

**2018 Meeting of the Australasian
Neuroscience Society**

38th Annual Scientific Meeting

PROGRAM BOOK

**BRISBANE CONVENTION &
EXHIBITION CENTRE, QLD**

3 – 6 December 2018



Australasian
Neuroscience
Society

www.ans.org.au

Acknowledgements

The Australasian Neuroscience Society kindly acknowledges the following sponsors for their generous support of the Annual Scientific Meeting:

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Welcome from the President

Welcome to Brisbane for the 38th Annual Scientific Meeting of the Australasian Neuroscience Society.

The local organising committee this year was headed by Professor Joseph Lynch and Dr Victor Anggono and supported by Professor Helen Cooper and professional conference organisers, The Association Specialists. On behalf of the organisers, ANS Council and Executive, welcome to all our members.

I am excited to welcome our Plenary speakers:

- Professor Wickliffe (Cliff) Abraham, FRSNZ, Co-Director Brain Research New Zealand Department of Psychology and Brain Health Research Centre University of Otago, New Zealand
- Professor Alison Goate, Willard T.C. Johnson Research Professor of Neurogenetics, Director of the Ronald M. Loeb Center for Alzheimer's disease and Icahn School of Medicine at Mount Sinai New York, USA
- Professor Glenda Halliday, NHMRC Senior Principal Research Fellow at Sydney Medical School, Brain & Mind Centre, The University of Sydney, New South Wales
- Professor Neville Knuckey, Head of Department and Director of Training of the Western Australian Neurosurgical Service, University of Western Australia, Western Australia
- Professor Alan Mackay-Sim, Professor Emeritus at Griffith Institute for Drug Discovery, Griffith University, Queensland

The meeting has been strongly supported by Universities, Institutes, scientific sponsors and trade exhibitors. I invite all delegates to visit the displays and discuss your latest work and ideas for new experiments with scientists at the trade and exhibition booths and to learn about new developments in products and services. It is with the very generous support of our sponsors and exhibitors that the Society is able to hold a meeting of this size and quality.

I hope you all find this meeting a worthwhile and enjoyable experience.

Professor Linda J. Richards, FAA, FAHMS.
ANS President

MEMBERS OF THE ANS EXECUTIVE FOR 2017-2018

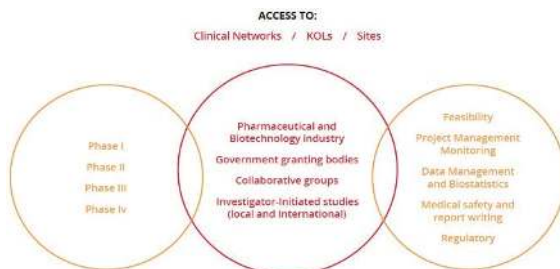
Prof Linda Richards	<i>President</i>
Prof Cliff Abraham	<i>President Elect</i>
Prof Gary Egan	<i>Treasurer</i>
Prof Helen Cooper	<i>Editor</i>
A/Prof Kay Double	<i>Secretary</i>

LOCAL ORGANISING COMMITTEE FOR ANS 2018 BRISBANE

Prof Joseph Lynch, Co-Chair	<i>Queensland Brain Institute, The University of Queensland</i>
Dr Victor Anggono, Co-Chair	<i>Queensland Brain Institute, The University of Queensland</i>
Dr Marta Garrido	<i>Queensland Brain Institute, The University of Queensland</i>
Dr Steven Zuryn	<i>Queensland Brain Institute, The University of Queensland</i>
Dr Rebecca Lim	<i>The University of Newcastle</i>
Dr Shyuan Ngo	<i>The University of Queensland</i>
Dr Fatima Nasrallah	<i>Queensland Brain Institute, The University of Queensland</i>



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Social Functions

WELCOME RECEPTION

Venue: Great Hall 3+4, Brisbane Convention and Exhibition Centre
Date: Monday, 3 December 2018
Time: 6:30- 8:30pm
Cost: Included in Full Delegate Registration Fee

EARLY CAREER RESEARCHER NETWORKING EVENT

Venue: Great Hall 3+4, Brisbane Convention and Exhibition Centre
Date: Tuesday, 4 December 2018
Time: 7:30- 9:30pm

ACAN NETWORKING EVENT

Venue: Meeting Room M1&2
Date: Tuesday, 4 December 2018
Time: 7:30- 9:30pm

GALA DINNER

Venue: Plaza Ballroom, Brisbane Convention and Exhibition Centre
Date: Wednesday, 5 December 2018
Time: 7:30-11:30pm
Cost: Included in Full Delegate Registration Fee
Guest Tickets: \$150.00 per person
Student Tickets: \$100 per person

To add to Gala Dinner: Please bring your ticket located in your name badge pack

General Information

AWARDS

- Istvan Tork Student Oral Award - for the best oral presentation by a Student Member of the Society at the Annual Meeting.
- Sir Grafton Elliot-Smith Poster Award - for the best poster by a Student Member of the Society at the Annual Meeting.

CONFERENCE APP

The Society is offering a free downloadable app for the Annual Scientific Meeting. To download the app please search for 'Elements Events Portal' and enter the event code 'ANS2018'.

Features of the app:

- Conference program including timings, speaker profiles and the location of specific sessions in the venue. All abstracts can be viewed on the app.
- Participate in the exhibitor passport competition
- View all exhibitor and sponsor profiles
- All delegates will have a QR code on their name badges which can then be used by trade to collect your details to be able to send you further information

EXHIBITOR PASSPORT

The exhibitor passport competition will run through the conference app. Make sure you have logged into your profile on the app – **then, scan the QR codes of the sponsors and exhibitors as you visit their booths.**

To successfully scan a booth, you will need to answer their passport question relating to the company or their products. Scanning all the booths in the exhibition and answering the questions will put you in the running to win an amazing prize awarded by ANS!

NAME BADGES

Name tags must be worn at all times. Delegates without a name badge may be refused entry to sessions and to the trade exhibition. All badges will have a QR code which can be scanned by another delegate or exhibitor to connect them to your profile.

PROGRAM

The plenary sessions will be held in the Great Hall. Concurrent sessions will be held in Meeting Rooms M1, M2, P1, P2 and P3 & P4.

Please note that the M1 & M2 rooms are located on the Mezzanine Level of the Brisbane Convention and Exhibition Centre. The P1, P2 and P3 + P4 rooms are located on the Plaza Level of the Brisbane Convention and Exhibition Centre.



PET RADIOPHARMACEUTICALS

Molecular Imaging

AUSTRALIA & NEW ZEALAND

Cyclotek has been supporting neuroscience research, mainly through the provision of novel PET radiopharmaceuticals, for over a dozen years.

We have been manufacturing GMP-grade amyloid tracers since 2007. As the clinical trials of Disease Modifying Drugs for Alzheimer's Disease started to unfold, Cyclotek played a pivotal role in making the amyloid and Tau tracers available for use as biomarkers for trials in ANZ.

Apart from contract manufacture for big pharma, Cyclotek has also enabled a large number of local Investigator Sponsored Trials.

Chronic neuroinflammation is also thought to play a central role in the progressive degeneration of brain tissue in disorders such as Alzheimers, Parkinsons, Huntingtons, and Motor Neuron Diseases. PET imaging using the 18F-FEMPA tracer – which binds to activated immune-responsive brain cells – offers a unique non-invasive window into the spatial distribution and magnitude of the neuroinflammatory response in the human brain. Cyclotek has made FEMPA available to a number of research groups in ANZ.

In an effort to expand the portfolio of tracers, Cyclotek recently licenced a fluorinated DAT tracer called [18F] FP-CIT for Parkinson disease. FP-CIT is used in PET scans of patients being evaluated for uncertain Parkinsonian syndrome – differentiating patients suffering from PD and non-PD related tremor. This new and exciting tracer will be available for research use March 2019.

Cyclotek is proud of the role it has played in neuroscience research, and welcomes a dialogue with ANZ researchers with respect to the currently available and novel PET tracers.

PARKING

The car park is open 24 hours a day and should you require assistance, please use the intercom located at the pay stations or exit gates.

Parking Rates Monday – Sunday

0-2 hours: \$15.00

2-3 hours: \$20.00

3-4 hours: \$25.00

4 + hours: \$35.00

Maximum daily rate: \$35.00

24 hour parking from time of entry to time of exit the following day

Early Bird: \$16.00

Enter before 9am, exit between
3pm-6pm (Mon-Fri only)

REGISTRATION

The registration desk will be located on the ground floor of the Brisbane Convention and Exhibition Centre (BCEC). The registration desk will be open at the following times:

Monday 3 December 2018

12.00pm – 6.30pm hours

Tuesday 4 December 2018

7.30am – 7.30pm

Wednesday 5 December 2018

7.30am – 5.30pm

Thursday 6 December 2018

8.00am – 2.00pm

SPEAKERS' PREPARATION ROOM

The speakers' preparation room is located in the M10 Speakers Presentation 2 room on the Arbour level. The room is staffed daily. The technician will be on hand one hour before the start of each session, then 30 minutes after the close of the final session. Presenters are encouraged to hand their presentations in at least two hours before required onstage, or the day before if presenting in the morning.

