

ACNS CONFERENCE SYDNEY 2023

27-30 NOVEMBER, 2023



PROGRAM AT A GLANCE

Room
#1050



Room
#1060



Room
#1070



Room
#1110



Room
#1130



Room
#B2010



Day 1 | Monday 27th November

0930-1700	Registration Open		
1000-1200	Workshop 1: ECR AMA Workshop (#1130)		
1200-1300	Break		
1300-1700	Workshop 2: EEG Methodology (sponsored by Symbiotic Devices) (#1050)	Workshop 3: Bridging the Gap in BCI (#1060)	Workshop 4: Unifying VR Environments with State-of-the-Art EEG Research (#1070)
1700-1800	Keynote #1 - Lynn Nadel (#B2010)		
1800-1930	Welcome Reception - ABS		

Day 2 | Tuesday 28th November

0830-1700	Registration Open		
0900-1030	Fast talks: Clinical and Executive Function (#1110)	Fast talks: Attention and Perception (#1130)	Parent/Quiet Room (#1050)
1030-1100	Morning Tea		
1100-1300	Open talks: Executive Function (#1110)	Open talks: Attention and Executive Processes (#1130)	Parent/Quiet Room (#1050)
1300-1430	Lunch Break / Posters		
1430-1630	Open talks: High level Perception (#1110)	Open talks: Clinical I (#1130)	Parent/Quiet Room (#1050)
1630-1700	Afternoon Tea		
1700-1800	NZ Special Symposium (#B2010)		Parent/Quiet Room (#1050)
1800-1930	Young Investigator Award talks Emerging Researcher Award talks		
1930-	ECR Social - Carriageworks Brew Dog		

Room
#1050



Room
#1060



Room
#1110



Room
#1130



Room
#B2010



Day 3 | Wednesday 29th November

0830-1700	Registration Open		
0900-1030	Fast talks: Executive Function (#1110)	Fast talks: Perception and Action (#1130)	Parent/Quiet Room (#1050)
1030-1100	Morning Tea		
1100-1300	Open talks: Clinical II (#1110)	Symposia #1: Motor system plasticity (#1130)	Parent/Quiet Room (#1050)
1300-1430	Lunch Break / Posters		
1430-1630	Open talks: Attention and Perception (#1110)	Symposia #2: Aperiodic neural activity (#1130)	Parent/Quiet Room (#1050)
1630-1700	Afternoon Tea		
1700-1800	Keynote #2 - Mary Peterson (#B2010)		Parent/Quiet Room (#1050)
1800-2100	Neural Networking Night - ABS		

Day 4 | Thursday 30th November

0830-1700	Registration Open		
0900-1030	Fast talks: Perception Attention and Memory (#1110)	Fast talks: Emotion, Memory and Language (#1130)	Parent/Quiet Room (#1050)
1030-1100	Morning Tea		
1100-1300	Open talks: Individual difference and Executive Function (#1110)	Symposia #3: Predictive coding across the brain (#1130)	Parent/Quiet Room (#1050)
1300-1430	Lunch Break / Posters		
1430-1630	Open talks: Perception, Decision making and Executive function (#1110)	Symposia #4: AI for Cognitive Neuroscience (#1130)	Parent/Quiet Room (#1050)
1630-1700	Afternoon Tea		
1700-1830	AGM Prizes Announced (#B2010)		Parent/Quiet Room (#1050)

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Keynotes

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Symposia

20

ACNS2023 features four symposia, spanning genetics, multivariate pattern analysis, prediction and interdisciplinary approaches



Conference Schedule

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A complete timetable of ACNS2023 including talk and poster sessions, symposia, social events and more!

5 Sponsors

Please check out our fantastic sponsors of ACNS 2023

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The University of Sydney is proud to host ACNS2023 at the Abercrombie Building

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Members of the Local Organising Committee for ACNS2023, student volunteers, and the ACNS Executive Committee

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List of presentations at the poster sessions in the Abercrombie Building

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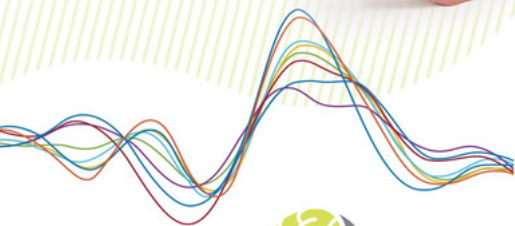


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Transcranial Magnetic Stimulation (TMS)

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HD-EEG + Low Density / Portable EEG



HD-tES with GTEN: Precision electrical stimulation

HD-EEG: Eye Tracking, Electrical and TMS Stimulation

HD-EEG + TMS: Understanding neural networks

E-PRIME: Synchronize HD-EEG, Eye Tracking, Electrical (tDCS/tACS/tRNS) & TMS Stimulation

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RESEARCH NEUROSCIENCES



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Combining EEG + VR

Did you have time to attend the
EEG + VR workshop with Max
Mosimann? If you did, we hope
you were able to see just how
easy it is to integrate your EEG
research with VR and were able
to engage with a transformative
approach to EEG research.

Scan for more
on the DSI-24



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our EEG +
NIRS videos



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WELCOME

*from the
organisers*

*Dear Colleagues,
Students,
Distinguished Guests,
Valued Sponsors,
and Supporters*

It is our great pleasure to welcome you all to the Annual Meeting of the Australasian Cognitive Neuroscience Society (ACNS). To start, we would like to acknowledge and pay respect to the traditional owners of the land on which we meet, the Gadigal people of the Eora Nation. It is upon their ancestral lands that the University of Sydney (Camperdown Campus) is built.

We are truly grateful for the opportunity to host this conference, a hallmark event for Australasian cognitive neuroscientists each academic year. As we gather here, we warmly welcome our esteemed keynote speakers and colleagues. Our gratitude also extends to our invaluable sponsors, whose support

has been instrumental in bringing this conference to fruition. Continuing in the tradition of past years, we are confident that this conference will serve as a platform to showcase the best in Australasian cognitive neuroscience research.

We aim to provide an enriching experience, offering opportunities to explore novel findings, exchange thought-provoking ideas, engage in stimulating discussions, and foster meaningful connections. Alongside intellectual pursuits, we invite you to indulge in the city's culinary delights and enjoy moments of camaraderie with your peers and friends.

Throughout the years, ACNS has cultivated a culture of collegiality, inspiration, and inclusivity, offering cognitive neuroscience researchers a true sense of belonging. We are resolutely committed to promoting gender equality among speakers, key-notes, session chairs, and leaders. Equally important is our dedication to creating opportunities for early-career researchers. In the spirit of progress, we're introducing several initiatives this year. Our catering will feature exclusively vegetarian food provided by House of Welcome. House of Welcome is an organisation that extends open arms to

asylum seekers and refugees, regardless of age, gender, sexuality, nationality, or religion, empowering them with holistic support. We're encouraging participants to contribute by recycling their old conference lanyards, with the recycled lanyards available at the conference. As in the past, we encourage you to bring your own reusable drink containers, embracing sustainability.

We are also excited to announce a new event - Neural Networking Night. This gathering will replace the traditional conference dinner, combining delectable food and drinks with activities to foster connections. Neural Networking Night aims to create an environment conducive to networking and collaboration, allowing registrants to interact in a relaxed setting. This event will be open to all conference participants at no extra cost.

Lastly, we express our deep gratitude to the exceptional conference organising team and the dedicated student volunteers. Their tireless efforts have been pivotal in shaping the success of this event. We hope that you enjoy your time in Sydney!

Thomas Carlson, Chair of ACNS 2023

COMMITTEES

LOCAL ORGANISING COMMITTEE



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University of Sydney



Muireann Irish
University of Sydney



Anina Rich
Macquarie University



Reuben Rideaux
University of Sydney



Tijl Grootswagers
Western Sydney University

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Alicja Nowacka, *University of Auckland*

Daniele Scanzi, *University of Auckland*

COMMITTEES

We wish to thank our amazing volunteers who have offered to assist at the conference. We also thank our fantastic reviewers who kindly offered their time to review all the abstracts we received

STUDENT VOLUNTEERS

Kristina Horne, *University of Sydney*

Maggie Lan, *University of Sydney*

Tao Chen, *University of Sydney*

Siobhán Shaw, *University of Sydney*

Almudena Ramirez, *Western Sydney University*

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Conference Organised by:

