2019 MEETING OF THE AUSTRALASIAN NEUROSCIENCE SOCIETY

39th Annual Scientific Meeting

2 – 5 December 2019

Adelaide Convention Centre, SA

PROGRAM BOOK

ANS adelaide

ans.org.au

Australasian **Neuroscience** Society

Acknowledgements

The Australasian Neuroscience Society kindly acknowledges the generous support of the following sponsors in assisting with the Annual Scientific Meeting:

2019 PARTNERS

Adelaide Convention Bureau

SOUTH AUSTRALIA

ADELAIDE CONVENTION CENTRE

SILVER SPONSOR

illumina

CONFERENCE SUPPORTERS

University of South Australia

Brain Foundation

THE FLOREY

EXHIBITORS

abcam

biosearch

AXT

GENEARCH

metronic

In vitro Technologies

INSCOPIX

3i

Lastek

logos biosystems

millennium science

MACS Miltenyi Biotec

multichannel systems

SAPPHIRE BIOSCIENCE

Scitech

SDR SCIENTIFIC

Stalling

SYMBIOTIC

ThermoFisher SCIENTIFIC

THORLABS

Transnetyx

ugo basile

Contents


Where will you be surprised?
Visit:
southaustralia.com/places-to-go
Adelaide
Convention Bureau
ADELAIDE
SOUTH AUSTRALIA
ADELAIDE
CONVENTION
CENTRE

Welcome

Welcome to the 39th Annual Scientific Meeting of the Australasian Neuroscience Society, being held in lovely Adelaide. The large and enthusiastic local organising committee, chaired by A/Professor Michael Lardelli and supported by Professor Helen Cooper, together with the newly formed Programme Committee chaired by Professor Tony Hannan, has put together a wonderful event which I'm sure all attendees will enjoy. We are also acknowledging the excellent support we have received from our professional conference organisers, The Association Specialists.

I am particularly thrilled to welcome our Plenary speakers:

- Professor Hollis Cline, The Scripps Research Institute
- Professor Geoffrey Goodhill, Queensland Brain Institute
- Distinguished Professor Jose-Manuel Alonso, State University of New York
- Professor Selena Bartlett, Queensland University of Technology

The meeting has been strongly supported by Universities, Institutes, scientific sponsors and trade exhibitors. In addition to attending the scientific sessions, 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.

On behalf of the organisers, ANS Council and Executive, I send a warm welcome to all our members and conference attendees. I am sure that you will find this meeting a worthwhile and enjoyable celebration of Australasian neuroscience, and I look forward to meeting as many of you as possible and hearing about your research.

Professor Cliff Abraham, FRSNZ
ANS President

The ANS acknowledges and pays respect to the Kaurna people, the traditional custodians whose ancestral lands we have gathered on for our 39th Annual Scientific Meeting. We acknowledge the deep feelings of attachment and relationship of the Kaurna people to country and we respect and value their past, present and ongoing connection to the land and cultural beliefs.

Members of the Executive and Council for 2018-2019

Professor Cliff Abraham
President

Professor Linda Richards
Past President

Professor Gary Egan
Treasurer

Professor Brian Dean
Treasurer Elect

Professor Helen Cooper
Conference Executive Chair

Professor Thomas Fath
Secretary

Professor John Bekkers
Public Officer/ACT

A/Professor Yazi Ke
Council (NSW)

Dr Kristin Hillman
Council (NZ)

A/Professor Ethan Scott
Council (QLD)

A/Professor Michael Lardelli
Council (SA)

A/Professor Alison Canty
Council (TAS)

Professor Anthony Hannan
Council (VIC)

Dr Ann-Maree Vallence
Council (WA)

Dr Erin McAllum
Neuroscience Research Representative

Barbora Fulopova
Student Body Chair 2019

The Chair of the Local Organising Committee (LOC) for the 39th Annual Scientific Meeting of the ANS would like to thank the following people for their very active contributions to meeting preparation:

Pirjo Apaja
Cedric Bardy
Karissa Barthelson
Lyndsey Collins-Praino
Andrea Harrington
Kim Hemsley
Brenton Hordacre
Mel Kyloh
Martin Lewis
Ville-Petteri Makinen
Ian Musgrave
Morgan Newman
Mary-Louise Rogers
Tim Sargeant

Others, local and interstate, who contributed were:

Julian Carosi
Frances Corrigan
Ryan Doig
Luke Grundy
Tony Hannan
Julian Heng
Stuart Hodgetts
Antonio Inserra
Anna Leonard
Louise O'keefe
Christopher Proud
Nick Spencer
Renee Turner
Ann-Maree Vallence

The Adelaide LOC thanks Andrea Harrington and Martin Lewis for organising the oral presentation program and desigining the online tools for judging the student oral presentations and posters. The Adelaide LOC also thanks the chairs of oral sessions and poster judges for their contributions and is indebted to the creativity and generosity of Joshua Ameliorate for providing the graphic design for ANS 2019. The Adelaide LOC is very grateful to Claire Smoorenberg and the Florey Institute of Neuroscience and Mental Health for donating Claire Smoorenburg's time as media liaison person.

Social Functions

Welcome Reception

Venue: Halls M, N & O,
Adelaide Convention Centre

Date: Monday, 2 December 2019

Time: 6:30pm - 8:30pm

Cost: Included in Full Delegate Registration Fee

Additional Tickets: $50.00 (Guest and one day registrations)

Student & Early-Mid-Career Researcher (EMCR) Networking Event

Venue: Regattas Bar & Kitchen
(Adelaide Convention Centre)

Date: Tuesday 3 December 2019

Time: 8:00pm – 10:00pm

Cost: Included in Registration Fee

GALA DINNER

Venue: Ballroom, Adelaide Convention Centre

Date: Wednesday, 4 December 2019

Time: 7:30pm - 11:30pm

Cost: $150

Guest Tickets: $150.00 per person

Student Tickets: $100.00 per person

General Information

AWARDS

The following Awards will be presented:

- 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 'ANS2019'.

Features of the app include:

- Conference Program including, speaker profiles and the location and time of specific sessions in the venue
- Participation in the exhibitor passport competition
- Information on all trade exibits and contact details for all exhibitors and sponsors.
- A QR code facility: your QR code, located on your badge, can be used by exhibitors to collect your details in order to send you further information

EXHIBITOR PASSPORT

The exhibitor passport competition will run through the conference app. Make sure you have logged in to your profile on the app – then, have your badges, scanned by sponsors and exhibitors as you visit their booths.

To successfully scan at a booth, you will need to answer their passport question relating to the company or their products. Scanning at 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.

PARKING

The convention centre has two undercover car parking options, North Terrace or Riverbank car parks. The Riverbank car park is accessible from Morphett Street / Festival Drive.

Both car parks are located directly under the Centre and operate 24 hours a day, 7 days a week.

0-1 HOUR	$7.00
1-2 HOURS	$11.00
2-3 HOURS	$15.00
3-4 HOURS	$17.00
EARLY BIRD*	$16.00

*Early Bird rate is available on any day for entry between 5.30am-9.30am and exit between 2.30pm-6.30pm.

An additional $1.00 will be charged for each additional hour to a maximum of $29.00 over a 24-hour period.

REGISTRATION

The registration desk is located on the ground floor of the Adelaide Convention Centre in Foyer M, accessible via the West Entrance.

The registration desk will be open at the following times:

Monday 2 December 2019
12:00pm - 7:30pm

Tuesday 3 December 2019
7:30am - 6:00pm

Wednesday 4 December 2019
7:30am - 5:30pm

Thursday 5 December 2019
8:00am - 4:30pm

SPEAKERS' PREPARATION ROOM

The speakers' preparation room is located in room L1B. The room is staffed daily. Presenters are encouraged to hand their presentations in at least two hours before their presentation time slot, or the day before if presenting in the morning.

TRADE EXHIBITION

The trade exhibition will be in Halls M, N & O and will be open at the following times:

Monday 2 December 2019
6:30pm - 8:30pm

Tuesday 3 December 2019
9:30am - 4:15pm

Wednesday 4 December 2019
9:30am - 4:15pm

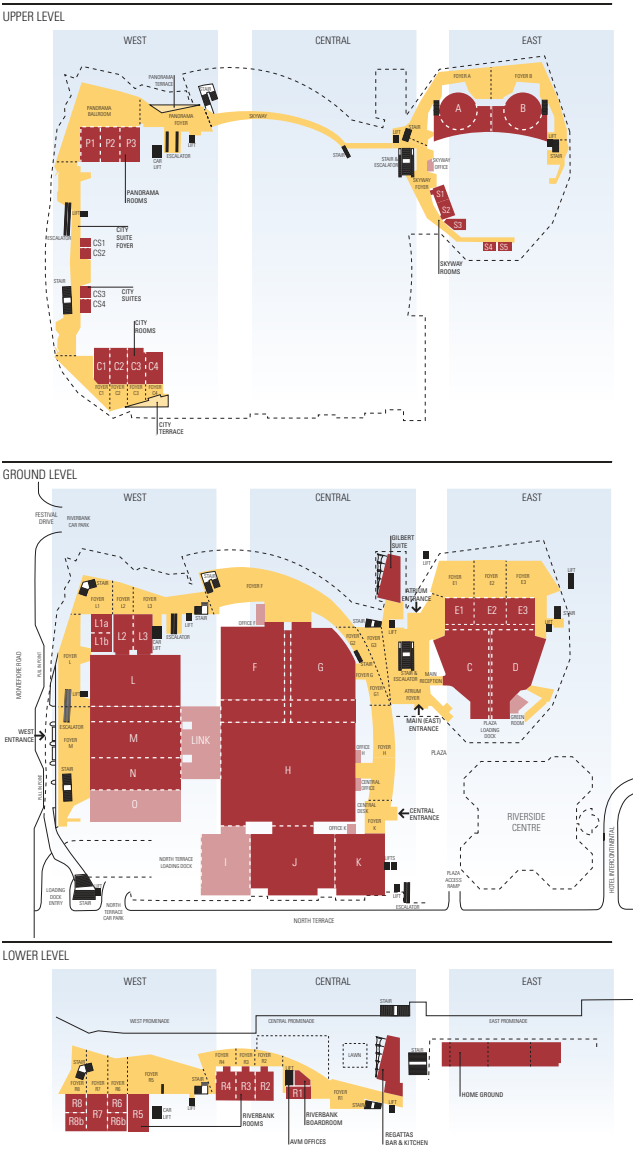
Thursday 5 December 2019
10:00am - 4:30pm

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

WIFI

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

Floorplan


UPPER LEVEL
WEST
CENTRAL
EAST
PANORAMA BALLROOM
PANORAMA TERRACE
PANORAMA FOYER
SKYWAY
FOYER A
FOYER B
A
B
P1
P2
P3
PANORAMA ROOMS
CITY SUITE FOYER
CS1
CS2
CS3
CS4
CITY SUITES
CITY ROOMS
C1
C2
C3
C4
CITY TERRACE
SKYWAY OFFICE
S1
S2
S3
S4
S5
SKYWAY ROOMS
GROUND LEVEL
FESTIVAL DRIVE
RIVERBANK CAR PARK
MOUNTFORD ROAD
WEST ENTRANCE
GILBERT SUITE
ATRIUM ENTRANCE
L1a
L1b
L2
L3
L
M
N
O
LINK
F
G
H
I
J
K
E1
E2
E3
C
D
MAIN RECEPTION
MAIN (EAST) ENTRANCE
PLAZA
CENTRAL ENTRANCE
RIVERSIDE CENTRE
NORTH TERRACE LOADING DOCK
NORTH TERRACE CAR PARK
NORTH TERRACE
LOWER LEVEL
WEST PROMENADE
CENTRAL PROMENADE
EAST PROMENADE
R1
R2
R3
R4
R5
R6
R6b
R7
R8
R8b
RIVERBANK ROOMS
RIVERBANK BOARDROOM
AVM OFFICES
REGATTAS BAR & KITCHEN
HOME GROUND

Plenary Speaker Bios

PROFESSOR HOLLIS CLINE

Hollis Cline, PhD, is the Hahn Professor of Neuroscience and co-chair of the Department of Neuroscience at Scripps Research. Dr. Cline is a Fellow of the American Association for the Advancement of Science and has received the prestigious NIH Director's Pioneer Award. Dr. Cline is a Past President of the Society for Neuroscience. She received her PhD from the University of California at Berkeley, followed by postdoctoral training at Yale and Stanford Universities. Her research has demonstrated the roles of a variety of activity-dependent mechanisms in controlling structural plasticity of neuronal dendrites and axons, synaptic maturation and topographic map formation. This work has helped to generate a comprehensive understanding of the role of experience in shaping brain development.

PROFESSOR JOSE MANUEL ALONSO

Jose Manuel is a Distinguished Professor at the State University of New York, College of Optometry. He received an MD from the University of Santiago de Compostela and a PhD from the University Autonoma of Madrid in Spain. He then won a Fulbright fellowship to work as a postdoctoral student in the laboratory of Torsten Wiesel at Rockefeller University in New York. His laboratory started at the University of Connecticut and then moved to the State University of New York. His work contributed to understanding the role of thalamocortical and cortical circuits in visual processing. He recently discovered that the visual cortex devotes more resources to process dark than light features in visual scenes, a finding that could help explain an old visual illusion dating back to Galileo Galilei.

