*. 12 Jul 2018; Melbourne, Australia.
- 79. Lowery A. Bionic vision. *IEEE Victoria Section, Annual General Meeting.* 12 Dec 2018; Melbourne, Australia.
- 80. Maljevic S. Changing the channel Genes, mechanisms and targeted therapy in genetic epilepsies. *Florey Institute of Neuroscience and Mental Health Seminar Series.* 13 Nov 2018; Melbourne, Australia.
- 81. Mansouri F. The dissociable roles of prefrontal cortical regions in executive control of behaviour. *Paint a Great Big Picture: Science Meeting of the Brain Function CoE.* 2 Dec 2018; Brisbane, Australia.
- 82. Martin PR. Bogdan and primate studies. *Festschrift, Bogdan Dreher.* 12 Jul 2018; Sydney, Australia.
- 83. McFadyen J. Stable population codes for eye position despite context-dependent tuning of single neuron. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.
- 84. McFadyen J. Shortcuts for fear, conscious perception, and surprise in hierarchical visual systems. *QBI Neuroscience Seminar Series*. 1 Aug 2018; Brisbane, Australia.
- 85. Nasr B. Helium ion microscopy orion NanoFab. *Helium Ion Microscopy Annual Workshop* 24-25 Jan 2018; Brisbane, Australia.
- 86. Nasr B. Biological imaging via helium ion microscopy. Second Postdoctoral Methods Symposium. 13 Sep 2018; Melbourne, Australia.
- 87. Orchard ER, Ward PGD, Sforazzini F, et al. Does parenthood lead to enduring changes in the human brain. 1st Meeting of the Organisation for Human Brain Mapping Australian Chapter. 12 Oct 2018; Melbourne, Australia.
- 88. Paxinos G. Is the brain the right size? *Brains on the Hill*. 26-28 Mar 2018; Canberra, Australia.
- Paxinos G. Brain and mind: who is the puppet and who the puppeteer? RANZCP 7th Annual Neuropsychiatry and Behavioural Neurology Conference. 23-24 Nov 2018; Melbourne, Australia.
- 90. Petrou S. Disease mechanism directed therapy in SCN1A/ SCN2A. Australian Physiological Society Meeting. 25-28 Nov 2018; Sydney, Australia.
- 91. Postnova S. Time management and academic/industry balance. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.

- **92.** Postnova S. Passenger wellbeing in the air and on the ground: an interdisciplinary approach. *Sleep DownUnder* 2018. 19 Oct 2018; Brisbane, Australia.
- 93. Rangelov D. Neural correlates of complex decisionmaking. *Paint a Great Big Picture: Science Meeting of the Brain Function CoE.* 2 Dec 2018; Brisbane, Australia.
- 94. Sah P. The amygdala, prefrontal cortex and hippocampal circuit in fear learning. *Seminar Series, School of Medicine, University of Tasmania*. 30 Nov 2018; Hobart, Tasmania.
- 95. Sanz-Leon P. Science communication. *Brain Function CoE ECR Workshop*. 30 Nov 1 Dec 2018; Brisbane, Australia.
- 96. Singh T. Implementing a Behavioural Paradigm with Two-Photon Calcium Imaging to probe Bilateral Integration in Head-fixed mice. *Brain Function CoE ECR Workshop*. 30 Nov - 1 Dec 2018: Brisbane, Australia.
- **97.** Stuart G. The electrical structure of neurons. Australian Course in Advanced Neuroscience. 8-28 Apr 2018; North Stradbroke Island. Australia.
- 98. Stuart G. Cellular and circuit mechanisms underlying binocular vision. Paint a Great Big Picture: Science Meeting of the Brain Function CoE. 2 Dec 2018; Brisbane, Australia.
- 99. Sun SH. Extracellular spike waveform predicts whether single units recorded in visual cortex are tuned to orientation. *Brain Function CoE ECR Workshop*. 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 100. Viventi S, Frausin S, Alshawaf A, et al. Developing regenerative therapies for Friedreich's Ataxia using sensory neurons derived from induced pluripotent stem cells. 13th Annual Fiedreich Ataxia Scientific Symposium. 25 Oct 2018; Melbourne, Australia.
- 101. Wang C. Neural activity in the medial prefrontal cortex and hippocampus that encodes novel object recognition. Brain Function CoE ECR Workshop. 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 102. Ward PGD. Neuroimaging of cerebral physiology: Deconvolving the neurological from the vascular. *Monash Biomedical Imaging Seminar Series*. 13 Sep 2018; Melbourne, Australia.
- 103. Ward PGD, Harding IH, Raniga P, et al. Disease stagedependent longitudinal progression of dentate nucleus iron and volume changes in Friedreich ataxia: The IMAGE-FRDA study. 13th Annual Fiedreich Ataxia Scientific Symposium. 25 Oct 2018; Melbourne, Australia.
- 104. Ward PGD, Sforazzini F, Jamadar SD, et al. Separating the neuronal and vascular contributions to the BOLD signal using simultaneous MR-PET. 1st Meeting of the Organisation for Human Brain Mapping Australian Chapter. 12 Oct 2018; Melbourne, Australia.
- 105. Yunzab M. How to become a Neurodetective: Developing an innovate neural recording device. *Brain Function CoE ECR Retreat.* 4-5 Aug 2018; Melbourne, Australia.
- 106. Yunzab M. Revisiting the bimodal classification of cells in primary visual cortex. Brain Function CoE ECR Workshop. 30 Nov - 1 Dec 2018; Brisbane, Australia.
- 107. Zeater N. Binocularity in the LGN of the marmoset. Festschrift, Bogdan Dreher. 12 Jul 2018; Sydney, Australia.

Poster Presentations

- 108. Almasi A, Meffin H, Cloherty SL, et al. How cells in primary visual cortex combine features to attain selectivity and invariance for object recognition. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 109. Baran J, Chen Z, Sforazzini F, et al. SPM-based segmentation of air in the human head for improved PET attenuation correction in simultaneous PET/MR. 26th Annual Meeting of the International Society for Magnetic Resonance in Medicine. 16-21 Jun 2018; Paris, France.
- 110. Baran J, Pawar K, Ferris N, et al. Accurate attenuation correction for simultaneous PET/MR based on a deep learning segmentation method. 12th Congress of the World Federation of Nuclear Medicine and Biology. 20-24 Apr 2018: Melbourne. Australia.
- 111. Belluccini EA, Martin PR, Zeater N, et al. Binocular interaction in the marmoset lateral geniculate nucleus. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 112. Chandra A, Lee SCS, Masri RA, et al. Melanopsin containing ganglion cells and displaced cholinergic amacrine cells in human retina express calbindin. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. 29 Apr 3 May 2018; Honolulu, Hawaii.
- 113. Chen G, Gong P. Computing by modulating onging coherent patterns: A mechanism of active perception. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 114. Chen G, Gong P. Computing by modulating spontaneous activity patterns: A dynamical mechanism of active cortical processing. Computing by modulating spontaneous activity patterns: *A dynamical mechanism of active cortical processing*. 25-28 Sep 2018; Berlin, Germany.
- 115. Close T, Ward PGD, Sforazzini F, et al. NeuroImaging Analysis (NiAnalysis): Python package for archive-centric analysis of neuroimaging data. 24th Annual Meeting of the Organisation for Human Brain Mapping. 17-21 Jun 2018; Singapore, Singapore.
- 116. Deeba F, Sanz-Leon P, Robinson PA. Effects of physiological parameter evolution on tonic-clonic seizure. Society for Mathematical Biology Meeting 2018. 8-12 Jul 2018; Sydney, Australia.
- 117. Deerasooriya Y. An efficient neural conductance modelling approach using dynamic action potental clamp data. *27th Annual Computational Neuroscience Meeting*. 13-18 Jul 2018; Seattle, USA.
- 118. Eiber CD, Pietersen ANJ, Zeater N, et al. Visual stimulus specificity of local field potentials in the primate lateral geniculate nucleus (LGN). *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 119. Ferdousi M, Babaie T, Robinson PA. Nonlinear wave interactions in the corticothalamic system. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.

ARC CoE for Integrative Brain Function 37

36 PUBLICATIONS 2014-2021

- 120. Furlong T, Paxinos G. Accelerated habitual behaviour resulting from L-dopa exposure is prevented by N-acetylcysteine. 11th Federation of Europearn Neuroscience Societies Forum of Neuroscience. 7-11 Jul 2018; Berlin, Germany.
- **121**. Gao D. Statistical properties of strengths of structural and functional connectivity. *27th Annual Computational Neuroscience Meeting*. 13-18 Jul 2018; Seattle, USA.
- 122. Gong P, Gu Y. An integrated model linking structural and dynamical properties of cortical microcircuits. Neuroscience 2018: Society for Neuroscience 48th Annual Meeting. San Diego, USA 2018; San Diego, USA.
- 123. Grünert U, Lee SCS, Kwan WC, et al. Morphological types of retinal ganglion cell projecting to superior colliculus, pulvinar and pretectum in the marmoset. Federation of American Societies for Experimental Biology 24-29 Jun 2018: Olean, USA.
- **124.** Harris C. Learning under conditions of uncertainty and threat. *8th Australasian Cognitive Neuroscience Society Conference*. 22-25 Nov 2018; Melbourne, Australia.
- **125**. Harris C. Learning under conditions of uncertainty and threat. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 126. Jamadar SD, Sforazzini F, Baran J, et al. Simultaneous BOLD-fMRI and FDG-fPET distinguishes neural and vascular components of brain activity. *24th Annual Meeting of the Organisation for Human Brain Mapping*. 17-21 Jun 2018; Singapore, Singapore.
- 127. Jia L. In vitro neuronal network models of SCN2A epileptic encephalopathy. Neuroscience 2018: Society for Neuroscience 48th Annual Meeting. 3-7 Nov 2018; San Diego, USA.
- 128. Jung YJ, Yunzab M, Almasi A, et al. Orientation maps in the primary visual cortex of an Australian marsupial, the Tammar Wallaby Macropus eugenii. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018; Brisbane, Australia.
- 129. Karle T. Combining light-sheet imaging and molecular profiling to investigate neuron populations in models of genetic epilepsy. *Datablitz Epilepsy*. 26 May 2018; Melbourne, Australia.
- 130. Li S, Jamadar SD, Sforazzini F, et al. Simultaneous BOLD-fMRI/FDG-PET study of resting state glucose utilization networks in healthy humans. 24th Annual Meeting of the Organisation for Human Brain Mapping. 17-21 Jun 2018; Singapore, Singapore.
- 131. Li S, Jamadar SD, Ward PGD, et al. Improved dynamic PET reconstruction using temporal decoding. 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference. 10-17 Nov 2018; Sydney, Australia.
- 132. Li S, Sforazzini F, Jamadar S, et al. Estimation of simultaneous BOLD and dynamic FDG metabolism activation using a coherent ICA method. 26th Annual Meeting of the International Society for Magnetic Resonance in Medicine. 16-21 Jun 2018; Paris, France.

- 133. Li S, Sforazzini F, Jamadar S, et al. Independent component analysis of functional PET. 12th Congress of the World Federation of Nuclear Medicine and Biology. 20-24 Apr 2018; Melbourne, Australia.
- 134. Li S, Sforazzini F, Jamadar S, et al. Independent component analysis of task-specific functional PET using a continuous infusion FDG protocol. 24th Annual Meeting of the Organisation for Human Brain Mapping. 17-21 Jun 2018; Singapore, Singapore.
- 135. Liam Y, Meffin H, Grayden DB, et al. A biologically plausible neural model of visual pathways based on efficient coding. *27th Annual Computational Neuroscience Meeting*. 13-18 Jul 2018; Seattle, USA.
- 136. Liu Y, Gong P. Gamma oscillations organize as propagating patters in cortical circuits. *Bernstein Conference* 2018. 25-28 Sep 2018; Berlin, Germany.
- 137. Liu Y., Long X, Gong P. Gamma oscillation organize as propagating patterns in cortical circuits. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 138. Maljevic S. Mouse model of progressive myoclonic epilepsy. 11th Federation of European Neuroscience Societies Forum of Neuroscience. 7-11 Jul 2018; Berlin, Germany.
- 139. Marek P. Balanced prefrontal activity controls the expression of emotional memories. *Neurons, Synapses & Circuits: From Function to Disease*. 16-18 Aug 2018; Sydney, Australia.
- 140. Masri RA, Lee SCS, Madigan MC, et al. Particle-mediated gene transfection of ganglion cells in human retina`. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 141. Mattei C, Lim R, Drury H, et al. Generation of inner ear organoids enriched with mchanosensitive vestibular hair cells derived from human pluripotent stem cells. *International Society for Stem Cell Research Annual Meeting*. 20-23 Jun 2018; Melbourne, Australia.
- 142. McIntyre M. Temporal order biases behavioural and neural measures of stimulus encoding in a complex perceptual decision-making task. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018: Melbourne. Australia.
- 143. Menezes de Oliveira M, Pang J, Robinson PA, et al. Feasibility of detecting ocular dominance and orientation preference columns in human visual cortex via fMRI. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 144. Monfared O, Burkitt AN, Grayden DB, et al. Modelling the electrical impedence of neural tissue based on its cellular building blocks. 27th Annual Computational Neuroscience Meeting. 13-18 Jul 2018; Seattle, USA.
- 145. Mukta KN, Gao X, Robinson PA. Evoked response potential in a spherical geometry via neural field theory`. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.