MERS Events

Margaret Eagers Matt Eagers

VENUE MAPS

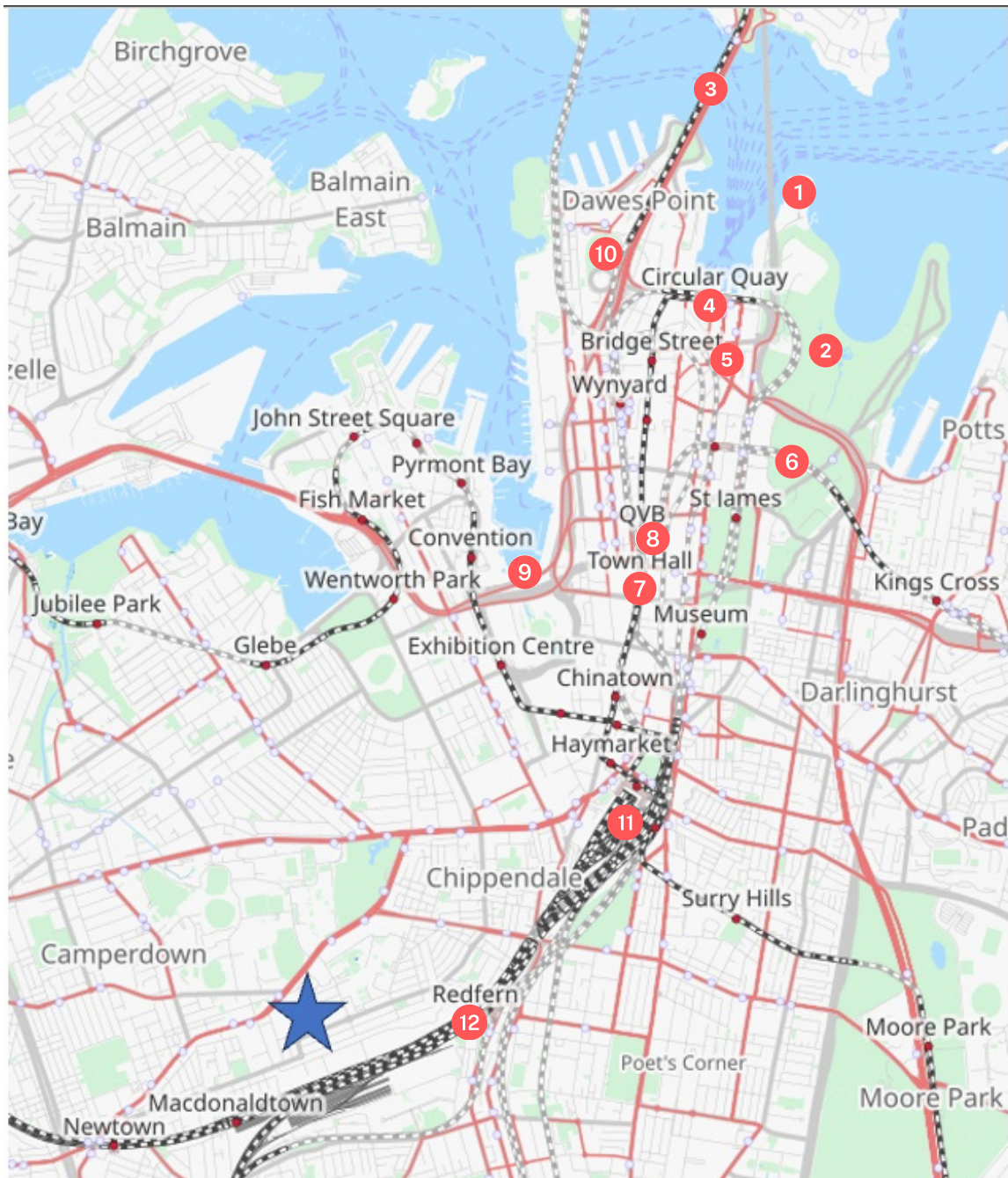
The conference venue is southwest of the Sydney Central Business District, at the University of Sydney Business School



University of Sydney Business School
Abercrombie Building H70



- | | |
|-------------------------|---------------------------|
| 1 Sydney Opera House | 7 Town Hall |
| 2 Royal Botanic Garden | 8 Queen Victoria Building |
| 3 Sydney Harbour Bridge | 9 Darling Harbour |
| 4 Circular Quay | 10 Sydney Observatory |
| 5 Museum of Sydney | 11 Central Station |
| 6 The Domain | 12 Redfern Station* |

*Best option for public transport



VENUE MAPS

Level 1

700m

This way to Redfern Train Station




Level B2



DID YOU KNOW?

Parent/Quiet Room

- We have a room for those needing privacy or a quiet space during the day. Can watch streams of presentations on phone/laptop
- Open Tuesday-Thursday (Room #1050)

NZ Satellite Hub

- We are hosting a NZ Satellite Hub for those unable to travel but still wish to present.
- Present in person in Auckland, NZ
- Sydney sessions livestreamed

Free Wifi

- The University of Sydney has free Wifi for the duration of the Conference
- Access: acns2023guest
- Password: 61822810

Volunteers

- We have amazing volunteers helping to make the conference run smoothly
- They'll be wearing specially made eco-friendly Volunteer shirts so easy to spot!

SOCIAL EVENTS

Alongside the scientific program, the conference features many social events, including a welcome reception, a neural networking night and an early-career researcher dinner at Carriageworks BrewDog Bar



WELCOME RECEPTION

Abercrombie Building
Monday, 27th November @6:00pm

The conference's welcome reception will be held on Monday evening, following the keynote talk by Dr Lynn Nadel in the Abercrombie Building. Canapes will be provided by the amazing people at House of Welcome (who will also be providing food and refreshments during the conference) and our Drinks will be supplied by the great team at Mobile Bevvly who will serve a range of Australian beer and wine as well as an assortment of non-alcoholic varieties!

ECR SOCIAL

Carriageworks BrewDog Bar
Tuesday, 28th November @7:30pm

The ECR group will host a special social event for early-career researchers on Tuesday evening. It will be held at the Carriageworks BrewDog bar. A range of canapes will be served, as well as a selection of Australian and International wines, beers and soft drinks to be purchased at the bar. Please come join us for a great night out!



NEURAL NETWORKING NIGHT

Abercrombie Building
Wednesday, 29th November @6:00pm

The Neural Network Night will be held on the Wednesday evening at the conclusion of the day, and will feature a menu of high-quality vegetarian canapes, prepared by the skilled chefs at The House of Welcome. There will be a number of fun activities planned throughout the night, including Karaoke, a Scavenger Hunt and a Build-a-Brain Craft Station. Please join us for what plans to be a very fun night out!



WORKSHOPS

ACNS ECR ASK ME ANYTHING (AMA) WORKSHOP



Monday 27th November
@10:00am
ABS #1130

This workshop is designed to provide an opportunity for early career researchers to find answers to the questions (about academia, research, etc.) that are important to them. The workshop will be hosted by the ACNS ECR committee and four presenters (TBA) from different academic and non-academic areas will provide brief presentations before fielding questions from the audience. Questions can be submitted electronically and anonymously.

EEG METHODOLOGY: IMPLEMENTING AN EEG STUDY FROM DATA ACQUISITION THROUGH TO ANALYSIS AND INTERPRETATION OF RESULTS

Electroencephalography (EEG) has seen longstanding use as a powerful and cost-effective tool for non-invasively examining neural activity. EEG provides rich and temporally precise information on functional brain dynamics with wide-ranging applications spanning basic, cognitive, and medical sciences where it is frequently utilised to interrogate both spontaneous and task-related neural activity. However, EEG data are highly sensitive to aspects of the recording environment, as well as the specific acquisition, cleaning, and analysis parameters used. The EEG record is also typically contaminated with a host of biological and non-biological artifacts, which, if not adequately accounted for, can mask or obscure the neural signal. In this workshop, we will provide a comprehensive overview of best-practice EEG methodologies from recording of the EEG signal, to artifact reduction, and finally analysis and interpretation of results. This will include a 'hands on' demonstration of our recently released open-source and fully-automated 'RELAX' (Reduction of Electroencephalographic Artifacts) cleaning software, as well as demonstrations of multiple sophisticated analysis techniques for examining event-related potentials, neuronal oscillations, and non-oscillatory 1/f-like activity. It will also include discussion of theoretical and practical considerations for several common EEG analysis techniques and their interpretation.



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Monday 27th November
@1:00pm
ABS #1050

BRIDGING THE GAP BETWEEN COMPUTATIONAL INTELLIGENCE AND NEUROSCIENCE IN BRAIN-COMPUTER INTERFACES



Monday 27th November
@1:00pm
ABS #1060

Brain-Computer Interfaces (BCI) allow people to interact with the environment by directly processing brain signals, thus bypassing the natural pathways of nerves and muscles. In the last two decades, several systems have been proposed and a simple PubMed search of the term "Brain-Computer Inter-faces"; provides more than 3500 results, with a number of scientific publications that is still increasing exponentially over the years. BCIs represent a highly multidisciplinary research field, in which neuro-scientists, mathematicians, physicians, computer scientists, and engineers, to name few, interact to improve BCIs by proposing new neurophysiological paradigms, new brain signals recording methods and devices, or new mathematical methods. The richness generated by this multitude of expertise, however, has a major drawback that is that different languages and different points of view relative to deal with the same BCI system are used, thus causing confusion or difficulty to share ideas, data or tools. It is also very frequent that it is not possible to compare results from different experiments as different metrics are used. Even sharing data from BCIs

and time-consuming as different file formats, terminologies and methods are used. An example of this is provided by the excellent BNCI database (<http://bnci-horizon-2020.eu/database/> data-sets), a public database of BCI data which hosts almost a thousand of files from several experiments (actually 26) and various laboratories: many different file formats are used, even if similar experiments were performed and additional documents are necessary to fully comprehend how to retrieve the desired information. This implies that on one side a computer scientist needs to comprehend the complex neurophysiological details of the BCI experiment, whereas on the other side a neuroscientist needs to learn how to navigate into MatLab data structures or even binary files. This is avoidable if just a standard file format would be adopted which includes all the information required to perform BCI analyses. Moreover, this would allow releasing tools that could be used to retrieve useful information from the data or perform automatic processing.