PROFESSOR GEOFFREY GOODHILL

Geoff Goodhill is a Professor at the Queensland Brain Institute and School of Mathematics and Physics at the University of Queensland. Prior to that he was a Professor of Neuroscience at Georgetown University in Washington DC. He received a BSc degree in Mathematics and Physics from Bristol University, an MSc degree in Artificial Intelligence from Edinburgh University, and a PhD in Cognitive Science from Sussex University, followed by postdoctoral work in Computational Neuroscience at Edinburgh University, Baylor College of Medicine, and the Salk Institute. Through a combination of experimental and mathematical research, he has helped uncover some of the computational principles that underlie neural development.

PROFESSOR SELENA BARTLET

Professor Bartlett thinks there is nothing more exciting than being a neuroscientist in the 21st century. Her research laboratory is focussed on addiction and obesity with a strong emphasis on translation into practice. Most recently the lab has shown that sugar is as addictive as alcohol and nicotine, and developed a mHealth intervention to tackle obesity by reducing sugar intake. In previous roles she was the Director of a translational research program at the Gallo Research Center at UCSF, USA before returning to

Australia. She has received a number of awards, 90 scientific publications, and has recently written books for a lay audience, given a TEDx talk, developed smart phone apps, and founded a digital health company for addiction. Her ongoing passion is to translate neuroscience research to improve the lives of people.

PROFESSOR PAMELA MCCOMBE

Professor McCombe is a graduate of the Medical School of the University of Queensland. She trained in Neurology at Prince Henry/Prince of Wales Hospital in Sydney, and then obtained a PhD from the University of Sydney. This was the start of her interest in Neuroimmunology. She is now a Neurologist at Royal Brisbane and Women's Hospital and Professor at the Faculty of Medicine at University of Queensland. She is President-Elect of the Australian and New Zealand Association of Neurologists. Her research interests are broad, and encompass autoimmune diseases of the nervous system as well as immune response to acquired diseases of the brain. She has published on experimental autoimmune encephalomyelitis, multiple sclerosis, myasthenia gravis, Guillain Barre syndrome and CIDP, stroke and motor neurone disease. She has a special interest in the role of gender and of pregnancy in neurological and immune disease.

2018 A.W. CAMPBELL AWARDEE A/PROFESSOR WENDY IMLACH

Wendy Imlach is an NHMRC career development fellow and head of the Pain Mechanisms lab at Monash University, in the Department of Physiology and Monash Biomedicine Discovery Institute. Her research is focused on neural circuits in the spinal cord that are activated in chronic pain, in an effort to identify new therapeutic targets. She obtained her PhD in Pharmacology in New Zealand from the University of Otago and held postdoctoral positions at Columbia University in New York, and in Australia at the University of Queensland and University of Sydney. Wendy has a background in neuropharmacology, synaptic physiology and neural circuitry and her laboratory investigates spinal dorsal horn circuitry and nociceptive signaling.

2018 NINA KONDELOS AWARDEE PROFESSOR JANET KEAST

Janet is recognised internationally in the area of autonomic neuroscience, especially the neural regulation of urogenital organs and the impact of injury on these nerves. She also undertakes studies on the neurobiology of pain, focusing on changes in spinal and sensory pathways that contribute to pelvic visceral pain and spinal cord injury pain. Janet currently leads a team supported by the NIH SPARC (Stimulating Peripheral Activity to Relieve Conditions) Program, to map the neural circuitry of the lower urinary tract in order to develop new neuromodulatory therapies.

CHEN TIANQIAO AND CHRISSY INSTITUTE

You're invited to a

GLOBAL NETWORKING EVENT

for Brain Research in Australia and New Zealand

MONDAY, DECEMBER 2, 2019

City Room 1, Adelaide Convention Centre, 2-4 PM

Chen Institute Welcome

Updates from:
International Brain Initiative (IBI), Australian Brain Alliance, Brain Research New Zealand and the Canadian Brain Research Strategy

Presentations:
Neuroethics as an Anchor for the CBRS and IBI
Australian Brain Data Commons

Social Mixer

Come see the award-winning documentary
'Minds Wide Open'
www.MindsWideOpenFilm.com

Program at a Glance

MONDAY 2 DECEMBER 2019

12:00pm - 7:00pm	**Registration Desk Open**	*Foyer M*
1:00pm - 4:30pm	Imaging Workshop	*Hall A*
5:00pm - 5:15pm	IBI Networking Event	*City Room 1*
5:00pm - 5:15pm	**Opening of Conference**	*Hall L*
5:15pm - 6:30pm	**PLENARY SESSION 1: INTERNATIONAL PLENARY** Proteomic analysis of visual system organisation, function and plasticity *Chair: Professor Cliff Abraham* *Speaker: Professor Hollis Cline, PhD*	*Hall L*
6:30pm - 8:30pm	**Welcome Reception**	***Halls MNO***

TUESDAY 3 DECEMBER 2019

7:30am - 6:00pm	**Registration Desk Open**				*Foyer M*
8:30am - 9:30am	**PLENARY SESSION 2: ELSPETH MCLACHLAN PLENARY** Computational models of neural development *Chair: Professor Brian Dean* *Speaker: Professor Geoffrey Goodhill*				*Hall L*
9:30am - 10:00am	**Morning Tea, Exhibition and Poster Display**				***Halls MNO***
10:00am - 12:00pm	**SYMPOSIUM SESSIONS**				
	City Rooms 1 & 2 *Chairs: Mary-Louise Rogers & Bradley Turner*	*City Rooms 3 & 4* *Chair: Gary Egan*	*Riverbank Room 7* *Chair: Thomas Burne*	*Riverbank Room 8* *Chair: Alison Canty*	*Hall L* *Chair: Cliff Abraham*
	New insights in Motor Neuron Disease pathogenesis, therapeutics and biomarkers *Don Cleveland, Avinda Nath, Andreas Malaspina, Shyuan Ngo*	**New perspectives in neural circuit modelling** *Pulin Gong, Anthony Burkitt, T Kameneva, Geoffrey Goodhill*	**Diagnostics and Theranostics in Psychiatry: Using advanced biological, bio-informatics and computational tools to improve clinical outcomes** *Elizabeth Thomas, Brian Dean, Rachel Hill, Scott Clark*	**Through the looking glass: Observing real time changes in brain circuitry** *Vincenzo De Paola, Catherine Blizzard, Lucy Palmer, Ethan Scott*	**Presidential Symposium: Synaptic mechanisms of plasticity and memory** *Haruhiko Bito, Graham Collingridge, Johanna Montgomery, Joanna Williams*
12:00pm - 1:45pm	**Lunch, Exhibition and Poster Display** People with odd numbered posters should stand by their posters to present				***Halls MNO***
12:30pm - 1:45pm	Brain Bee Final				*Hall L*

1:45pm - 3:45pm	**SYMPOSIUM SESSIONS**				
	City Rooms 1&2 *Chair:* *Timothy Bred*	*City Rooms 3&4* *Chair:* *Kimberley Pitman*	*Riverbank Room 7* *Chair:* *Andrea Harrington*	*Riverbank Room 8* *Chair:* *Nela Durisic & Ramón Martínez-Mármol*	*Hall L* *Chair:* *Anand Gururajan*
	Technical developments at the frontier of neuroscience *Dan Ohtan Wang, Ryan Lister, Phillipa Tablerlay, John Lin*	**Glia in neurotransmission** *Raphael Ricci, Nicola Allen, Yasuyuki Osanai, Junhua Xiao*	**Mechanisms of pain: From the periphery to the brain** *Stuart Brierley, Yves De Koninck Brett Graham, Elena Bagley*	**Deconstructing the synapse: How pre- and post-synaptic proteins come together to fine tune synaptic strength in health and disease** *Subhojit Roy, Frederic Meunier, Sarah Gordon, Patricio Opazo Olavarria*	**The stressed brain: Translating preclinical concepts into therapeutic realities** *Olivia O'Leary, Christopher Dayas, Anthony Hannan, Dagmar Koethe*
3:45pm - 4:15pm	**Afternoon Tea, Exhibition and Poster Display**				***Halls MNO***
4:15pm - 5:15pm	**PLENARY SESSION 3: ECCLES LECTURE** Sex differences in neurological disease *Chair: Professor Linda Richards* *Speaker: Professor Pamela McCombe*				*Hall L*
5:30pm - 7:30pm	**Workshops**				
	City Rooms 1&2			*Riverbank Room 7*	
	NHMRC Grant System Workshop *Chair: Dr Tim Sargeant* *Professor Helen Cooper, Professor Melinda Fitzgerald, Professor Anthony Hannan, Professor Paul Martin*			**Neuroscience Teaching Workshop** *A/Professor Kay Double and A/Professor Gaby Todd*	
6:00pm - 7:30pm	**Public Lecture: Neuroscience of Brain Resilience: Health, Fitness, and Addiction** *Chair Dr Tim Sargeant* *MC: Tom Rehn* *Speaker: Professor Selena Bartlett*				*Hall L*
8:00pm - 10:00pm	**Student & EMCR Networking Event**				***Regattas Bar & Kitchen***

WEDNESDAY 4 DECEMBER 2019

7:30am - 6:00pm	**Registration Desk Open** *Foyer M*
8:30am - 9:30am	**PLENARY SESSION 4: LAWRIE AUSTIN PLENARY** Neuroplasticity neuroscience, multi-generational trauma, and the treatment of addiction and obesity *Sponsored by: Tianqiao and Chrissy Chen Institute* *Chair: A/Professor Michael Lardelli* *Speaker: Professor Selena Bartlett* *Hall L*

Program at a Glance

9:30am - 10:00am	**Morning Tea, Exhibition and Poster Display**				***Halls MNO***
10:00am - 12:00pm	**SYMPOSIUM SESSIONS**				
	City Rooms 1&2 *Chair:* *Ehsan Arabzadeh*	*City Rooms 3&4* *Chair:* *Lachlan Thompson*	*Riverbank Room 7* *Chairs:* *Marta Garrido & Carsten Murawski*	*Riverbank Room 8* *Chair:* *Asheeta Prasad & Zoran Boskovic*	*Hall L* *Chair:* *Denovan Begg*
	Vision, information processing and cognition *Karin Nordstrom, Stephen Williams, Paul Martin, Jason Mattingley*	**Parkinson's disease: from pathogenesis to regeneration** *Glenda Halliday, Clare Parish, Deniz Kirik, Cedric Bardy*	**Computational Psychiatry** *Bernard Balleine, Shinsuke Suzuki, Roshini Randeniya, Xiaosi Gu*	**Illuminating neural circuits of emotional and motivational behaviour** *Mazen Kheirbek, Robyn Brown, Roger Marek, Dhanisha Jhaveri*	**When gut meets brain: their impact on food intake control** *Damien Keating, Zhi Yi Ong, Amanda Page, Ivan de Araujo*
12:00pm - 1:45pm	**Lunch, Exhibition and Poster Display** People with evem numbered posters should stand by their posters to present				***Halls MNO***
1:45pm - 3:45pm	**Oral Presentations Selected from Submitted Abstracts**				
	City Rooms 1&2 *Chairs:* *Erica Fletcher & Luke Grundy*	*City Rooms 3&4* *Chairs:* *Brian Billups & Helen Gooch*	*Riverbank Room 7* *Chairs:* *Cedric Bardy & Anthony Don*	*Riverbank Room 8* *Chairs:* *Kim Hemsley & Toby Merson*	*Hall L* *Chairs:* *Brenton Hordacre & Renee Turner*
	Sensory circuits & mediators *Xioatian Jiang, Hui Li, Mallory Luke, Sarah Petryszyn, Saba Gharaei, Conrad Lee, Javier Jimenez-Martin, Emmanuel Marquez Legorreta*	**Synaptic transmission** *Vladimir Sytnyk, Adam Hines, Hilary Yong, Christopher Small, Anmin Jiang, Lauren Bleakley, Nela Durisic, Benjamin Hunn*	**Development & regeneration** *Tobias Bluett, Rodrigo Suarez, Sebastian Quezada, Kai Sempert, Laura Fenlon, Lulu Xing, Eva Tomaskovic-Crook, Lachlan Harris*	**Glia** *Kimberley Pitman, Darren Clarke, Carlie Cullen, Jana Vukovic, Ali Delbaz, Ross O'Shea, Ruth Musgrove, Bianca Guglietti*	**Injury to the nervous system** *Shenpeng Zhang, Isabella Bilecki, Lin Kooi Ong, Jessica Sharkey, Bronwyn Kivell, Heidi Walkden, Sarah Stephenson, Leah Beauchamp*
3:45pm - 4:15pm	**Afternoon Tea, Exhibition and Poster Display**				***Halls MNO***
4:15pm - 4:50pm	**A.W. Campbell Award Presentation** Targeting changes in spinal circuit function to treat chronic pain *Speaker: A/Prof Wendy Imlach*				*Hall L*
4:50pm - 5:25pm	**Nina Kondelos Award Presentation** Reconstructing sacral visceral circuits for bioelectronic medicine *Speaker: Professor Janet Keast*				*Hall L*
5:30pm - 5:45pm	Brain Foundation Student Poster Awards Presentation				*Hall L*
5:45pm - 7:00pm	ANS Annual General Meeting				*Hall L*
7:30pm - 11:30pm	**Conference Dinner**				***Ballroom***