- 146. Mukta KN, Gao X, Robinson PA. Brain activity in a spherical geometry via neural field theory. 27th Annual Computational Neuroscience Meeting. 13-18 Jul 2018; Seattle, USA.
- 147.147.Muller EJ, Robinson PA. Suppression of parkinsonian beta oscillations by deep brain stimulation: Comparison of effective protocols. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 148. Munn BR, Zeater N, Martin PR, et al. Fractal firing rate fluctuations, diverse population coupling and their relations in neural spiking activity. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 149. Nasir-Ahmad S, Lee SCS, Mansouri FA, et al. Characterisation of ganglion cells in the macaque retina expressing the transcription factor SATB2. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 150. Oliveira MM, Pang J, Schira MM, et al. Detectability of ocular dominance and orientation preference features in primary visual cortex using fMRI. *Neuroscience 2018: Society for Neuroscience 48th Annual Meeting*. 3-7 Nov 2018; San Diego, USA.
- 151. Omidvarnia A, Chen Z, Jamadar SD, et al. On the correlation between dynamic fMRI local connectivity and dynamic PET. 24th Annual Meeting of the Organisation for Human Brain Mapping. 17-21 Jun 2018; Singapore, Singapore.
- 152. Orchard ER, Ward PGD, Sforazzini F, et al. Does parenthood lead to enduring changes in the human brain. 11th Federation of Europearn Neuroscience Societies Forum of Neuroscience. 7-11 Jul 2018; Berlin, Germany.
- 153. Orchard ER, Ward PGD, Sforazzini F, et al. Cerebral scars of parenthood: A study of parenthood on the late-life brain. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- **154.** Pang JC, Robinson PA, Aquino KM, et al. Extracting the palimpsest of brain activity and hemodynamics from fMRI data. *24th Annual Meeting of the Organisation for Human Brain Mapping*. 17-21 Jun 2018; Singapore, Singapore.
- 155. Pang JC, Robinson PA, Aquino KM, et al. Neural mechanisms of the EEG alpha-bold anticorrelation. *24th Annual Meeting of the Organisation for Human Brain Mapping*. 17-21 Jun 2018; Singapore, Singapore.
- 156. Rangelov D. Perceptual decision-making depends on feature-based attention. Neuroscience 2018: Society for Neuroscience 48th Annual Meeting. 3-7 Nov 2018; San Diego, USA.
- 157. Renton A. Implicit neurofeedback boosts feature-based selective attention in a visual decision-making task. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- **158.** Richards K, Connelly A, Petrou S. Ultra-microscopic brain structure in mouse model of Dravet syndrome. *Epilepsy Research Conference*. 10-11 Aug 2018; Ballarat, Australia.

- 159. Robinson PA, Gabay NC, Babaie T, et al. Modal connectomics: Physically based analysis of brain connectivity. 24th Annual Meeting of the Organisation for Human Brain Mapping. 17-21 Jun 2018; Singapore, Singapore.
- 160. Soto-Breceda A, Yunzab M, Maturana M, et al. Exploring selectivity of rat retina ganglion cells through an STC analysis of their temporal electrical recetive fields. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 161. Strettoi E, Masri RA, Grünert U. All amacrine cells in the fovea of human and non-human primates. *Annual Meeting of the Association for Research in Vision and Ophthalmology*. 29 Apr 3 May 2018; Honolulu, Hawaii.
- 162. Sudarshan VP, Awate SP, Egan GF, et al. PET image reconstruction using joint MR-PET dictionary. 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference. 10-17 Nov 2018; Sydney, Australia.
- 163. Sun S, Almasi A, Yunzab M, et al. Extracellular spike waveform predicts whether single units recorded in visual cortex are tuned to orientation. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 164. Sun SS, Meffin H, Almasi A, et al. Extracellular spike waveform classification aligns with receptive field type in cat visual cortex. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 165. Taylor J. Associations between severity of schizophrenia symptoms and brain activity evoked during fMRI auditory oddball task. 8th Australasian Cognitive Neuroscience Society Conference. 22-25 Nov 2018; Melbourne, Australia.
- 166. Taylor J. Predicting individual psychotic experiences on a continuum using machine learning. *Australasian Neuroscience Society, 38th Annual Scientific Meeting.* 3-6 Dec 2018: Brisbane, Australia.
- 167. Tekieh T. Quantitative modeling of the direct alerting effects of light. 24th Congress of the European Sleep Research Society. 25-28 Sep 2018; Basel, Switzerland.
- 168. Tekieh T, McCloskey S, Lockley SW, et al. Prediction of subjective alertness using arousal dynamics model. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 169. Wang C. Neural activity in the medial prefrontal cortex and hippocampus that encodes novel object recognition. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 170. Wang C. The role of the mPFC and HPC in fear learning and extinction. *ELSC Annual Retreat Kibbutz Ein Gedi.* 11-13 Mar 2018; Jerusalem, Israel.

- nucleus in a longitudinal study of Friedreich ataxia using quantitative susceptibility mapping: The IMAGE-FRDA Study. 11th Federation of Europearn Neuroscience Societies Forum of Neuroscience, 7-11 Jul 2018: Berlin. Germany.
- 172. Ward PGD, Harding IH, Raniga P, et al. Magnetic susceptibility of the dentate in a longitudinal study of Friedreich ataxia. 26th Annual Meeting of the International Society for Magnetic Resonance in Medicine. 16-21 Jun 2018; Paris, France.
- 173. Ward PGD. Sforazzini F. Jamadar SD. et al. Decomposition of the fMRI BOLD signal into neural and vascular components using simultaneous fMRI and functional 18-FDG PET. 12th Congress of the World Federation of Nuclear Medicine and Biology. 20-24 Apr 2018: Melbourne, Australia.
- 174. Ward PGD, Sforazzini F, Jamadar SD, et al. Enhanced imaging of brain activity using simultaneous functional magnetic resonance imaging and continuous-infusion 18-F flurodeoxyglucose positron emission tomography. 12th Congress of the World Federation of Nuclear Medicine and Biology. 20-24 Apr 2018; Melbourne, Australia.
- 175. Wardak A, Gong P. Fractional diffusion theory of balanced, heterogeneous cortical circuits. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 176. Yajadda MMA, Robinson PA. Neural field theory of formation of ocular dominance columns in primary visual cortex. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 177. Yang D-P, Robinson PA. Unified analysis of global and focal aspects of absence epilepsy via neural field theory of corticothalamic system. 11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 27-29 Nov 2018; Sydney, Australia.
- 178. Yates JL, Cloherty SL, DeAngelis GC, et al. Multiplicative interaction between perceptual biases and sensory input in motion estimation. COSYNE 2018: Computational and Systems Neuroscience Conference. 1-4 Mar 2018; Denver, USA
- 179.179. Yunzab M, Almasi A, Choi V, et al. Revisiting the bimodal classification of cells in primary visual cortex. 11th Federation of Europearn Neuroscience Societies Forum of Neuroscience. 7-11 Jul 2018; Berlin, Germany.
- 180. Yunzab M. Almasi A. Choi V. et al. Revisiting the bimodal classification of cells in primary visual cortex. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
- 181. Yunzab M, Soto-Breceda A, Maturana M, et al. Selectivity of temporal electrical receptive fields in rat retinal ganglion cells to electrical stimulation. Australasian Neuroscience Society, 38th Annual Scientific Meeting, 3-6 Dec 2018; Brisbane, Australia.

- 171. Ward PGD, Harding IH, Raniga P, et al. Iron of the dentate 182. Zavitz E, Hagan MA, Oakley BH, et al. Population codes in V1 and MT are optimised for the structure of natural images. 11th Federation of European Neuroscience Societies Forum of Neuroscience. 7-11 Jul 2018; Berlin,
 - 183. Zavitz E, Hagan MA, Oakley BH, et al. Population codes in V1 and MT are optimised for the structure of natural images. AREADNE 2018. 20-24 Jun 2018; Santorini, Greece.
 - 184. Zavitz E, Hagan MA, Oakley BH, et al. Network structure within and between marmoset V1 and MT facilitates natural image coding. Neuroscience 2018: Society for Neuroscience 48th Annual Meeting. 3-7 Nov 2018; San Diego, USA.
 - 185. 185. Zeater N, Zaheer A, Grünert U, et al. Analysis of calbindin immunoreactive neuron in the primat lateral geniculate nucleus and inferior pulvinar. Australasian Neuroscience Society, 38th Annual Scientific Meeting. 3-6 Dec 2018; Brisbane, Australia.
 - 186.186.Zobaer MS. Physiology-based ERPs in normal and abnormal states. The Brain Conferences (FENS in collaboration with The Brain Prize). 7-10 Oct 2018; Copenhagen, Denmark,

International Presentations

- 1. Postnova S, Robinson PA. Insight to shiftwork dynamics from neurophysical modelling of sleep and circadian rhythms. 23rd International Symposium on Shiftwork and Working Time. 19-20 June 2017; Uluru, Australia.
- 2. Almasi A, Cloherty SL, Grayden DB, Wong YT, Ibbotson MR, Meffin H. Are receptive fields in visual cortex quantitatively consistent with the theory of efficient coding? 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- Robinson PA, Zhao Z, Aguino K, Griffiths JD, Mehta-Pandejee G, Gabay N, MacLaurin J, Sarkar S. Structurefunction relationships via neural field theory. 26th Annual Computational Neuroscience Meeting, 15-20 July 2017: Antwerp, Belgium.
- Sah P. The new science of learning. 2nd International Conference on Educational Neuroscience. 5-6 March 2017; Abu Dhabi, United Arab Emirates.
- Furlong TM. Accelerated habitual behaviour resulting from L-dopa exposure is rescued by N-acetylcysteine. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- Garrido MI. Feedback loops in detecting (un) seen change. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.

- 7. Grünert U, Lee SCS, Kwan WC, Mundinano IC, Martin PR, Bourne JA. Retinal ganglion cell types projecting to the pulvinar and superior colliculus in marmoset. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- Hagan MA. Mechanisms of feedforward processing in the visual system. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 9. Hagan MA, Chaplin TA, Huxlin KR, Rosa MGP, Lui LL. Fewer cells in the middle temporal area represent visual space inside the scotoma after chronic lesions of the primary visual cortex. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 10. Kheradpezhouh E, Arabzadeh E. TRPA1 modulation of information processing in mice somatosensory cortex. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 11. Lee C, Clifford C, Arabzadeh E. Neuronal correlates of sensory prioritization in rats. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Svdnev. Australia.
- 12. Morris A, Krekelberg B. A stable visual world in primate cortex during eye movements. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 13. Price N, Zavitz E, Oakley, Rosa MGP. Nonlinear temporal integration of visual motion. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 14. Zavitz E, Price N. How is motion information transformed between V1 and MT? 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 15. Sah P. Deep brain stimulation: From movement disorders to psychosurgery. 6th Annual Neuropsychiatry and Behavioural Neurology Conference. 27-28 October 2017; Sydney, Australia.
- 16. Bland N. Gamma coherence mediates interhemispheric transfer of visual information during multiple object tracking. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 17. Dzafic I. Impaired regularity learning in healthy individuals with psychotic experiences is mediated by reduced top-down frontotemporal effective connectivity. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 18. Filmer H. Neurochemical inhibition in the prefrontal cortex predicts individuals' response to electrical stimulation. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 19. Hall MG, Naughtin CK, Mattingley JB, Dux PE. Distributed and opposing effects of incidental learning on visual processing in the human brain. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.