TRADE EXHIBITION

The trade exhibition will be in Great Hall 3-4. It will be open on the following days:

Monday 3 December 2018

6.30pm – 8.30pm

Tuesday 4 December 2018

9.30am – 4.15pm

Wednesday 5 December 2018

9.30am – 4.15pm

Thursday 6 December 2018

10am – 2.30pm

The morning tea, lunch and afternoon tea breaks will be held in the trade exhibition hall. Please note that separate dietary catering tables will be set up in the exhibition area for those who have submitted dietary requests.

WIFI

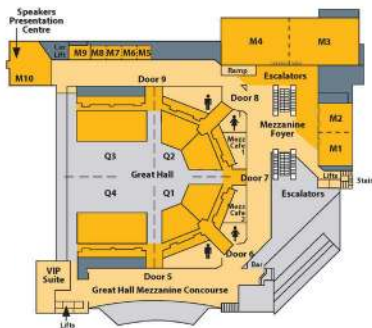
To access the free WIFI, please select 'BCECLINK' to connect (no password required).

Floorplan

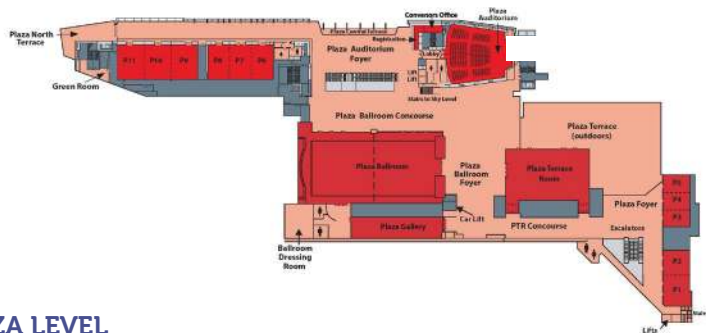
BRISBANE CONVENTION AND EXHIBITION CENTRE



FOYER LEVEL



MEZZANINE LEVEL



PLAZA LEVEL

Plenary Speaker Bios



Professor Wickliffe (Cliff) Abraham, FRSNZ, Co-Director Brain Research New Zealand, Department of Psychology and

Brain Health Research Centre, University of Otago, New Zealand

Cliff Abraham is Professor of Psychology and co-Director of a national research centre on the aging brain, Brain Research New Zealand. He received a PhD in Neuroscience from the University of Florida and spent 5 years of postdoctoral research at the University of Otago and the University of Gothenburg, Sweden. He returned to Psychology at The University of Otago, to take up a Lectureship at The University of Otago, where he has remained since. He is a Fellow of the Royal Society of New Zealand, and in 2009 was awarded the University of Otago's Distinguished Research Medal.

Professor Abraham's research is focused on the neural mechanisms of learning and memory, particularly with respect to the mechanisms of synaptic plasticity and metaplasticity, as well as the mechanisms and therapeutic potential of secreted amyloid precursor protein.



Professor Alison Goate, Willard T.C. Johnson Research Professor of Neurogenetics, Director of the Ronald M. Loeb

Center for Alzheimer's disease and Icahn School of Medicine at Mount Sinai New York, USA

Dr. Alison Goate started working on Alzheimer's disease (AD) genetics in 1987 as a postdoctoral fellow with Dr. John Hardy at ICL. Since then she has been part of many gene-finding teams that have successfully identified disease causing variants for AD and FTD. With Dr. Hardy she reported the first mutation to cause familial AD. From 1992-2014 she was on the faculty at Washington University. Among her key findings was the identification of the presenilin 1 mutation in the Colombian kindreds.

She is a leader in the field of late onset AD genetics using endophenotypes. This work led to the identification of two novel AD risk genes, TREM2 and PLD3. She moved to the Icahn School of Medicine at Mount Sinai to lead the Ronald M Loeb Center for Alzheimer's Disease in 2015.

Prof Goate has received many awards including the Potamkin Award, the MetLife Award and the Khalid Iqbal Lifetime Achievement Award from the Alzheimer's Association, election as a fellow of the American Association for the Advancement of Science in 2012 and election as a member of the National Academy of Medicine in 2016.



Professor Glenda Halliday,
NHMRC Senior
Principal Research
Fellow at Sydney
Medical School,
Brain & Mind Centre,

The University of Sydney, New South
Wales

Glenda Halliday is a NHMRC Senior Principal Research Fellow and Professor of Neuroscience at the Brain and Mind Centre, the University of Sydney (joined in 2016). Her career as a fulltime research fellow in Australia has involved determining the brain changes in Parkinson's disease (initially at Flinders University of South Australia and the University of Sydney before establishing the Sydney Brain Bank at NeuRA), in chronic alcoholism (at the University of Sydney), and in degenerative dementias (at NeuRA and now at the University of Sydney).

Her research has highlighted broader pathological involvement in Parkinson's disease and especially in dementia with Lewy bodies, with recent work suggesting that immunity is involved. This work has contributed to diagnostic criteria for Parkinson's disease, dementia with Lewy bodies and frontotemporal dementia syndromes. She currently leads a large research group tackling non-Alzheimer's neurodegeneration in clinical patients and uses patient-derived and experimental models to progress knowledge on early definitive diagnosis; factors influencing the selective nature of the nervous system degeneration; mechanisms that propagate degeneration between brain regions; the comparative toxicity of the major proteins involved; and the lack of tools to monitor disease modifying treatments.



Professor Neville Knuckey,
Head of Department
and Director of
Training of the
Western Australian
Neurosurgical

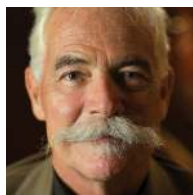
Service, University of Western Australia,
Western Australia

Neurosurgery and Mountain climbing seems a world apart, however there are fundamental areas of overlap such as precise understanding of your environment, developing a set of skills and striving for excellence in safety. They also share common clinical problems such as cerebral oedema and hypoxic neuronal death. The Eccles oration will integrate a passion outside neurosurgery with recent advances in the basic science of neuroprotection.

Professor Neville Knuckey completed medical school at the University of Western Australia in 1976. He did resident and registrar training at Royal Perth and Sir Charles Gairdner Hospitals from 1976-1985. He completed the Fellowship of the Royal Australian College in Neurosurgical in 1985. He did post-fellowship training at John Hopkins Hospital in 1985 and Rhode Island Hospital/ Brown University in 1986. He was a member of the neurosurgical staff at Rhode Island Hospital from 1987-1995 and awarded an associate Professor at Brown University. He returned to Western Australia as the Head of Department and Director of Training of the Western Australian Neurosurgical Service and Professor at University of Western Australia from 1995. He has held numerous teaching and administrative positions such as Chief Examiner of Neurosurgery, Board of Neurosurgery, Executive board of Neurosurgery,

Director Neuroscience at SCGH and was awarded the Sir Charles Gairdner Hospital Award for Excellence in Clinical Practice and Administration in 2006.

Professor Knuckey's principle research interest is neuroprotection and he has published over 100 peer reviewed articles with a major focus being Hypothermia/ magnesium and more recently Arginine rich peptide. In 1998, he was awarded the Doctorate of Medicine, UWA for research titled "The role of Transforming Growth Factor in cerebral ischemia". Other research awards include the Peter Leach memorial Prize in Neurosurgery [1984], RACS and the Geoff Blee Neuroscience Award.



Professor Alan Mackay-Sim,
Professor Emeritus
at Griffith Institute
for Drug Discovery,
Griffith University,
Queensland

2017 Australian of the Year Alan Mackay-Sim is a neuroscientist and stem cell scientist. His research career has focused on how the sensory neurons in the nose are replaced and regenerated from stem cells. He is a world leader in spinal cord injury research. He led the Brisbane team in a world-first clinical trial in which the patient's own olfactory cells were transplanted into their injured spinal cord in the first stages of a therapy to treat human paraplegia. Alan established the National Centre for Adult Stem Cell Research in 2006. He developed an adult stem cell bank from over 300 people with different neurological conditions including schizophrenia, Parkinson's disease, mitochondrial mutation disorders, hereditary spastic paraplegia, ataxia telangiectasia and motor neuron disease. These stem cells are used to identify the biological bases of neurological diseases using genomics, proteomics and cell function assays and this work is leading to new drug therapies. He was recently awarded the Neil Hamilton Fairley Medal by the RACP and RCP (Lond) for Outstanding Contribution to Medicine.

Discover more

Accelerate neuroscience breakthroughs with hypothesis free gene expression analysis



It is only recently through next-generation sequencing (NGS) studies that the full genomic complexity of neurological diseases is being revealed. The interplay between heritable and nonheritable mutations, epigenetics, and other factors requires NGS-level analyses to increase our understanding.

Illumina has the array and NGS tools needed to make genomic neuroscience research possible. As the leading developer, manufacturer, and marketer of life science tools and integrated systems for large-scale analysis of genetic variation and function, illumina systems are enabling studies that were not even imaginable just a few years ago, moving us closer to the realization of personalized medicine.