THURSDAY 5 DECEMBER 2019

8:00am - 4:30pm	**Registration Desk Open**				*Foyer M*
9:00am - 11:00am	**SYMPOSIUM SESSIONS**				
	City Rooms 1&2 *Chair:* *Junhua Xiao*	*City Rooms 3&4* *Chairs:* *Michelle Rank & Kirsten Coupland*	*Riverbank Room 7* *Chair:* *Geoffrey Goodhill*	*Riverbank Room 8* *Chair:* *Andrew Lawrence*	*Hall L* *Chair:* *Ville-Petteri Makinen*
	How altered lipid metabolism and myelin structure causes neurode-generation *John Kwok, Karen Mather, Maria Fuller, Anthony Don*	**Pathway to success: paving the way for translational stroke research** *Steven Zuryn, Nicole Jones, Michael O'Sullivan, Michael Tymianski*	**Wiring the brain: the development of cortical neurons and networks** *Nathalie Dehorter, Michael Crair, Linda Richards, James Bourne*	**Neurobiological mechanisms of drug addiction** *Michael Bowen, Jennifer Cornish, Arnauld Belmer, Asheeta Prasad*	**EMBL Australia scientific symposium on neural circuitry and cellular integrity in health and disease** *Cornelius Gross, Yann Gambin, Pirjo Apaja, Leon Teo*
11:00am - 11:30am	**Morning Tea, Exhibition and Poster Display**				***Halls MNO***
11:30am - 12:30pm	**PLENARY SESSION 5: ANS PLENARY** Chiaroscuro in the visual brain *Chair: A/Professor Kaylene Young* *Speaker: Professor Jose-Manuel Alonso*				*Hall L*
12:30pm - 1:30pm	**Lunch, Exhibition and Poster Display**				***Halls MNO***
1:30pm - 3:30pm	**Oral Presentations Selected from Submitted Abstracts**				
	City Rooms 1&2 *Chairs:* *Karissa Barthelson & Nick Spencer*	*City Rooms 3&4* *Chairs:* *Frances Corrigan & Anthony Hannan*	*Riverbank Room 7* *Chairs:* *Lyndsey Collins-Praino & Hannah Keage*	*Riverbank Room 8* *Chairs:* *Peregrine Osborne & Rochelle Peterson*	*Hall L* *Chairs:* *Jenny Gunnersen & Arne Ittner*
	New technologies & methods *Omar Ibrahim, Andrew Allen, Sandesh Panthi, Merja Joensuu, Harrison Evans, Mina Ghanimi Fard, Indranil Basak, Jenny Ekberg*	**Psychiatric disorders & memory** *Maarten van den Buuse, Martin Lewis, Xiang Li, Hayley North, Alexandre Cristino, Anna Schroeder, Angeline Leong, Charles Watson*	**Cognition, learning, & behaviour** *Thomas Burne, Asheeta Prasad, Teri Furlong, Cheryl Shoubridge, Sharna Jamadar, Janet van Eersel, Kimberly Archer, Jacqueline Heighway*	**Autonomic circuits** *Marcello Costa, Simon Brookes, Anita Leembruggen, Sabrina Poon, Madushani Herath, Aung Aung Kywe Moe, Stuart McDougall, Vanesa Stojanovska*	**Disorders of the nervous system** *Mohammad Ibrahim, Craig McIntosh, Pratishtha Chatterjee, Ryu Takechi, Morgan Newman, Eleanor Drummond, Anthony White, Tim Sargeant*
3:30pm - 4:30pm	**Presentation of Awards and Conference Close**				*Hall L*

THORLABS

BERGAMO™

RAPID VOLUMETRIC IMAGING WITH BESSEL BEAMS

In-vivo volume imaging of neuronal activity requires both submicron spatial resolution and millisecond temporal resolution. While conventional methods create 3D images by serially scanning a diffraction-limited Gaussian beam, an alternative Bessel beam-based multiphoton imaging technique relies on an axially elongated focus to capture volumetric images. The excitation beam's extended depth of field creates a 2D projection of a 3D volume, effectively converting the traditional 2D frame rate into a 3D volumetric rate. To highlight the power of this technique, Figure 1 shows a 300 x 300 µm scan of a Thy1-GPF-M mouse brain slice imaged with Bessel (left) and Gaussian (right) scanning. 45 optical slices taken with a Gaussian focus are vertically stacked to generate a volume image, while the same structural features are visible in a single Bessel scan taken with a 45 µm-long focus. This indicates a substantial gain in volume-imaging speed, making this technique suitable for investigating sparsely labeled samples *in-vivo*.

In partnership with Howard Hughes Medical Institute and Prof. Na Ji (University of California at Berkeley), Thorlabs is now offering a Bessel beam module for our Bergamo® multiphoton laser-scanning microscopes. As demonstrated in Ji's pioneering work, this rapid Bessel beam-based imaging technique has synaptic resolution, capturing the Ca^{2+} dynamics and tuning properties of dendritic spines in mouse and ferret visual cortices. The Bessel beam module has also been used to successfully measure GCaMP6s expression in the subesophageal zone of a fly brain (Figure 2), synchrony of inhibitory neuron activity in the visual cortex of a mouse, and the network dynamics of reticulospinal neurons in the hindbrains of zebrafish larvae.

Capturing Volume Information in a Single Scan

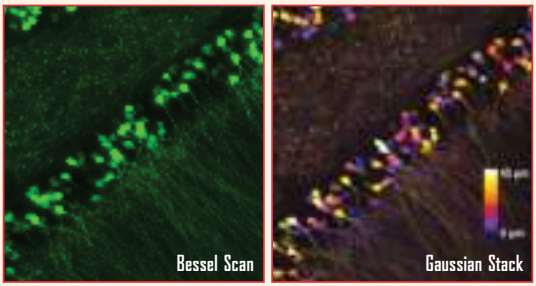


Figure 1. A single Bessel scan (left) captures the same structural information obtained from a Gaussian volume scan created by stacking 45 optical sections (right), reducing the total scan time 45-fold. The images show a brain slice scanned over a 300 µm x 300 µm area. Scan depth for the Gaussian stack is indicated by the scale bar.[a]

Extended Focus for *In-Vivo* Studies

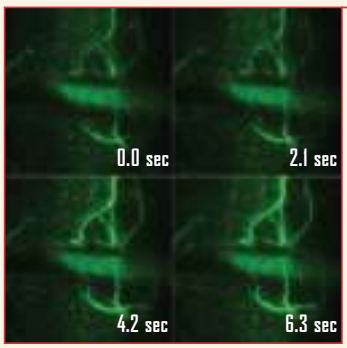


Figure 2. GCaMP6s expression in two neuron pairs arborized within the subesophageal zone of a fly brain. Ca^{2+} transients are captured by XY-scanning a 30 µm Bessel focus at a rate of 30 frames per second. A single Bessel scan corresponds to an XY-scan with no translation in the Z-direction.[b]

Thorlabs' Bergamo® II system shown equipped with a Bessel beam module for rapid volumetric *in-vivo* imaging.

a. Sample Courtesy of Ginrong Zhang, PhD and Matthew Jacobs; the Ji Lab, Department of Physics, University of California, Berkeley
b. Sample Courtesy of Zepeng Yao; the Scott Lab, Department of Molecular & Cell Biology, University of California, Berkeley

To learn more, visit www.thorlabs.com/bergamo, call 1-703-651-1700, or email ImagingSales@thorlabs.com.

Plenary Sessions

Plenary Session 1 – International Plenary

PROTEOMIC ANALYSIS OF VISUAL SYSTEM ORGANIZATION, FUNCTION AND PLASTICITY

Professor Hollis T Cline[1]

1. The Scripps Research Institute, La Jolla CA, USA

Circuits in the brain are comprised of remarkably heterogeneous neurons whose morphologies, connectivity patterns and physiological properties are dynamically regulated by brain activity throughout postnatal life. Current estimates suggest that there are 21,000 genes and up to 1 million different proteins in humans. While studies of transcriptional dynamics in the brain have been transformative, transcriptional dynamics do not correlate with protein dynamics because protein synthesis, turnover and subcellular localization are tightly regulated spatially and temporally. New studies demonstrate that the extraordinary plasticity of the developing brain can be re-expressed in adult brain, allowing experience-dependent plasticity mechanisms to be engaged for repair from brain injuries or disease. These findings highlight exciting opportunities for treatment of brain injuries and diseases and emphasize the need to discover additional developmental plasticity mechanisms for these applications. I will present and discuss recent advances in proteomics in the brain and recent studies demonstrating rapid dynamics in protein synthesis required for neuronal plasticity, as well as proteomic analysis of axon transport in the rodent visual system.

PLENARY SESSION 2 - ELSPETH MCLACHLAN PLENARY
COMPUTATIONAL MODELS OF NEURAL DEVELOPMENT

Professor Geoffrey Goodhill[1]

1. Queensland Brain Institute, QLD, Australia

An important goal of computational neuroscience is to understand brain function in terms of the computations performed. I will discuss an interdisciplinary program of mathematical and experimental work which addresses some of the computational principles underlying neural development. This includes (i) how growing axons navigate to their targets by detecting and responding to molecular cues in their environment, (ii) the formation of maps in the visual cortex and how these are influenced by visual experiences, and (iii) how patterns of neural activity in the zebrafish brain develop to facilitate precisely targeted hunting behaviour. Together this work contributes to our understanding of both normal neural development and the etiology of neurodevelopmental disorders.

PLENARY SESSION 3 – ECCLES LECTURE
SEX DIFFERENCES IN NEUROLOGICAL DISEASE

Professor Pamela McCombe[1]

1. The University of Queensland, Australia

Sexual dimorphism arose with the evolution of sexual reproduction and is manifest as differences in anatomy and physiology. There is sexual dimorphism in the prevalence and severity of neurological disease. This can be seen in the autoimmune diseases such as multiple sclerosis, degenerative diseases such as motor neurone diseases, and brain injury including stroke and recovery from major surgery. The mechanisms for these differences will be discussed.

PLENARY SESSION 4 – LAWRIE AUSTIN PLENARY
NEUROPLASTICITY NEUROSCIENCE, MULTI-GENERATIONAL TRAUMA, AND THE TREATMENT OF ADDICTION AND OBESITY

Professor Selena E. Bartlett[1]

1. Group Leader Neuroscience and Obesity, Translational Research Institute, Institute for Health and Biomedical Innovation, School of Clinical Sciences, Faculty of Health, Queensland University of Technology, QLD, Australia

The overarching theme of my laboratory is to understand the molecular mechanisms driving addiction and obesity and translate this knowledge into more effective medications, predictive and preventative treatments and develop evidence-based programs. We were the first to show that varenicline, a neuronal nicotinic receptor modulator is a potential treatment for alcohol addiction and completed "proof of concept" clinical trials to demonstrate efficacy in humans. This research led to the discovery that sugar is as addictive as alcohol and nicotine, by changing neuronal nicotinic receptor activation in the nucleus accumbens, and that overconsumption of sugar changes the neuronal circuitry in the prefrontal cortex and the amygdala. We are now conducting clinical trials focussed on the tracking the amount of "added sugar" in the Australian diet using a smart phone app and applying neuroplasticity-based gamification approaches to reduce sugar intake to tackle obesity. More recently, we discovered that the overconsumption of sugar increases neuroinflammation and microglia activation and morphology. In collaboration with the Mazzieri lab and Dr Mark Pinkham at the Princess Alexandra hospital, we have shown that this leads to changes in brain microenvironment and favours tumour progression. The lab focusses on developing innovative approaches to rewire the brain circuits impacted by multi-generational trauma and stress, as this has been shown to play a major role in addiction and obesity. Advances in brain imaging and molecular techniques have allowed us to begin to dissect the mechanisms driving changes in serotonergic neuroplasticity that contribute to the promotion and prevention of addiction and obesity.