WORKSHOPS

UNIFYING VR ENVIRONMENTS WITH STATE-OF-THE-ART EEG RESEARCH



**Monday 27th November
@1:00pm
ABS #1070**

This workshop, hosted by Max Mosimann from NEUROSPEC AG at the forthcoming ACNS conference, offers a comprehensive overview of designing, implementing, and executing EEG experiments within virtual environments. Participants will be introduced to a state-of-the-art dry active EEG system, distinguished by its superior noise resistance, rapid setup, and portability.

We will focus on the integration of this innovative EEG technology with virtual reality (VR) hardware. Through this practical short demonstration, attendees will gain insight into the design and setup of VR-based neuroscience experiments. Advancing neuroscience research into a virtual environment presents a myriad of benefits. By simulating real-life scenarios, researchers can probe neural responses in context by mirroring real-world environments. This transition not only enhances feasibility but also permits investigation of cognitive processes, previously inaccessible in conventional laboratory settings. Moreover, VR environments facilitate controlled

manipulation of sensory inputs, enabling precise examination of perceptual, behavioral and cognitive phenomena and functions.

By attending this workshop, you will acquire basic understanding and knowledge of expanding your EEG research to the virtual realm. This session represents a unique opportunity to engage with a transformative approach to EEG research.

Reserve your place with the organizers now, to join us in pioneering the next frontier of EEG experimentation. The past has proven, that this workshop promises to be an invaluable resource for those seeking to unlock the potential of dry active EEG technology within virtual environments.

Target audience

Any researcher interested in latest EEG experiment methodologies encompassing virtual reality (VR). The aim is to give researchers a basic understanding and introduction to combined EEG and VR experiments.

What you will learn

- Realistic Contexts for Research: Understand the advantages of virtual environments in replicating real-world scenarios for more accurate neural response studies.
- Cutting-Edge Dry Active EEG Technology: Explore advanced features of a revolutionary dry active EEG system, emphasizing its noise resistance, quick setup, and portability.
- EEG Integration with VR: Learn to seamlessly merge EEG with VR, creating a unified platform for virtual neuroscience experiments.

Session Length

Single session (2-3h) + Q&A Session

The Technology

Wireless, dry and active electrode EEG headsets are a relatively novel technology and most researchers haven't had the chance to see a system utilising this tech in action. Join Max from NEUROSPEC AG in this interactive and informative workshop on Wearable Sensing's most popular dry active EEG system, the DSI-24.

The Presenter

Maximilian Mosimann is the head of technology for NEUROSPEC AG in Switzerland and expert when it comes to the revolutionary dry active EEG headsets from Wearable Sensing. He has been with NEUROSPEC AG for 10 years. He studied computer science and medical engineering at the University of Applied Sciences in Lucerne, Switzerland where he focused on the research of methods for detection of early-onset dementia.



KEYNOTES

LYNN NADEL

Dr. Lynn Nadel is a cognitive neuroscientist whose work has focused on the functions of the hippocampus in memory and spatial cognition, leading to significant contributions in the study of stress and memory, sleep and memory, memory reconsolidation, and the mental retardation observed in Down syndrome. He has promulgated, with collaborators, two highly influential theories: the cognitive map theory of hippocampal function, and the multiple trace theory of memory.

He was raised in New York City, went to Stuyvesant High School, and then McGill University, where he received his BSc, MSc and PhD. He did an NIMH-sponsored postdoctoral fellowship in the lab of Jan Bures and Olga Buresova in Prague, Czechoslovakia, from 1967-70. He then spent six years as a Lecturer in the Anatomy Department at University College London, followed by a year at the VA hospital in San Diego, two years in the Psychology Department at Dalhousie University in Nova Scotia, and 5 years at UC Irvine, before settling at the University of Arizona, where he has served as Department Head, Interim Dean, and Chair of the Faculty in the 35 years he has been at Arizona.



Monday 27th November @5:00pm
ABS AUDITORIUM (#B2010)

He is a Fellow of the Association of Psychological Societies, the American Association for the Advancement of Science, and the Society of Experimental Psychologists, an Honorary Member of the European Brain and Behavior Society, and a member of the National Academy of Sciences.

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KEYNOTE TALK

Hippocampus: Action at a Distance

The hippocampal formation provides the core of a context-based memory system that enables actions at both spatial and temporal removes. It does this by creating representations of context – what O'Keefe and I labelled 'cognitive maps', that are critical to acting at a distance. Most simply, these internal maps allow organisms to act on the basis of entities (objects, people, goals, etc) that are at some distance, and not within visible, audible or olfactory range. Context representations support environment re-identification, allowing animals to correctly link up information gathered in the same environment over multiple occasions separated by significant temporal gaps. They support, as well, retrieval of contextually-appropriate knowledge, bringing information gathered in the past to bear on present behavior and future planning. This talk will review evidence in support of these assertions about the hippocampus, and consider various implications of its role in action at a distance.

KEYNOTES

MARY PETERSON



**Monday 27th November @5:00pm
ABS AUDITORIUM (#B2010)**

Dr. Mary Peterson is a Professor of Psychology and Cognitive Science and Director of the interdisciplinary Cognitive Science Program at the University of Arizona. In her research she uses ERPs, fMRI, and behavioral methods to investigate:

- the competitive processes producing object perception, and how they are affected by context;
- the reciprocal relationship between perception and memory;
- feedforward and feedback mechanisms in perception;
- how unconsciously activated knowledge affects attention and perception

Professor Peterson is a Fellow of AAAS, APA, APS, and the Psychonomic Society. She is an elected member of the International Neuropsychological Symposium (INS) and the Society of Experimental Psychologists (SEP). She has served on the Governing Boards of the Vision Sciences Society and the Psychonomic Society and as the Chair of the Governing Board of

the Psychonomic Society. She is a founding member of the Configural Processing Consortium, and is currently serving as the President (2016 – 2019). Dr. Peterson is one of the founding organizers of "Females of Vision, et al" (FoVea, founded in 2016), whose goal is to enhance the success of women in vision science (supported by NSF). She has been an active member of the advisory board of Women in Cognitive Science since its inception in 2000.

KEYNOTE TALK

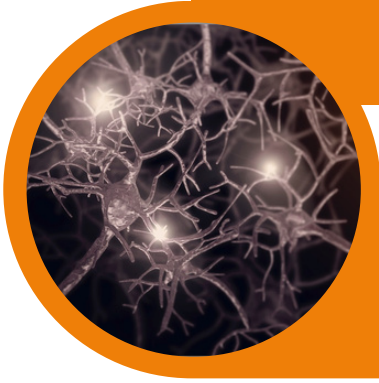
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Ambiguity and Recurrent Processing in Visual Object Detection

Visual perception has long been modeled by bottom-up, feedforward theories, making two fundamental assumptions: (1) that perception is unambiguous except in special cases and (2) that familiar object shape and meaning are activated at high levels only after objects are segregated in the visual input. An alternative view holds that a fast pass of processing identifies multiple high-level candidate objects that might be fit to the input and the best fitting interpretation is then chosen through top-down feedback and competition. I will first review behavioral, electrophysiological, and imaging evidence that familiar object shapes and meanings are activated unconsciously before object detection and that these potential interpretations compete for access to consciousness. I will then describe recent evidence suggesting that recurrent corticothalamic interactions play a critical role in resolving ambiguities that are never evident consciously. This body of evidence shows that visual perception involves recurrent processes that must be taken into account when modeling this basic cognitive capacity.

SYMPOSIUM

MOTOR SYSTEM PLASTICITY: NETWORKS AND NEURO-TRANSMITTERS IN HEALTH AND NEURODEGENERATION



CHAIRS

Ann-Maree Vallence

Murdoch University

George Opie

University of Adelaide

**Australian Business
School, Room #1130**

**Wednesday 29th November
@11:00am**

Historical and recent evidence demonstrates that our capacity to learn and control voluntary movements is underpinned by plasticity across cognitive-motor networks. Yet, the specific mechanisms mediating these changes, and how they are affected by neurodegeneration, remain unclear. This Symposium will showcase work providing insights into how neural networks and neurotransmitters influence motor plasticity in health and neurodegeneration. First, we will showcase how dorsal premotor cortex modulates the excitability of intracortical circuits within primary motor cortex during motor learning in young and older adults, and that high-intensity exercise influences primary motor cortex plasticity, complex motor skill learning, and associative memory in healthy ageing. Next, we will present evidence that dopamine plays a key role in motor cortex plasticity induced by exercise and brain stimulation, and such dopamine-dependent plasticity critically influences the learning of new skills. Given the implications of this evidence for our understanding of diseases involving dopaminergic dysfunction, we will conclude with research exploring the role of dopamine on cortical network connectivity in Parkinson's disease; we show that cortical motor connectivity is influenced by dopaminergic medication and associated with the severity of tremor. By employing diverse approaches that combine the innovative application of non-invasive brain stimulation with both acute pharmacological and behavioural intervention, these empirical projects shed light on motor skill learning and motor function in health, ageing, and disease. Collectively, the work has implications for the implementation of plasticity-inducing protocols to improve function in motor rehabilitation, particularly in populations with altered dopamine function.