Discover more by visiting illumina at **ANS booth #17**

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Program at a Glance

MONDAY 3 DECEMBER

12:00pm - 06:30pm	REGISTRATION DESK OPEN <i>Foyer</i>
01:00pm - 04:30pm	IMAGING WORKSHOP <i>Meeting Room M1&2</i>
05:00pm - 05:15pm	OPENING OF CONFERENCE <i>Great Hall 1+2</i>
05:15pm - 06:30pm	PLENARY SESSION 1 : INTERNATIONAL PLENARY What has genetics taught us about mechanisms of Alzheimer's disease pathogenesis? – Professor Alison Goate <i>Great Hall 1+2</i>
06:30pm - 08:30pm	WELCOME MIXER <i>Great Hall 3+4</i>

TUESDAY 4 DECEMBER

7:30am - 7:30pm	REGISTRATION DESK OPEN <i>Foyer</i>		
08:30am - 09:30am	PLENARY SESSION 2 : ELSPETH MCLACHLAN PLENARY Are neurons really the most important in neurodegenerative diseases? – Professor Glenda Halliday <i>Great Hall 1+2</i>		
09:30am - 10:00am	MORNING TEA, EXHIBITION AND POSTER DISPLAY <i>Great Hall 1+2</i>		
10:00am - 12:00pm	SYMPOSIUM SESSIONS		
	<i>Great Hall 1+2</i>	<i>Meeting Room P1</i>	<i>Meeting Room P2</i>
	Mapping the neural circuitry of ingestive behaviours using a genetic approach	Neuroinflammation in neurodegenerative diseases	Computational psychiatry
	<i>Meeting Room P3&4</i>	<i>Meeting Room M1</i>	<i>Meeting Room M2</i>
	Beyond dopamine: Targeting alternative pathological hallmarks for the treatment of Parkinson's disease	Exploring neuronal function through advanced imaging techniques	The emerging neuronal RNA regulatory mechanisms in health and disease

12.00pm - 1.45pm	LUNCH, EXHIBITION AND POSTER DISPLAY Even numbers stand by posters <i>Great Hall 3+4</i>		
12:30pm - 01:45pm	BRAIN BEE FINAL <i>Great Hall 1+2</i>		
01:45pm - 03:45pm	SYMPOSIUM SESSIONS		
	<i>Great Hall 1+2</i> Genetically-encoded calcium imaging techniques for interrogating neural circuits in vivo	<i>Meeting Room P1</i> The neural basis of decision making in a changing environment	<i>Meeting Room P2</i> Wiring the brain for function
	SYMPOSIUM SESSIONS	ORAL ABSTRACTS	
	<i>Meeting Room P3&4</i> Microglia: Architects of the brain	<i>Meeting Room M1</i> ORAL 1 - Sensory systems	<i>Meeting Room M2</i> ORAL 2 - TBI and stroke
03:45pm - 04:15pm	AFTERNOON TEA, EXHIBITION AND POSTER DISPLAY <i>Great Hall 3+4</i>		
04:15pm - 06:00pm	ORAL ABSTRACTS		
	<i>Great Hall 1+2</i> ORAL 3 - Neurodegeneration 1	<i>Meeting Room P1</i> ORAL 4 - Glia	<i>Meeting Room P2</i> ORAL 5 - Schizophrenia
	<i>Meeting Room P3&4</i> ORAL 6 - Development 1	<i>Meeting Room M1</i> ORAL 7 - Synapse 1	<i>Meeting Room M2</i> ORAL 8 - Sensory and physiology
06:15pm - 07:15pm	PLENARY SESSION 3 : ECCLES PLENARY Peaks, Peptides and Protection <i>Professor Neville Knuckey</i> <i>Great Hall 1+2</i>		
07:30pm - 09:30pm	EARLY CAREER RESEARCHER NETWORKING EVENT <i>Great Hall 3+4</i>		
07:30pm - 09:30pm	ACAN NETWORKING EVENT <i>Meeting room M1&M2</i>		

WEDNESDAY 5 DECEMBER

7:30am - 5:30pm	REGISTRATION DESK OPEN <i>Foyer</i>		
08:30am - 09:30am	PLENARY SESSION 4: LAWRIE AUSTIN PLENARY Metaplasticity: Activity-dependent shaping of future plasticity <i>Professor Wickliffe Abraham</i> <i>Great Hall 1+2</i>		
09:30am - 10:00am	MORNING TEA, EXHIBITION AND POSTER DISPLAY <i>Great Hall 3+4</i>		
10:00am - 12:00pm	SYMPOSIUM SESSIONS		
	<i>Great Hall 1+2</i> Dendritic spines: From morphology to Function	<i>Meeting Room P1</i> Roads less travelled: Recent ideas on the cause of age-related dementia (Alzheimer's disease)	<i>Meeting Room P2</i> Emotional modulation of (Un) Conscious experience
	<i>Meeting Room P3&4</i> Oligodendrocytes in health and disease	<i>Meeting Room M1</i> Understanding protein synthesis and translational control in neurobiology and disease	<i>Meeting Room M2</i> Sensory and motor processing in cortical circuits in vivo
12:00pm - 02:00pm	LUNCH, EXHIBITION AND POSTER DISPLAY - <i>Odd numbers stand by posters</i> <i>Great Hall 3+4</i>		
02:00pm - 03:45pm	ORAL ABSTRACTS		
	<i>Great Hall 1+2</i> Oral 9 - Synapse 2	<i>Meeting Room P1</i> Oral 10 - Cognition	<i>Meeting Room P2</i> Oral 11 - Neurodegeneration 2
	<i>Meeting Room P3&4</i> Oral 12 - Integrative physiology	<i>Meeting Room M1</i> Oral 13 - Development 2	<i>Meeting Room M2</i> Oral 14 - Neuroimaging
03:45pm - 04:15pm	AFTERNOON TEA, EXHIBITION AND POSTER DISPLAY <i>Great Hall 3+4</i>		
04:15pm - 04:50pm	A.W. CAMPBELL AWARD PRESENTATION		
	Neurological complications in cancer survivors: Assessment strategies, risk factors and treatments. - <i>Dr Susanna Park</i> <i>Great Hall 1+2</i>		
04:50pm - 05:25pm	NINA KONDELOS AWARD PRESENTATION		
	Visual pathways: From the retina to the brain - <i>A/Prof Ulrike Grünert</i> <i>Great Hall 1+2</i>		
05:45pm - 07:00pm	ANS ANNUAL GENERAL MEETING <i>Meeting Room M1&2</i>		
07:30pm - 11:30pm	CONFERENCE DINNER <i>Plaza Ballroom</i>		

THURSDAY 6 DECEMBER

08:00am - 2:00pm	REGISTRATION DESK OPEN <i>Foyer</i>		
09:00am - 10:00am	PLENARY: ANS PLENARY Stem cells as models of brain diseases and for drug discovery <i>Prof Alan MacKay-Sim</i> <i>Great Hall 1+2</i>		
10:00am - 10:30am	MORNING TEA, EXHIBITION AND POSTER DISPLAY <i>Great Hall 3+4</i>		
10:30am - 12:30pm	SYMPOSIUM SESSIONS		
	<i>Great Hall 1+2</i> Degeneration or Regeneration, choice after axon injury	<i>Meeting Room P1</i> New frontiers in gene therapy for neurological disorders	<i>Meeting Room P2</i> Auditory system: From sound transduction to hearing loss and tinnitus
	<i>Meeting Room P3&4</i> Adaptive learning and plasticity in the motor system	<i>Meeting Room M1</i> Computational neuroscience and neuroimaging approaches to investigate integrative brain function	<i>Meeting Room M2</i> Novel therapeutic approaches for modulating behavioural responses to stress and reward: Transdiagnostic implications for psychiatry
12:30pm - 02:00pm	LUNCH, EXHIBITION AND POSTER DISPLAY <i>Great Hall 3+4</i>		
01:00pm - 02:00pm	PRESENTATION OF AWARDS AND CONFERENCE CLOSE <i>Great Hall 1+2</i>		

Plenary Sessions

PLENARY SESSION 1 : INTERNATIONAL PLENARY

What has genetics taught us about mechanisms of Alzheimer's disease pathogenesis?

Prof Alison M. Goate^{1,2,3}, D.Phil

1. Willard T. C. Johnson Foundation, NY, USA
2. Ronald M. Loeb Center for Alzheimer's Disease, NY, USA
3. Icahn School of Medicine at Mount Sinai New York, USA

Studies of autosomal dominant forms of Alzheimer's disease identified mutations in three genes, APP, PSEN1, PSEN2 that implicated APP processing and A β production as central to the disease process. However, since then it has been less clear that AD risk factors for late onset AD affect A β production. Indeed, APOE, the most common genetic risk factor, affects clearance of A β but has no impact on A β production. Recent genome-wide association studies in large cohorts have begun to elucidate both rare and common variation contributing to sporadic AD. While new data does provide some support for the role of genes that influence APP processing pathway analyses implicate lipid metabolism, immune response and endocytic trafficking. Indeed, AD heritability is most highly enriched in microglial enhancers, particularly those associated with three transcription factors: PU.1, MEF2C and RUNX1. Together these data suggest that both APP metabolism and the brains response to damage caused by A β aggregation are key to understanding AD pathogenesis.