PLENARY SESSION 5 - ANS PLENARY
CHIAROSCURO IN THE VISUAL BRAIN

Professor Jose-Manuel Alonso[1]

1. State University of New York, College of Optometry, New York, USA

The brain uses two major visual pathways to process light (ON pathway) and dark (OFF pathway) features in visual scenes. As with pathways from contralateral and ipsilateral eyes, pathways signaling light and dark polarity segregate in primary visual cortex. Our results indicate that this afferent segregation (contralateral, ipsilateral, ON and OFF) splits the cortical map of visual space into four copies that form an eye/polarity grid. The two eyes segregate along the grid axis that changes spatial position at the slowest rate (eye axis) to maximize the spatial binocular match needed for depth perception. In turn, light and dark polarity segregate along the axis that changes spatial position at the fastest rate (polarity axis) to maximize the spatial mismatch needed to process stimulus orientation. This eye/polarity grid is not symmetric; it is OFF biased. Cortical responses to dark stimuli are stronger, faster, and have better spatiotemporal resolution than cortical responses to light stimuli. Moreover, OFF cortical receptive fields anchor the map of visual space while ON receptive fields rotate around OFF receptive fields. Our results also indicate that this OFF-dominated/OFF-centric cortical organization originates from a size distortion in the retinal representation of light stimuli at the photoreceptor layer that we call neuronal blur. We believe that this neuronal blur has important implications for cortical function, visual disease, and may provide the basis for chiaroscuro, a technique discovered by Leonardo da Vinci to maximize contrast between lights ("chiaro") and darks ("oscuro") in visual art.

A.W. CAMPBELL AWARD PRESENTATION
TARGETING SPINAL ADENOSINE SIGNALLING TO TREAT CHRONIC PAIN

A/Professor Wendy Imlach[1]

1. Monash Biomedicine Discovery Institute & Department of Physiology, Monash University, Melbourne, VIC, Australia

Neuropathic pain, one of the most intense types of chronic pain, is caused by malfunction of the nervous system and involves persistent changes in signalling within pain pathways. We have shown that there is an increase in endogenous adenosine in the spinal cord in chronic pain states, increased sensitivity of adenosine A1 receptors in the dorsal horn and changes in receptor expression in nociceptive afferents. These adaptations produce anti-nociceptive activity that can be further enhanced by positive allosteric modulation of the adenosine A1 receptor. In this talk, I will describe our work investigating adenosine signalling in nociceptive circuits and the effects of allosteric modulation of the adenosine receptor on spinal circuit activity in neuropathic pain states. We have used patch-clamp electrophysiology to measure synaptic input into the spinal dorsal horn and changes in intrinsic activity of dorsal horn nociceptive neurons in both primate and rodent ex vivo spinal cord to understand the analgesic mechanism at a circuit level. These findings are supported by our in vivo data which show potential for the adenosine A1 receptor as a therapeutic target to reduce pathological pain.

NINA KONDELOS AWARD PRESENTATION

RECONSTRUCTING SACRAL VISCERAL CIRCUITS FOR BIOELECTRONIC MEDICINE

Professor Janet Keast[1]

1. Chair, Anatomy and Neuroscience, University of Melbourne, Parkville, VIC, Australia

Understanding the neural regulation of the pelvic organs (lower urinary and digestive tracts, reproductive organs) is challenged by the physical complexity of the peripheral neural circuits, and features of their synaptic connectivity that appear to break several fundamental rules of autonomic and sensory nervous system organization and function. This area of the nervous system also shows strong sexual dimorphism, raising additional mechanistic questions for the early development, maturation and plasticity of these circuits. This presentation will demonstrate approaches that have been established to define this 'sacral visceral connectome' and will also illustrate how this new knowledge is being applied to the expanding field of bioelectronic medicine, to develop neuromodulation approaches for treating pelvic organ dysregulation and visceral pain.

Symposia

TUESDAY 3 DECEMBER 2019

SYMPOSIUM 1
10:00am – 12:00pm, City Rooms 1 & 2

New insights in Motor Neuron Disease pathogenesis, therapeutics and biomarkers

Chairs: Mary-Louise Rogers (Flinders University) & Bradley Turner (Florey Institute of Neuroscience and Mental Health)

10:00am	**Don Cleveland** (Ludwig Institute, University of California) Premature polyadenylation and loss of the neuronal stathmin-2 inhibits axonal regeneration in TDP-43-dependent neurodegeneration
10:30am	**Avinda Nath** (National Institute of Neurological Disorders and Stroke) Endogenous retroviral elements in ALS and other neurodegenerative diseases
11:00am	**Andreas Malaspina** (Blizard, Institute of Cell and Molecular Medicine, Barts & the London School of Medicine & Dentistry, London) Pathogenesis and molecular mechanisms that inform ALS/MND biomarkers
11:30am	**Shyuan Ngo** (Australian Institute for Bioengineering and Nanotechnology) Insights into metabolic dysfunction in motor neuron disease

SYMPOSIUM 2
10:00am – 12:00pm, City Rooms 3 & 4

New perspectives in neural circuits modelling

Chair: Gary Egan (ARC Centre of Excellence for Integrative Brain Function)

10:00am	**Pulin Gong** (The University of Sydney) An integrated model linking structural and dynamical properties of local cortical circuits
10:30am	**Anthony Burkitt** (The University of Melbourne) Real-time temporal alignment of neural activity in neural circuits
11:00am	**Tatiana Kameneva** (Swinburne University of Technology & The University of Melbourne) Mechanisms of combined electrical and optogenetic costimulation
11:30am	**Geoffrey Goodhill** (The University of Queensland) Separating spontaneous and evoked activity with a latent factor model of calcium imaging data

SYMPOSIUM 3
10:00am – 12:00pm, Riverbank Room 7

Diagnostics and Theranostics in Psychiatry: Using advanced biological, bioinformatics and computational tools to improve clinical outcomes

Chair: Thomas Burne (Queensland Brain Institute)

10:00am	**Elizabeth Thomas** (The Scripps Research Institute) DNA methylation biomarkers as early predictors of psychiatric disorders
10:30am	**Brian Dean** (Florey Institute of Neuroscience and Mental Health) From brain transcriptomics to blood tests: fact or fantasy
11:00am	**Rachel Hill** (Monash University) A national data linkage platform to identify predictors of mental illness
11:30am	**Scott Clark** (University of Adelaide) Multimodal machine learning for prediction of the first psychotic episode

SYMPOSIUM 4
10:00am – 12:00pm, Riverbank Room 8

Through the looking glass: Observing real time changes in brain circuitry

Chairs: Alison Canty (Wicking Dementia Research and Education Centre, University of Tasmania)

10:00am	**Vincenzo De Paola** (Imperial College London) Illuminating cortical circuit development and dysfunction in humanised models
10:30am	**Catherine Blizzard** (University of Tasmania) Do regional spine dynamics contribute to the vulnerability of brain regions to neurodegenerative disease such as Amyotrophic Lateral Sclerosis and Frontotemporal Dementia?
11:00am	**Lucy Palmer** (Florey Institute of Neuroscience and Mental Health) Imaging neural dynamics during goal-directed behaviour
11:30am	**Ethan Scott** (University of Queensland) Sensory processing in larval zebrafish: perspectives from whole-brain calcium imaging

SYMPOSIUM 5
10:00am – 12:00pm, Hall L

Presidential Symposium: Synaptic mechanisms of plasticity and memory

Chair: Cliff Abraham (President: Australasian Neuroscience Society, Brain Research New Zealand and University of Otago)

10:00am	**Haruhiko Bito** (University of Tokyo) Regulation of long-term memory via inverse synaptic tagging of activity-induced Arc
10:30am	**Graham Collingridge** (University of Toronto) Calcium permeable AMPARs and synaptic plasticity in the hippocampus
11:00am	**Johanna Montgomery** (University of Auckland) The role of plasticity in disorders of the central and peripheral nervous systems
11:30am	**Joanna Williams** (University of Otago) Bilateral regulation of histone deacetylase activity and gene expression is associated with an intermediate form long-term potentiation in vivo

SYMPOSIUM 6
1:45pm – 3:45pm, City Rooms 1 & 2

Technical developments at the frontier of neuroscience

Chair: Timothy Bredy (The University of Queensland)

1:45pm	**Dan Ohtan Wang** (Kyoto University) Dynamic localization of RNA molecules and techniques to visualize them
2:15pm	**Ryan Lister** (The University of Western Australia) Editing the epigenome
2:45pm	**Phillipa Tablerlay** (University of Tasmania) geNOMeC maps of neuronal epigenetic changes in Alzheimer's disease
3:15pm	**John Lin** (University of Tasmania) New optogenetic tools for the modulation of membrane excitability, synaptic plasticity and learning

SYMPOSIUM 7
1:45pm – 3:45pm, City Rooms 3 & 4

Glia in neurotransmission

Chair: Kimberley Pitman (University of Tasmania)

1:45pm	**Raphael Ricci** (University of Tasmania) Kainate receptor signalling in Multiple Sclerosis and Schizophrenia
2:15pm	**Nicola Allen** (Salk Institute for Biological Studies) Astrocyte regulation of neuronal synapses
2:45pm	**Yasuyuki Osanai** (Monash University) Length of myelin internodes of oligodendrocytes is controlled by microenvironment influenced by axonal activity in sensory deprived mouse models
3:15pm	**Junhua Xiao** (Florey Institute of Neuroscience and Mental Health) Neurotransmission in myelin-forming glial cells and function

SYMPOSIUM 8
1:45pm – 3:45pm, Riverbank Room 7

Mechanisms of Pain: From the periphery to the brain

Chair: Andrea Harrington (University of Adelaide)

1:45pm	**Stuart Brierley** (Flinders University) Peripheral targets for treating chronic visceral pain: From tarantula toxins to itchy colons
2:15pm	**Yves De Koninck** (Université Laval & CERVO Research Centre) Spinal inhibition in health and disease
2:45pm	**Brett Graham** (University of Newcastle) Using optogenetics to link spinal circuits and pain behaviour in mice
3:15pm	**Elena Bagley** (The University of Sydney) Central sensitization of the spino-parabrachial-amygdala pathway that outlasts a brief nociceptive stimulus

SYMPOSIUM 9
1:45pm – 3:45pm, Riverbank Room 8

Deconstructing the synapse: How pre- and post-synaptic proteins come together to fine tune synaptic strength in health and disease

Chairs: Nela Durisic (The University of Queensland) & Ramón Martínez-Mármol (The University of Queensland)

1:45pm	**Subhojit Roy** (The University of California) Gene-editing in sporadic Neurodegenerative diseases
2:15pm	**Frederic Meunier** (The University of Queensland) Nanoscale organisation of the exocytic machinery
2:45pm	**Sarah Gordon** (Florey Institute of Neuroscience and Mental Health) Neurodevelopmental synaptopathies: Presynaptic dysfunction in intellectual disability
3:15pm	**Patricio Opazo Olavarria** (The University of Queensland) Compensating and recovering from dendritic spine loss in spinopathologies

SYMPOSIUM 10
1:45pm – 3:45pm, Hall L

The Stressed Brain: Translating preclinical concepts into therapeutic realities

Chair: Anand Gururajan (University of Sydney)

1:45pm	**Tony Hannan** (University of Melbourne) Neurobiological effects of stress and associated glucocorticoids in mouse models of brain disorders
2:15pm	**Olivia O'Leary** (University College Cork) An emerging therapeutic target for stress-related psychiatric disorders
2:45pm	**Christopher Dayas** (University of Newcastle) Channel Rhodopsin (ChR2)-assisted circuit mapping of novel stress control pathways
3:15pm	**Dagmar Koethe** (University of Sydney) Endocannabinoids and Neuropeptides in CSF and serum from borderline personality disorder and PTSD patients

WEDNESDAY 4 DECEMBER 2019

SYMPOSIUM 11
10:00am – 12:00pm, City Rooms 1 & 2

Vision, information processing and cognition

Chair: Ehsan Arabzadeh (Australian National University)

10:00am	**Karin Nordstrom** (Flinders University) Target detection in the hoverfly visual system
10:30am	**Stephen Williams** (Queensland Brain Institute) Role of dendritic information processing in neuronal circuit function
11:00am	**Paul Martin** (University of Sydney) New insights into ancient visual pathways
11:30am	**Jason Mattingley** (Queensland Brain Institute & School of Psychology, The University of Queensland) Understanding the role of prediction in sensory encoding

SYMPOSIUM 12
10:00am – 12:00pm, City Rooms 3 & 4

Parkinson's disease: from pathogenesis to regeneration

Chair: Lachlan Thompson (Florey Institute of Neuroscience and Mental Health)

10:00am	**Glenda Halliday** (University of Sydney) The role of α-synuclein in dopamine neuron degeneration in Parkinson's disease
10:30am	**Deniz Kirik** (University of Lund) Gene therapy for Parkinson's disease: GDNF and α-synuclein lowering approaches
11:00am	**Clare Parish** (Florey Institute of Neuroscience and Mental Health) Advancing stem cell and gene therapy for Parkinson's disease
11:30am	**Cedric Bardy** (Flinders University) Genetic predispositions of Parkinson's disease revealed in patient-derived brain cells

SYMPOSIUM 13
10:00am – 12:00pm, Riverbank Room 7

Computational psychiatry

Chairs: Marta Garrido (Queensland Brain Institute, The University of Queensland) & Carsten Murawski (The University of Melbourne)

10:00am	**Bernard Balleine** (University of New South Wales) Hierarchical and network models of decision-making and specific psychopathology
10:30am	**Shinsuke Suzuki** (University of Melbourne) Obsessive-compulsive traits impair reinforcement learning through the change of exploration strategies
11:00am	**Roshini Randeniya** (The University of Queensland) Bayesian models of atypical sensory perception in Autism Spectrum
11:30am	**Xiaosi Gu** (Icahn School of Medicine at Mount Sinai) The anatomy of beliefs: Insights from computational psychiatry research on addiction