- 20. Jamadar SD, Chen Z, Li S, Sforazzini F, Baran J, Ward PGD, Egan GF. Development of simultaneous functional MRI and functional PET imaging. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 21. Rangelov D. Bayesian inference as a model of complex decision making in humans. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 22. Martin PR, Eiber C, Pietersen ANJ, Zeater N, Solomon SG. Chromatic and achromatic response properties of blueon cells in marmoset lateral geniculate nucleus. Annual Meeting of the Association for Research in Vision and Ophthalmology. 7-11 May 2017; Baltimore, USA.
- 23. Zeater N. Complex visual processing in subcortical visual pathways. Asia Pacific Conference on Vision. 14-17 July 2017; Tainan, Taiwan.
- 24. Price N, Ghodrati M, Zavitz E, Rosa MGP. Orientation tuning in V1 is contrast invariant on short, but not long, timescales. Asia-Pacific Conference on Vision. 14-17 July 2017; Tainan, Taiwan.
- 25. Zavitz E, Hagan MA, Yu H-H, Rosa MGP, Lui L, Price, N. Stimulus structure impacts population codes for motion within and between areas V1 and MT. Asia-Pacific Conference on Vision. 14-17 July 2017; Tainan, Taiwan.
- 26. Hagan MA, Chaplin TA, Huxlin KR, Rosa MGP, Lui LL. Motion selectivity of MT cells after V1 lesions. Asian Pacific Conference for Vision 14-17 July 2017; Tianan, Taiwan
- 27. Grünert U, Nasir Ahmad S, Lee SC, Martin PR. Melanopsinexpressing ganglion cells in human retina. Association for Research in Vision and Ophthalmology (ARVO) Asia. 5-8 February 2017; Brisbane, Australia.
- 28. Paxinos G. Know thyself. Athens Science Festival. March 2017: Athens. Greece.
- 29. Mattingley JB. The role of selective attention in conscious and unconscious vision: evidence from healthy and damaged brains. Azrieli Program in Brain, Mind and Consciousness. Disorders in the Contents of Consciousness. 12 June 2017; Beijing, China.
- 30. Robinson PA. Beyond connection matrices: Brain modes based analysis of Structure and Function. BrainModes 2017, 11-14 December 2017; Delhi, India.
- 31. Sah P. Neural circuits that mediate fear learning and extinction. Brainnetome Lecture Series, Chinese Academy of Sciences. 15 March 2017; Beijing, China.
- 32. Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? Dementia Congress. November 2017; Athens, Greece.
- 33. Sarkar S, Robinson PA. Zipf's Law for Australia: An outlier? DPG-Frühjahrstagung (DPG Spring Meeting). 19-24 March 2017; Dresden, Germany.
- 34. Grünert U. Anatomical analysis of the rod pathway in human retina. Federation of European Neuroscience Societies. 20-23 September 2017; Pécs, Hungary.

- **35.** Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? *Fourth Symposium on Brainnetome Meets Genome.* 16-17 October 2017; Beijing, China.
- **36.** Stuart G. SK channels in spines regulate STDP. *Gordon Research Conference on Dendrites*. 26-31 March 2017; Lucca, Italy.
- **37**. Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? *Health Tourism Conference as a Lever for Development*. March 2017; Athens, Greece.
- **38.** Arabzadeh E. Neural coding. *IBRO Neuroscience School.* 1-5 August 2017; Kerman, Iran.
- 39. Sforazzini F, Chen Z, Baran J, Bradley J, Carey A, Shah NJ, Egan G. MR-based attenuation map re-alignment and motion correction in simultaneous brain MR-PET imaging. *IEEE International Symposium on Biomedical Imaging.* 18-21 April 2017; Melbourne, Australia.
- 40. Ward PGD, Ferris NJ, Raniga P, Ng ACL, Barnes DG, Dowe DL, Egan GF. Vein segmentation using shape-based Markov Random Fields. *IEEE International Symposium* on Biomedical Imaging. 18-21 April 2017; Melbourne, Australia.
- **41.** Mattingley JB. Using frequency tagging to measure visual attention in real time. *International Neuropsychological Symposium.* 20-24 June 2017; Sitia, Crete.
- **42.** Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? *International Symposium on Morphological Sciences Congress*. 25-30 July 2017; Xi'an, China.
- **43.** Paxinos G. Opened conference. *Medical Society Corfu.* November 2017; Corfu, Greece.
- 44. Robinson PA. Physically based modeling and analysis of brain activity and function. *Opening Symposium of the ICCN and BCCN Berlin, and GRK Workshop From Neurons to Behavior Computing across Scales.* 12 October 2017; Berlin, Germany.
- **45.** Stuart G. Dendritic physiology. SDC Neuroscience Symposium. 15-20 October 2017; Bejing, China.
- 46. Rosa MGP, Majka P, Takahashi Y, Worthy KH, Lin MK, Wolkowicz I, Tolpygo AS, Bai S, Huo B, Chan JM, Sasaki E, Reser DH, Okano H, Mitra PP. Monosynaptic connections between auditory and visual areas in the marmoset monkey. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- **47**. Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? *Speech Therapy Conference*. November 2018; Ioannina, Greece.
- **48**. Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? *Summer Symposium of Neurology of the Greek Academy of Neurosciences*. May 2017; Athens, Greece.
- 49. Shivdasani MN, Halupka KJ, Spencer TC, Abbott CJ, Epp SB, Brandli A, Luu CD, Allen PJ, McGowan C, Nayagam DAX, Wong YT, Cloherty SL, Grayden DB, Burkitt AN, Sergeev EN, Fallon J.B., Meffin H. Visual cortex responses to multichannel stimulation in retinal degeneration: Towards current focusing and steering. *The Eye and The Chip* 24-26 September 2017; Detroit, USA.

- **50.** Sah P. Prefrontal inhibitory circuits and behavioral control. *Winter Conference on Neural Plasticity.* 4-11 February 2017; St Georges, Grenada.
- 51. Paxinos G. Brain or mind: Who is the puppet and who is the puppeteer? World Federation of Neurosurgical Societies World Congress of Neurosurgery. 20-25 August 2017; Istanbul, Turkey.

National Presentations

- **52.** Yang DP. Moran process with network dynamics for the evolution of cooperation. *2nd Australian Social Network Analysis Conference*. 28-29 November 2017; Sydney, Australia.
- **53.** Arabzadeh E. Efficient sensory processing in rodent cortex. *Anderson Stuart Seminar Series*. 23 October 2017; Sydney, Australia.
- 54. Garrido MI. Digging deep with MEG. ARC Centre of Excellence in Cognition and its Disorders, CCD-KIT Workshop. 5 December 2017; Sydney, Australia.
- 55. Arabzadeh E. Neural coding. *Australian Course for Advanced Neuroscience (ACAN)*. 28 April 2017; Stradbroke Island, Australia.
- **56.** Stuart G. The electrical structure of neurons. *Australian Course for Advanced Neuroscience (ACAN)*. 27 April 2017; Stradbroke Island, Australia.
- **57.** Garrido MI. Modelling the interaction of attention and prediction errors. *Australian Mathematical Psychology Conference 2017.* 14 February 2017; Brisbane, Australia.
- 58. Stuart G. Neuronal computation. *BITS: Brain-Inspired Technologies and Systems symposium.* 27 October 2017; Melbourne, Australia.
- 59. Garrido MI. Brain connectivity modelling of prediction errors. *Brain-Inspired Technologies and Systems*. 22 October 2017; Melbourne, Australia.
- **60.** Stuart G. How does MS influence electrical signalling in the brain. *Canberra MS symposium*. 16 May 2017; Canberra, Australia.
- 61. Richards K. Glass Brain: 3D whole brain imaging. *Imaging PhD course*. April 2017; Melbourne, Australia.
- 62. Garrido MI. Connectivity modelling of brain prediction errors. MICCN Computational Neuroscience Symposium: The application and utility of computational neuroscience for understanding brain function. 2 February 2017; Melbourne, Australia.
- 63. Dzafic I. Impaired regularity learning in healthy individuals with psychotic experiences is mediated by reduced top-down frontotemporal effective connectivity. *Paint a bigger picture, Science meeting of the ARC Centre of Excellence for Integrative Brain Function.* 2 Decemebr 2017; Sydney, Australia.
- 64. Sanz-Leon P. Multiscale neural field dynamics. *Paint a bigger picture, Science meeting of the ARC Centre of Excellence for Integrative Brain Function.* 2 December 2017; Sydney, Australia.

- 65. Tang M. How prediction affects sensory representation in humans and rodents. *Paint a bigger picture, Science meeting of the ARC Centre of Excellence for Integrative Brain Function.* 12 December 2017; Sydney, Australia.
- 66. Zeater N. Binocular integration in the marmoset lateral geniculate nucleus. *Paint a bigger picture, Science meeting of the ARC Centre of Excellence for Integrative Brain Function.* 2 December 2017; Sydney, Australia.
- 67. Sah P. Anxiety and depression the search for better therapeutics. *QBI Neuroscience Seminars*. 11 October 2017; Brisbane, Australia.
- 68. Chandra A. Calretinin immunolabelling in retina. Save Sight Institute, Annual Higher Degree Research Student Symposium, Vision Science and Ophthalmology. 31 March 2017; Sydney, Australia.
- 69. Masri R. Characterisation of ganglion cell populations in marmoset retina. Save Sight Institute, *Annual Higher Degree Research Student Symposium, Vision Science and Ophthalmology.* 31 March 2017; Sydney, Australia.
- Gu Y, Qi Y, Gong P. Interrelating the structural connectivity and spatiotemporal dynamics of cortical microcircuits. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 71. McFadyen J, Heider B, Karkhanis AN, Muñoz F, Ramalingam N, Siegel RM, Morris AP. Population coding of gaze direction in parietal cortex during reaching and changing visual scenes. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 72. Pang JC, Robinson PA, Aquino KM, Lacy TC, Schira MM. Deconvolving a palimpsest of brain activity and hemodynamics from fMRI. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 73. Zavitz E, Hagan M, Yu H-H, Rosa PGP, Lui L, Price N. Population codes in V1 and MT are opimized for the structure of natural images. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 74. Garrido MI. Connectivity underpinnings of statistical learning in healthy people with psychotic experiences. Systems & Computational Neuroscience Down Under 2017 (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 75. Sah P. Hippocampus and amygdala Systems & Computational Neuroscience Down Under 2017 (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- Sanz-Leon P. Large scale brain dynamics. *University of Western Sydney, Seminar Series*. 14 March 2017; Sydney, Australia.
- 77. Postnova S. Physiologically based modelling of sleep and alertness. *WIMSIG 2017: Women in Australian Mathematical Sciences*. 24-26 September 2017; Adelaide, Australia.

Poster Presentations

- 78. Filmer HL, Lyons M, Mattingley JB, Dux PE. Anodal tDCS applied during multitasking training leads to transferable performance gains. 13th International Conference for Cognitive Neuroscience. 5-8 August 2017; Amsterdam, Netherlands.
- 79. McFadyen J, Mattingley J, Garrido M. Fibre density of the subcortical route to the amygdala enhances fearful face perception: a tractgraphy and DCM analysis of the HCP dataset. 13th International Conference for Cognitive Neuroscience. 5-8 August 2017; Amsterdam, Netherlands.
- 80. Painter D, Renton A, Kim J, Mattingley J. Are two brains better than one? Evidence for neural synchrony across co-actors in a visually guided movement task. *13th International Conference for Cognitive Neuroscience*. 5-8 August 2017; Amsterdam, Netherlands.
- **81.** Rangelov D, Mattingley J. Maintaining multiple attentional sets decreases the specificity of cognitive control. *13th International Conference for Cognitive Neuroscience*. 5-8 August 2017; Amsterdam, Netherlands.
- 82. Renton A, Painter D, Mattingley J. Differential mobilization of visual selective attention during dynamic approach and avoidance behaviour. *13th International Conference for Cognitive Neuroscience*. 5-8 August 2017; Amsterdam, Netherlands.
- 83. Smout C, Garrido M, Tang M, Mattingley J. Expectation effects pre-stimulus neural activity. *13th International Conference for Cognitive Neuroscience*. 5-8 August 2017; Amsterdam, Netherlands.
- 84. Wittenhagen L, Mattingley J. Role of spatial attention in modulation of neural representations of illusory shapes 13th International Conference for Cognitive Neuroscience. 5-8 August 2017; Amsterdam, Netherlands.
- 85. Ferdousi M, Babaie T, Robinson PA. Nonlinear harmonic generation and wave-wave interactions in the brain. *2017 Annual Meeting of the Organization for Human Brain Mapping*. 25-29 June 2017; Vancouver, Canada.
- 86. Griffiths JD, Aquino K, Robinson PA, McIntosh AR. The spherical harmonic structure of MEG functional connectivity networks. *2017 Annual Meeting of the Organization for Human Brain Mapping*. 25-29 June 2017; Vancouver, Canada.
- 87. MacLaurin J, Robinson PA. Inference of structural connectivity from functional connectivity of brain networks. 2017 Annual Meeting of the Organization for Human Brain Mapping. 25-29 June 2017; Vancouver, Canada.
- 88. Roy N, Sanz-Leon P, Robinson PA. Signatures of neural feedback effects in power spectra of large-scale brain activity. 2017 Annual Meeting of the Organization for Human Brain Mapping. 25-29 June 2017; Vancouver, Canada.
- 89. Almasi A, Cloherty SL, Grayden DB, Wong YT, Ibbotson MR, Meffin H. Are receptive fields in visual cortex quantitatively consistent with the theory of efficient coding? *26th Annual Computational Neuroscience Meeting*. 15-20 July 2017; Antwerp, Belgium.