PLENARY SESSION 2 : ELSPETH MCLACHLAN PLENARY

Are neurons really the most important in neurodegenerative diseases?

Prof Glenda Halliday¹

1. University of Sydney Central Clinical School & Brain and Mind Centre, Sydney Australia

Background - While 50% of the brain cells are not neurons, when it comes to neurodegenerative diseases, non-neuronal cells are often overlooked or considered to be involved secondarily (the cleaning and restoration crews for neuronal dysfunction). This has largely been due to the descriptions of neurodegeneration where populations of neurons are lost, often with abnormal protein accumulations in remaining neurons, alongside stereotypic glial responses. The concept that non-neuronal cells are only involved secondarily is now being significantly challenged with evidence suggesting peripheral mechanisms are involved.

Concepts involving events preceding neuronal loss and the role of non-neuronal cells. Many reviews of major neurodegenerative diseases have mechanistically focussed on neurons and particular proteins, potentially because of genetic involvement. However, recent data suggests that genetic abnormalities do not target neurons selectively and that initiation of neurodegeneration includes complex interactions between selective regional cellular dysfunction and immune cells responding to potential pathogens (from external or self- sources). Pathogenic brain proteins, like amyloid- β and α -synuclein, have antimicrobial properties and evidence suggests that gut microbiota diversity regulates host innate immunity that impacts on neurodegeneration through neuroimmune mechanisms involving macrophages and microglia. Some genetic factors also impact on these neuroimmune mechanisms. The pathogenic proteins do not just accumulate in particular brain cells and regions, but also increase in extracellular vesicles along with other proteins, lipids and RNAs, vesicles thought to exploit viral entry routes for long range cell-to-cell communication. In concert, fluid circulation through different brain systems are now being analysed – CSF-producing choroid, glymphatics (periarterial and perivenous astrocyte regulation of CSF influx and efflux), lymphatic drainage (meningeal), and interstitium (networked collagen bound interorgan system). In the absence of direct neuronal transmission of neurodegenerative disease through the brain, the differential involvement of astrocytes and associated glymphatic regulation could contribute to the variable spread of neurodegeneration through the brain over time that gives rise to the particular patterns underlying clinical syndromes. The movement of immune cells (infection/inflammation), extracellular proteins and vesicles (uptake via pathogenic mechanisms), and cell and particulate debris through the brain appear to be important factors associated with biological events leading to neurodegeneration, including associations with air pollution, and metabolic and sleep dysregulation.

Conclusion – Overall, neurons appear largely resilient to increased protein deposition alone with ageing, and appear to require a variety of detrimental interactions with non-neuronal cells to initiate their selective demise. The identification of these complex interactions and environmental factors that influence them will provide a variety of novel paradigms for the treatment of different neurodegenerative diseases.

PLENARY SESSION 3 : ECCLES PLENARY

Peaks, Peptides and Protection

Prof Neville W. Knuckey¹

1. University of Western Australia, Western Australian Neurosurgical Service, WA, Australia

Neuroprotection is critical for neuronal survival during periods of cerebral ischemia as a consequence of major vessel occlusion, neonatal hypoxia and neurotrauma. Also, during recreational activities such as climbing high mountain peaks, altitude sickness and resulting cerebral oedema/hypoxia is common and may be associated with long term neurological sequelae. I will describe my experiences with high altitude climbing and my brush with high altitude cerebral hypoxia and the critical importance of neuroprotective

drugs. Despite many decades of laboratory experiments and clinical trials there are no neuroprotective drugs in clinical use. I will explore our research in the Cerebrovascular laboratory at the Perron Institute, which has examined the role of hypothermia in mediating the neuroprotective actions of magnesium, and in doing so illustrate the disconnection between the finding of basic laboratory research and clinical trials.

I will also report our novel findings of a new class of neuroprotective agent: Poly-arginine peptides. The talk will journey from the basics experiments performed in neuronal cultures to small and medium animal cerebral ischaemia experiments, and to the mode of action of the peptides. The final destination is the potential application of poly-arginine peptides in clinical trials used in conjunction with endovascular mechanical thrombectomy, which has revolutionised the treatment of large vessel stroke.

PLENARY SESSION 4: LAWRIE AUSTIN PLENARY

Metaplasticity: Cellular memories that shape future plasticity

Prof Wickliffe Abraham, FRSNZ¹

1. University of Otago, Brain Research New Zealand, Department of Psychology and Brain Health Research Centre, Otago, New Zealand

The nervous system is built to continuously adapt its cellular properties and connectivity in response to changing environmental stimuli and contingencies. This allows an organism to behave optimally within that changing environment. Unfettered plasticity, however, is counter-productive; equally, having insufficient plasticity capability at critical times might be catastrophic. In the case of synaptic plasticity phenomena such as long-term potentiation and long-term depression, the nervous system has resolved these potential issues through activity-dependent mechanisms that regulate the threshold, amplitude, duration and even direction of future synaptic change. Moreover, mechanisms exist that can regulate future plasticity either locally at specific synapses, or more widely on portions of a dendritic arbour, across all the synaptic contacts of a cell, or even across a network of cells. Together these mechanisms are referred to as "Metaplasticity", i.e. the plasticity of synaptic plasticity. Metaplasticity-like effects have also been observed to be engaged by behavioural events, and to regulate future learning and memory, thus revealing more global regulations which are increasingly referred to as "Behavioural Metaplasticity". In this talk, various metaplasticity phenomena and mechanisms will be reviewed, followed by a presentation of recent findings regarding a novel form of astrocyte-mediated metaplasticity that spreads across a network of neurons, and its possible aberrant engagement in a mouse model of Alzheimer's disease.

PLENARY SESSION 5: ANS PLENARY

Stem cells as models of brain diseases and for drug discovery

Prof Alan Mackay-Sim¹

1. Griffith University, Griffith Institute for Drug Discovery, QLD, Australia

After so many years of transgenic animal models, why don't we have any successful disease-modifying drugs for brain diseases? Why have 100's of phase III clinical trials for Alzheimer's disease and Motor Neuron Disease failed? Why are we still using drugs to treat symptoms of schizophrenia and not its causes? Why have cancer researchers been so successful in finding new treatments compared to neuroscientists? Perhaps for brain diseases we need to focus on cells, like cancer researchers, rather than brains, like neuroscientists. Patient-derived olfactory neural stem cells, generated from biopsies of the olfactory organ in the nose, give us a new way to understand brain diseases, including "monogenic" diseases (Hereditary Spastic Paraplegia, familial Parkinson's disease) and polygenic disease (schizophrenia and sporadic Parkinson's disease). With these cells, we use the various "omics" to link disease-associated cell phenotypes with genetic mutations and use these phenotypes for drug discovery. Patient-derived neurons (from induced pluripotent stem cells) are used to validate disease-associated phenotypes.

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Symposia

TUESDAY 4 DECEMBER

SYMPOSIUM 1

10.00 am – 12.00 pm, Great Hall 1&2

Mapping the neural circuitry of ingestive behaviours using a genetic approach

Chair: Michael McKinley (The Florey Institute of Neuroscience and Mental Health)

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|----------|---|
| 10.00 am | Phillip J Ryan (The Florey Institute of Neuroscience and Mental Health)
Mapping the neural circuitry of fluid satiation |
| 10.30 am | Denovan Begg (University of New South Wales)
Fluid and electrolyte disturbances mediated by melanocortin-4 receptor-deficiency |
| 11.00 am | Aneta Stefanidis (Monash University) Mechanisms underlying the impact of bariatric surgery on food intake and thermogenesis |
| 11.30 am | Joel Geerling (University of Iowa, USA)
Branched, ascending pathways inform the forebrain about sodium deficiency and drive sodium appetite |

SYMPOSIUM 2

10.00 am – 12.00 pm, Meeting Room P1

Neuroinflammation in neurodegenerative diseases

Chairs: Estella Newcombe (Queensland Brain Institute, The University of Queensland)

Rodrigo Medeiros (Queensland Brain Institute, The University of Queensland)

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|----------|--|
| 10.00 am | Alison M Goate (Icahn School of Medicine at Mount Sinai, USA)
Genetic evidence supporting a casual role of microglia in Alzheimer's disease risk |
| 10.30 am | Mike Dragunow (University of Auckland, New Zealand)
Brain capillaries as drivers and targets of neuroinflammation |
| 11.00 am | Shane Liddelow (New York University Neuroscience Institute, USA)
What do reactive astrocytes do? |
| 11.30 am | Judith Camats-Perna (The University of Queensland)
Inflammatory resolution in Alzheimer's disease |

SYMPOSIUM 3

10.00 am – 12.00 pm, Meeting Room P2

Computational psychiatry

Chairs: Marta Garrido (Queensland Brain Institute)