Merrick Liao, University of Adelaide

Modulation of dorsal premotor cortex differentially influences visuomotor learning in young and older adults

James Coxon, Monash University

The effects of acute high-intensity exercise on motor cortical plasticity, learning, and memory in healthy older adults

Dylan Curtin, Monash University

Effects of dopamine (D2) receptor blockade on exercise-induced changes in excitation:inhibition balance and motor learning

Li-Ann Leow, University of Queensland

Exploring the role of dopamine in intensity-dependent effects of tDCS on motor learning

Jane Tan, Murdoch University

Cortico-cortical connectivity is modulated by levodopa in tremor-dominant Parkinson's disease

APERIODIC NEURAL ACTIVITY: EMERGING DEVELOPMENTS AND APPLICATIONS IN EEG RESEARCH

Electroencephalography (EEG) has seen longstanding use in cognitive and clinical neuroscience as an affordable and accessible means of non-invasively examining brain dynamics across health and disease. To date, the vast majority of EEG research has focussed on the analysis and interpretation of power within specific frequency bands, which are assumed to reflect oscillatory (i.e., periodic) neural signals within canonically defined frequency bands (e.g., delta, theta, alpha, beta, and gamma). However, recent research, spurred by new developments in EEG signal analysis techniques, has begun to highlight the physiological relevance of the broadband aperiodic (i.e., non-oscillatory) neural signal, and its contribution to traditional bandpower measures. Critically, this aperiodic signal, previously disregarded as 'noise', has been shown to reflect important physiological information that is related to perception, cognition, neurodevelopment, ageing, and clinical conditions. Additionally, without controlling for the contribution of the aperiodic signal to measure the spectral power, conclusions cannot be specific to oscillatory activity. The aperiodic signal is comprised of two key components: the exponent, which reflects the slope of the $1/f$ -like power distribution across frequencies, and the offset (broadband shift of power across frequencies). In this symposium, we will provide a comprehensive overview of this emerging research area and its application across healthy and clinical cohorts. We will also discuss methods to control for the $1/f$ slope when measuring oscillatory activity within the alpha and theta frequencies. We will then present several lines of research that have utilised these techniques in both clinical and non-clinical settings.

Aron Hill, Deakin University

An introduction to the aperiodic neural signal and its analysis in health and disease

Neil Bailey, Australian National University

Methods to control for the $1/f$ slope are inaccurate within theta frequencies, so spatio-temporal generalised eigenvector decomposition might be a good alternative for theta oscillations

Elysia Sokolenko, University of Adelaide

NMDA receptor antagonist-induced disruptions to oscillatory and aperiodic neural activity

Stefanie Evas, University of Adelaide, CSIRO

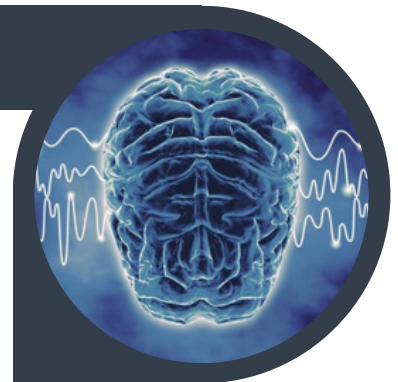
Exploring relationships between aperiodic brain activity and cognition in healthy older adults

Talitha Ford, Deakin University

Aperiodic exponent, an index of excitation-inhibition, may predict social difficulties in young adults

Nina-Francesca Parrella, Deakin University

Increased Aperiodic Exponent but Reduced Aperiodic Offset for Children with Autism Spectrum Disorder



CHAIRS

Talitha Ford

Deakin University

Aron Hill

Deakin University

**Australian Business
School, Room #1130**

**Wednesday 29th November
@2:30pm**

PREDICTIVE CODING ACROSS THE BRAIN: UNRAVELLING THE MIND'S PROPHETIC ENIGMA



CHAIRS

Reuben Rideaux

University of Sydney

Dominic Tran

University of Sydney

**Australian Business
School, Room #1130**

**Thursday 30th November
@11:00am**

Predictive coding is a compelling theory in cognitive neuroscience that offers a paradigm shift in our understanding of brain function. It posits that the brain is essentially a predictive machine, continuously generating and refining hypotheses about the world based on past experiences. This hypothesis-testing process aims to minimize the discrepancy between top-down predictions and the actual sensory input we encounter, thereby creating an efficient and flexible model of our external environment. The fundamental appeal of predictive coding lies in its capacity to offer a unified framework for understanding several cognitive processes, from perception and attention to learning and memory. Furthermore, predictive coding theory has important implications for our understanding of neurological and psychiatric disorders. Many mental health conditions, such as schizophrenia, autism, and depression, can be reinterpreted through the lens of predictive coding as disorders of prediction and inference. The principles of predictive coding extend even beyond cognitive neuroscience, intersecting with fields like artificial intelligence (AI) and robotics. The brain's predictive coding mechanism can serve as a model for developing more intelligent and adaptive artificial systems. The importance of predictive coding in cognitive neuroscience is multifaceted and profound. It has revolutionized our understanding of brain function, provided novel insights into mental health disorders, and inspired advancements in AI and robotics. This symposium will explore the implications and recent advancements of this influential theory, seeking to stimulate further exploration and understanding.

Jason Mattingley, *University of Queensland*

Violated predictions alter neural encoding within and between sensory modalities

Reuben Rideaux, *University of Queensland*

Unexpected visual events elicit faster and more accurate behavioural responses

Margaret Moore, *University of Queensland*

Expectation modifies the representational fidelity of complex visual objects

Dominic Tran, *University of Sydney*

Is awareness necessary for prediction-based motor attenuation?

Juanita Todd, *University of Newcastle*

Tuning to information content in probabilistic inference

Marta Garrido, *University of Melbourne*

Bayesian accounts of aberrant perception in Autism and Psychosis

AI FOR COGNITIVE NEUROSCIENCE: EXPLORING NEW HORIZONS

This symposium brings together experts in Cognitive Neuroscience and Artificial Intelligence (AI) from academia and industry. Its main focus is to explore how AI can help us gain new insights into how the human brain works. This is especially important because AI, like OpenAI's ChatGPT, has become very popular. For instance, ChatGPT garnered one million users in just five days, setting a record for the fastest adoption of technology in history. AI has been successfully used in fields like particle physics, functional genomics, and language preservation. This symposium explores how Cognitive Neuroscience can similarly benefit from AI by using its powerful processing capabilities to better understand human behaviour. Integrating AI into cognitive neuroscience research has several advantages. For example, researchers can create realistic situations using deepfakes and generative AI to help study how the brain responds to stimuli that resemble real-life experiences. Deep learning models, such as convolutional neural networks, have already provided important insights into how the brain processes visual information. More recently, large language models like ChatGPT have opened up new possibilities for research in cognitive neuroscience. The symposium will explore the benefits of using AI in cognitive neuroscience research. It will cover topics like deepfakes, generative AI, deep learning, and working with large language models like ChatGPT. By studying these areas, the symposium aims to show how AI can improve our understanding of the brain and human behaviour. The event will end with a discussion on how leveraging AI techniques can advance cognitive neuroscience and revolutionize our understanding of the complexities of the brain and human thinking.

Casey Becker, *RMIT University*

Using Deepfakes to Probe the Human Brain's Sensitivity to Biological Motion in Faces

Tijl Grootswagers, *The MARCS Institute, Western Sydney University*

AI-generated stimuli for cognitive neuroscience: pitfalls and potential

Astrid Zeman, *University of Melbourne*

Is it the architecture, the task, or the input? What deep neural networks can and cannot tell us about neural computation

Patrick Cooper, *Data61, CSIRO*

Large language models as cognitive co-pilots: Opportunities and challenges



CHAIRS

Patrick Cooper

Data61, CSIRO

Tijl Grootswagers

Western Sydney University

**Australian Business
School, Room #1130**

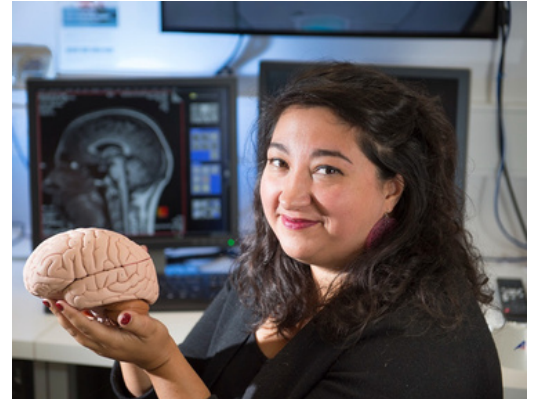
**Thursday 30th November
@2:30pm**

2023 ACNS AWARD WINNERS

YOUNG INVESTIGATOR AWARD

SHARNA JAMADAR

Sharna is Associate Professor (Research) and NHMRC Emerging Leader Fellow at the Turner Institute for Brain and Mental Health and Monash Biomedical Imaging at Monash University. Her research program examines how our life experiences change our brains, with two core research streams. First, the development of novel simultaneous PET/MR methods for studying brain connectivity and cognitive reserve; and second, proposing and exploring the novel hypothesis that parenthood contributes to a person's cognitive reserve. This award recognises Sharna's scientific contributions (including over 65 peer-reviewed publications); and her long-standing service to the discipline including ACNS, ARC, NHMRC and numerous Australasian and international bodies.