SYMPOSIUM 14
10:00am – 12:00pm, Riverbank Room 8

Illuminating neural circuits of emotional and motivational behaviour

Chairs: Asheeta Prasad (University of New South Wales) & Zoran Boskovic (Queensland Brain Institute)

10:00am	**Mazen Kheirbek** (University of California) Memory codes in the dentate gyrus
10:30am	**Robyn Brown** (Florey Institute of Neuroscience and Mental Health) Why do women overeat? Characterizing a model of 'emotional' binge eating in female mice
11:00am	**Roger Marek** (Queensland Brain Institute) Neural function and connectivity to drive emotional learning
11:30am	**Dhanisha Jhaveri** (The University of Queensland) Targeting adult-born hippocampal neurons to regulate local circuitry and anxiety-related behaviour

SYMPOSIUM 15
10:00am – 12:00pm, Hall L

When gut meets brain: their impact on food intake control

Chair: Denovan Begg (University of New South Wales)

10:00am	**Damien Keating** (Flinders University) Understanding interactions between the gut microbiome, enteroendocrine cells and the nervous system
10:30am	**Zhi Yi Ong** (University of New South Wales) Hindbrain control of feeding behaviours
11:00am	**Amanda Page** (The University of Adelaide) Gastric vagal afferent satiety signalling in health and disease
11:30am	**Ivan de Araujo** (Icahn School of Medicine at Mount Sinai) The gut-brain axis and reward

THURSDAY 5 DECEMBER 2019

SYMPOSIUM 16
9:00am – 11:00am, City Rooms 1 & 2

How altered lipid metabolism and myelin structure causes neurodegeneration

Chair: Junhua Xiao (The University of Melbourne)

9:00am	**John Kwok** (The University of Sydney) Mutations in white matter disease genes are causal of frontotemporal dementias and their impact on neuroimaging and peripheral lipid biomarkers
9:30am	**Karen Mather** (The University of New South Wales) Investigating lipidomics from an ageing perspective and as potential biomarkers of early Alzheimer's disease
10:00am	**Maria Fuller** (Women's and Children's Hospital) The brain lipidome as a therapeutic target for inherited neurodegenerative disorders
10:30am	**Anthony Don** (The University of Sydney) Restoring neuroprotective lipid signalling in Alzheimer's Disease

SYMPOSIUM 17
9:00am – 11:00am, City Rooms 3 & 4

Pathway to success: paving the way for translational stroke research

Chairs: Michelle Rank (The University of Melbourne) & Kirsten Coupland (University of Newcastle)

9:00am	**Steven Zuryn** (Queensland Brain Institute) Discovery of molecules and molecular mechanisms that protect neurons from stress
9:30am	**Nicole Jones** (University of New South Wales) Hypoxia inducible-1 (HIF-1) as a target for brain repair
10:00am	**Michael O'Sullivan** (University of Queensland Centre and Royal Brisbane and Women's Hospital) What, if anything, have experimental lesions in models taught us about cognitive function after brain injury in humans?
10:30am	**Michael Tymianski** (Krembil Research Institute, Toronto Western Hospital, University of Toronto) Development of PSD95 inhibitors for acute ischemic stroke: From target discovery to Phase 3 trials

SYMPOSIUM 18
9:00am – 11:00am, Riverbank Room 7

Wiring the brain: the development of cortical neurons and networks

Chair: Geoffrey Goodhill (University of Queensland)

9:00am	**Nathalie Dehorter** (Australian National University) Molecular control of cortical interneuron development in the mouse embryo
9:30am	**Michael Crair** (Yale University) Self-organization in the developing nervous system
10:00am	**Linda Richards** (University of Queensland) Emergence of activity patterns in the developing cerebral cortex
10:30am	**James Bourne** (Monash University) The role of the thalamic nuclei in development of cortical anatomy and function

SYMPOSIUM 19
9:00am – 11:00am, Riverbank Room 8

Neurobiological mechanisms of drug addiction

Chair: Andrew Lawrence (Florey Institute of Neuroscience and Mental Health)

9:00am	**Michael Bowen** (University of Sydney) Rebalancing the addicted brain: prosocial compounds for treating substance abuse disorders
9:30am	**Jennifer Cornish** (Macquarie University) Methamphetamine addiction circuitry: the effect of oxytocin treatment
10:00am	**Arnauld Belmer** (Queensland University of Technology) Serotonin neuron signalling and plasticity in chronic alcohol consumption and withdrawal
10:30am	**Asheeta Prasad** (The University of New South Wales) Complementary roles for ventral pallidum cell types and their projections in relapse

SYMPOSIUM 20
9:00am – 11:00am, Hall L

EMBL Australia scientific symposium on neural circuitry and cellular integrity in health and disease

Chair: Ville-Petteri Makinen (South Australian Health and Medical Research Institute)

9:00am	**Cornelius Gross** (European Molecular Biology Laboratory) Primal Fear - the neural circuitry of instinctive defence
9:30am	**Yann Gambin** (University of New South Wales) Protein-protein interactions, Parkinson's disease and biomarkers in blood
10:00am	**Pirjo Apaja** (South Australian Health and Medical Research Institute) Regulation of proteostasis during astrocyte stress responses
10:30am	**Leon Teo** (Monash University) Unravelling the identity and reactivity of astrocytes in primates after injury

Oral Presentations

WEDNESDAY 4 DECEMBER 2019

ORAL 1 – SENSORY CIRCUITS AND MEDIATORS
1:45PM – 3:45PM, CITY ROOMS 1 & 2

Chairs: Erica Fletcher and Luke Grundy

Xioatian Jiang* (The University of Western Australia) - *Characterizing the role of voltage-gated potassium channel Kv8.2 subunits in the retina using a novel mouse model*

Hui Li (The University of Adelaide) - *Activation of CRF2 receptor increases gastric vagal afferent mechanosensitivity*

Mallory Luke* (The University of New South Wales) – *Disruption of the neurite networks in dorsal root ganglion neurons following treatment with the chemotherapeutic drug paclitaxel*

Sarah Petryszyn (The Florey Institute of Neuroscience and Mental Health) - *Significance of POm thalamo-striatal terminals in the dorsolateral striatum*

Saba Gharaei (Eccles Institute of Neuroscience) - *Superior colliculus modulates cortical coding of somatosensory information*

Conrad Lee* (Australian National University) - *State dependent changes in perception and sensory coding in the somatosensory cortex*

Javier Jimenez-Martin* (University of Otago) - *Visualising population voltage responses of cortical layer 2/3 during sensory stimulation in awake mice*

Emmanuel Marquez Legorreta* (The University of Queensland) - *Brain-wide visual habituation networks in wild type and fmr1 zebrafish*

ORAL 2 – SYNAPTIC TRANSMISSION
1:45PM – 3:45PM, CITY ROOMS 3 & 4

Chairs: Brian Billups and Helen Gooch

Vladimir Sytnyk (The University of New South Wales) - *Disruptions in GABAergic signalling caused by the neuronal growth regulator 1 (NEGR1) in high fat diet-induced obesity*

Adam Hines* (Queensland Brain Institute) - *Pre-synaptic effects of general anaesthetics: from single molecule dynamics to whole-brain connectivity*

Hilary Yong (Queensland Brain Institute) - *PICK1 regulates presynaptic vesicle recycling in primary hippocampal neurons*

** Please note these presenters are students*

Christopher Small* (The University of Queensland) - *SV2A surface pool nanoclustering and recycling in synaptic vesicles is controlled by synaptotagmin-1 in hippocampal nerve terminals*

Anmin Jiang* (The University of Queensland) - *Activity-dependent recruitment and nanoscale organization of dynamin I isoforms in neurosecretory cells*

Lauren Bleakley* (The Florey Institute of Neuroscience and Mental Health) – *Characterizing a mouse model of HCN1 genetic epilepsy*

Nela Durisic (The University of Queensland) - *Epilepsy-causing mutations to the β3 subunit of GABA type-A receptor alter the receptor function and trafficking*

Benjamin Hunn (University of Oxford) - *Impairment of macroautophagy in dopamine neurons has opposing effects on Parkinsonian pathology and behaviour*

ORAL 3 – DEVELOPMENT AND REGENERATION

1:45PM – 3:45PM, RIVERBANK ROOM 7

Chairs: Cedric Bardy and Anthony Don

Tobias Bluett* (Queensland Brain Institute) - *Onset and early dynamics of calcium activity in the developing neocortex revealed by in vivo two-photon imaging of the marsupial fat-tailed dunnart*

Rodrigo Suarez (Queensland Brain Institute) - *Timing of SATB2 and CTIP2 expression differentially regulates development of cortical projection neurons in marsupial and eutherian mammals*

Sebastian Quezada (RMIT University) - *Genetic and microstructural differences between gyri and sulci during gyrification in the cortical plate of fetal sheep*

Kai Sempert* (Queensland Brain Institute) - *The RGMa-Neogenin pathway regulates actin remodelling during dendritic spine maturation*

Laura Fenlon (Queensland Brain Institute) - *Novel patterns of axonal plasticity in congenital and acquired developmental callosal absence*

Lulu Xing (Monash University) - *A novel cell-ablation strategy for studying the role of oligodendrocyte-forming stem cells in myelin homeostasis and regeneration*

Eva Tomaskovic-Crook (University of Wollongong) - *Human neural tissues from induced pluripotent stem cells using conductive biogel and printed polymer microelectrode arrays for 3D electrical stimulation*

Lachlan Harris (Francis Crick Institute) - *Progressive changes to neural stem cell quiescence ensure lifelong neurogenesis*

** Please note these presenters are students*

ORAL 4 – GLIA
1:45PM – 3:45PM, RIVERBANK ROOM 8

Chairs: Kim Hemsley and Toby Merson

Kimberley Pitman (University of Tasmania) - *The voltage gated calcium channel CaV1.2 promotes adult oligodendrocyte progenitor cell survival in the mouse corpus callosum but not motor cortex*

Darren Clarke* (The University of Western Australia) - *Low intensity repetitive magnetic stimulation alters gene expression in cultured mouse cortical astrocytes*

Carlie Cullen (University of Tasmania) - *Myelin and nodal plasticity modulate action potential conduction in the adult mouse brain*

Jana Vukovic (The University of Queensland) - *Repopulating microglia promote brain repair in an IL-6-dependent manner*

Ali Delbaz (Griffith University) - *Neisseria meningitidis induces pathology-associated cellular and molecular changes in trigeminal Schwann cells*

Ross O'Shea (La Trobe University) - *Selective inhibition of ROCK2 does not cause neurotrophic changes in cultured mouse astrocytes*

Ruth Musgrove (University of Tasmania) - *Astroglia mediate the transfer of Parkinson's disease pathology through neuronal networks*

Bianca Guglietti* (The University of Adelaide) - *Fyn kinase inhibition as a novel therapeutic target for Parkinson's disease*

ORAL 5 – INJURY TO THE NERVOUS SYSTEM
1:45PM – 3:45PM, HALL L

Chairs: Brenton Hordacre and Renee Turner

Shenpeng Zhang (La Trobe University) - *A retrospective analysis of 5 years of laboratory data to identify interrelationships between outcome measures in experimental stroke*

Isabella Bilecki* (The University of Adelaide) - *A comparison of peripheral and central biomarkers of post-stroke secondary neurodegeneration*

Lin Kooi Ong (Monash University Malaysia) – *Growth hormone in experimental stroke: from motor improvement to neurogenesis and beyond*

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

** Please note these presenters are students*

Bronwyn Kivell (Victoria University of Wellington) - *The kappa opioid receptor agonist ethoxymethyl ether Salvinorin B promotes functional recovery and remyelination in preclinical models of multiple sclerosis*

Heidi Walkden (Griffith University) - *Does a nasal injury increase bacterial infection of your brain?*

Sarah Stephenson (Murdoch Children's Research Institute) - *A high density of dysmorphic neurons in the centre of dysplasias are the driver of epileptic seizures in tuberous sclerosis complex*

Leah Beauchamp* (The University of Melbourne) - *Does dopamine mis-metabolism underlie preclinical hyposmia in Parkinson's disease?*

THURSDAY 5 DECEMBER 2019

ORAL 6 – NEW TECHNOLOGIES AND METHODS

1:30PM – 3:30PM, CITY ROOMS 1 & 2

Chairs: Karissa Barthelson and Nick Spencer

Omar Ibrahim* (QUT- Institute of Health and Biomedical Innovation) *A novel approach to identify functional genetic variants associated with persistent post-concussion symptoms*

Andrew Allen (The University of Melbourne) - *Development and validation of a novel circuit-based chemogenetic inhibitory approach*

Sandesh Panthi* (University of Otago) - *Using DREADD technology to interrogate dysfunctional feed-forward inhibition within cortico-thalamo-cortical microcircuits to investigate absence seizure generation and altered behaviour*