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| 10.00 am | Luca Cocchi (Queensland Institute of Medical Research)
Using brain stimulation to uncover the principles of whole-brain integration and restore healthy brain dynamics |
| 10.30 am | Ivana Dzafic (Queensland Brain Institute)
Neural dynamics underlying psychotic experiences in healthy people |
| 11.00 am | Daniel Bennett (Princeton University)
Reinforcement learning and mood instability in bipolar disorder? |
| 11.30 am | Michael Breakspear (Queensland Institute of Medical Research)
Volatility theory of schizophrenia |

SYMPOSIUM 4	
10.00 am – 12.00 pm, Meeting Room P3&4	
Beyond dopamine: Targeting alternative pathological hallmarks for the treatment of Parkinson's disease	
Chairs: Asheeta Prasad (UNSW Sydney)	
10.00 am	Kay Double (University of Sydney) A proposed novel mechanism for neurodegeneration in Parkinson's disease
10.30 am	Trent Woodruff (University of Queensland) Innate immune drivers of pathological synuclein spread in Parkinson's disease
11.00 am	Richard Gordon (University of Queensland) Therapeutic switching of an orally-active drug to target neuroinflammation and neuropathology in Parkinson's disease
11.30 am	Lyndsey Collins-Praino (University of Adelaide) Fyn kinase inhibition as a novel therapeutic strategy to prevent pathological microglial activation in Parkinson's disease
SYMPOSIUM 5	
10.00 am – 12.00 pm, Meeting Room M1	
Exploring neuronal function through advanced imaging techniques	
Chair: Bruce Mockett (University of Otago)	
10.00 am	Fred A. Meunier (Queensland Brain Institute) Synapses under the nanoscope
10.30 am	Laura F. Gummy (University of Otago) Visualising intracellular transport in neurons
11.00 am	Ruth M. Empson (University of Otago) Genetically encoded voltage indicators for imaging synaptic circuit activity
11.30 am	Danilo LaTerra (Florey Institute of Neuroscience and Mental Health) The role of higher order thalamus during sensory processing and behaviour
SYMPOSIUM 6	
10.00 am – 12.00 pm, Meeting Room M2	
The emerging neuronal RNA regulatory mechanisms in health and disease	
Chair: Victor Anggono (Queensland Brain Institute)	
10.00 am	Murray J Cairns (The University of Newcastle) Exploring the molecular determinants and behavioural consequences of posttranscriptional dysregulation in schizophrenia
10.30 am	Guy Barry (QIMR Berghofer Medical Research Institute) Long non-coding RNAs and the dynamic regulation of human brain function
11.00 am	Guo-Li Ming (University of Pennsylvania) Epitranscriptomic m6A regulation of axon regeneration in the adult mammalian nervous system
11.30 am	Jocelyn Widagdo (Queensland Brain Institute) m6A-epitranscriptomic regulation of neuronal plasticity

SYMPOSIUM 7 1.45pm – 3.45 pm, Great Hall 1+2	
Genetically-encoded calcium imaging techniques for interrogating neural circuits in vivo Chair: Gavan P. McNally (UNSW) & Helen Nasser (Florey Institute of Neuroscience and Mental Health)	
1.45 pm	Philip Jean-Richard-dit-Bressel (University of New South Wales) Using fibre photometry to investigate neural circuits for reward and aversion
2.15pm	Malinda Tantirigama (John Curtin School of Medical Research) Illuminating odour processing with two-photon calcium imaging in vivo.
2.45 pm	Lucy M Palmer (The Florey Institute of Neuroscience and Mental Health) Probing cortical dendritic and axonal activity during reward association using two photon microscopy
3.15pm	Su Young Han (University of Otago) Real-time observation of gonadotrophin-releasing hormone pulse generator activity using fiber photometry and miniature micro-endoscopes
SYMPOSIUM 8 1.45pm – 3.45 pm, Meeting Room P1	
The neural basis of decision making in a changing environment Chair: Marcello Rosa (Monash University)	
1.45 pm	Keiji Tanaka (RIKEN Center for Brain Science) Neural substrates of intuition in shogi and soccer experts
2.15 pm	Jason Mattingley (Queensland Brain Institute) Bayesian inference as a model of complex perceptual decision making in humans
2.45 pm	Katerina Semendeferi (University of California in San Diego) Frontal cortex in evolution and disease
3.15 pm	Farshad A. Mansouri (Monash University) The role of prefrontal cortex in cognitive flexibility and control
SYMPOSIUM 9 1.45pm – 3.45 pm, Meeting Room P2	
Wiring the brain for function Chair: Annalisa Paolino (Queensland Brain Institute) & Timothy Edwards (Queensland Brain Institute)	
1.45 pm	Victor Tarabykin (Institute of Cell Biology and Neurobiology / Charité - Universitätsmedizin Berlin) Molecular control of cortical wiring
2.15 pm	Laura Fenlon (Queensland Brain Institute) The development and plasticity of interhemispheric connections
2.45 pm	Amanda Wood (Murdoch Children's Research Institute) Cognitive and neural features of developmental callosal disorders
3.15 pm	Jozef Gecz (University of Adelaide) Expect the unexpected, unbiased genomics of neurodevelopmental disorders

SYMPOSIUM 10**1.45pm – 3.45 pm, Meeting Room P3+4****Microglia: Architects of the brain**

Chair: Michele Binder (Florey Institute of Neuroscience and Mental Health)

1.45 pm	Manuel Graeber (The University of Sydney) Microglia functions beyond inflammation
2.15 pm	Jenna Ziebell (University of Tasmania) How do microglia-synapse dynamics change with ageing and Alzheimer's disease?
2.45 pm	Erica Fletcher (University of Melbourne) Microglial regulation of retinal integrity
3.15 pm	Trevor Owens (University of Southern Denmark) Microglia in the developing and adult brain

WEDNESDAY 5 DECEMBER 2018**SYMPOSIUM 11****10.00 am – 12.00 pm, Great Hall 1&2****Dendritic spines: From morphology to function**

Chair: Merja Joensuu (Queensland Brain Institute) & Fred Meunier (Queensland Brain Institute)

10.00 am	Valentin Nägerl (Université de Bordeaux) Super-resolution microscopy for neuroscience
10.30 am	Tong Wang (Queensland Brain Institute) Exocytosis of GluN2A containing N-meth-D-aspartate (NMDA) receptors in mature hippocampal neurons
11.00 am	Ramon Martinez-Marmol (Queensland Brain Institute) Fyn and Tau under the nanoscope
11.30 am	Pirta Hotulainen (Minerva Foundation Institute for Medical Research) Actin in dendritic spines: connecting dynamics to function

SYMPOSIUM 12**10.00 am – 12.00 pm, Meeting Room P1****Roads less travelled: recent ideas on the cause of age-related dementia (Alzheimer's disease)**

Chair: Morgan Newman (University of Adelaide)

10.00 am	Bryce Vissel (Garvan Institute of Medical Research)
10.30 am	Jonathan Stone (University of Sydney) The ageing pulse destroys the ageing brain: age-related dementia is a small-vessel vascular dementia
11.00 am	Michael Lardelli (University of Adelaide) Zebrafish "knock-in" models of familial Alzheimer's disease mutation show accelerated aging, transcriptional "inversion" and age-dependent inability to respond to hypoxia
11.30 am	Robert Richards (University of Adelaide) "Non-self" Mutation: Double-stranded RNA elicits antiviral cell death response in a Drosophila model of expanded CAG repeat neurodegenerative diseases

SYMPOSIUM 13	
10.00 am – 12.00 pm, Meeting Room P2	
Emotional modulation of (Un) Conscious experience	
Chair: Marta Garrido (Queensland Brain Institute)	
10.00 am	Jessica McFadyen (Queensland Brain Institute) Expecting the unexpected: Emotional modulation of prediction and conscious awareness
10.30 am	Hakwan Lau (University of California Los Angeles) Towards an unconscious multi-voxel neural reinforcement treatment for common fears
11.00 am	Bruno van Swinderen (Queensland Brain Institute) A role for sleep in maintaining value systems in the fly brain
11.30 am	Jakob Hohwy (Monash University) Consciousness, interoception and allostasis
SYMPOSIUM 14	
10.00 am – 12.00 pm, Meeting Room P3&4	
Oligodendrocytes in health and disease	
Chair: Jessica Fletcher (The University of Melbourne)	
10.00 am	Shane Liddelow (New York University Neuroscience Institute) What do reactive astrocytes do?
10.30 am	David Gonsalvez (The University of Melbourne) Novel insights into the mode of oligodendrocyte production during development
11.00 am	Kaylene Young (The University of Tasmania) The role of non-clustered protocadherins in the development of oligodendroglioma
11.30 am	Steven Petratos (Monash University) Targeting EAE-induced demyelination and axonal pathology by transplanting haematopoietic stem cells that overexpress NgR(310) ecto-Fc fusion protein
SYMPOSIUM 15	
10.00 am – 12.00 pm, Meeting Room M1	
Understanding protein synthesis and translational control in neurobiology and disease	
Chair: Victor Anggono (Queensland Brain Institute)	
10.00 am	Harrison T Evans (Queensland Brain Institute) Decreased de novo protein synthesis observed in mouse models
10.30 am	Jürgen Götz (Queensland Brain Institute) Fyn and local translation of Tau in Alzheimer's disease
11.00 am	Timothy Bredy (Queensland Brain Institute) RNA modification in the brain
11.30 am	Joanna Williams (The University of Otago) Secreted amyloid precursor protein alpha regulates glutamate receptor trafficking and plasticity-related protein synthesis