- 90. Assadzadeh S, Robinson PA. Necessity of sleep and wake 103. Gabay N, Babaie T, Robinson PA. Spatiotemporal for synaptic homeostasis. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp,
- 91. Babaie T, Robinson PA. Neural field theory of corticothalamic prediction and attention. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 92. Deeba F, Sanz-Leon P, Robinson PA. Dependence of absence seizure dynamics on physiological parameters. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 93. Gu Y, Gong P. Sharp wave ripples as propagating patterns emerging from spatially extended neural circuits. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 94. Henderson J, Gong P. Self-organised balanced spiking neural networks to encode natural stimuli. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 95. Li LW, Lizier J, Sanz-Leon P, Kerr CC. Network analysis of task-oriented neuroimaging data via multivariate information-theoretic measures. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 96. Qin W, Hadjinicolaou A, Meffin H, Burkitt A, Grayden D, Ibbotson MR, Kameneva T. Single-compartment models of retinal granglion cells with different morphologies. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 97. Sanz-Leon P, Knock SA. Spreading of nonlinear dynamics in a nonuniform neural field model. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 98. Sanz-Leon P, Robinson PA. Low- and high-mode waking states in the cortiocothalamic system. 26th Annual Computational Neuroscience Meeting. 15-20 July 2017; Antwerp, Belgium.
- 99. Mitchell B, Tang M, Mattingley J, Arabzadeh E. Single-cell expectation suppression and expectation enhancement in the vibrissal cortex of anaesthetised mice. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 100. Chandra AJ, Lee SCS, Masri RA, Grünert U. Identification of calbindin positive cells in the human retina. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 101, Chaplin TA, Hagan MA, Allitt BJ, Rosa MGP, Lui LL Effects of spike count correlations on population decoding of motion embedded in noise in the middle temporal area. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 102. Eiber CD, Pietersen ANJ, Zeater N, Townsend R, Solomon SG, Martin PR. Single unit and beta-band local field potential responses to visual stimulus in primate lateral geniculate nucleus (LGN). 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.

- properties of eigenmodes of brain activity: a neural field analysis. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney,
- 104. Dyce G, Tang M, Mattingley J, Arabzadeh E. Frequency tagging in the mouse vibrissal cortex. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 105. Meffin H, Almasi A, Sun S, Wong YT, Cloherty SL, Yunzab M, Ibbotson MR. Revisiting feature invariance of complex cells in primary visual cortex 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 106. Lee SCS, Martin PR, Rosa MGP, Grünert U. Subpopulations of wide-field ganglion cells express the transcription factor FoxP2 in marmoset retina. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 107. Yunzab M, Choi V, Meffin H, Cloherty SL, Scholl B, Priebe NJ, Ibbotson MR. Contrast-dependent phase-sensitivity in mouse primary visual cortex: an intracellular study 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 108. Marek R, Xu L, Sah P. Parvalbumin interneurons shape hippocampus-driven prefrontal activity in fear extinction. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 109. Masri RA, Purushothuman S, Lee SCS, Martin PR, Grünert U. Distribution of three types of cone bipolar neurons in the inner nuclear layer of the human retina. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 110. Meffin H, Almasi A, Sun S, Cloherty SL, Wong YT, Yunzab M, Ibbotson MR. Revisiting feature invariance of complex cells in primary visual cortex. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 111. Pietersen ANJ, Eiber CD, Zeater N, Solomon SG, Martin PR. Split identity of blue-off and suppresssed-by-contrast cells in lateral geniculate nucleus of anaesthetised marmosets. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney,
- 112. Cloherty SL, Yates JL, DeAngelis GC, Mitchell JF. Motion perception in the common marmoset 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 113. Singh T, Lee C, Fenlon L, Suarez R, Richards L, Arabzadeh E. A controlled behavioural paradigm for bilateral integration of information in the whisker sensory system. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney,
- 114. Wang C, Marek R, Stratton P, Sah P. State-specific neural activity in the medial prefrontal cortex and hippocampus that encodes fear learning and extinction behaviour. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.

- 115. Yunzab M, Choi V, Meffin H, Cloherty SL, Scholl B, Priebe NJ. Ibbotson MR. Contrast-dependent phase sensitivity in mouse primary visual cortex: An intracelluar study. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 116. Zeater N, Cheong SK, Pietersen ANJ, Dreher B, Solomon SG, Martin PR. Interocular matching of receptive field properties in binocular cells of the marmoset LGN. 37th Annual Meeting of the Australasian Neuroscience Society. 3-6 December 2017; Sydney, Australia.
- 117. Hearne L. Anomalous functional network integration in response to cognitive control demands in human callosal dysgenesis. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia
- 118. Jamadar SD, Chen Z, Li S, Sforazzini F, Baran J, Ward PGD. Egan GF. New advances in simultaneous BOLDfMRI and dynamic [18F]FDG-PET imaging of human brain function. 7th Australasian Cognitive Neuroscience Society Conference, 23-26 November 2017; Adelaide, Australia,
- 119. Travis S. Neural correlates of goal-directed attentional capture in the absence of conscious perception. 7th Australasian Cognitive Neuroscience Society Conference. 23-26 November 2017; Adelaide, Australia.
- 120. Mukta K. Bangladeshi woman physicist working on eigenmode analysis of the spherical brain activity. Abdus Salam International Centre for Theoretical Physics (ICTP) Career Development Workshop for Women in Physics. 9-13 October 2017; Trieste, Italy.
- 121. Grünert U, Nasir Ahmad S, Lee SC, Martin PR Melanopsin-expressing ganglion cells in human retina. Annual Meeting of the Association for Research in Vision and Ophthalmology. 7-11 May 2017; Baltimore, USA.
- 122. Jamadar SD, Chen Z, Li S, Sforazzini F, Baran J, Ward PGD, Egan GF. Assessment of Brain Reserve using Simultaneous MR-PET Imaging. Australian Dementia Forum 2017. 15-17 October 2017; Melbourne, Australia.
- 123. Ferdousi M. Babaie T. Robinson PA. Nonlinear harmonic heneration and wave-wave interactions in the brain. Brain. Mind, Research Institute Symposium. 13 October 2017; Sydney, Australia.
- 124. Mukta K, MacLaurin J, Robinson PA. Eigenmode analysis of spherical brain activity via neural field theory. BrainModes 2017. 11-14 December 2017; Delhi, India.
- 125. Karle T. Lightsheet microscopy. Epilepsy Research Retreat. June 2017; Marysville, Australia.
- 126. Richards K. Multimodal imaging pipeline. Epilepsy Research Retreat. June 2017; Marysville, Australia.
- 127. Wijetunge C. Light-sheet fluorescence microscopy: a promising technique for mesoscopic level connectotomics. Epilepsy Research Retreat. June 2017; Marysville, Australia.
- 128. Grünert U, Chandra A, Lee SCS. Morphological and neurochemical characterization of narrow and broad thorny ganglion cells in marmoset retina. European Retina Meeting 2017. 5-7 October 2017; Paris, France.

- 129. Martin PR, Eiber CD, Pietersen ANJ, Zeater N, Solomon SG. Contrast summation of opponent cone inputs to blueon (S-cone) cells in marmoset monkeys. European Retina Meeting 2017. 5-7 October 2017; Paris, France.
- 130. Munn BR, Zeater N, Pietersen AN, Solomon SG, Cheong SK, Gong P, Martin PR. Fractal property of maintained spiking activity in parvocellular, mag-noncellular and koniocellular cells of marmoset lateral geniculage nucleus. Federation of European Neuroscience Societies, 20-23 September 2017; Pécs, Hungary.
- 131. Yang DP, Robinson PA. Transitions from normal arousal states to epileptic seizures and from seizure suppression to generalization. *International Conference on* Technology and Analysis for Seizures. 20-23 August 2017; Minneapolis, USA.
- 132. Ward PGD, Ferris NJ, Raniga P, Ng ACL, Dowe DL, Barnes DG, Egan GF. Regional variations in cerebral venous contrast using susceptibility-based MR. International Society of Magnetic Resonance in Medicine 25th Annual Meeting. 22-27 April 2017; Hawaii, USA.
- 133. Yates JL, Cloherty SL, DeAngelis GC, Mitchell JF. Motion estimation in the common marmoset Sunposium 2017, Max Planck Florida Institute for Neuroscience. 13-14 February 2017 Forida, USA.
- 134. Ward PGD, Ferris NJ, Raniga P, Dowe DL, Ng ACL, Barnes DG, Egan GF. Improving venous blood vessels analysis in the brain using anatomical patterns and MR. Monash University Faculty of Medicine, Nursing and Health Sciences Early Career Researcher Symposium, 2017. 30 October 2017; Melbourne, Australia.
- 135. Close TG, Sforazzini F, Ward PGD, Chen Z, Egan GF. NeuroImaging Analysis (NiAnalysis): archive-centred analysis of neuroimaging data. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 136. Testa-Silva G, Häusser M, Stuart G. Backpropagating action potentials boost dendritic inhibition. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 137. Huang H, Stuart G. Cortical processing of binocular information in the mouse. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 138. De Vitis M, Hadjidimitrakis K, Breveglieri R, Bosco A, Galletti C, Fattori P. Segregated processing of reach depth and direction signals in the macaque area PE. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 139. Fillipini M, Breveglieri R, Hadjidimitrakis K, Bosco A, Galletti C, Fattori P. Decoding of real reaching targets in 3D space from monkey area V6A. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 140. Müller EJ, van Albada SJ, Kim JW, Robinson PA. Unified neural field theory of brain dynamics underlying oscillations in Parkinson's disease and generalized epilepsies. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.

- 141. Munn BR, Zeater N, Solomon SG, Cheong SK, Gong P, Martin PR. Fractal property and non-Gaussian dynamics of maintained spiking activity in parvocellular, magnocellular and koniocellular cells of marmoset lateral geniculate nucleus. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, USA.
- 142. Cloherty SL, Yates JL, DeAngelis GC, Mitchell JF. Motion perception in the common marmoset Society for Neuroscience 47th Annual Meeting 2017. Washington DC, USA; Washington DC, USA.
- 143. Gharaei S, Arabzadeh E, Stuart G. Impact of the superior colliculus on cortical processing of somatosensory (whisker) input. Society for Neuroscience 47th Annual Meeting 2017. 11-15 November 2017; Washington DC, LISA
- 144. Lowery A. The Challenges of Brain Machine Interfaces.Students of Brain Research (SoBR) Student Symposium.11 October 2017; Melbourne, Australia.
- 145. Almasi A, Cloherty SL, Wong YT, Grayden D, Ibbotson MR, Meffin H. On classification of simple and complex cells in primary visual cortex. *Systems & Computational Neuroscience Down Under (SCiNDU)*. 13-15 December 2017; Brisbane, Australia.
- 146. Chen G, Gong P. Computing by modulating spontaneous activity patterns: A mechanism of active cortical processing. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 147. Gao X, Robinson PA. Global signal effect in functional connectivity using eigenmode analysis. *Systems & Computational Neuroscience Down Under (SCiNDU)*. 13-15 December 2017; Brisbane, Australia.
- 148. Liu X, Sanz-Leon P, Robinson PA. Gamma-band correlations in primary visual cortexq. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017: Brisbane. Australia.
- 149. Liu Y, Gong P. Gamma oscillations as dynamical patterns for optimally implementing distributed information communication. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 150. Qi Y, Gong P. Spatiotemporal probabilistic inference emerging from balanced cortical circuit. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 151. Wardak A, Gong P. A fractional diffusion theory of balanced, heterogeneous cortical circuits. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 152. Yang DP. High-frequency transient wave at onset of focal seizure generalization. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017: Brisbane. Australia.

- 153. Dzafic I, Randeniya R, Garrido M. Impaired regularity learning in healthy individuals with psychotic experiences is mediated by reduced top-down frontotemporal effective connectivity. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 154. Larsen KM, Morup M, Birknow M, Fischer E, Hulme O, Vangkilde A, Schmock H, Baare W, Didriksen M, Olsen L, Werge T, Siebner H, Garrido M. Altered auditory processing and top-down connectivity in 22q 11.2 Deletion Syndrome. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 155. McFadyen J, Mattingley J, Garrido M. Fibre density of the subcortical route to the amygdala enhances fearful face perception: a tractgraphy and DCM Analysis of the HCP dataset. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 156. Oestreich L, Randeniya R, Garrido M. White matter connectivity distruptions associated with psychotic experiences in healthy individuals. *Systems & Computational Neuroscience Down Under (SCiNDU)*. 13-15 December 2017; Brisbane, Australia.
- 157. Renton A, Mattingley J, Painter D. Translating thoughts into text: rapid communication with a brain computer interface virtual keyboard. *Systems & Computational Neuroscience Down Under (SCiNDU)*. 13-15 December 2017; Brisbane, Australia.
- 158.158.Rowe E, Harris C, Randeniya R, Garrido M. Bayesian model selection maps for group studies using EEG data. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 159. 159. Smout C, Tang M, Garrido M, Mattingley J. Independent effects of attention and expectation on stimulus representation in the visual cortex. Systems & Computational Neuroscience Down Under (SCINDU). 13-15 December 2017; Brisbane, Australia.
- 160. 160. Taylor J, Matthews N, Michie P, Rosa M, Garrido M. Auditory prediction errors as individual biomarkers of schizophrenia. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- 161.161.Wang C, Marek R, Stratton P, Sah P. State-specific neural activity in the medial prefrontal cortex and hippocampus that encodes fear learning and extinction behaviour. Systems & Computational Neuroscience Down Under (SCiNDU). 13-15 December 2017; Brisbane, Australia.
- **162**.162.Deeba F, Sanz-Leon P, Robinson PA. Dynamics of absence seizures. *The American Physical Society March Meeting 2017*. 13-17 March 2017; New Orleans, USA.