EMERGING RESEARCHER AWARD



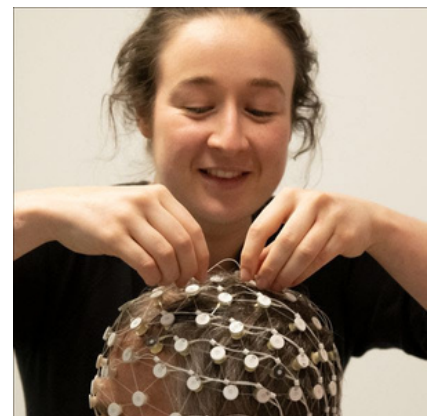
FERNANDA RIBEIRO

Fernanda is a Postdoctoral Research Fellow at the University of Queensland, with an interdisciplinary background in biophysics, neuroscience and computer science. Her research interests encompass three main areas: visual neuroscience, deep learning, and the development of explainable and fair AI for medical imaging. Fernanda's ultimate goal is to bridge the gap between biological and computer vision to create more robust and impactful AI models for society. Her work has been published in 5 peer-reviewed articles and 3 full conference proceedings, including her most recent work "Variability of visual field maps in human early extrastriate cortex challenges the canonical model of organisation of V2 and V3", in press in eLife.

EMERGING RESEARCHER AWARD

ISABELLA BOWER

Isabella is a Postdoctoral Research Fellow at the University of South Australia, and an emerging leader in environmental cognitive neuroscience. Her research explores whether we can improve brain function and mental health through built environment design. Isabella notes that we currently build our environment with an evidence base that only considers the physical needs of the occupants, and it is her goal to raise awareness and build an evidence base that considers the intended psychological health and performance needs in mind. This award recognises Isabella's early career contributions to cognitive neuroscience, including 5 peer reviewed publications, and her most recent work "Functional brain connectivity during exposure to the scale and color of interior built environments" published in Human Brain Mapping.



2023 ACNS AWARD WINNERS

SHARNA JAMADAR

**THE APPLICATION OF SIMULTANEOUS PET/MR FOR
THE STUDY OF HUMAN BRAIN CONNECTIVITY**

Brain connectivity is a multidimensional construct. While the most common approaches examine structural (e.g., white matter tractography, grey matter covariance), haemodynamic (BOLD-fMRI) and electrophysiological (M/EEG) dimensions of brain connectivity, connectivity also occurs over other dimensions. Metabolic connectivity refers to coherence of time-varying glucose metabolic signals. We have recently developed a new [18F]-fluorodeoxyglucose positron emission tomography (FDG-PET) approach (called 'fPET') that allows within-subject metabolic connectivity to be measured for the first time. In this presentation, I will present an overview of the development of simultaneous fPET-fMRI measures for the study of human brain function, as well as the application of the method to resting-state brain connectivity. I will demonstrate that metabolic connectivity provides a unique, but complementary, insight to functional brain connectivity by comparison to fMRI; and that the method shows promise for understanding changes in brain connectivity in healthy ageing.

**EXPLORING HUMAN VISION USING COMPUTER
VISION: NEW INSIGHTS FROM A DEEP LEARNING
MODEL OF RETINOTOPY ON THE FUNCTIONAL
ORGANIZATION OF HUMAN VISUAL CORTEX**

FERNANDA RIBEIRO

The visual system is comprised of several functionally specialized cortical visual areas, nearly all of which mirror the visual field. In these areas, adjacent neurons represent adjacent locations on the retina (and hence in the visual field), resembling a miniature map of the outside world – the so-called retinotopic maps. The detailed organization of these cortical maps is tightly coupled with the underlying anatomy, with cortical shape being a useful predictor of the retinotopic organization in early visual cortex in computational models. However, these models fail to predict individual differences in these functional maps. In this talk, I will show that geometric deep learning algorithms can be leveraged to predict the functional organization of the human visual cortex from underlying anatomy at the individual-level. Moreover, these models have offered new insights into the individual variability in retinotopic maps of early visual areas, revealing that many individuals' retinotopic maps deviate from the canonical model of organization of these areas.

ISABELLA BOWER

HOW DO OUR ENVIRONMENTS AFFECT OUR MINDS?

Isabella's research aims to raise awareness and establish an evidence base for building environments with the intended psychological health and performance needs in mind. Her doctoral research investigated if design characteristics of the built environment triggered modulations in autonomic or oscillatory measures, alongside changes to self-reported emotion. She is currently exploring the impact of built environments on cognitive processes such as working memory and emotion recognition, alongside expanding her focus to explore the impact on different cohorts and contexts.

CONFERENCE SCHEDULE

Day 1 | Monday 27th November

0930-1000	Registration Open		ABS Corridor
1000-1200	Workshop I ECR Workshop ACNS ECR Ask Me Anything (AMA) workshop		ABS #1110
1200-1300	Break		
1300-1700	Workshop II (ABS #1050) EEG methodology: Implementing an EEG study from data acquisition through to analysis and interpretation of results.	Workshop III (ABS #1060) Bridging the gap between Computational Intelligence and neuroscience in Brain-Computer Interfaces	Workshop IV (ABS #1070) Unifying VR Environments with State-of-the-Art EEG Research
1700-1800	Welcome to Country Maxine Ryan Keynote #1 Lynn Nadel Talk Hippocampus: Action at a Distance		Auditorium #B2010
1800-1930	Welcome Reception		ABS Corridor

Day 2 | Tuesday 28th November

0830-0900	Registration Open		ABS Corridor
	Parallel Fast Talks		
	Clinical & Executive Function (ABS #1110)	Attention and Perception (ABS #1130)	
0900-0910	Temporal patterns of self-reported depression symptoms in spinocerebellar ataxia type 6 <i>Louisa Selvadurai</i>	Strategies for supporting sustained attention during lectures and their impact on memory <i>Patricia Morada Macabulos</i>	
0910-0920	The contribution of motivational disturbances to behavioural rigidity in frontotemporal dementia <i>Kristina Horne</i>	Investigating Deployment Patterns of Covert Attention using Steady-State Visual Evoked Potential <i>Yangyulin Ai</i>	
0920-0930	Efficacy and neural mechanisms of computerised cognitive training in Huntington's disease: interim analyses of a randomised controlled trial <i>Katharine Huynh</i>	Towards ecological validity in expression discrimination: forced-choice saccadic responses to posed and spontaneous stimuli <i>Natalie Peluso</i>	
0930-0940	Predicting longitudinal cognition and mood changes in newly diagnosed Parkinson's Disease from substantia nigra imaging <i>Benjamin Ellul</i>	Distinguishing attentional capture from stopping in action cancellation: An fNIRS/EMG approach <i>Sarah Kemp</i>	
0940-0950	Modifiable Factors of Dementia Risk Associated with Reduced White Matter Volume and Altered 1/f Aperiodic Brain Activity: Cross-Sectional Insights from the LEISURE Study <i>Thomas Pace</i>	Investigating the effect of beta tACS on motor cortical brain waves in healthy adults <i>Kym Wansbrough</i>	

0950-1000	Complex higher thought and strategy processes in corpus callosum dysgenesis <i>Georgia Marsh</i>	Cerebellar activity alters low-dimensional patterns in a sensorimotor adaptation task <i>Joshua Tan</i>	
1000-1010	Frontocentral pink noise reactivity is associated with executive function in healthy older adults, but not those with mild cognitive impairment <i>Aland Astudillo</i>	How the spontaneous perception of face pareidolia unfolds over time <i>Greta Stuart</i>	
1010-1020	Neurochemical predictors of generalised learning induced by brain stimulation and training <i>Shane Ehrhardt</i>	Visual Snow Syndrome symptoms are more common in poor sleepers <i>Amy Claire Thompson</i>	
1030-1100	Morning Tea		<i>ABS Corridor</i>
	Parallel Open Talks		
	Executive Function <i>(ABS #1110)</i>	Attention and Executive Processes <i>(ABS #1130)</i>	
1100-1115	Adolescent Metacognitive Ability Predicts Spontaneous Task Strategy Adjustment <i>Kali Chidley</i>	Meta-analysis shows Pseudoneglect is caused by a rightward attentional bias in the representation of space <i>Marta Garrido</i>	
1115-1130	A new approach to understanding Stroop phenomena from an epistemological processing model: A meta-analytic study <i>Guan Wang</i>	Attentional control in a fearful state <i>Gina Grimshaw</i>	
1130-1145	Comparing 3-Tesla and 7-Tesla functional magnetic resonance imaging during a higher-order cognitive task: gains in statistical power at 7-Tesla <i>Linzhi Tao</i>	Mice with an autism-associated R451C mutation in neuroligin-3 exhibit deficits in attention orienting and altered responses to a cholinergic antagonist <i>Shuting Li</i>	
1145-1200	Metacognition is mentally demanding: revealing the costs and consequences of metacognitive effort <i>Julian Matthews</i>	Merging a novel VR EEG paradigm with analysis of continuous data to inform the diverse genders bathroom debate: a feasibility discussion <i>Taz Clifford</i>	
1200-1215	Probabilistic inference shows sub-optimal knowledge transfer <i>Sophie Lin</i>	White matter morphology of the middle cerebellar peduncle is associated with motor imagery in childhood <i>Mugdha Mukherjee</i>	
1215-1230	Central and peripheral contributions of acetylcholine on cognitive performance <i>Alexander Weuthen</i>	EEG decoding of shared touch representations in people who experience vicarious touch <i>Sophie Smit</i>	
1230-1245	Beyond top-down and bottom-up processing: uncovering dimensional biases and their basis in cognitive tasks across humans and macaques <i>Daniel Fehring</i>	Dopamine D2-receptor blockade modulates the invigoration of motor actions by reward signals <i>Huw Jarvis</i>	
1245-1300	Comparative studies of cognitive control in anthropoids <i>Farshad Mansouri</i>		
1300-1430	Lunch / Poster Session I		<i>ABS Corridor</i>
	Parallel Open Talks		
	High Level Perception <i>(ABS #1110)</i>	Clinical I <i>(ABS #1130)</i>	