Merja Joensuu (The University of Queensland) - *Super-resolving the nanoscale dynamics of Botulinum Neurotoxin Type-A intoxification journey*

Harrison Evans* (Queensland Brain Institute) - *Novel transgenic click chemistry tool enables the identification of distinct de novo proteomic changes during memory formation specifically in the hippocampus*

Mina Ghanimi Fard* (Macquarie University) - *Targeting glycans on glioblastoma cells with nanodiamonds*

Indranil Basak (University of Otago) - *Characterisation of CLN5 Batten disease in induced pluripotent stem cell derived human neurons*

Jenny Ekberg (Griffith University) - *Modelling cell-cell interactions in the olfactory nerve using a novel 3D culture method*

** Please note these presenters are students*

ORAL 7 – PSYCHIATRIC DISORDERS AND MEMORY

1:30PM – 3:30PM, CITY ROOMS 3 & 4

Chairs: Frances Corrigan and Tony Hannan

Maarten van den Buuse (La Trobe University) - *Paradoxical effects of chronic exercise on anxiety-like behaviour in rats: sex differences and role of the BDNF val66met polymorphism*

Martin Lewis (SAHMRI) - *The novel gene PHF21B associated with major depression exhibits sexually dimorphic responses to chronic stress in a transgenic preclinical model*

Xiang Li (The University of Queensland) - Elucidating the functional role of novel DNA modifications in fear extinction memory formation

Hayley North* (Neuroscience Research Australia) - *Increased inflammation and macrophage infiltration is associated with altered subependymal zone neurogenesis in schizophrenia but not bipolar disorder*

Alexandre Cristino (Griffith University) - *Beyond the central dogma: from junk DNA to Schizophrenia-associated cell functions*

Anna Schroeder (Monash University) - *The betacellulin knock-out mouse: Behavioural characterisation of a novel model with relevance to schizophrenia*

Angeline Leong* (University of Newcastle) - *Effects of maternal immune activation and adolescent cannabinoid exposure on GABAergic and BDNF gene expression in the prefrontal cortex*

Charles Watson (The University of Western Australia) - *The need for clinicians to update their knowledge on brain organisation*

ORAL 8 – COGNITION, LEARNING, AND BEHAVIOUR

1:30PM – 3:30PM, RIVERBANK ROOM 7

Chairs: Lyndsey Collins-Praino and Hannah Keage

Thomas Burne (The University of Queensland) *Adult vitamin D deficiency disrupts spatial memory and perineuronal nets in the hippocampus*

Asheeta Prasad (The University of New South Wales) - *Ventral pallidum subpopulations in reward seeking behaviour*

Teri Furlong (Neuroscience Research Australia) - *Habitual behaviour resulting from high-calorie food is prevented by an orexin-receptor antagonist*

Cheryl Shoubridge (The University of Adelaide) - *Short term estradiol treatment reduces seizure severity but does not improve cognitive measures in mouse models of congenital epilepsy and intellectual disability*

** Please note these presenters are students*

Sharna Jamadar (Monash University) - *Dynamic within-subject functional connectivity in the resting state using high temporal-resolution simultaneous BOLD-fMRI FDG-PET*

Janet van Eersel (Macquarie University) - *Hippocampal network aberrations in P301S tau transgenic mice is linked to immediate early genes*

Kimberly Archer* (University of Newcastle) - *Investigating the role of theta frequency oscillations in visual processing during reading*

Jacqueline Heighway* (The Florey Institute of Neuroscience and Mental Health) - *Recurrent SCN2A autism variant S1758R shows a loss-of-function phenotype*

ORAL 9 – AUTONOMIC CIRCUITS

1:30PM – 3:30PM, RIVERBANK ROOM 8

Chairs: Peregrine Osborne and Rochelle Peterson

Marcello Costa (Flinders University) – *Enteric neural mechanisms of guinea pig faecal pellet formation*

Simon Brookes (Flinders University) – *Characterisation of descending interneuronal pathways in myenteric plexus of human colon*

Anita Leembruggen* (The University of Melbourne) - *Group I metabotropic glutamate receptors are involved in neural control of colonic motility*

Sabrina Poon* (The University of Melbourne) – *Neonatal exposure to the antibiotic vancomycin induces long-term effects on the microbiota, enteric nervous system and host metabolism*

Madushani Herath* (The University of Melbourne) - *Altered neuronal regulation of mucosal barrier function in the Neuroligin-3R451C mouse model of autism*

Aung Aung Kywe Moe (The University of Melbourne) – *Autonomic and respiratory modulation via optogenetic stimulation of left vs right vagal neurons of different embryological lineages*

Stuart McDougall (The Florey Institute of Neuroscience and Mental Health) - *Synaptic modulation of viscerosensory signals within the brainstem*

Vanesa Stojanovska (Hudson Institute of Medical Research) - *Synaptic modulation of viscerosensory signals within the brainstem*

** Please note these presenters are students*

ORAL 10 – DISORDERS OF THE NERVOUS SYSTEM

1:30PM – 3:30PM, HALL L

Chairs: Jenny Gunnersen and Arne Ittner

Mohammad Ibrahim* (University of Otago) - *Metabotropic glutamate receptors as a potential therapeutic target for the treatment of Spinocerebellar ataxia type 1 (SCA1)*

Craig McIntosh* (Murdoch University) - *Antisense oligonucleotide-mediated exon skipping to treat Spinocerebellar Ataxia Type 3*

Pratishtha Chatterjee (Macquarie University) - *Iron dyshomeostasis manifests in the periphery in preclinical Alzheimer's disease*

Ryu Takechi (Curtin University) - *Synthesis and secretion of human lipoprotein beta-amyloid restricted to peripheral lipogenic organs in mice results in an early Alzheimer's-like neurodegenerative phenotype*

Morgan Newman (The University of Adelaide) - *Loss of hypoxia response in a zebrafish model of familial Alzheimer's disease*

Eleanor Drummond (University of Sydney) - *Phosphorylated tau interactome in the human Alzheimer's disease brain*

Anthony White (QIMR Berghofer Medical Research Institute) - *iPSC-derived brain endothelial cells carrying PSEN1 Alzheimer's mutation exhibit altered phenotype and permeability in response to focused ultrasound, with potential implications for amyloid clearance and drug delivery*

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

** Please note these presenters are students*

Poster Presentations

Please note these are submissions made before August 20th.

Odd number posters to be manned between 12:00pm- 1:45pm on Tuesday 3rd December
Even number posters to be manned between 12:00pm - 1:45pm on Wednesday 4th December

Poster Number	Name	Abstract Title
1	Gayathri Balasuriya	Altered gastrointestinal motility in a mouse model of cigarette smoking-induced Chronic Obstructive Pulmonary Disease
2	Mariana Brizuela	Activation of Dopamine D2 receptors in the CNS reduces thermogenesis elicited by activation of the lateral habenula
3	John Furness	Evidence that heteromers of dopamine and ghrelin receptors in the spinal cord control colorectal function
4	Andrea Harrington	Transneuronal tracing of colonic-related afferent circuits in mice using herpes simplex virus 1 strain H129 expressing EGFP
5	Suzanne Hosie	Gastrointestinal dysmotility in the C57BL/6 NL3R451C mouse model of autism
6	Geraldine Kong	Longitudinal omics approach to investigate the microbiome-gut-brain-axis in R6/1 mice, a transgenic mouse model of Huntington's disease
7	Erin McAllum	Regional iron distribution and soluble ferroprotein profiles in the healthy human brain
8	Samiha Sharna	Changes in caecal neuroimmune interactions in the Neuroligin-3R451C mouse model of autism
9	Ajai Vyas	Neurobiology of Fatal Attraction
20	Micah Daniel Austria	Neurovascular unit characterization in the Alzheimer's disease middle temporal gyrus using human brain tissue microarrays
21	Megan Bakeberg	Cholesterol-related gene is associated with longitudinal cognitive decline in an Australian cohort of Parkinson's disease patients
22	Karissa Barthelson	Identifying early molecular and vascular changes in young adult zebrafish brains due to mutations in early-onset, familial Alzheimer's disease-related genes
23	Julien Bensalem	Improving brain autophagy to counteract Alzheimer's disease
24	Alison Canty	In vivo imaging of cortical axon degeneration after laser induced injury
25	Mark Corbett	Expansions of a pentameric intronic ATTTC repeat in STARD7 lead to familial adult myoclonic epilepsy linked to chromosome 2

Poster Presentations

Poster Number	Name	Abstract Title
26	Jaisalmer de Frutos	Does APOE genotype moderate the relationship between physical activity and brain health and dementia risk?
27	Melinda Fitzgerald	NG2+ cells are vulnerable at breaches of the blood brain barrier during secondary degeneration following neurotrauma
28	Sameera Iqbal	Investigation of polysialic acid expression in response to immune signalling in the nervous system
29	Hannah Keage	Patterns of conversion and reversion between cognitive states (normal, MCI and dementia) in Parkinson's disease: a systematic review and meta-analysis
30	Adeline Lau	Inhibition of heparan sulfate biosynthesis as a novel substrate reduction therapy for a paediatric-onset dementia
31	Preet Makker	Investigation of axonal excitability in preclinical mouse models of acute oxaliplatin-induced neurotoxicity
32	Ruth Napper	Using serial block face scanning electron microscopy to investigate long-term effects of binge alcohol exposure during development on mature brain structure in the rat: preliminary findings
33	Asheeta Prasad	Cellular Changes in the Substantia Nigra and Subthalamic Nucleus in Parkinson Disease pathology and Deep Brain Stimulation Treatment
34	Cheryl Shoubridge	Heterozygous loss of function of IQSEC2 /Iqsec2leads to increased activated Arf6 and severe neurocognitive seizure phenotype in females
35	Parnayan Syed	Effects of mutations in the GABA-A receptor a3 subunit that underlie epilepsy, autism, anxiety, facial deformities and intellectual disabilities
36	Michael Lardelli	A research program to discover the early brain molecular changes/ stresses that drive Alzheimer's disease through comparative 'omics analyses of genome-edited zebrafish
50	Ansab Akhtar	Brain Insulin Resistance in Alzheimer's disease: Targeting phosphoinositide 3-kinase (PI3K)/Akt/GSK-31 pathway
51	Thomas Burne	Adult vitamin D deficiency disrupts spatial memory and perineuronal nets in the hippocampus
52	Amu Faiz	Environment is a significant parameter in the switch between defensive behavioural responses

Poster Presentations

Poster Number	Name	Abstract Title
53	Jessica Moretti	Effects of repetitive transcranial magnetic stimulation on motivation in a mouse model
54	Albert Dayor Piersson	Relationship between plasma AB and structural brain alterations: A systematic review
55	Albert Dayor Piersson	Brain atrophy and its relationship with brain amyloid deposition, tau levels, and cerebral glucose metabolism in individuals at risk of cognitive decline
56	Genevieve Steiner	Reduced neuronal activation of attention and cognitive control mechanisms in amnestic mild cognitive impairment (aMCI) compared to healthy controls
57	Yukti Vyas	Influence of maternal high zinc diet on the development of autism-associated behaviours in Shank3-knockout mice
58	Cong Wang	Neural correlates of novel object recognition in the medial prefrontal cortex and hippocampus
59	Guohun Zhu	Cognitive load during multitasking can be accurately assessed based on a single channel EEG recording
70	Saurabh Bandhavkar	Extracellular matrix remodelling regulates adult hippocampal neurogenesis and improves spatial learning
71	Matthew Fanning	Maternal antibiotic consumption during pregnancy affects offspring ENS development
72	Maria Gancheva	Reprogramming human dental pulp stem cells into neural stem cells
73	Lachlan Jolly	Exploiting naturally occurring mutations to unravel the neurodevelopmental functions of the deubiquitylating enzyme USP9X
74	Peter Kozulin	Comparative transcriptomic analysis of forebrain connectivity across mammalian evolution
75	Riccardo Natoli	Active microRNA and binding partners in the degenerating retina
76	B K Chandrasekhar Sagar	Ultrastructural evaluation of synaptogenesis induced by electroconvulsive shock in the rat brain
77	Akram Zamani	Chronic white matter disruption following paediatric traumatic brain injury (pTBI) in mice
78	Fatemeh Ameri Sefideh	A novel role of extracellular ferritin in ferroptosis: implications for neurodegenerative diseases