International Presentations

- Arabzadeh, E. A rat model of sensory decision-making. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- Atapour, N., Rosa, M.G.P. Structural plasticity of the axon initial segment in marmoset prefrontal cortex. 39th Annual Meeting of the Japan Neuroscience Society. 20-22 July 2016; Yokohama, Japan.
- 3. Breakspear, M. Brain waves and chimera states: Mechanisms of cortical metastability. *Yale Workshop on Brain Connectivity*. 6-9 March 2016; Whistler, Canada.
- Breakspear, M. A Fokker Planck for the brain. Cognitive Neuroscience Society 2016 Annual Meeting. 2-5 April 2016; New York, USA.
- 5. Breakspear, M. Dysconnectivity of affective disorders. The Royal Society Theo Murphy International Scientific Meeting. 6-7 April 2016; London, UK.
- 6. Breakspear, M. Interoception and affective disorders. Wellcome Trust Centre for Neuroimaging Brain Meeting. 8 April 2016; London, UK.
- Breakspear, M. Brain waves. Brain Connectivity Workshop. 22-24 June 2016; Marseilles, France.
- Breakspear, M. Structural, functional and effective connectivity in affective disorders. *Brain & Mind Symposium*. 15-16 September 2016; Helsinki, Finland.
- 9. Breakspear, M. Nonlinear models of large-scale brain activity. 6th Australasian Cognitive Neuroscience Conference. 24-27 November 2016; Newcastle, Australia.
- Breakspear, M. Sa2a Geometric constraints and dynamic consequences of the human connectome. 9th Dynamic Days Asia-Pacific. 14-17 December 2016; Hong Kong, China.
- Breakspear, M. From simplicity to complexity: Complex systems across science. World Science Festival. 9-13 March 2016; Brisbane, Australia.
- **12.** Egan, G. Meet the editors roundtable. *22nd Annual Meeting of the Organization for Human Brain Mapping*. 26-30 June 2016; Geneva, Switzerland.
- 13. Egan, G. Big data neuroimaging applications at the Australian Research Council Centre of Excellence for Integrative Brain Function. 18th IOP World Congress. 31 August - 4 September 2016; Habana, Cuba.
- Garrido, M. Predictive and efficient coding in sensory learning. Université Grenoble-Alpes, *Laboratoire de Psychologie et NeuroCognition - CNRS*. 1 July 2016; Grenoble, France.
- **15**. Garrido, M. Predictive and efficient coding in sensory learning. CCU Lisbon, *Champalimaud Neuroscience*. 16 June 2016; Lisbon, Portugal.
- Garrido, M. Electroencephalographic biomarkers of schizophrenia. Max Planck UCL Centre for Computational Psychiatry and Ageing Research. 24 June 2016; London, UK.

- Garrido, M. Detecting unseen change. 6th Australasian Cognitive Neuroscience Conference. 26 November 2016; Newcastle, Australia.
- Grünert, U., Masri, R.A., Percival, K.A., Koizumi, A., Martin, P.R. Morphological diversity of ganglion cells in marmoset retina. *Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO)*. 1-5 May 2016; Seattle, LISA
- 19. Hadjidimitrakis, K., Morris, A.P., Breveglieri, R., Galletti, C., Fattori, P., Rosa, M.G.P. Encoding and decoding of 3D reaches from neural populations in the posterior parietal cortex of macaques. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- 20. Hagan, M.A., Chaplin, T.A., Huxlin, K.R., Rosa, M.G.P., Lui, L.L. Neurons in MT are less likely to be direction selective after chronic V1 lesions. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- **21**. Lee, C., Arabzadeh, E. Neuronal correlates of sensory prioritization in rats. *29th Annual Barrels Conference*. 11 November 2016; Los Angeles, USA.
- 22. Lee, S.C., Aghajani, R.J., Martin, P.R., Grünert, U. Quantification of the neurons in the rod pathway of the human retina. *Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO)*. 1-5 May 2016; Seattle, USA.
- 23. Liang, A. Supraspinal projections to the mouse spinal cord: origin and termination. *14th Meeting of the Asian-Pacific Society for Neurochemistry*. 27-30 August 2016; Kuala Lumpur, Malaysia.
- 24. Lowery, A. Engineering development of the Monash Vision Group BIONIC EYE. 4th International Conference on Medical Bionics. 20-23 November 2016; Brisbane, Australia.
- **25**. Mansouri, F. The role of frontal pole cortex in primate cognition. *39th Annual Meeting of the Japan Neuroscience Society*. 20-22 July 2016; Yokohama, Japan.
- 26. Marek, R. Attentional modulation of prefrontal circuits that mediate fear extinction. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- **27**. Martin, P.R. Color and the koniocellular pathways. *Lifetime of Vision: Symposium for Vivien Casagrande*. 18 November 2016; Nashville, USA.
- 28. Martin, P.R., Buzas, P., Blessing, E., Pietersen, A.N.J., Cheong, S.K., Zeater, N., Solomon, S.G. Colour vision signals in subcortical pathways: Spatial selectivity and interaction (or not) with brain rhythms. *European Conference on Visual Perception 2016*. 28 August 1 September 2016; Barcelona, Spain.
- 29. Mattingley, J. Science of learning at the University of Hong Kong. *SummerFest 2016: Impact, Innovation and Integrity.* 20 July 2016; Hong Kong, China.
- **30.** Mattingley, J. Keynote Humphreys Lecture: Mechanisms of selective attention in health and disease. *SummerFest 2016: Impact, Innovation and Integrity.* 22 July 2016; Hong Kong, China.

- 31. Maturana, M.I., Grayden, D.B., Cloherty, S.L., Kameneva, T., Ibbotson, M.R., Meffin, H. A simple model of retinal response to multi-electrode stimulation. *25th Annual Computational Neuroscience Meeting*. 2-7 July 2016; Je Ju Island, South Korea.
- 32. Meffin, H., Ibbotson, M.R., Almasi, A., Wong, Y., Cloherty, S. Predictive coding in receptive field formation in visual cortex. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- 33. Morris, A.P., Krekelberg, B. Primary visual cortex is home to an intrinsic neural eye tracker. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016: Hobart, Australia.
- **34.** Paxinos, G. The brains of humans and experimental animals. *SPIE BioPhotonics conference*. 16-19 October 2016; Adelaide, Australia.
- **35**. Paxinos, G. Histological and MRI atlases of the brain of humans and experimental animals. *The 2nd International Workshop on Human Brain Banking*. May 2016; China.
- **36.** Paxinos, G. Brain, behaviour and evolution. *World Congress on Genetics, Geriatrics and Neurodegenerative Disease Research.* 20-23 October 2016; Sparta, Greece.
- **37**. Rosa, M.G. Organisation and connections of frontal pole areas in different primates. *39th Annual Meeting of the Japan Neuroscience Society*. 20-22 July 2016; Yokohama, Japan.
- 38. Rosa, M.G., Majka, P., Chan, J.M., Bai, S., Ferrante, D., Mitra, P.P. The marmoset brain architecture project: Sharing data on primate corticocortical connectivity through an open access web platform. *Society for Neuroscience 2016 Annual Meeting*. 12-16 November 2016; San Diego, USA.
- **39.** Sah, P. Population aging. McDonnell International Scholars *Academy 6th International Symposium.* 22-25 September 2016; Brisbane, Australia.
- **40.** Sah, P. Public health. McDonnell International Scholars *Academy 6th International Symposium*. 22-25 September 2016: Brisbane. Australia.
- **41.** Sah, P. Neural circuits between the hippocampus, medial cortex and amygdala: three partners in the fear circuit. *Third International Symposium on Brainnetome Meets Genome.* 4-6 November 2016: Haikou, China.
- 42. Sah, P. Connecting the dots: Understanding integrative brain function. *Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7* December 2016; Hobart, Australia.
- 43. Sah, P., Morris, J. Learning and memory formation using partial reinforcement: an Animal Model of Feedback. SummerFest 2016: Impact, Innovation and Integrity. 20-22 July 2016; Hong Kong, China.
- **44.** Sanz-Leon, P. An overview of numerical tools for simulating brain dynamics. *25th Annual Computational Neuroscience Meeting*. 2-7 July 2016; Je Ju Island, South Korea.
- **45**. Sanz-Leon, P. Integrating connectomics and neural fields. *25th Annual Computational Neuroscience Meeting*. 2-7 July 2016; Je Ju Island, South Korea.

- 46. Sanz-Leon, P. An overview of numerical tools for simulating brain dynamics. *6th Australasian Cognitive Neuroscience Conference*. 24-27 November 2016; Newcastle, Australia.
- 47. Shivdasani, M.N., Spencer, T.C., Halupka, K.J., Dumm, G., Thien, P., Epp, S., Brandli, A., Abbott, C.J., Luu, C.D., Allen, P.J., Wong, Y.T., Cloherty, S.L., Grayden, D.B., Burkitt, A.N., Meffin, H., Fallon, J.B. Increasing the resolution of retinal prostheses through current steering and current focusing. 4th International Conference on Medical Bionics. 20-23 November 2016; Brisbane, Australia.
- 48. Stuart, G.J. Contrasting roles of calcium-activated potassium channels on dendritic excitability and synaptic plasticity. *EMBO Workshop on Dendritic Anatomy, Molecules and Function.* 18-21 June 2016; Crete, Greece.
- 49. Stuart, G.J. Contrasting roles of calcium-activated potassium channels on dendritic excitability and synaptic plasticity. *Institute for Science and Technology.* 16 June 2016: Vienna, Austria.
- 50. Sun, Y. Anatomy and physiology of the central extended amygdala. *Society for Neuroscience 2016 Annual Meeting*. 12-16 November 2016; San Diego, USA.
- 51. Yang, D.P., Robinson, P.A. Low dimensional dynamics for transitions from normal arousal states to epileptic seizures. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.

National Presentations

- **52.** Arabzadeh, E. Neuronal activity underlying efficient sensory processing in the rodent cortex. *Colloquium at the University of Queensland*. 27 May 2016; Brisbane, Australia.
- **53**. Arabzadeh, E. Efficient sensory processing in the rodent vibrissal cortex. *Monash Biomedicine Discovery Institute Seminar Series*. 1 April 2016; Melbourne, Australia.
- 54. Breakspear, M. Using neuroimaging to understand brain network disturbances in psychiatry. *Biological Psychiatry Australia Conference 2016*. 13-14 October 2016; Newcastle, Australia.
- 55. Breakspear, M. Computational models of brain activity. *MatLab Conference*. 10-24 May 2016; Brisbane, Australia.
- 56. Breakspear, M. Prospective imaging study of ageing and dementia. *NHMRC National Institute for Dementia Research Inaugural Meeting.* 1-3 May 2016; Brisbane, Australia.
- **57.** Egan, G. Keynote address. *3rd Annual STEM Education Conference*. 27-28 July 2016; Melbourne, Australia.
- Garrido, M. Predictive coding in sensory learning. QBI Neuroscience Seminar 2016. 12 October 2016; Brisbane, Australia
- 59. Mattingley, J. Public Lecture: What can psychology and neuroscience tell us about learning? Lessons from the Australian Science of Learning Research Centre. 2016 Australian Psychological Society Congress. 13 September 2016: Melbourne, Australia.

- 60. Mattingley, J. Mechanisms of selective attention in health and disease. *Biomedical Discovery Seminar Series, Monash University*. 6 September 2016; Melbourne, Australia.
- 61. Postnova, S. Mathematical modelling of arousal state dynamics. *Monash Academy for Cross & Interdisciplinary Mathematical Applications*. 16 March 2016; Melbourne, Australia.
- 62. Robinson, P.A. The physical brain. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane. Australia.
- **63.** Sah, P. Opening address. *MND Australia Research Meeting.* 21 October 2016; Brisbane, Australia.
- 64. Sah, P. How do we learn? What are the biological systems that meditate learning? *Mind Brain Education Conference* 2016. 25 February 2016; Sydney, Australia.
- 65. Sah, P. The amygdala, hippocampus and medial prefrontal cortex: *Three partners in the fear circuit. NeuRA Invited Seminar Series.* 26 September 2016; Sydney, Australia.
- 66. Skafidis, E. Printable electronics for biosensors. ARC Centre of Excellence in Covergent Bio-Nano Science & Technology Biosensor Symposium. 30 November 2016; Melbourne, Australia.
- 67. Stuart, G.J. Brain mechanics. *Conversations Across the Creek*. 20 May 2016; Canberra, Australia.
- 68. Sun, Y. Dissection of an anxiety circuit in the central extended amygdala. *Queensland Brain Institute, Postgraduate Student Symposium.* 25 November 2016; Brisbane, Australia.