SYMPOSIUM 16**10.00 am – 12.00 pm, Meeting Room M2****Sensory and motor processing in cortical circuits in vivo**

Chair: Malinda Tantirigama (The Australian National University) & Juliette Cheyne (The University of Auckland)

10.00 am	John M Bekkers (The Australian National University) NMDA receptors and olfactory learning in the piriform cortex
10.30 am	Elizabeth Zavitz (Monash University) Population codes in primate visual cortex are optimised for the structure of natural images
11.00 am	Mehdi Adibi (University of New South Wales) Neural computations underlying sensory adaptation in rodent somatosensory cortex
11.30 am	Ruth M Empson (University of Otago) Visualising motor map dynamics

THURSDAY 6 DECEMBER 2018**SYMPOSIUM 17****10.30 am – 12.30 pm, Great Hall 1+2****Degeneration or regeneration, choice after axon injury**

Chair: Ramon Martinez-Marmol (Queensland Brain Institute)

10.30 am	Tong Wang (Queensland Brain Institute) The tumor suppressor Lethal Giant Larve 1 promotes axon regeneration through enhancing growth cone recovery in the central neurons.
11.00 am	Anna E King (The University of Tasmania) How do axons degenerate in disease and Injury?
11.30 am	Brent Neumann (Monash University) MEC-17/ATAT1 is essential for preserving synaptic integrity, and for nervous system repair after injury
12.00 pm	Tobias J Merson (Monash University) Regulation of myelin morphology during CNS remyelination

SYMPOSIUM 18**10.30 am – 12.30 pm, Meeting Room P1****New frontiers in gene therapy for neurological disorders**

Chair: Brad Turner (Florey Institute of Neuroscience and Mental Health) & Fazel Shabanpoor (Florey Institute of Neuroscience and Mental Health)

10.30 am	Yoshitsugu Aoki (National Institute of Neuroscience, Japan) Targeting RNA to treat neuromuscular disease: mechanism and clinical application
11.00 am	Sue Fletcher (Murdoch University) Antisense oligomer interventions to reduce the severity of spinal muscular atrophy
11.30 am	Mary-Louise Rogers (Flinders University) Immunogenes for targeted neurotrophin gene delivery to motor neurons
12.00 pm	Kara Perrow (University of Wollongong) Improving the delivery of antisense oligonucleotides to motor neurons using calcium phosphate-lipid nanoparticles

SYMPOSIUM 19	
10.30 am – 12.30 pm, Meeting Room P2	
Auditory system: From sound transduction to hearing loss and tinnitus	
Chair: Karina Needham (The University of Melbourne) & Srdjan Vlajkovic (The University of Auckland)	
10.30 am	Gary D Housley (University of New South Wales) Feedback control of sound transduction in the cochlea
11.00 am	Wilhelmina Mulders (University of Western Australia) Investigations of the mechanisms of tinnitus: Dysfunctional sensory gating
11.30 am	Srdjan Vlajkovic (The University of Auckland) Adenosine receptor-based strategies for cochlear rescue from injury
12.00 pm	Bryony Nayagam (The University of Melbourne) The application of stem cells for regeneration of auditory sensory cells
SYMPOSIUM 20	
10.30 am – 12.30 pm, Meeting Room P3&4	
Adaptive learning and plasticity in the motor system	
Chair: Ann-Maree Vallence (Murdoch University)	
10.30 am	Li-Ann Leow (The University of Queensland) The role of reward prediction errors in motor learning
11.00 am	Reza Shadmehr (Johns Hopkins University) Neural basis of motor learning in the cerebellum
11.30 am	Jenny Rodger (The University of Western Australia) Using brain stimulation to enhance learning: before, during or after the task?
12.00 pm	Siobhan Schabrun (Western Sydney University) Altered homeostatic plasticity and implications for learning in the presence of pain
SYMPOSIUM 21	
10.30 am – 12.30 pm, Meeting Room M1	
Computational neuroscience and neuroimaging approaches to investigate integrative brain function	
Chair: Marta Garrido (Queensland Brain Institute) & Gary Egan (Monash University)	
10.30 am	N. Jon Shah (Monash University) Multimodal imaging fingerprints using simultaneous MR-PET-EEG
11.00 am	James Roberts (QIMR Berghofer Medical Research Institute) Geometry and fragility of the human connectome
11.30 am	Paula Sanz-Leon (ARC Centre of Excellence for Integrative Brain Function) Computational tools for modelling generalized and subject-specific multiscale brain dynamics
12.00 pm	Phillip Ward (ARC Centre of Excellence for Integrative Brain Function) High temporal resolution measurement of brain function and metabolism using simultaneous dynamic PET and functional MRI

SYMPOSIUM 22**10.30 am – 12.30 pm, Meeting Room M2****Novel therapeutic approaches for modulating behavioural responses to stress and reward:
Transdiagnostic implications for psychiatry****Chair: Andrea Gogos (University of Melbourne)**

10.30 am	Susannah J Tye (Queensland Brain Institute) Modulating stress- and reward-related behaviour with Deep Brain Stimulation of the mesoaccumbens dopamine system: Targeting circuit, cellular, and synaptic dysfunction.
11.00 am	Jennifer L Cornish (Macquarie University) Novel therapeutics for methamphetamine addiction and psychosis
11.30 am	Adam J Walker (Deakin University) Insulin-mediated mTOR signalling differentially correlates with antidepressant effects of ketamine in a rodent model of tricyclic antidepressant resistance
12.00 pm	Sophie Erhardt (Karolinska Institute) Enhanced production of kynurenic acid associates to increased dopaminergic activity-relation to psychosis and cognitive deficits

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Oral Presentations

TUESDAY 4 DECEMBER 2018

ORAL 1 – SENSORY SYSTEM

1.45 pm – 3.45 pm, Meeting Room M1

Chair: Phil Jobling (University of Newcastle) & Karina Needham (University of Melbourne)

Declan Rowley (Monash University) – *Studying the functional maps of the primate primary visual cortex using multi-scale imaging.*

Sammy Chi Sam Lee (University of Sydney) – *Multiple types of ganglion cells express the transcription factor SATB1 in marmoset retina.*

Tatsuo Sato (Monash University) – *Streamlined sensory motor communication through cortical reciprocal connectivity in a visually guided eye movement task.*

Alexander Pietersen (University of Sydney) – *Linear summation of cone inputs to LGN suppressed-by-contrast cells in marmosets.*

Sazia Sharmin (University of Queensland) – *Reprogramming human iPSCs into sensory neurons to study Rett syndrome.*

Jacqueline Ogier (Murdoch Childrens Research Institute) – *ASK1 inhibition; A potential strategy for the prevention of acquired hearing loss.*

Rebecca Poulsen (University of Queensland) – *Auditory responses in zebrafish: investigating neurologic and behavioural sensory phenotypes of wildtype and fmr1 zebrafish.*

Mark Gradwell (University of Newcastle) – *Pre- and post-synaptic inhibitory 'gating' of a direct allodynia microcircuit in the spinal cord.*

ORAL 2 – TBI AND STROKE

1.45 pm – 3.45 pm, Meeting Room M2

Chair: Jessica Fletcher (University of Melbourne) & Lin Koi Ong (Hunter Medical Research Institute)

Jessica Sharkey (University of Adelaide) – *Investigating the pattern of axonal injury in traumatic brain injury of varying intensity in a large animal model.*

Melinda Fitzgerald (Curtin University and the Perron Institute) – *Predicting outcomes following mild traumatic brain injury*

Preet Makker (University of New South Wales) – *Assessment of long-term functional deficits and axonal damage in a mouse model of peripheral nerve injury*

Ryan O'Hare Doig (South Australian Health and Medical Research Institute) – *18-kDa translocator protein radioligand [18 F]GE-180 as a neuroinflammatory biomarker following spinal cord injury*

Travice De Silva (La Trobe University) – *Endothelial NOX4 oxidase exacerbates motor dysfunction after ischemic stroke*

Adam Edwards (Perron Institute for Neurological and Translational Science) – *The poly-arginine-18 (R18) peptide is neuroprotective in a P7 rat model of perinatal hypoxic-ischaemic encephalopathy; a dose-response and therapeutic window study*

Carli Roulston (Florey Institute of Neuroscience and Mental Health) – *Improving recovery after stroke through stabilisation of astrocytes to retain the neurovascular unit and reduce glial scar expansion into the non-damaged brain.*

Theresa Sutherland (University of Technology Sydney) – *An examination of the cellular and inflammatory response in rats after spinal cord injury, and the effects of age and survival time.*

ORAL 3 – NEURODEGENERATION 1

04:15pm - 06:00pm, Great Hall 1+2

Chair: Brent Neumann (Monash University) & Jocelyn Widagdo (Queensland Brain Institute, University of Queensland)