Poster Presentations

Poster Number	Name	Abstract Title
87	Haowen Liu	A dual role for the UNC-13 M domain in Ca^{2+} - triggered neurotransmitter release
88	Holly Melland	A newly characterised neurodevelopmental disorder is caused by mutations in synaptotagmin-1 that alter synaptic vesicle dynamics
89	Abdur Rahman	PP1 inhibition is involved in lead-induced neurotoxicity in cultured rat embryonic hippocampal cells
90	Haozhe Wang	Studying the role of Kv7.2 and Kv7.3 ion channels in the mouse enteric nervous system with the assistance of computational modelling
95	Georgina Craig	Adaptive myelination regulated by changes to oligodendrocyte survival
96	Yasuyuki Osanai	Length of myelin internodes of oligodendrocytes is controlled by microenviroment influenced by axonal activity in sensory deprived mouse models
97	Huitong Song	Sphingosine kinase 2 protects oligodendrocytes and is required for remyelination
98	Jordan Wright	The transcription factor 'Olig2' recruits chromatin remodelling complexes to regulate proliferation and myelination in oligodendrocytes
99	Kaylene Young	LRP1 inhibits myelination and remyelination in the adult central nervous system
105	Brittany Rurak	Examining supplementary motor area-primary motor cortex connectivity using a novel transcranial magnetic stimulation protocol: Application in tremor-dominant Parkinson's disease
107	Connor Sherwood	Optical Control of Neuronal Behaviour with Organic Electronic Devices
108	James St John	Bioengineering a cell transplantation therapy to repair the injured spinal cord
111	Harry Carey	DeepSlice: A deep neural network for fully automatic alignment of histological sections
112	Farheen Farzana	Spatially mapping brain metabolism in a mouse model of Huntington's disease
113	Mahadeeswara Mandiyam	Reconstructing three-dimensional trajectories of freely flying honeybees in a semi-outdoor environment

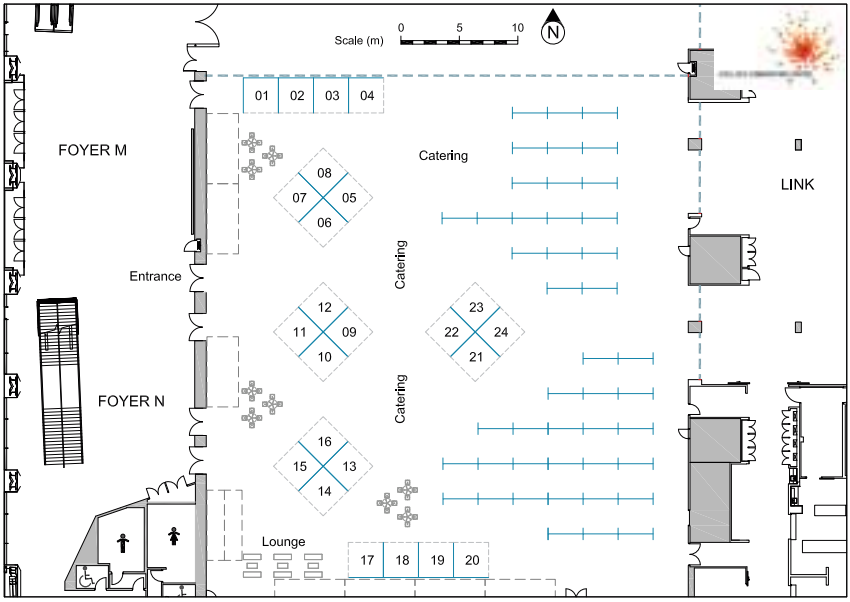
Poster Presentations

Poster Number	Name	Abstract Title
114	Rucha Pandit	The effect of low-intensity ultrasound on tau pathology in a transgenic mouse model and on the transport mechanisms across the blood-brain barrier
115	Sam Rathbone	Ultrasound mediated piezoelectric stimulation of human neural stem cells
116	Stephanie Rayner	Rapid, unbiased identification of protein inclusion components from patient post-mortem brain tissue using targeted-biotinylation and mass spectrometry
122	Alice Al Abed	Cognitive deficits in the CNTNAP2-/- mice model of autism: How altered circuit maturation affects adult memory
123	Kathryn Baker	The impact of chronic fluoxetine treatment in adolescence or adulthood on fear learning, parvalbumin neurons, and perineuronal nets
124	Isaac Bul Deng	Long term high-fat diet aggravates anxiety, depression and cognitive dysfunction in pR5 mice
125	Changtae Hahn	Thalamic shape and cognitive performance in amnestic mild cognitive impairment
126	Lauren Harms	Investigation of mismatch responses in rats: towards a new outcome measure for preclinical schizophrenia research
127	Lauren Hennessy	The effect of low-intensity repetitive transcranial magnetic stimulation delivered using standard and accelerated stimulation protocols on brain and behaviour in an animal model of depression
128	Neda Nasrollahi	Age differences in the processing of emotional information: A meta-analysis investigating face versus non-face pictures as potential moderators
136	Yee Lian Chew	Mapping wired and wireless neural connectivity to investigate behavioural and pathological states in C. elegans
137	Guthrie Dyce	Frequency tagging in the mouse vibrissal cortex
138	Bernard Evans	Discrimination of features in natural scenes driven by selective attention
139	Joseph Fabian	Mechanosensors underlying flight by feel on dragonfly wings
140	Ehsan Kheradpezhouh	Enhanced sensory coding in mouse vibrissal and visual cortex through TRPA1
141	Benjamin Lancer	Dragonfly target-detection neuron ignores high-contrast distractors

Poster Presentations

Poster Number	Name	Abstract Title
142	Yamni Mohan	The role of ON/OFF sub-regions of visual cortical simple cells in sharpening orientation selectivity
143	Subha Nasir Ahmad	Characterisation of ganglion cell types in human retina expressing the transcription factor SATB2
144	Gratia Nguyen	A model for the origin and development of orientation selectivity
145	Bao Nguyen	Exercise alters binocular rivalry dynamics in healthy young adults
146	Yuri Ogawa	Pattern electroretinography reveals the spatial resolving power and contrast sensitivity of insect compound eyes
147	Alexander Pietersen	State-dependence of gamma-band spiking activity in 'blue-OFF'cells in marmoset lateral geniculate nucleus
148	William Redmond	Categorical and invariant visual object capabilities of the superior colliculus - a threat detection centre of the brain
149	Taylor Singh	Bilateral integration of sensory information in the mouse whisker system
150	Kimberly Thek	Vagus nerve stimulation induces cellular plasticity in NTS neurons
151	Anlai Wei	Characterisation of Forkhead Protein (Foxp1) expressing cells in the marmoset retina
167	Yang Dong	Investigating Alzheimer's disease through mutating the PSEN1 gene in zebrafish
168	Barbora Fulopova	Region specific trends of amyloid deposition in APP/PS1 mice following mid-life environmental enrichment

Exhibition



Company	Booth
Genesearch	2
Thorlabs	3
Transnetyx, Inc	4
Multi Channel Systems MCS GmbH	5
Abcam	6
Stoelting	7
Symbiotic Devices	8
SDR Scientific	9
Ugo Basile SRL	10

Company	Booth
Australian Biosearch/Bio Legend	11
Scitech Pty Ltd	12
Miltenyi Biotec Australia Pty Ltd	13
Thermo Fisher	14
imetronic	15
Logos Biosystems, Inc.	16
illumina	17
Millennium Science	18
Inscopix, Inc.	19

Company	Booth
Lastek	20
AXT	21
Sapphire Bioscience Pty. Ltd.	22
In Vitro Technologies	23
Intelligent Imaging Innovations (3i)	24

Sponsors Profiles

3I INTELLIGENT IMAGING INNOVATIONS

Address: 3509 Ringsby Ct, Denver, CO 80216, USA
Telephone: +1 303 607 9429
Email: sales@intelligent-imaging.com
Website: www.intelligent-imaging.com
Facebook: @i.Inc
Twitter: @3i_inc
LinkedIn: Intelligent Imaging Innovations (3i)

3i designs and manufactures technologies for living cell, live cell, and intravital fluorescence microscopy including superresolution, computer-generated holography, spinning disk confocal, multi-photon and lightsheet. SlideBook software manages everything from instrument control to image capture, processing and data analysis. Established in 1995, 3i is headquartered in Denver, Colorado (USA) with offices in London, United Kingdom, and Göttingen, Germany.

ABCAM

Address: Level 16, 414 La Trobe Street, Melbourne, VIC 3000
Telephone: 1800 024 968
Email: orders@abcam.com
Website: www.abcam.com
Facebook: www.facebook.com/Abcam
Twitter: www.twitter.com/abcam
LinkedIn: www.linkedin.com/company/abcam

As an innovator in reagents and tools, Abcam's purpose is to serve life science researchers globally to achieve their mission, faster. Providing the research community with tools and scientific support, Abcam offers highly validated antibodies, including knock-out validation and assay kits to address important targets in critical biological pathways.

AUSTRALIAN BIOSEARCH/BIO LEGEND

Address: Unit 9, 8 Baretta Road, Wangarra, WA 6065
Telephone: 08 9302 2766
Email: customerservice@aust-biosearch.com.au
Website: www.aust-biosearch.com.au
LinkedIn: www.au.linkedin.com/company/australian-biosearch

Australian Biosearch supports Australia's Life Scientists by providing the highest quality products at an outstanding value. Our suppliers offer product ranges cover a diverse set of research areas including Immunology, Cell Signalling, Molecular Biology, Epigenetics, Gene Regulation, Neuroscience, Cancer, Stem cells, Cell Biology, Infectious diseases and other Life Sciences. To mention a few, the suppliers included are BioLegend, Cell Signalling Technology, Origene, Active Motif, Advanced BioMatrix, OZ Biosciences and many others.

AXT

Address: 1/3 Vuko Place, Warriewood, NSW 2102
Telephone: 02 9450 1359
Email: steve.hunter@axt.com.au
Website: www.axt.com.au
Twitter: @AXT_Australia
LinkedIn: www.linkedin.com/company/axt-pty-ltd

AXT is a supplier of diverse high-end scientific equipment offering unique products for neuroscience researchers. These products cover in vivo imaging modalities such as MRI, PET, SPECT and CT and microscopic imaging systems including holographic tomography, super resolution microscopy that can unlock cell structure and molecular interactions in living cells.

BRAIN FOUNDATION

Address: 37-43 Alexander Lane, Crows Nest NSW 2065
Telephone: 02 9437 5967
Email: trevor@brainfoundation.org.au
Website: www.brainfoundation.org.au
Facebook: www.facebook.com/BrainFoundationOz
Twitter: @brainfoundoz
LinkedIn: www.linkedin.com/company/brain-foundation

The Brain Foundation is a nationally registered charity dedicated to funding world-class research Australia- wide into neurological disorders, brain disease and brain injuries. Established in 1970 by neurologists and neurosurgeons, the Brain Foundation annually provides research grants to candidates who are selected by a scientific committee of eminent neurological practitioners.

CHRISSY CHEN INSTITUTE

Address: 735 Sand Hill Road Menlo Park, CA 94025 USA
Email: ContactUs@cheninstitute.org
Website: www.cheninstitute.org/en/home
Facebook: www.facebook.com/ChenInstitute
Twitter: @ChenInstitute
LinkedIn: www.linkedin.com/company/tianqiao_and_chrissy_chen_institute

The Tianqiao and Chrissy Chen Institute (TCCI) was established in 2016 with the mission to promote holistic brain research focused on three areas—brain discovery, treatment, and development. We partner with world-leading universities and research institutions to unlock the mysteries of the human brain.

GENESEARCH

Address: Unit 3, 8 Technology Drive, Arundel QLD 4214
Telephone: 1800 074 278
Email: info@genesearch.com.au
Website: www.genesearch.com.au
Facebook: www.facebook.com/Genesearch.eFreezer
Twitter: @genesearch
LinkedIn: www.linkedin.com/company/genesearch-pty-ltd

Genesearch is home of the eFreezer and Australian distributor of: New England Biolabs molecular biology reagents; Cell Signaling Technology antibodies; Cisbio Bioassays kits and tools for immunoassay development; and Thompson instruments, PreOmics for proteomics and GENEWIZ services.

illumina Australia

Address: 1 International Court, Scoresby VIC 3179
Telephone: 03 9212 9900
Email: info@illumina.com
Website: www.illumina.com
Twitter: @illumina
LinkedIn: www.linkedin.com/company/illumina

Illumina is a leading developer, manufacturer, and marketer of life science tools and integrated systems for large-scale analysis of genetic variation and function. These systems are enabling studies that were not even imaginable just a few years ago and moving us closer to the realization of personalized medicine. It is only recently through next-generation sequencing (NGS) studies that the full genomic complexity of neurological diseases is being revealed. Visit the illumina booth to learn more.

imetronic

Address: 156 Avenue Jean Jaurès, 33600 Pessac, France
Telephone: +33 5 56 98 29 62
Email: nicolas.bonneau@imetronic.com
Website: www.imetronic.com/home
LinkedIn: www.linkedin.com/company/imetronic

Our measuring devices are used to learn more about diseases and are also used in various treatments. Together with our customers, who are major international research laboratories, we participate in each project for the advancement of human knowledge so that one day, the following serious diseases can be eradicated: Addictions, Alzheimer's, Autism, Lou Gehrig's disease, Huntington's disease, Depression, Obsessive compulsive disorders (OCD), Epilepsy, Obesity, Multiple Sclerosis, Post-traumatic stress disorder, Bipolar disorders and Parkinson's disease.