1430-1445	Stimulus expectations do not modulate visual event-related potentials in probabilistic cueing designs <i>Daniel Feuerriegel</i>	Influence of cognitive reserve on cognitive and motor function in α-synucleinopathies: A systematic review and multilevel meta-analysis <i>Isaac Saywell</i>	
1445-1500	A Biophysical Model of Visual Rivalry Links Cellular Mechanisms to Signatures of Conscious Perception <i>Christopher Whyte</i>	Amygdala subregional volume changes in frontotemporal dementia and Alzheimer's disease and their associations with social cognitive deficits <i>Mengjie Huang</i>	
1500-1515	Action sharpens neural representations of predictable sensory input: An ERP study <i>Imogen Clarke</i>	Structural integrity of cholinergic pathways associated with executive function networks in Parkinson's disease <i>Nicola Slater</i>	
1515-1530	Auditory working memory overload increases SSVEP magnitude <i>Oren Griffiths</i>	Cardiometabolic disease risk factors and cognitive function in bipolar disorder: Findings from the UK Biobank <i>Elysha Ringin</i>	
1530-1545	Predicting similarity judgements for naturalistic images using low-level features <i>Emily A-Izzeddin</i>	Augmented functional connectivity of spoken language processing in healthy ageing and in early-stage Parkinson's disease: MEG evidence <i>Yury Shtyrov</i>	
1545-1600	The effect of dopamine D2 receptor blockade on human motor skill learning <i>Eleanor Taylor</i>	Exploring the relation between the cerebello-cerebral pathways and word learning in children with developmental language disorder <i>Cheyenne Svaldi</i>	
1600-1615	Precision-weighted inference in bistable perception? <i>Tim Gastrell</i>	Impact of SaiLuoTong (SLT) on resting EEG activity and plasma pro-inflammatory cytokines in people with mild cognitive impairment: an fPCA study <i>Lauren Dewsbury</i>	
1615-1630	Pink polygon or polygon and pink? Dissociating conjunctive and relational polygon-colour associations in synaesthesia <i>Nora Holmes</i>	Aging of the locus coeruleus and its contribution to memory <i>Ilana Bennett</i>	
1630-1700	Afternoon Tea		<i>ABS Corridor</i>
1700-1800	NZ Special Symposium <i>(Streamed Live from the University of Auckland)</i> The (Limited?) Utility of Brain Age as a Biomarker for Capturing Fluid Cognition in Older Individuals <i>Narun Pat</i> Investigating the role of brain iron in acute sports-related mild traumatic brain injury <i>Christi Essex</i> Benchmark Machine-Learning Based Multimodal MRI to Capture Cognitive Abilities across the Lifespan: Predictability, Reliability and Generalisability <i>Alina Teterova</i> Artificial intelligence for clinical decision support: Opportunities, challenges and ethics <i>Mangor Petersen</i>		<i>Auditorium #B2010</i>
1800-1930	Emerging Researcher Award Winner - Fernanda Ribeiro Emerging Researcher Award Winner - Isabella Bower Young Investigator Award - Sharna Jamadar		<i>Auditorium #B2010</i>

Day 3 | Wednesday 29th November

0830-0900	Registration Open	ABS Corridor
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Parallel Fast Talks		
	Executive Function (ABS #1110)	Perception and Action (ABS #1130)
0900-0910	Withdrawn	Don't let your emotions have the upper hand: Cross-modal correspondence effect is not affected by induced emotional states <i>Olga Shcherbakova</i>
0910-0920	The effect of age on response inhibition in the pre-frontal cortex <i>Marlee Wells</i>	Examining the interactions between cardiorespiratory exercise, neuroplasticity, and motor sequence learning <i>Joshua Hendrikse</i>
0920-0930	Individual Differences in Neural Adaptations to tDCS and Multitasking Training Underlie Learning Generalisation <i>Yohan Wards</i>	Supplementary motor area disinhibition during motor sequence learning: A TMS-EEG study <i>Sophie Thong</i>
0930-0940	Stuck in a rut: low-dimensional brain state reconfigurations govern response inhibition <i>Natasha Taylor</i>	What does cortical inhibition in motor cortex tell us about preventing an action? Investigations of proactive and reactive inhibitory control using TMS <i>Evan Livesey</i>
0940-0950	Response inhibition and action execution in marmosets, probed with a Stop-Signal Task <i>Ranshi Samandra</i>	Dissociable modulatory effects of motor-based predictions and prior expectations on sensory processing of inner speech <i>Lawrence Chung</i>
0950-1000	Age Differences in Inhibitory Control and Prefrontal Cortex Activity in a Combined Stop-Signal Flanker Task <i>Rebecca Healey</i>	The time-course of action control: Measuring conditioned tendencies and their suppression using TMS <i>Yvonne Chan</i>
1000-1010	Exploring the Reliability of tDCS; A Registered Report <i>Nick Willmot</i>	Comparing Force Acquisition Methods and Sensorimotor Memory Effects in Object Lifting <i>Jarrod Harris</i>
1010-1020	Prepared for prejudice? Exploring the Emergence of Prejudice in 6-month-old Infants <i>David Butler</i>	Decoding how the human visual motion system rewrites its failed predictions <i>Mia Nightingale</i>
1020-1030	Withdrawn	Extended source analysis of movement related potentials (MRPs) for self-paced hand and foot movements demonstrates opposing cerebral and cerebellar laterality <i>Neil Todd</i>
1030-1100	Morning Tea	
	Open Talks Clinical II (ABS #1110)	Symposia I: Motor system plasticity: networks and neurotransmitters in health and neurodegeneration (ABS #1130) <i>Chairs: Ann-Maree Vallence & George Opie</i>
1100-1115	Parkinson's disease anxiety: Understanding it's development over the disease course <i>Kyla-Louise Horne</i>	Modulation of dorsal premotor cortex differentially influences visuomotor learning in young and older adults <i>Merrick Liao</i> The effects of acute high-intensity exercise on motor cortical plasticity, learning, and memory in healthy older adults <i>James Coxon</i>
1115-1130	Schizotypy and Perceptual Span in a Non-Clinical Sample: A Virtual Reality Study <i>Kaitlin Moat</i>	
1130-1145	Do specific anxiolytics and a panicolytic affect conflict-related theta power in a predator escape task? <i>Shabah Mohammad Shadli</i>	

1145-1200	Therapy to Reduce dementia risk In Parkinson's disease (TRIP): Trial update <i>Ji Hyun Julia Yang</i>	Effects of dopamine (D2) receptor blockade on exercise-induced changes in excitation:inhibition balance and motor learning. <i>Dylan Curtin</i> Exploring the role of dopamine in intensity-dependent effects of tDCS on motor learning <i>Li-Ann Leow</i> Cortico-cortical connectivity is modulated by levodopa in tremor-dominant Parkinson’s disease <i>Jane Tan</i> Panel Discussion	
1200-1215	Characterising neurocognitive intra-individual variability in bipolar disorder; brain, behaviour and beyond <i>Georgia Caruana</i>		
1215-1230	Adaptive safety coding in the prefrontal cortex <i>Sarah Tashjian</i>		
1230-1245	Elucidating the role of semantic memory in scene construction - evidence from semantic dementia <i>Thanh Vinh Cao</i>		
1245-1300	Sense of self fluctuates by trimester during first pregnancy: Findings from self-report and cognitive tasks <i>Kelsey Perrykkad</i>		
1300-1430	Lunch / Posters		ABS Corridor
	Open Talks Attention and Perception <i>(ABS #1110)</i>	Symposia II: Aperiodic neural activity: Emerging developments and applications in EEG research <i>(ABS #1130)</i> <i>Chairs: Talitha Ford & Aron Hill</i>	
1430-1445	Enhanced responding to explicitly predicted inputs cannot be explained by priming via the imagination <i>Derek H. Arnold</i>	An introduction to the aperiodic neural signal and its analysis in health and disease <i>Aron Hill</i>	
1445-1500	Investigating a novel motion-induced "splitting" illusion <i>Joseph Melling</i>	Methods to control for the 1/f slope are inaccurate within theta frequencies, so spatio-temporal generalised eigenvector decomposition might be a good alternative for theta oscillations <i>Neil Bailey</i> NMDA receptor antagonist-induced disruptions to oscillatory and aperiodic neural activity <i>Elysia Sokolenko</i> Exploring relationships between aperiodic brain activity and cognition in healthy older adults. <i>Stefanie Evas</i> Aperiodic exponent, an index of excitation-inhibition, may predict social difficulties in young adults <i>Talitha Ford</i> Increased Aperiodic Exponent but Reduced Aperiodic Offset for Children with Autism Spectrum Disorder <i>Nina-Francesca Parrella</i> Panel Discussion	
1500-1515	Out of the corner of my eye: detecting threat stimuli in space <i>Tess Barich</i>		
1515-1530	Localising Correction-for-Extrapolation Mechanisms with a Dichoptic "Twinkle-Goes" Illusion <i>Jack Henderson</i>		
1530-1545	Binocular Rivalry and Objectively Measuring the Intensity of Imagination <i>Loren Bouyer</i>		
1545-1600	Tonic vergence in a virtual reality head-mounted display <i>Logan McIntosh</i>		
1600-1615	Investigating and modelling the precision of visual working memory in aphantasia <i>Rebecca Keogh</i>		
1615-1630	Spatial and temporal complexity modulates pareidolia in dynamic fractal noise <i>Lindsay Peterson</i>		
1630-1700	Afternoon Tea		ABS Corridor
1700-1800	Keynote #2 Ambiguity and Recurrent Processing in Visual Object Detection <i>Mary Peterson</i>		Auditorium #B2010
1800-2100	Neural Network Night		ABS Corridor