Lars Ittner (Macquarie University) - *LIMK1 depletion prevents deficits in an APP transgenic mouse model of Alzheimer's disease*

Katherine Gill (Aarhus University, Denmark) – *Investigating early causative mechanisms that lead to GBAA associated Parkinson's disease using induced pluripotent stem cells.*

Lei Qian (Queensland Brain Institute, School of Biomedical Science, The University of Queensland) – *Apnea-induced intermittent hypoxia causes cholinergic basal forebrain degeneration which predisposes to Alzheimer's disease*

Julian Carosi (South Australian Health and Medical Research Institute) – *Autophagy clears Tau aggregates in a prion-like model of Tauopathy*

Rebecca Nisbet (Queensland Brain Institute) – *Generation of tau-specific antibodies for the treatment of Alzheimer's disease and enhancement of their delivery into the brain using focused scanning ultrasound*

Jason Howitt (Swinburne University) – *Exosomal transmission of α – synuclein results in Parkinson's disease-like pathology and movement deficits in vivo.*

Zac Chatterton (Sydney University) – *Peripheral monitoring of neurodegeneration in frontotemporal dementia and healthy controls using cell-free DNA methylation*

ORAL 4 – GLIA

04:15pm - 06:00pm, Meeting Room P1

Chair: Toby Merson (Australian Regenerative Medicine Institute) & Kaylene Young (Menzies School of Health Research)

Junhua Xiao (University of Melbourne) – *A novel neuronal signal that instructs oligodendrocyte development and de novo myelination*

Farrah Blades (Florey Institute of Neuroscience and Mental Health) – *TYRO3 is a key regulator of myelin thickness in the central nervous system*

Sangwon Yoo (The University of Melbourne) – *Deletion of Trkb neurotrophin receptor in neurons leads to functional deficits after myelin injury in the CNS*

Costanza Ferrari Bardile (Translational Laboratory in Genetic Medicine, Singapore) – *Intrinsic mutant HTT-mediated defects in oligodendroglia cause myelination deficits and behavioural abnormalities in Huntington's disease*

Christine Barry (Flinders University) – *Hyper-innervation, macrophage infiltration and nociceptor sensitisation in a model of vulvodinia*

Hussein Mansour (University of Sydney) – *Increased oxidative stress and apoptotic cell death is closely correlated with reactive astrogliosis, altering their structural and functional properties in the aging retina*

Collin Tran (University of New South Wales) – *Parallel S1P1 and S1P2 receptor signalling pathways synergise to maintain neurotrophic gene expression in human astrocytes*

ORAL 5 – SCHIZOPHRENIA

04:15pm - 06:00pm, Meeting Room P2

Chair: James Kesby (Queensland Brain Institute, University of Queensland) & Andrea Gogos (Florey Institute of Neuroscience and Mental Health)

Renata Pertile (Queensland Brain Institute, University of Queensland) – *Maternal vitamin D-deficiency and the epigenetic regulation of brain development*

Michael Geaghan (University of Newcastle, Australia) – *In vitro characterisation of dysregulated micro RNA biogenesis machinery associated with schizophrenia*

Xiaoying Cui (Queensland Brain Institute, University of Queensland) – *The role of long non-coding RNA in the development of dopamine systems: A convergent mechanism for schizophrenia*

Brian Dean (Florey Institute of Neuroscience and Mental Health) – *Changed Frontal Pole Gene Expression Suggests Layered Interplay Between Neurotransmitter, Developmental And Inflammatory Pathways In Schizophrenia*

Rachel Hill (Monash University) – *Exploring the origins of GABAergic dysfunction in schizophrenia using the maternal immune activation model uncovers a role for the ARX gene*

Elysia Sokolenko (University of Melbourne) – *Identifying the cell type mediating NMDA receptor hypofunction effects on behaviours relevant to schizophrenia and gamma oscillations*

Peng Zheng (University of Wollongong) – *Reducing excessive D2R-DISC1 complex formation prevents synaptic spine lesion through the NPY system in striatal neurons*

ORAL 6 – DEVELOPMENT 1

04:15pm - 06:00pm, Meeting Room P3&4

Chair: Jens Bunt (Queensland Brain Institute, University of Queensland) & Mary-Louise Rogers (Flinders University)

Silvia Vicenzi (University of Tasmania) - *Revisiting serotonin signalling in axon guidance*

Tara Walker (Queensland Brain Institute, University of Queensland) – *Early cell death in adult hippocampal neurogenesis is ferroptotic and rescued by selenium*

Jing Zhao (Queensland Brain Institute, University of Queensland) – *EPHA4 regulates hippocampal neural precursor proliferation in the adult mouse brain by D-serine modulation of NMDAR signalling*

Kathryn Mathews (Brain and Mind Centre, The University of Sydney) – *The regional pattern of neurogenesis along the anterior-posterior axis of the human hippocampus differs to that in non-human models*

Saurabh Bandhavkar (Mater Research Institute) – *Cholinergic signalling from basal forebrain regulates adult hippocampal neurogenesis via Chrm4.*

Isabel Hemming (The Harry Perkins Institute of Medical Research) – *Investigating ZBTB18 missense variants in brain development and disease.*

Nathalie Dehorter (Australian National University) – *Molecular control of the neuronal diversity in the developing striatum*

ORAL 7 – SYNAPSE 1

04:15pm - 06:00pm, Meeting Room M1

Chair: Laura Gummy (University of Otago) & Thomas Fath (Macquarie University)

Mark Graham (Children's Medical Research Institute) - *Comparison of phospho-signalling in cultured neurons and synaptosomes reveals a strong correlation and identifies bassoon as a major signalling target.*

Haowen Liu (Queensland Brain Institute) – *Heterodimerization of UNC-13/RIM regulates synaptic vesicle release probability but not priming*

Ailisa Blum (The University of Queensland) – *The Munc18-1 domain 3A loop controls Munc13-1 nanoscale organization during SNARE assembly*

Hilary Yong (Queensland Brain Institute, University of Queensland) – *PICK1 regulates presynaptic vesicle recycling in primary hippocampal neurons*

Gays Kharouf (The Florey Institute of Neuroscience and Mental Health) – *The impact of pharmacological and molecular HCN4 channel block on seizure susceptibility.*

Nela Durisic (The University of Queensland) – *Effects of epilepsy-causing mutations found in GABA type-A receptor on inhibitory synapse*

Carlie Cullen (Menzies Institute for Medical Research, University of Tasmania) – *Myelin and nodal plasticity synchronises action potential conduction in the adult mouse brain*

ORAL 8 – SENSORY AND PHYSIOLOGY

04:15pm - 06:00pm, Meeting Room M2

Chair: Elizabeth Zavitz (Monash University) & Susannah Tye (Queensland Brain Institute, University of Queensland)

Annice Kong (UQ Centre for Clinical Research) - *Using EEG and MRI at term equivalent age in very preterm infants to predict visual and cognitive outcome*

Graeme Polglase (Monash University) – *Diffusion tensor imaging detects ventilation – induced brain injury in preterm lambs.*

Karolina Kluk (The University of Manchester, UK) – *Effects of noise exposure on young adults with normal audiometric hearing*

Trichur Vidyasagar (The University of Melbourne) – *Differences in the orientation preferences of the spiking activity and the local field potentials recorded from the primary visual cortex of cats and macaques.*

Rita Machaalani (University of Sydney) – *Hypoxia or nicotine- which is worse on the young brain? From neurotransmitters, growth factors, to apoptosis and microglia.*

Judy Sng (National University of Singapore) – *Exploratory study of Risperidone on Reelin DNA methylation in patients diagnosed with first episode psychosis*

Karagh Loring (The University of Adelaide) – *Short term estradiol treatment improves seizure outcomes but not cognitive measures in mouse models of congenital epilepsy and intellectual disability.*

WEDNESDAY 5 DECEMBER 2018

ORAL 9 – SYNAPSE 2

2.00pm - 3.45pm, Great Hall 1 + 2

Chair: Mark Graham (Children's Medical Research Institute) & Joanna Williams (University of Otago)

Xiumin Chen (The University of Queensland) – *Effects of GluN2A and GluN2B epilepsy mutations on synaptic currents mediated by diheteromeric and triheteromeric NMDA receptors in artificial synapses*

Gianmaria Lorenzo Odierna (The University of Queensland) – *Dscam2 suppresses synaptic strength via an endosome-dependent mechanism*

Xiaojun Yu (Queensland Brain Institute) – *Regulation of NMDA receptor trafficking by SNX27 and CaMKII*

Chanchanok Chaichim (UNSW Sydney) – *Regulation of synaptic function by actin-associated tropomyosins*

Kai Sempert (Queensland Brain Institute, University of Queensland) – *The Netrin/RGMA receptor Neogenin controls actin remodelling during dendritic spine maturation*

Alison Canty (University of Tasmania) – *Repetitive transcranial magnetic stimulation induces dendritic spine plasticity – lessons from 2 photon imaging in Thy1-GFPM mice.*

Allanah Kenny (University of Canterbury) – *Large scale tissue slice simulations of cortical spreading depression*