IN VITRO TECHNOLOGIES

Address: 21/12 Mars Rd, Lane Cove West NSW 2066
Telephone: 1300 552 003
Email: orders@invitro.com.au
Website: www.invitro.com.au
Facebook: www.facebook.com/invitrolifescience
Twitter: @vitro_life
LinkedIn: www.linkedin.com/company/in-vitro-technologies

In Vitro Technologies is a Scientific and Medical distribution company specialising in the sale and support of scientific, clinical diagnostic, medical and related products. The company was established in 2002 and is 100% owned by the multi-generational family company JJ Richards & Sons Pty Ltd. JJ Richards & Sons Pty Ltd was established in 1932 and is the largest privately owned waste and environmental management company in Australia, employing over 1,200 employees throughout Australia and New Zealand.

INSCOPIX

Address: 2462 Embarcadero Way, Palo Alto, CA 94303, USA
Telephone: +1 650 600 3886
Email: info@glo-bio.com.cn
Website: www.inscopix.com
Facebook: www.facebook.com/inscopix
Twitter: @Inscopix
LinkedIn: www.linkedin.com/company/inscopix-inc

Inscopix is pioneering a new paradigm in the quest to understand the brain and its diseases. Combining revolutionary technology and methods for the imaging of large-scale neural activity in a naturally behaving subject, Inscopix has developed the enabling means to relate causal neural circuit dynamics to corresponding behavior. With its nVista and nVoke products, Inscopix is today disseminating these capabilities to neuroscientists across the world, empowering them to gather unprecedented data and to make new scientific discoveries. With strategic collaborators and partners, Inscopix is at the same time developing in vivo neuropsychiatric disease assays and stands on the brink of making fundamental breakthroughs on treatments for brain diseases such as autism and schizophrenia.

LASTEK

Address: 10 Reid St, Thebarton SA 5031
Telephone: 08 8443 8668
Email: sales@lastek.com.au
Website: www.lastek.com.au

The Lastek Group of Companies was formed in 1988 and operates today from a large, fully-restored factory located in the University of Adelaide's Commerce and Research Precinct at Thebarton, Adelaide, South Australia. The Group offers a unique set of laser and optical technological resources to the Australian and New Zealand photonics industry. With a staff of over fifteen employees, Lastek brings together a wealth of experience in lasers, optics and complementary technologies.

LOGOS BIOSYSTEMS

Address: 7700 Little River Turnpike STE 207, Annandale, VA 22003 USA
Telephone: +1 703 622 4660
Email: info@logosbio.com
Website: www.logosbio.com
Facebook: www.facebook.com/logosbiosystems
Twitter: @LogosBiosystems
LinkedIn: www.linkedin.com/company/logosbio

Logos Biosystems is dedicated to the development and commercialization of innovative technologies to support the life science research community. Since its founding in 2008, Logos Biosystems has been developing a series of automated systems and imaging instruments for laboratories engaging in research with a cellular and molecular emphasis.

MILLENNIUM SCIENCE

Address: 4 Miles Street Mulgrave, VIC 3170
Telephone: 1800 678 242
Email: EWoods@mscience.com.au
Website: www.mscience.com.au
Facebook: www.facebook.com/millenniumscience
Twitter: @mscienceaustnz
LinkedIn: www.linkedin.com/company/millennium-science

Millennium Science is a specialist distribution company established in 1999 specifically to source, supply and support high technology solutions to the Australasian Life Science market. With over 15 years in operation, the company has become well established as a leading distributor of instrumentation and reagents for the Australiasian biotechnology research market with recognition of performance and business practice excellence by the global companies we represent. Millennium Science is a solution supplier to the science industry with a core competency in the delivery of high technology products. These include hardware, software and consumables. Millennium Science focuses heavily on pre- and post-sales technical support and employs scientifically qualified Technical Sales Representatives in each state backed up by PhD qualified Application Scientists and a team of highly experienced Service Engineers and customer service and support staff. Millennium Science partners with carefully selected manufacturers who are market leaders in their chosen fields and are equally customer focused.

MILTENYI BIOTEC AUSTRALIA PTY LTD

Address: 11/2 Eden Park Dr, Macquarie Park NSW 2113
Telephone: 02 8877 7400
Email: macs@miltenyibiotec.com.au
Website: www.miltenyibiotec.com/AU-en
Facebook: www.facebook.com/miltenyibiotecofficial
Twitter: @miltenyibiotec
LinkedIn: www.au.linkedin.com/company/miltenyi-biotec

We're a global provider of products and services that advance biomedical research and cellular therapy. Our innovative tools support research at every level, from basic research to translational research to clinical application. This integrated portfolio enables scientists and clinicians to obtain, analyze, and utilize the cell. Our technologies cover techniques of sample preparation, cell isolation, cell sorting, flow cytometry, cell culture, molecular analysis, and preclinical imaging. Our 30 years of expertise spans research areas including immunology, stem cell biology, neuroscience, and cancer, and clinical research areas like hematology, graft engineering, and apheresis. In our commitment to the scientific community, we also offer comprehensive scientific support, consultation, and expert training. Today, Miltenyi Biotec has 2,500 employees in 28 countries – all dedicated to helping researchers and clinicians around the world make a greater impact on science and health.

SAPPHIRE BIOSCIENCE

Address: Unit G1/44-70 Rosehill St, Redfern NSW 2016
Telephone: 02 9698 2022
Email: sales@sapphirebioscience.com
Website: www.sapphirebioscience.com
Facebook: www.facebook.com/sapphire.bioscience
Twitter: www.twitter.com/SapphireBiosci
LinkedIn: www.linkedin.com/company/sapphire-bioscience-pty-ltd

Sapphire Bioscience distributes over 1.6 million products from over 100 suppliers including AdipoGen Life Sciences, Aviva Systems Biology, Biosensis, Bioss Antibodies, Cayman Chemical, Echelon Biosciences, Enzo Life Sciences, and GeneTex. Our extensive range of high-quality products includes antibodies, biochemicals, certified reference materials, inhibitors, cytokines, proteins, toxins, ELISA kits, and more.

SCITECH

Address: Unit 4, 72-74 Chifley Drive, Preston VIC 3072
Telephone: 03 9480 4999
Email: ales@scitech.com.au
Website: www.scitech.com.au
Twitter: @ScitechPtyLtd
LinedIn: www.linkedin.com/company/scitech-pty-ltd

SciTech was founded in 1989 and has been supplying innovative and state of the art products and systems to assist researchers in their field of Neuroscience research. We will be showcasing a number of the latest and most innovative products and tools in the areas of Imaging, Image analysis, Digital Stereology and Neuro Anatomical analysis, Electrophysiology (InVivo and InVitro), Optogenetics, Spinning Disk and Multi-photon microscopy. We offer solutions from 3Brain, ALA Scientific, Blackrock Microsystems, Luxendo, MBF BioScience, Mightex, Molecular Devices, Photometrics, PCO Imaging, Phenosys and Scientifica.

SDR SCIENTIFIC

Address: Unit 206 / 354 eastern Valley Way, Chatswood NSW 2067
Telephone: 02 9882 2882
Email: info@sdr.com.au
Website: www.sdr.com.au

With a specialty in Neuroscience and related products, SDR Scientific provides quality equipment, consumables and technical support for researchers across Australia and New Zealand. With the backing of a depth of reputable suppliers, we also provide installation, training and equipment service. At SDR Scientific, our objective is to make your life easier: helping you get the results you need, for the success you deserve.

SMART EPHYS | MULTI CHANNEL SYSTEMS

Address: Aspenhaustrasse 21, 72770 Reutlingen, Germany
Telephone: +49 7121 90925 25
Email: sales@smart-ephys.cm
Website: www.smart-ephys.com
LinkedIn: www.linkedin.com/company/3850141

Smart Ephys combines the expertise and experience of three companies: HEKA, Multi Channel Systems, and Warner Instruments. We provide solutions for all areas of electrophysiology from one source.
As a trusted partner in your laboratory, we look forward to finding the right solution to support your electrophysiological research.

STOELTING

Address: 620 Wheat Lane, Wood Dale, Illinois, 60191 USA
Telephone : +1 630 860 9700
Email: info@stoeltingco.com
Website: www.StoeltingCo.com
Twitter: @StoeltingNeuro
LinkedIn: www.linkedin.com/company/stoelting-co

Stoelting Co. (stoeltingco.com) has been an innovator in manufacturing preclinical neuroscience research equipment since 1886. We proudly offer Stereotaxic Instruments and ANY-maze Behavioural Video Tracking software found in laboratories all over the world. At Stoelting, we have a strong commitment to support scientific research. You believe your research is important; we do too. With the backing of a depth of reputable suppliers, we also provide installation, training and equipment service. At SDR Scientific, our objective is to make your life easier: helping you get the results you need, for the success you deserve.

SYMBIOTIC DEVICES

Address: Unit 6, 105-111 Ricketts Road, Mount Waverley VIC 3149
Telephone: 0423 911 649
Email: declan@symbioticdevices.com.au
Website: www.symbioticdevices.com.au
Facebook: www.facebook.com/SymbioticDevices
Twitter: @Symbiotic_Deb
LinkedIn: www.linkedin.com/company/symbioticdevices

Symbiotic Devices services Australia and New Zealand, providing both innovative, best-in-class technologies, and technical and scientific support for EEG/ERP/EP, TMS, tDCS/HD-tDCS, fNIRS, EMG, NCS, IONM and BCI and integrated solutions for combined measurements with fMRI, fNIRS, TMS, MEG & tDCS. Symbiotic Devices' business is anchored in its core values of providing a benefit to our clinical and research communities through technology and support while contributing to a sustainable and successful research and clinical sector in Australian and New Zealand.

THERMO FISHER SCIENTIFIC

Address: 5 Caribbean Dr, Scoresby, VIC 3179
Telephone: 03 9262 3772
Email: sally.zhang2@thermofisher.com
Website: www.thermofisher.com/au/en/home.html
Facebook: www.facebook.com/thermofisher
Twitter: @thermofisher
LinkedIn: www.linkedin.com/company/thermo-fisher-scientific

Thermo Fisher Scientific is the world leader in serving science, enabling customers to make the world healthier, cleaner and safer. Our comprehensive range includes high end analytical and process instrumentation, laboratory equipment, a complete range of consumables, chemicals and reagents as well as the service and support to optimise your results.

THORLABS

Address: 56 Sparta Ave Newton, NJ 07860, USA
Telephone: + 1 973 300 3000
Email: KKowalak@thorlabs.com
Website: KKowalak@thorlabs.com
LinkedIn: www.linkedin.com/company/thorlabs

Thorlabs is a leading designer and manufacturer of photonics equipment for research, manufacturing, and biomedical applications. Founded in 1989, Thorlabs is headquartered in Newton, New Jersey with over 1800 employees at manufacturing and sales offices in the United States, Canada, United Kingdom, Germany, France, Sweden, Japan, China, and Brazil. As a vertically integrated company we design, develop, and manufacture our product portfolio of over 20,000 items.

TRANSNETYX

Address: 8110 Cordova Road, Suite 119, Cordova, TN 38106 USA
Telephone: 0408 054 095
Email: msmale@transnetyx.com
Website: www.transnetyx.com
Facebook: Transnetyx
Twitter: @Transnetyx
LinkedIn: Transnetyx

Transnetyx serves biomedical researchers worldwide with fast and accurate genetic services and software that consist of automated genotyping, genetic monitoring and colony management software.

UGO BASILE S.R.L

Address: Via Di Vittorio 2, 21036 Gemonio, ITALY
Telephone: +39 345 5985461
Email: sales@ugobasile.com
Website: www.ugobasile.com
Facebook: www.facebook.com/ugobasile.info
LinkedIn: www.linkedin.com/company/1112121

UGO BASILE, leading manufacturer of instruments for Behavioral Research, provides classic and innovative instruments scientists have been using since 1963, with more than 25,000 hits in bibliographic search engines: RotaRod; Treadmill; Operatnt/Avoidance Cages; Fear Conditioning/ Startle/PPI; Mazes/Videotracking; Respirators/Anesthesia; A complete line of Devices for Pain Studies.

Ugo Basile: Transforming ideas into instruments!

UNIVERSITY OF SOUTH AUSTRALIA

Address: Division of Health Sciences, University of South Australia, GPO Box 2471, Adelaide SA 5001
Telephone: 08 8302 2544
Email: susan.hillier@unisa.edu.au
Website: www.unisa.edu.au

The University of South Australia is Australia's University of Enterprise which operates through a partnered, end-user informed culture of teaching and research. The culture of innovation is anchored around global and national links to academic, research and industry partners and known for relevance, equity and excellence.

Notes

Australasian Neuroscience Society

AUSTRALASIAN NEUROSCIENCE SOCIETY

the association specialists ©TM
...taking care, adding value

ANS c/o The Association Specialists
PO Box 576, Crows Nest, NSW, Australia 1585

T +61 2 9431 8652
E secretariat@ans.org.au
W www.ans.org.au

ANS 2019 ASM MANAGER

PO Box 576, Crows Nest, NSW, Australia 1585

T +61 2 9431 8600
E conferences@ans.org.au
W www.ans.org.au/ans-2019-conference

ans.org.au

Australasian
Neuroscience
Society