Day 4 | Thursday 30th November

0830-0900	Registration Open	ABS Corridor
	Parallel Fast Talks	
	Perception, Attention and Memory (ABS #1110)	Emotion, Memory and Language (ABS #1130)
0900-0910	Right frontal transcranial magnetic stimulation reduces conflict-elicited forgetting <i>Irina Harris</i>	Exploring emotional biases during inhibitory control performance: Insights from an emotional antisaccade task in patients with euthymic bipolar disorder <i>Reuben Dyer</i>
0910-0920	Adding noise can remove response biases in addition to improving perceptual performance <i>Elise Rowe</i>	Approaching emotional faces: differential electrophysiological dynamics for filtered stimuli by low and high spatial frequencies <i>Zhou Yu</i>
0920-0930	Testing for stimulus repetition and expectation effects using multivariate pattern analysis <i>Carla den Ouden</i>	Dimensionality of Positive Affect Valence <i>Gabriel Brandolini</i>
0930-0940	Characterising pre-activation of expected stimulus representations in the visual system <i>Morgan Kikkawa</i>	Vigilance and avoidance for the ensemble perception of faces in social anxiety <i>Xin Luo</i>
0940-0950	Interaction and observation mode in the macaque visual cortex <i>Jessica Taubert</i>	Investigating Fluency in Amyotrophic Lateral Sclerosis: Verbal and Nonverbal Domains <i>Megan Barker</i>
0950-1000	Audiovisual spatial ventriloquism is reduced in musicians <i>Matthew O'Donohue</i>	Regular rhythmic primes can boost sentence perception and production in children with and without developmental language disorders <i>Anna Fiveash</i>
1000-1010	Colour information biases facial age estimation and reduces inter-observer variability <i>Jean Hsieh</i>	Exploring Directed Forgetting Mechanisms Applying cTBS Over the Dorsolateral Prefrontal Cortex <i>Olga Lucia Gamboa Arana</i>
1010-1020	Big brother: the effects of surveillance on fundamental aspects of social vision <i>Kiley Seymour</i>	Withdrawn
1020-1030	Using a dynamic network perspective to understand inertia of negative emotions in dysphoria <i>Tao Chen</i>	Investigating emotion expression of the body through generative modelling of human gait <i>Liam Crowley-de Thierry</i>
1030-1100	Morning Tea	
	Open Talks Individual Differences and Executive Function (ABS #1110)	Symposia III: Predictive coding across the brain: Unravelling the mind's prophetic enigma (ABS #1130) <i>Chairs: Reuben Rideaux & Dominic Tran</i>
1100-1115	The impact of error feedback on memory accuracy in retrieval training <i>Maya Al Safadi</i>	Violated predictions alter neural encoding within and between sensory modalities <i>Jason Mattingley</i>
1115-1130	The Impact of Room Geometry on Affective States, Physiological Responses, and Creative Output <i>Oliver Baumann</i>	Unexpected visual events elicit faster and more accurate behavioural responses <i>Reuben Rideaux</i>

1130-1145	Say "ahh" or tell a story: Speaking reduces acute pain <i>Adrian Gonzales</i>	Expectation modifies the representational fidelity of complex visual objects <i>Margaret Moore</i> Is awareness necessary for prediction-based motor attenuation? <i>Dominic Tran</i> Tuning to information content in probabilistic inference <i>Juanita Todd</i> Bayesian accounts of aberrant perception in Autism and Psychosis <i>Marta Garrido</i> Panel Discussion	
1145-1200	On the causal neural substrates of mind wandering and dynamic thought <i>Tara Rasmussen</i>		
1200-1215	Exploring inner speech with EEG: developing an objective marker of an inherently subjective experience <i>Thomas J. Whitford</i>		
1215-1230	Mindful Appraisal of Facial Expressions <i>Yeow Khoon Pua</i>		
1230-1245	Temporal stability of Bayesian belief updating in perceptual decision making <i>Isabella Goodwin</i>		
1245-1300	Effects of Perceptual and Decisional History in Orientation Perception <i>Zoe Little</i>		
1300-1430	Lunch / Posters		ABS Corridor
	Open Talks Perception, Decision Making and Executive Function <i>(ABS #1110)</i>	Symposia IV: AI for Cognitive Neuroscience: Exploring New Horizons <i>(ABS #1130)</i> <i>Chairs: Patrick Cooper & Tijl Grootswagers</i>	
1430-1445	Processes of learning depend on context <i>Bryan Paton</i>	Using Deepfakes to Probe the Human Brain’s Sensitivity to Biological Motion in Faces <i>Casey Becker</i> AI-generated stimuli for cognitive neuroscience: pitfalls and potential <i>Tijl Grootswagers</i> Is it the architecture, the task, or the input? What deep neural networks can and cannot tell us about neural computation <i>Astrid Zeman</i> Large language models as cognitive co-pilots: Opportunities and challenges <i>Patrick S. Cooper</i> Panel Discussion	
1445-1500	Sigma power and encoding strength in sleep-based and retrieval-mediated memory consolidation <i>Hayley Bree Caldwell</i>		
1500-1515	HumanBrainAtlas: and full brain vivo MRI atlas <i>Mark Schira</i>		
1515-1530	Clarifying retinal and cognitive influences on crossmodal correspondence <i>John McEwan</i>		
1530-1545	Temporal dynamics of food attribute representations in dietary decision-making <i>Violet Chae</i>		
1545-1600	Top-down vs bottom-up origins of sensory uncertainty in early visual cortex <i>Joshua Corbett</i>		
1600-1615	The cognitive permeability of core object representations <i>Amanda Robinson</i>		
	Withdrawn		
1630-1700	Afternoon Tea		ABS Corridor
1700-1800	AGM		Auditorium #B2010
1800-1830	Prizes Announced		Auditorium #B2010

POSTERS

Poster Session I | Tuesday 28th November

1	Changes in neural excitability modulate enumeration performance inside and outside the subitizing range	Anthony Harris
2	The impact of conversation on sustained visual attention and vigilance in a dynamic environment	Jordan Ratcliffe
3	Visual periodicity reveals distinct attentional signatures for face and non-face categories	Genevieve Quek
4	Abnormal default mode network functional connectivity is associated with poorer attention in children with acquired brain injury: A HD-EEG study	Athena Stein
5	Resting-state functional connectivity changes after future thinking intervention in schizophrenia patients	Jia-Li Liu
6	Not just a head knock: Investigating neuroplastic changes within the DLPFC following mTBI	Emily Moore
7	Do Cardiovascular Risk Factors Mediate the link between Cognition and Brain Structure in Healthy Ageing?	Nicholas Ware
8	The (Even) Smarter Screen - replicating decision making research in a modern Australian context	Zoey Isherwood
9	Changes of mind improve decision-making under speed pressure.	Caleb Stone
10	Perceptual uncertainty reduces loss aversion in value-based decisions	Andrew Mckay
11	Altered Task-Induced Functional Decoupling of the Frontocingulate Cortex as a Marker of Depression	Christine Leonards
12	Down-regulating intense negative emotional responses: comparing cognitive reappraisal to suppression and distraction.	Christopher Maymon
13	Withdrawn	
14	Withdrawn	
15	Effects of fear on proactive and reactive control: an investigation using the AX-Continuous Performance Task in virtual reality	Jordan Schulde
16	The effect of using group-averaged or individualized brain parcellations when investigating connectome dysfunction in psychosis	Priscila Thalenberg Levi
17	Quality and Practicality: A 3T MRI Protocol for the Human Brain Atlas Project Suitable for Precise Hippocampus Segmentation and Children.	Brooklyn Wright
18	Structure-function relationships between the hippocampus and cortical mantle: new insights using track-weighted dynamic functional connectivity	Marshall Dalton
19	Using magnetoencephalography (MEG) to uncover the neural pattern of motion silencing	Tabea-Maria Haase
20	Predicting behavioural errors before they occur based on task-relevant stimulus representations measured using EEG	Benjamin Lowe

Poster Session I | Tuesday 28th November (cont.)