Poster Presentations

- 69. Assadzadeh, S., Robinson, P.A. Synaptic homeostasis via plasticity in the corticothalamic system. *NeuroEng* 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.
- 70. Chandra, A.J., Lee, S.C.S., Grünert, U. Calretinin immunoreactive ganglion cells in marmoset retina. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 71. Chaplin, T.A., Hagan, M.A., Price, N.S., Rosa, M.G.P., Lui, L.L. Neuronal contributions to motion discrimination are strongly influenced by spiking rate, not tuning bandwidth. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 72. Cloherty, S.L., Hughes, N.J., Hietanen, M.A., Bhagavatula, P.S., Goodhill, G.J., Ibbotson, M.R. Sensory experience modifies feature map relationships in visual cortex. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 73. Deeba, F., Sanz-Leon, P., Robinson, P.A. Dynamics of absence seizures: Onset, amplitude and duration. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.

- 74. Eiber, C.D., Pietersen, A.N.J., Zeater, N., Solomon, S.G., Martin, P.R. Chromatic opponency and receptive field properties of blue-on cells in primate lateral geniculate nucleus. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 75. Gabay, N., Robinson, P.A. Cortical geometry as the determinant of the structure of dominant brain eigenmodes and resting state networks: neural field analysis. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.
- 76. Gabay, N., Robinson, P.A. Cortical geometry as the determinant of the structure of dominant brain eigenmodes and resting state networks: Neural field analysis. *Fifth Biennial Conference of Resting State Brain Connectivity*. 21-23 September 2016; Vienna, Austria.
- 77. Garrido, M. The effects of attention on neural representations of environmental statistics. *22nd Annual Meeting of the Organization for Human Brain Mapping*. 26-30 June 2016: Geneva. Switzerland.
- 78. Ghodrati, M., Alwis, D.S., Price, N.S.C. Faster responses under low-contrast stimulation in rat V1. *Society for Neuroscience 2016 Annual Meeting*. 12-16 November 2016; San Diego, USA.
- 79. Gu, Y., Gong, P. Sharp wave ripples as wave packets emerging from heterogeneous neural circuits. *NeuroEng* 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane. Australia.
- 80. Hadjidimitrakis, K., Bertozzi, F., Breveglieri, R., Galletti, C., Fattori, P. Temporal stability of reference frames in monkey area V6A during a reaching task in 3D space. Society for Neuroscience 2016 Annual Meeting. 12-16 November 2016; San Diego, USA.
- 81. Hagan, M.A., Chaplin, T.A., Huxlin, K.R., Rosa, M.G.P., Lui, L.L. Fewer neurons in MT are direction selective to random dot stimuli after chronic V1 lesions in adult marmosets monkeys. *Society for Neuroscience 2016 Annual Meeting*. 12-16 November 2016; San Diego, USA.
- 82. Hagan, M.A., Pesaran, B. Functional inhibiton coordinates looking and reaching. *Okinawa Computational Neurosceince Course*. 13-30 June 2016; Okinawa, Japan.
- 83. 83. Huang, H., Stuart, G.J. Cortical processing of binocular visual information in the mouse. Australasian Neuroscience Society 36th Annual Scientific Meeting. 2016; Hobart, Australia: 4-7 December.
- 84. Ibbotson, M.I., Yunzab, M., Hietanen, M.A., Cloherty, S.L., Meffin, H. Dynamic receptive field properties in primary visual cortex. *10th FENS Forum of Neuroscience 2016*. 2-6 July 2016; Copenhagen, Denmark.
- 85. Lacy, T., Aquino, K., Robinson, P.A., Schira, M. Shock-like BOLD responses induced in the primary visual cortex: Theory and experiment. *22nd Annual Meeting of the Organization for Human Brain Mapping*. 26-30 June 2016; Geneva, Switzerland.

- 86. Lee, S.C.S., Aghajani, R.J., Martin, P.R., Grünert, U. Quantification of rod pathway neurons in the human retina. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 87. Liang, A. The anti-neuroinflammatory effect of apigenin: a pilot study in the GFAP-IL6 neuroinflammation model. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 88. MacLaurin, J.N., Robinson, P.A. Inference of structural connectivity from generalized functional connectivity of brain networks. *NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience.* 28-29 November 2016; Brisbane, Australia.
- 89. Martin, P.R., Pietersen, A.N.J., Zeater, N., Cheong, S.K., Solomon, S.G. Effect of brain state on visual stimulus detectability in lateral geniculate nucleus of anaesthetised marmosets. Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO). 1-5 May 2016; Seattle, USA.
- Masri, R., Percival, K.A., Koizumi, A., Martin, P.R., Grünert, U. Characterization of ganglion cell populations in marmoset retina. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- 91. Masri, R.A., Percival, K.A., Koizumi, A., Martin, P.R., Grünert, U. Characterization of ganglion cell populations in marmoset retina. FASEB Science Research Conference, Retinal Neurobiology and Visual Processing. 10-15 July 2016; Keystone, USA.
- 92. Meffin, H., Hietanen, M., Cloherty, S.L., Ibbotson, M.R. Contrast dependent phase sensitivity of complex cells in primary visual cortex. 25th Annual Computational Neuroscience Meeting. 2-7 July 2016; Je Ju Island, South Korea
- 93. Mendis, G.D., Morrisroe, E., Reid, C.A., Halgamuge, S., Petrou, S. Use of local field potentials of dissociated cultures grown on multi-electrode arrays for pharmacological assays. 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). 16-20 August 2016; Florida, USA.
- 94. Mukta, K., MacLaurin, J.N., Robinson, P.A. Neural field theory on the spherical brain. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane. Australia.
- 95. Muller, E.J., van Albada, S.J., Kim, J.W., Robinson, P.A. Unified neural field theory of brain dynamics in Parkinson's disease and generalized epilepsies. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.
- 96. Nasir Ahmad, S.N., Lee, S.C., Martin, P.R., Grünert, U. Two types of melanopsin-expressing ganglion cells in the human retina. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.

- 97. Pang, J.C., Robinson, P.A., Aquino, K. Modal decomposition of spatiotemporal hemodynamic response function. 22nd Annual Meeting of the Organization for Human Brain Mapping. 26-30 June 2016; Geneva, Switzerland.
- 98. Pietersen, A.N.J., Eiber, C.D., Zeater, N., Solomon, S.G., Martin, P.R. Correlation of local field potential in lateral geniculate nucleus and visual cortex in anaesthetised marmosets. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 99. Postnova, S., Lockley, S.W., Robinson, P.A. Sleep propensity under forced desynchrony in a model of arousal state dynamics. 23rd Congress of the European Sleep Research Society. 13-16 September 2016; Bologna, Italy.
- 100. Rahman, A.S., Pietersen, A.N.J., Eiber, C.D., Zeater, N., Dreher, B., Solomon, S.G., Martin, P.R. Functional properties of on-off cells in the dorsal lateral geniculate of anaesthetised marmosets. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016; Hobart, Australia.
- 101. Ranjbar, Y., Arabzadeh, E. High-velocity stimulation evokes "dense" population response in layer 2/3 vibrissal cortex. 29th Annual Barrels Conference. 12 November 2016; Los Angeles, USA.
- 102. Ranjbar, Y., Arabzadeh, E. High-velocity stimulation evokes "dense" population response in layer 2/3 vibrissal cortex. Society for Neuroscience 2016 Annual Meeting. 12-16 November 2016; San Diego, USA.
- 103. Richards, K., Alwis, D., Arabzadeh, E., Price, N.S.C. The neuronal and perceptual effects of visual masking. Australasian Neuroscience Society 36th Annual Scientific Meeting. 4-7 December 2016; Hobart, Australia.
- 104. Richards, K., Alwis, D., Arabzadeh, E., Price, N.S.C. The neuronal and perceptual effects of visual masking. *Society* for Neuroscience 2016 Annual Meeting. 12-16 November 2016; San Diego, USA.
- 105. Robinson, P.A., Sanz-Leon, P., Drysdale, P.M., Fung, F., Abeysuriya, R.G., Rennie, C.J., Zhao, X. Neurofield: Computational modeling and simulation of large scale electrical activity of the brain. 22nd Annual Meeting of the Organization for Human Brain Mapping. 26-30 June 2016; Geneva. Switzerland.
- 106. Robinson, P.A., Sanz-Leon, P., Drysdale, P.M., Fung, F., Abeysuriya, R.G., Rennie, C.J., Zhao, X. Neurofield: A C++ library for fast simulation of 2D neural field models. 25th Annual Computational Neuroscience Meeting. 2-7 July 2016; Je Ju Island, South Korea.
- **107.** Sanz-Leon, P. Nonuniform neural field modeling of seizure spreading on the cortical surface. *22nd Annual Meeting of the Organization for Human Brain Mapping*. 26-30 June 2016; Geneva, Switzerland.
- 108. Sanz-Leon, P., Robinson, P.A. An analytical study of the steady states and gloval dynamics of the corticothalamic system. 22nd Annual Meeting of the Organization for Human Brain Mapping. 26-30 June 2016; Geneva, Switzerland.

- 109. Sanz-Leon, P., Robinson, P.A. Corticothalamic dynamics: Steady states and their structure in the synaptic coupling parameter space. 25th Annual Computational Neuroscience Meeting. 2-7 July 2016; Je Ju Island, South Korea.
- 110. Tang, M. Do repetition suppression and expectation have different effects on the fidelity of sensory representations? 6th Australasian Cognitive Neuroscience Conference. 24-27 November 2016: Newcastle, Australia.
- 111. Townsend, R., Solomon, S.G., Martin, P.R., Gong, P. Evoked propagating neural waves: Mechanisms and functional roles. NeuroEng 2016: 9th Australasian Workshop on Neuro-Engineering and Computational Neuroscience. 28-29 November 2016; Brisbane, Australia.
- 112. Yang, D.P., Mackenzie-Sell, L., Karanjai, A., Robinson, P.A. Wake-sleep transition as a noisy bifurcation. 9th Dynamic Days Asia-Pacific. 14-17 December 2016; Hong Kong, China.
- 113. Yang, D.P., Robinson, P.A. Low-dimensional dynamics for transitions form normal arousal states to epileptic seizures. 9th Dynamic Days Asia-Pacific. 14-17 December 2016; Hong Kong, China.
- 114. Zavitz, E., Yu, H.-H., Rosa, M.G.P., Price, N.S.C. Taskand time-dependence of population codes for motion in marmoset MT. *Society for Neuroscience 2016 Annual Meeting.* 12-16 November 2016; San Diego, USA.
- 115. Zeater, N., Munn, B.R., Solomon, S.G., Dreher, B., Cheong, S.K., Gong, P., Martin, P.R. Pairwise and population dynamics of correlated spiking in marmoset lateral geniculate nucleus. *Australasian Neuroscience Society 36th Annual Scientific Meeting*. 4-7 December 2016: Hobart, Australia.
- 116. Zhu, S., Allitt, B., Samuel, A., Rosa, M.G.P., Rajan, R. Neuronal representation of vocalisation pitch in marmoset primary auditory cortex. *Australasian Auditory Neuroscience Workshop*. 4 December 2016; Hobart, Australia.
- 117. Zhu, S., Allitt, B., Samuel, A., Rosa, M.G.P., Rajan, R. Neuronal representation of vocalisation pitch in marmoset primary auditory cortex. *Students of Brain Research Symposium.* 18 November 2016; Melbourne, Australia.