ORAL 10 – COGNITION

2.00pm - 3.45pm, Meeting Room P1

Chair: Dhanisha Jhaveri (Mater Research Institute, University of Queensland) & Ann-Maree Vallence (Murdoch University)

Karly Turner (University of Cambridge) – *The role of cortical and striatal circuits in action sequence learning*

Clare Harris (University of Queensland) – *Learning under conditions of uncertainty and threat*

Catherine Li (University of New South Wales) – *Nicotinamide mononucleotide (NMN) ameliorates chemotherapy-induced cognitive impairment*

Xin Du (Monash University) – *Establishing brain actions of selective estrogen receptor modulators in vivo*

Daniel Blackmore (Queensland Brain Institute, University of Queensland) – *An exercise 'sweet spot' reverses cognitive deficits of ageing by growth hormone-induced neurogenesis*

Caitlin Finney (University of New South Wales) – *Sex-specific effects of standard rodent diets on estradiol, hippocampal estrogen receptor expression and spatial memory in the rat*

William Turner (The University of Melbourne) – *Perceptual change-of-mind decisions are sensitive to absolute evidence magnitude*

ORAL 11 – NEURODEGENERATION 2

2.00pm - 3.45pm, Meeting Room P2

Chair: Arne Ittner (University of New South Wales) & Carlie Cullen (Menzies School of Health Research)

Adam Walker (Queensland Brain Institute) – *Pathological alterations to the Golgi apparatus of neurons is an early feature of disease in TDP-43 ALS mice*

Catherine Blizzard (University of Tasmania) – *A postsynaptic pathway of TDP-43-mediated pathology in ALS*

Benjamin Trist (University of Sydney) – *Identification of a shared pathway to neuronal death in post-mortem Parkinson's disease and amyotrophic lateral sclerosis*

Tim Sargeant (South Australian Health and Medical Research Institute) – *Alzheimer's disease risk factor gene, PICALM, regulates localisation of lysosomal enzymes*

Gautam Wali (University of Sydney) – *Mutations in Paraplegin SPG7 gene lead to impaired mitochondrial function and oxidative stress in patient-derived stem cells*

Anne Hahn (Queensland Brain Institute) – *Mitochondrial DNA damage induces a premature ageing phenotype in neurons*

Helen Beard (South Australian Health and Medical Research Institute) – *Does the time-course & nature of neurodegenerative change in the retina parallel that occurring in the brain of sanfilippo syndrome?*

ORAL 12 – PHYSIOLOGY

2.00pm - 3.45pm, Meeting Room P3&4

Chair: Andrew Delaney (Charles Sturt University) & Melissa Tadros (Newcastle University)

Claire Foldi (Monash University) – *Cognitive control of reward neurocircuitry in the activity-based anorexia rat model*

Chi Kin (Kenny) Ip (Garvan Institute of Medical Research) – *Amygdala NPY circuits are critical for the development of obesity under chronic stress*

Ajai Vyas (Nanyang Technological University) – *Medial amygdala arginine vasopressin neurons regulate the trade-off between reproductive and defensive behaviours.*

Aung Aung Kywe Moe (The University of Melbourne) – *Selective optogenetic stimulation of neural crest and placodal-derived vagal fibres differentially regulates cardiorespiratory and oesophageal physiology*

Yannick Goumon (CNRS UPR3212) – *Lithium reverses mechanical allodynia through a mu opioid receptor-dependent mechanism*

Amy Alder (Victoria University of Wellington) – *Evaluation of two structurally novel G protein biased agonists with improved analgesic and side effect profiles*

Selena Bartlett (Translational Research Institute at the Institute of Health and Biomedical Innovation, Queensland University of Technology) – *Excessive sugar consumption changes neural circuitry and function. Implications for addiction and obesity.*

ORAL 13 – DEVELOPMENT 2

2.00pm - 3.45pm, Meeting Room M1

Chair: Julian Heng (Curtin University) & Bryony Nayagam (Melbourne University)

Laura Morcom (Queensland Brain Institute, University of Queensland) – *DCC signalling initiates formation of a glial substrate for corpus callosum development*

Michael Piper (The University of Queensland) – *Granule neuron precursor cell proliferation is regulated by NFIX and intersectin 1 during postnatal cerebellar development*

Annalisa Paolino (Queensland Brain Institute, University of Queensland) – *The molecular specification of commissural and subcerebral projection neurons in the neocortex is conserved in Therian mammals*

Kyra Chan (Hudson Institute of Medical Research) – *Early administration of umbilical cord blood cells increases inflammation and blood-brain barrier breakdown in injuriously ventilated preterm lambs.*

Zhiyong Liu (Institute of Neuroscience, Chinese Academy of Sciences) – *In vivo simultaneous germline inactivation of multiple genes in mouse through CRISPR/Cas9-mediated base editing*

Wei Shern Lee (Murdoch Children's Research Institute) – *Genetic and cellular characterisation of brain malformation using patient-derived brain tissues*

Emmanuel Marquez Legorreta (The University of Queensland) – *Habituation to looming stimuli in zebrafish larvae*

ORAL 14 – NEUROIMAGING

2.00pm - 3.45pm, Meeting Room M2

Chair: Patricio Opazo (Queensland Brain Institute, University of Queensland) & Sharna Jamadar (Monash University)

James Roberts (Queensland Institute for Medical Research) - *Spontaneous reconfiguration of waves in large-scale brain dynamics*

Marcello Rosa (Monash University) – *The Marmoset Brain Architecture Project: An open-access resource for visualisation and analysis of cortico-cortical connections*

Bhedita Seewoo (The University of Western Australia) – *Effects of daily low-intensity 10 Hz repetitive transcranial magnetic stimulation on rodent resting-state network: A longitudinal resting-state fMRI study.*

Arnauld Belmer (Queensland University of Technology) – *Rewiring of forebrain serotonergic inputs following chronic consumption of alcohol or sugar.*

Bernadette Fitzgibbon (Monash University) – *Theta burst stimulation to the dorsolateral prefrontal cortex in fibromyalgia syndrome: preliminary findings of a randomised-controlled trial*

Kimberley Day (Mater Research Institute) – *Multi-modal investigation in a mouse model reveals behavioural, cellular and neuroimaging changes reflective of human major depressive disorders*

Sabrina Oishi (University of Queensland) – *Heterozygosity for NFIX in mice models features of Malan syndrome*





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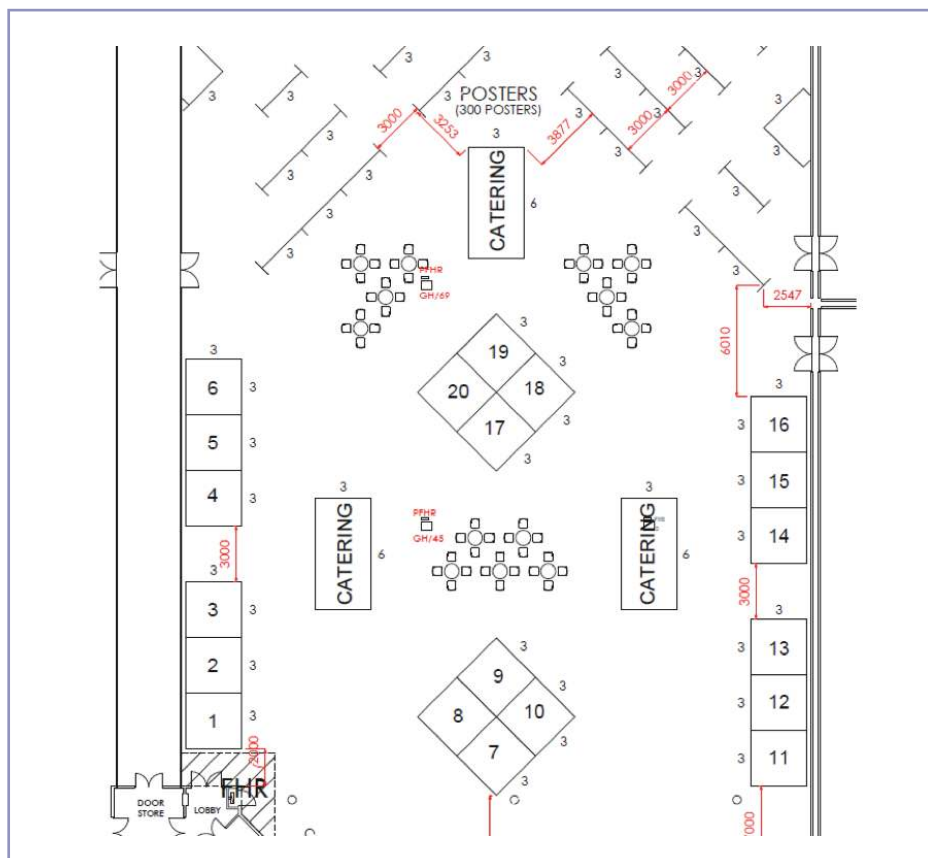
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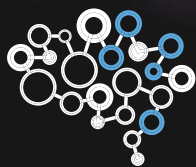
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