21	The role of agent form and intentional stance on social cue integration during joint attention interactions in virtual reality	Friederike Charlotte Hechler
22	The effect of hunger on the visual processing of food in the brain	Denise Moerel
23	Withdrawn	
24	How does the human visual system represent the position of objects encoded in position-invariant cortical areas?	Hinze Hogendoorn
25	Investigating the Dynamic Processing of Perceptual, Conceptual, and Contextual Aspects of Objects in EEG	Ariel Kim
26	Cortical plasticity in visually-impaired during adaptive go/no-go auditory and tactile discrimination: an ERP and ERS/ERD study	Nidhi Aggarwal
27	Real-time temporal alignment in hierarchical neural representations of a moving object's position	William Turner
28	Withdrawn	
29	Recent experience and spatial structure recognition	Lydia Barnes
30	What to expect when you're exploring: the role of uncertainty in visual foraging	Sylvie Loneran
31	Prior probability cues bias sensory encoding with increasing task exposure	Kevin Walsh
32	Uncovering the Multidimensional Representation of Spontaneous Facial Expressions	Houqiu Long
33	What do we see in random noise? A male bias in the perception of illusory faces.	Kritika Sarna
34	Eye and hand movements and brain activity underlying visuomotor inhibition: A synchronisation of eye tracking, kinematic behaviour and magnetoencephalography in reach-to-grasp Go/No-Go task	Gemma Lamp
35	What came first matters: Prior context entropy differentially biases predictive updating in mismatch negativity	Matthew Godfrey

Poster Session II | Wednesday 29th November

1	Sleep-like slow waves and inattention: a multimodal neuroimaging study	Aniko Kusztor
2	Investigating the neurostructural correlates of sustained attention in a group of healthy older adults	Ciara Treacy
3	Surface-based attention alters appearance in temporal transparency	Arsiak Ishaq
4	The trajectory aftereffect: its relationships with attention and orientation processes	Ryohei Nakayama
5	Withdrawn	

Poster Session II | Wednesday 29th November (cont.)

6	Localizing the neural mechanisms of premonitory urge in Tourette syndrome: an activation likelihood estimation meta-analysis	Daniel Corp
7	Measuring treatment response using KP biomarkers: Sub-study of a 12-month randomised controlled trial of curcumin for cognition in older people	Najwa-Joelle Metri
8	The Structural Connectome Constrains In vivo Synaptic Density Loss in Schizophrenia	Sidhant Chopra
9	Temporal features of brain network connectivity underlying cognition in Schizophrenia	Jodie Naim-Feil
10	Uncovering a stability signature of brain dynamics associated with meditation experience using massive time-series feature extraction	Neil Bailey
11	Exploring the underlying neurochemistry of mind-wandering and meta-awareness	Kara Parsons
12	Novel symbol learning and transfer to mental arithmetic problem-solving: a pilot study	Jacob Paul
13	Cognitive deficits in early parenthood are common to birthgiving and non-birthgiving parents: Outcomes from the CAREMAP study	M Navyaan Siddiqui
14	Does multilingualism confer executive functioning advantages in older adults? Reviewing cognitive and neuroscientific evidence.	Olivia Maurice
15	A Cognitive-Linguistic Investigation of the Concept and Skill of Innovation	Lourenço Dias Amador
16	Structurally informed generative models of resting-state effective connectivity	Matthew Greaves
17	Cortical columns - Linking structure to function using ultra-high field fMRI	Harriet Dempsey-Jones
18	Spatially-embedded recurrent neural networks reveal widespread links between structural and functional neuroscience findings	Danyal Akarca
19	A Tinbergenian Perspective on Visual Self-recognition: Why Does Recognising One's Own Appearance Matter?	David Butler
20	Walking entrains oscillations in performance on complex and crossmodal tasks	Matt Davidson
21	Forward encoding of neural responses to audiovisual stimuli reveals super-additive multisensory enhancement	Zak Buhmann
22	Isolating the neural correlates of the contents of conscious perception by decoding the flash-grab effect	Timothy Cottier
23	The network-level dynamics of visual perception and aphantasia	Chanelle Noble
24	Selective Inhibition of Reactive or Anticipated Movements	Simon Weber
25	A dynamic disadvantage? Morphs elicit brain responses distinct from videos and photos	Robin Laycock
26	Evidence from prosopometamorphopsia and mouth-specific distortions for independent representations of individual face features	Alexis Kidder
27	Opposite effect of spatial and temporal contextual modulation on perceived walking direction	Chang Chen
28	Perception of surface colour for briefly presented stimuli	Sonal Arora

Poster Session II | Wednesday 29th November (cont.)

29	A Systematic Review of the Cognitive and Social Processing Effects of Classical Psychedelics	<i>Sally Meikle</i>
30	Withdrawn	
31	Neuronal correlates of tactile decision making in humans	<i>Mehdi Adibi</i>
32	Perceptual decision-making at fixation is biased by task-irrelevant contralesional stimuli following unilateral stroke	<i>Dragan Rangelov</i>
33	Trust in humans and autonomous systems during a co-operative image recognition task & preliminary results from an fMRI study	<i>Daniel Rogers</i>

Poster Session III | Thursday 30th November

1	The effects of attention on the mismatch negativity: An ERP and decoding study	<i>Lilli Donovan</i>
2	Withdrawn	
3	Gaze adaptation beyond the horizontal	<i>Kit Fu</i>
4	Dispersion of functional gradients in Parkinson's disease altered by dopamine	<i>Isabella Orlando</i>
5	Catecholaminergic drug modulation of large scale dynamics and cognitive control varies by genotype	<i>Gabriel Wainstein</i>
6	Task performance and variability in Friedreich's ataxia displays functional vs. quality of life correlational clustering	<i>Sarah Wallis</i>
7	Decreased working memory capacity in the chronic phase of concussion	<i>Amaya Fox</i>
8	Brain Functional Connectivity Correlates of Age-Related Sequence Memory Impairments	<i>Catalina Trujillo Llano</i>
9	Neural mechanisms of autobiographical memory control: A systematic review	<i>Agnieszka Bachfischer</i>
10	Predicting sleep-based memory consolidation using the EEG aperiodic slope.	<i>Annaliese Anesbury</i>
11	tCFS: A New "CFS tracking" Paradigm Reveals Uniform Suppression Depth Regardless of Target Complexity or Salience	<i>Jacob Coorey</i>
12	Beyond noise removal: a method to unveil the influence of eeg preprocessing on neuronal signals and inform pipeline selection	<i>Daniele Scanzi</i>
13	Interbrain synchrony in hyperscanning research: pitfalls and alternatives	<i>Manuel Verlet</i>

Poster Session III | Thursday 30th November (cont.)

14	Affective tone of visual and tactile sensations	<i>Ella Seabrook</i>
15	The mental simulation of emotionally salient sounds: An exploration of physiological responses and imagery vividness	<i>Jordan Lyons</i>
16	The influence of psilocybin on cortical encoding of goal-directed behaviour	<i>Rose Firth</i>
17	Identifying the emergent macroscopic dynamical modes of information processing associated with global states of consciousness from EEG data.	<i>Borjan Milinkovic</i>
18	Inner speech: Is the N1-attenuation effect continuous or binary?	<i>Rebekah Govender</i>
19	Auditory and semantic processing for inner and overt speech: An ERP and decoding study	<i>Lachlan Hall</i>
20	Interference between imagined and real visual stimuli in the brain	<i>Alexander Sulfaro</i>
21	Building a large-scale eeg dataset for investigating the neural representation of naturalistic facial expressions	<i>Zihe Wei</i>
22	Error-independent effect of sensory uncertainty on motor learning when both feedforward and feedback control processes are engaged	<i>David Kaplan</i>
23	Modelling the Role of Neural Oscillation Phase on Contrast Perception	<i>Henry Beale</i>
24	Individual differences in and relations between subjective and objective measures of auditory, visual, tactile and cross-modal sensory sensitivity	<i>Rebekah Street</i>
25	Examining individual differences in perceptual curiosity with a perceptual foraging paradigm	<i>Jocelyn Halim</i>
26	Age-related differences in goal-directed and habitual behaviour and the role of speed of processing	<i>Chelsea Hennessy</i>
27	Exploring individual differences in modulation of near-threshold auditory perception by transcranial alternating current stimulation	<i>Sreekari Vogeti</i>
28	Arts engagement and embodied experience shape our aesthetic perceptions of socially-intentioned body movements	<i>Courtney Casale</i>
29	Protective effects of parenthood on age-related changes in brain function in mid-life	<i>Edwina Orchard</i>
30	Withdrawn	
31	Transforming treatments for schizophrenia: Virtual reality, brain stimulation and social cognition	<i>Kirsten Gainsford</i>
32	Voluntary control of crying	<i>Silvia Seghezzi</i>
33	Distinct contribution of brain geometry and connectivity for whole-cortex communication	<i>Lachlan Hamilton</i>
34	Using representations to bypass complexity constraints in cognitive reasoning	<i>Conor Robinson</i>