International Presentations

- Abeysuriya R, Robinson P. Real-time automated EEG tracking of brain state parameters using neural field theory: Application to brain stability and seizures. *IWSP7: Seventh International Workshop on Seizure Prediction*; 3-6 August 2015; Melbourne, Australia.
- Adibi M, Kheradpezhouh E, Fenlon L, Suarez R, Richards L, Arabzadeh E. Contribution of cortical layers 2/3 to sensory processing in mouse barrel cortex. 38th Annual Meeting of the Japan Neuroscience Society; 28 July 2015; Kobe, Japan.
- Arabzadeh E. Neuronal circuitry underlying efficient sensory processing in the barrel cortex. How do time and sensory information interact in perceptual decisionmaking? *Bernstein Conference*; 14 September 2015; Heidelberg, Germany. Invited Presentation.
- Arabzadeh E. Neuronal and Behavioural Correlates of Sensory Prioritisation. *Institute for Research in Fundamental Sciences Seminar;* 11 September 2015; Tehran, Iran. Invited Presentation.
- Arabzadeh E. Neuronal and Behavioural Correlates of Sensory Prioritisation. *International School for Advanced Studies (SISSA) Seminar*, 18 September 2015; Trieste, Italy. Invited Presentation.
- 6. Arabzadeh E. Neuronal activity underlying efficient sensory processing in the barrel cortex. *SCiNDU: Systems & Computational Neuroscience Down Under*, 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- 7. Breakspear M. Candidate examples for a computational approach to address practical problems in psychiatry: What are the characteristics of an application that makes it both feasible and relevant? Computational Psychiatry: What Can Theoretical Neuroscience and Psychiatry Teach Each Other?; 28 June 3 July 2015; Frankfurt, Germany. Invited Presentation.
- 8. Breakspear M. Brain Waves. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii, USA. Keynote Presentation.
- 9. Breakspear M. Introduction to Computational Neuroscience. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii, USA. Invited Presentation.
- Breakspear M. Nonlinear, hierarchical dynamics in prefrontal cortex modulate the precision of perceptual beliefs. SCiNDU: Systems & Computational Neuroscience Down Under; 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- 11. Breakspear M, Makeig S, Tanaka T, Muthuraman M, Poston K. *Dynamic Connectivity of Agency. Brain Connectivity Workshop*; 10 June 2015; California, USA. Invited Presentation.
- 12. Davies A, Chaplin T, Rosa M, Yu HH. Context-dependent robust coding of stimulus speed in primate extrastriate cortex. *11th Asia-Pacific Conference on Vision*; 10-12 July 2015; Singapore, Singapore.

- Davies A, Rosa M, Yu H. Context-dependent robust coding of stimulus speed in primate extrastriate cortex. Neuroscience 2015 - Annual Meeting of the Society for Neuroscience; 17-21 October 2015; Chicago, USA.
- 14. Egan G. Using neuroimaging to investigate the mechanisms of Friedreich's ataxia. *CAG Triplet Repeat Disorders, Gordon Research Conference* 1-5 June 2015; Barga, Italy. Invited Presentation.
- Garrido M. Predictive and efficient coding in sensory learning. 5th Australasian Cognitive *Neuroscience Society Conference*; 26-29 November 2015; Auckland, New Zealand, Invited Presentation.
- **16.** Garrido M. Investigating human attention and prediction. Neuroinformatics 2015, *8th INCF Congress*; 20-22 August 2015; Cairns, Australia. Invited Presentation.
- Garrido M. Constructing the Integrated Brain, neurons, circuits and cognition. 3rd Queensland Brain Institute & Munich Center for Neurosciences Symposium; 7-9 October 2015; Brisbane, Australia. Invited Presentation.
- **18.** Garrido M. Predictive and efficient coding in sensory learning. *SCiNDU: Systems & Computational Neuroscience Down Under;* 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- Gavrilescu M, Battista J, Ibbotson M, Gibbs P. Visual fatigue induced by optical misalignment in binocular devices: application to night vision binocular devices. SPIE DSS Defense + Security Conference; 20-24 April 2015; Baltimore, USA.
- 20. Gong P. Cortical spatiotemporal dynamics and their computational principles. *Symposium on Computational and Systems Neuroscience, Artificial Intelligence;* October 2015; Shanghai, China. Invited Presentation.
- Goscinski W. MASSIVE CVL: a specialized imaging and neuroinformatics facility. *Neuroinformatics 2015, 8th INCF Congress*; 20-22 August 2015; Cairns, Australia. Invited Presentation.
- 22. Hearne L. Functional brain networks underlying highlevel cognitive reasoning and fluid intellence. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand. Invited Presentation.
- 23. Ibbotson M. Returning sight to the blind. *CLSA Investor Forum*; 24 February 2015; Tokyo, Japan. Invited Presentation.
- 24. Ibbotson M. Understanding attention & predictive coding circuits in the brain. *Neuroinformatics 2015, 8th INCF Congress*; 20-22 August 2015; Cairns, Australia. Invited Presentation.
- 25. Ibbotson M, Wong R, Garrett D, Grayden D, Cloherty S. Bionic eye research: retinal ganglion cell responses to electrical stimulation with temporal patterns resembling light-evoked spike trains. *Asia ARVO*; 16-19 February 2015; Yokohama, Japan. Invited Presentation.
- 26. Lowery A. Monash Vision Group's Cortical Bionic Eye System: a wireless cortical stimulator. *Neuroinformatics* 2015, 8th INCF Congress; 20-22 August 2015; Cairns, Australia. Keynote Presentation.

- 27. Marek R. Neural correlates and circuitry in the medial prefrontal cortex to regulate fear extinction. 3rd Queensland Brain Institute & Munich Center for Neurosciences Symposium; 7-9 October 2015; Brisbane, Australia. Invited Presentation.
- 28. Martin P, Zeater N, Cheong S, Solomon S, Pietersen A, Dreher B.Binocular inputs to blue-ON and blue-OFF cells in marmoset lateral geniculate nucleus. 23rd Symposium of the International Colour Vision Society; 3-7 July 2015; Sendai, Japan. Invited Presentation.
- 29. Mattingley J. Neural correlates of selective visual attention for interactive approach and avoidance. *SCiNDU: Systems & Computational Neuroscience Down Under;* 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- 30. Mattingley J. What can evoked neural oscillations reveal about visual perception and selective attention? *University of Minnesota Colloquium*; 24 September 2015; Minneapolis, USA. Invited Presentation.
- 31. McFayden J.The subcortical route to the amygdala: Spatial frequencies and facial expressions. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand. Invited Presentation
- 32. Meffin H, Hietanen M, Cloherty S, Ibbotson, MR. Contrast dependent phase sensitivity of complex cells in primary visual cortex. *SCiNDU: Systems & Computational Neuroscience Down Under*, 15-17 December 2015; Brisbane, Australia.
- 33. Painter D, Funane T, Katura T, Sato H, Mattingley J. Spatiotemporal evolution of future-based selection during visual search. *Australasian Society for Experimental Psychology Conference*; 9 April 2015; Sydney, Australia.
- 34. Paxinos G. Brain Behavoiur and Evolution. Brainnetome; International Symposium on Primate Models in Brain Research — From Monkey Brain to Human Brain; 5 November 2015; Haikou, China. Plenary Speaker.
- **35.** Paxinos G. Brain Behaviour and Evolution. *Myrtis Conference*; 13 May 2015; Athens, Greece. Plenary Speaker.
- **36.** Paxinos G. Brain Behavoiur and Evolution. *Romanian Neuroscience Society Meeting*; 29-31 October 2015; Bucharest, Romania. Plenary Speaker.
- 37. Paxinos G. Brain Behavoiur and Evolution. XXIV International Symposium on Morphological Sciences meeting; 2-6 September 2015; Istanbul, Turkey. Plenary Speaker.
- 38. Price N. How do populations of neurons incorporate recent stimulus statistics? *Neuroinformatics 2015, 8th INCF Congress*; 20-22 August 2015; Cairns, Australia. Invited Presentation.
- 39. Robinson P. Physiology-based quantitative modeling and analysis of brain dynamics underlying attention and prediction. *Complexity, Criticality, and Computation (C3) International Biannual Symposium*; 26-27 November 2015; Sydney, Australia. Invited Presentation.

- 40. Robinson P. Interrelating EEF, fMRI, Networks, and Criticality: Multiscale Modeling and the Role of Brain Eigenmodes. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii, USA. Invited Presentation.
- 41. Robinson P. Physiology-based quantitative modeling and analysis of brain dynamics underlying attention and prediction. SCiNDU: *Systems & Computational Neuroscience Down Under*, 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- 42. Robinson P. Physiology-based quantitative modeling and analysis of brain dynamics underlying attention and prediction. *Neuroinformatics 2015, 8th INCF Congress*; 20-22 August 2015; Cairns, Australia. Invited Presentation.
- 43. Rosa M, Egan G. Mapping neural connections in primates an expanding role for cortical connectivity atlases. *Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society*, 23-27 August 2015; Cairns. Australia. Invited Presentation.
- 44. Sah P. Regulation of fear: Circuit and Network Interactions. Amygdala Function in Emotion, Cognition and Disease, Gordon Research Seminar, 4-5 August 2015; Massachusetts, USA. Invited Presentation.
- 45. Sah P. Update on NMDA receptors in Learning. *Amygdala Function in Emotion, Cognition and Disease, Gordon Research Seminar;* 4-5 August 2015; Massachusetts, USA. Invited Presentation.
- 46. Sah P. Prefrontal, hippocampus, amygdala networks in fear learning. From Synapses to Circuits and Behaviour Satellite of 2015 ISN/ANS Annual meeting 22 August 2015; Palm Cove, Australia. Invited Presentation.
- 47. Sah P. Hippocampal prefrontal circuits that mediate fear learning and extinction. *SCiNDU: Systems & Computational Neuroscience Down Under;* 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- Sanz-Leon P, Knock S. An implementation of Neural Fields on the Cortical Surface. *IWSP7: Seventh International Workshop on Seizure Prediction*; 3-6 August 2015; Melbourne, Australia.
- Stuart G. SK channels and spike timing-dependent synaptic plasticity. 5th Bonner Humboldt Preisträger (Prizewinner) Forum; 7-9 October 2015; Bonn, Germany. Invited Presentation.
- Stuart G. SK channels and spike timing-dependent synaptic plasticity. *Australia-China Symposium on Neuroscience*; 15-16 October 2015; Melbourne, Australia. Invited Presentation.
- 51. Stuart G. SK channels and spike timing-dependent synaptic plasticity. SCiNDU: Systems & Computational Neuroscience Down Under, 15-17 December 2015; Brisbane, Australia. Invited Presentation.
- 52. Wilson M, Goodwin D, Fung F, Robinson P, Reynolds J, Shemmell J. A comparison of modeling approaches to TMA. *Australasian Winter Conference on Brain Research. Neuroinformatics 2015, 8th INCF Congress;* 20-22 August 2015; Cairns, Australia. Invited Presentation.

53. Wittenhagen L, Painter D, de Weerd P, Mattingley J. Neural correlates of amodal visual completion revealed using frequency tagging. *Australasian Society for Experimental Psychology Conference*; 9 April 2015; Sydney, Australia.

National Presentations

- 54. Arabzadeh E. Neuronal circuitry underlying sensory processing in the barrel cortex. *Anderson Stuart Seminar Series, University of Sydney*, 12 October 2015; Sydney, NSW. Invited Presentation.
- 55. Cheong S, Dreher B, Grünert U, Lee S, Martin P, Percival K, Pietersen A, Solomon S, Szmajda B, Tailby C, Zeater N. Tertium quid, and the value of messing things up. Sensory Neuroscience Symposium; 8 December 2015; Parramatta, NSW. Keynote Presentation.
- 56. Egan G. Deciphering brain function using next generation brain imaging technologies. *Advances in Molecular Imaging Symposium*; 7 May 2015; Brisbane, QLD. Invited Presentation.
- 57. Egan G. Prospects for deciphering brain function using next generation brain imaging. *John Curtin School of Medical Research Seminar, Australian National University*; 20 November 2015; Canberra, ACT. Invited Presentation.
- 58. Egan G. Prospects for deciphering brain disorders using next generation brain imaging. *Orygen Research Institute Symposium*; 13 November 2015; Melbourne, VIC. Invited Presentation.
- 59. Egan G. Monash Biomedical Imaging- collaborative research opportunities. *Psychology Seminar Series, University of Queensland*; 6 November 2015; St Lucia, QLD. Invited Presentation.
- 60. Garrido M. DCM for evoked responses. *CCD-Neural Markers Statistical Parametric Mapping Workshop:*Dynamic Causal Modelling (DCM) for MEG/EEG; 24 July 2015; Sydney, NSW. Invited Presentation.
- 61. Harrison B, Korgaonkar M, Davey C, Hermens D, Whittle S, Breakspear M. Neuroimaging and computational approaches to depression. *Society for Mental Health Research Conference*; 2-4 December 2015; Brisbane, QLD, Invited Presentation.
- **62.** Hearne L. Interactions between default mode and control networks with increases in complexity during cognitive reasoning. *Cortical Connections* 2015; 20 March 2015; Brisbane, QLD. Invited Presentation.
- 63. Mattingley J. What can evoked neural oscillations reveal about visual perception and selective attention? *MARCS Monday Evening Research Colloquium*; 10 August 2015; Sydney, NSW. Invited Presentation.
- 64. Mattingley J. What can evoked neural oscillations reveal about visual perception and selective attention? *University of Western Australia Psychology Colloquium*; 15 September 2015; Perth, WA. Invited Presentation.
- 65. Robinson P. Physiologically Based Quantitative Modeling of Sleep Dynamics. *Physiology Seminar Series, Monash University*; 16 March 2015; Clayton, VIC. Invited Presentation.

ARC CoE for Integrative Brain Function 53

- 66. Sah P. Neural circuits that mediate fear learning and fear extinction. *Anderson Stuart Seminar Series, University of Sydney*; 5 June 2015; Sydney, NSW. Invited Presentation.
- 67. Stuart G. SK channels and spike timing-dependent synaptic plasticity. *Gage Conference: Ion Channels and Transporters*; 15-17 April 2015; Canberra, ACT. Invited Presentation.

Poster Presentations

- 68. Abeysuriya R. Beyond Rechtschaffen-Kales: real-time automated EEG tracking of arousal states using neural field theory. *7th World Congress of the World Sleep Federation*; 31 October 3 November 2015; Istanbul, Turkey.
- 69. Adibi M, Kheradpezhouh E, Arabzadeh E. Temporal dynamics of sensory adaptation in rat barrel cortex. *38th Annual Meeting of the Japan Neuroscience Society*; 28 July 2015; Kobe, Japan.
- 70. Adibi M, Kheradpezhouh E, Arabzadeh E. Temporal dynamics of sensory adaptation in rat barrel cortex. *Joint* meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society; 23-27 August 2015; Cairns. Australia.
- 71. Adibi M, Kheradpezhouh E, Fenlon L, Suarez R, Richards L, Arabzadeh E. Contribution of layer 2/3 neurons to sensory adaptation in mouse somatosensory cortex.

 Neuroscience 2015 Annual Meeting of the Society for Neuroscience; 17-21 October 2015; Chicago, USA.
- 72. Apollo N, Maturana M, Tong W, Nayagam D, Shivdasani M, Foroughi J, Wallace G, Prawer S, Ibbotson M, Garrett D. Neural interfacing applications of liquid crystalline graphene oxide fibers. 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society; 25-29 August 2015; Milan, Italy.
- 73. Aquino K, Lacy T, Robinson P, Schira M. Using models to design fMRI experiments not just fit data. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii, USA.
- 74. Bareham C. Role of right parietal cortex in auditory attention: evidence from an rTMS study of auditory extinction. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 75. Baumann O. Functional organization of the parahippocampal cortex: Dissociable roles for context representations and the perception of visual scenes. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 76. Chaplin T, Allitt B, Hagan M, Price N, Rosa M, Rajan R, Lui L. Audiovisual integration in areas MT & MST of marmoset monkeys. 13th Australasian Auditory Neuroscience Workshop; 30 November 1 December 2015; Melbourne, Australia.

- 77. Chaplin T, Allitt B, Hagan M, Price N, Rosa M, Rajan R, Lui L. Audiovisual integration in areas MT & MST of marmoset monkeys. Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society; 23-27 August 2015; Cairns, Australia.
- 78. Chaplin T, Allitt B, Hagan M, Price N, Rosa M, Rajan R, Lui L. Audiovisual integration in areas MT & MST of marmoset monkeys. *Monash Brain Function Workshop* 2015; 14 December 2015; Melbourne, VIC.
- 79. Chaplin T, Allitt B, Hagan M, Price N, Rosa M, Rajan R, Lui L. Audiovisual integration in areas MT & MST of marmoset monkeys. *Neuroscience 2015* Annual Meeting of the Society for Neuroscience; 17-21 October 2015; Chicago, USA.
- 80. Chaplin T, Allitt B, Hagan M, Price N, Rosa M, Rajan R, Lui L. Audiovisual integration in areas MT & MST of marmoset monkeys. *SCiNDU: Systems & Computational Neuroscience Down Under*, 15-17 December 2015; Brisbane, Australia.
- 81. Cloherty S, Hughes N, Goodhill G, Ibbotson M. Sensory experience modifies the spatial relationship between orientation and ocular dominance maps in visual cortex. *Neuroscience 2015 Annual Meeting of the Society for Neuroscience*; 17-21 October 2015; Chicago, USA.
- 82. Dux P, Naughtin C, Mattingley J. Early cortical contributions to object individuation. *Vision Sciences Society;* 18 May 2015; Florida, USA.
- 83. Filmer H, Mattingley J, Dux P. Object substitution for an attended and foveated target. *Vision Sciences Society*, 18 May 2015; Florida, USA.
- **84.** Garrido M, Mattingley J. MMN: a marker of statistical learning in the brain. *7th Mismatch Signals from the Brain;* 11 September 2015; Leipzig, Germany.
- 85. Garrido M, Rowe E, Halasz V, Mattingley J. The effects of attention on neural representations of environmental statistics. SCiNDU: Systems & Computational Neuroscience Down Under; 15-17 December 2015; Brisbane, Australia.
- 86. Garrido M, Teng J, Mattingley J. Surprise responses in the human brain demonstrate statistical learning even under high concurrent cognitive demand. 4th Champalimaud Neuroscience Symposium Perspectives on Social Behaviour; 18 September 2015; Lisbon, Portugal.
- 87. Garrido M, Teng J, Mattingley J. Statistical learning under high cognitive load. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii, USA.
- 88. Gharaei S, Arabzadeh E, Solomon S. Are rats capable of selective, spatial attention? *Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society*; 23-27 August 2015; Cairns, Australia.
- 89. Gollo L, Roberts J, Breakspear M. A phase transition in human brain connectivity. *SCiNDU: Systems & Computational Neuroscience Down Under*; 15-17 December 2015; Brisbane, Australia.

- 90. Gooch H, Xu L, Sah P. Optogenetics reveals asymmetrical GABAergic recruitment within the lateral amygdala by auditory inputs. SCiNDU: Systems & Computational Neuroscience Down Under; 15-17 December 2015; Brisbane, Australia.
- 91. Grünert U, Lee S, Weltzien F. Identification of calretinin immunoreactive amacrine cells in human retina. *Annual Meeting of the Association for Research in Vision and Ophthalmology*; 3-7 May 2015; Colorado, USA.
- 92. Gu Y, Gong P. The dynamics of memory search: a modeling study. *Computational and Systems Neuroscience*; 5-8 March 2015; Utah, USA.
- 93. Gu Y, Gong P. A Modeling Study of the Dynamics of Memory Retrieval. *Neuroscience 2015 - Annual Meeting of the Society for Neuroscience*; 17-21 October 2015; Chicago, USA.
- 94. Hadjidimitrakis K, Alanazi O, Chaplin T, Chan J, Yu HH, Bakola S, Rosa M. Topographic organization of the "third tier" dorsomedial visual cortex in the macaque monkey. Neuroscience 2015 - Annual Meeting of the Society for Neuroscience; 17-21 October 2015; Chicago, USA.
- 95. Hagan M, Chaplin T, Huxlin K, Rosa M, Lui L. Response properties of MT neurons to random dot motion stimuli after V1 lesion. SCiNDU: Systems & Computational Neuroscience Down Under, 15-17 December 2015; Brisbane, Australia.
- 96. Halupka K, Shivdasani M, Cloherty S, Grayden D, Burkitt A, Ibbotson M, Meffin H. Prediction of cortical responses to simultaneous electrical retinal stimulation using a linear-nonlinear model. *Neuroscience 2015 Annual Meeting of the Society for Neuroscience*; 17-21 October 2015; Chicago, USA.
- 97. Harris A. Alpha and theta oscillations play dissociable roles in goal-directed attention. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- Hearne L, Cocchi L, Mattingley J. Functional brain networks underlying high-level cognitive reasoning and fluid intellence. SCiNDU: Systems & Computational Neuroscience Down Under, 15-17 December 2015; Brisbane, Australia.
- 99. Heitmann S, Boonstra T, Gong P, Breakspear M, Ermentrout B. Modeling motor commands as traveling waves of cortical oscillation. *Computational and Systems Neuroscience*; 5-8 March 2015; Utah, USA.
- 100. Keane B, Spence M, Yarrow K, Arnold D. Perceptual confidence demonstrates trial-by-trial insight into the precision of audio-visual timing encoding. SCINDU: Systems & Computational Neuroscience Down Under; 15-17 December 2015; Brisbane, Australia.
- 101. Kheradpezhouh E, Adibi M, Fenlon L, Suarez R, Richards L, Arabzadeh E. Contribution of cortical layers 2/3 to sensory processing in mouse barrel cortex. Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society; 23-27 August 2015; Cairns, Australia.

- 102. Lacy T, Aquino K, Robinson P. Induction of Hemodynamic Shocks by Moving Stimuli in the Primary Visual Cortex. *Organization for Human Brain Mapping*; 14-18 June 2015; Hawaii. USA.
- 103. Lee C, Diamond M, Arabzadeh E. A rodent model of sensory prioritisation: behavioural performance and neural correlates. *Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society*; 23-27 August 2015; Cairns, Australia.
- 104. Lee C, Diamond M, Arabzadeh E. A rodent model of sensory prioritisation: behavioural performance and neural correlates. *Neuroscience 2015 - Annual Meeting of the Society for Neuroscience*; 17-21 October 2015; Chicago, USA.
- 105. Levy-Bencheton D. Role of parietal cortex in predictive remapping across eye movements: a transcranial magnetic stimulation study. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 106. 106. Madden D, Sale M, Robinson G. Left lateral prefrontal a-tDCS as an intervention for age-related decline in executive language ability. Australasian Society for Experimental Psychology Conference; 9 April 2015; Sydney, Australia.
- 107. Majka P, Chaplin T, Yu HH, Pinskiy V, Mitra P, Wójcik D, Rosa M. Workflow for mapping tracer injection studies of the common marmoset into a reference template. *Neuroinformatics 2015, 8th INCF Congress;* 20-22 August 2015; Cairns, Australia.
- 108. Majka P, Chaplin T, Yu HH, Tolpygo A, Mitra P, Wójcik D, Rosa M. Workflow for mapping tracer injection studies of the common marmoset into a reference template. Neuroscience 2015 - Annual Meeting of the Society for Neuroscience; 17-21 October 2015; Chicago, USA.
- 109. Marek R, Fallah A, Sah P. Hippocampus-driven feedforward inhibition in the prefrontal cortex mediated by GABA encodes task-dependent contextual information. From Synapses to Circuits and Behaviour Satellite of 2015 ISN/ANS Annual meeting 22 August 2015; Palm Cove, Australia.
- 110. Masri R, Percival K, Koizumi A, Martin P, Grünert U. Synaptic contacts between the diffuse cone bipolar cell type DB3A and ganglion cells in the marmoset retina. *Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society;* 23-27 August 2015; Cairns, Australia.
- 111. Matthews N. Influence of pre-trial alpha oscillations on mathematical reasoning. *5th Australasian Cognitive Neuroscience Society Conference*; 26-29 November 2015; Auckland. New Zealand.
- 112. Maturana M, Apollo D, Garrett D, Grayden D, Ibbotson M, Meffin H, Cloherty S, Kameneva T. Estimating spatial sensitivity profiles for electrical stimulation of retinal ganglion cells. *Joint meetings of the International Society for Neurochemistry, the Asian-Pacific Society for Neurochemistry and the Australasian Neuroscience Society*; 23-27 August 2015; Cairns, Australia.

- 113. McFayden J, Merillod M, Halasz V, Mattingley J, Garrido M. The subcortical route to the amygdala: Spatial frequencies and facial expressions. SCiNDU: Systems & Computational Neuroscience Down Under, 15-17 December 2015; Brisbane, Australia.
- 114. Naughtin C. Early cortical contributions to object individuation revealed by perception of illusory figures. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 115. Nguyen V, Sonkusare S, Breakspear M, Guo C. The role of the cerebellum in predictive coding during emotional and perceptual processes. SCiNDU: Systems & Computational Neuroscience Down Under; 15-17 December 2015; Brisbane, Australia.
- 116. Nott Z. Lesion sites associated with Theory of Mind impairments in stroke patients: A VLSM analysis. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 117. Nott Z, Horne K, Beavis T, Henry J, Mattingley J, Molenberghs P. Lesion sites associated with Theory of Mind problems in stroke patients: A VLSM analysis. Organisation for Human Brain Mapping 14-18 June 2015; Hawaii. USA.
- 118. Painter D. Spatiotemporal evolution of future-based selection during visual search. 5th Australasian Cognitive Neuroscience Society Conference; 26-29 November 2015; Auckland, New Zealand.
- 119. Painter D, Dwyer M, Kamke M, Mattingley J. Steady-state evoked potentials reveal visual cortical hyper-excitability to peripheral visual field stimulation in macular degeneration patients with visual hallucinations. SCiNDU: Systems & Computational Neuroscience Down Under, 15-17 December 2015; Brisbane, Australia.
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- 3. Paxinos, G. 44th Symposium of Paediatric Society of Northern Greece, Thessaloniki. Garrido, M. I. Multi-frequency: *The interplay of attention and prediction in the human brain. ICON*: 2014
- Grünert U, Masri RA, Percival KA, Koizumi A, Martin PR. Connections between bipolar and ganglion cells in the marmoset retina. *Asian Retina Meeting*, Sendai, Japan; 2014.
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