

31<sup>ST</sup>  
INTERNATIONAL AUSTRALASIAN  
WINTER CONFERENCE ON BRAIN RESEARCH



2013  
Programme and Abstracts

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24-28 August 2013  
Cophthorne Hotel, Queenstown, New Zealand  
[www.awcbr.org](http://www.awcbr.org)

Supported by the  
Neurological Foundation of New Zealand



Neurological Foundation of New Zealand

# SATURDAY 24 AUGUST



3.00-6.00 PM	REGISTRATION, COPTHORNE RESORT HOTEL
5.30-6.00 PM	STUDENT MEET AND GREET
6.00 PM	OPENING RECEPTION, CASH BAR
7.00 PM	OPENING REMARKS

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## 1. DISORDERS OF THE NERVOUS SYSTEM I

CHAIR: JOHANNA MONTGOMERY

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7.15 pm	1.1	<b>INVITED SPEAKER</b> <b>Ingrid Scheffer, <i>University of Melbourne, Australia</i></b> Epilepsy genetics: A successful marriage of next generation sequencing and next generation phenotyping
8.10 pm	1.2	<b>John Reynolds, <i>University of Otago, New Zealand</i></b> Cellular mechanisms underlying modulation of interhemispheric inhibition by theta-burst stimulation
8.25 pm	1.3	<b>Raewyn Hopkins, <i>University of Auckland, New Zealand</i></b> The multi-disciplinary brain recovery clinic for stroke: results of a customer satisfaction survey
8.40 pm	1.4	<b>Andrew Clarkson, <i>University of Otago, New Zealand</i></b> Modulating post-stroke tonic inhibition offers an extended therapeutic window for facilitating functional improvements
8.55 pm	1.5	<b>Raghavendra Nagaraja, <i>University of Otago, New Zealand</i></b> Enhancing tonic inhibition promotes post-stroke recovery
9.30 pm		Rugby: All Blacks vs Australia in bar Refreshments served

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# SUNDAY 25 AUGUST

## MORNING SESSION

6.00-8.00 AM

LIGHT BREAKFAST AVAILABLE

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## 2. SENSORY AND MOTOR SYSTEMS I

CHAIR: RICHARD FAULL

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8.00 am	2.1	<b>Yiewn Zheng, <i>University of Otago, New Zealand</i></b> Effects of early treatment with L-Baclofen on the development of tinnitus induced by acoustic trauma in rats
8.15 am	2.2	<b>Cindy Guo, <i>University of Auckland, New Zealand</i></b> Connexin43 mimetic peptide, a new treatment for early age-related macular degeneration?
8.30 am	2.3	<b>John Dalrymple-Alford, <i>University of Canterbury, New Zealand</i></b> Current perspectives on Parkinson's disease: Cognition to the fore
8.45 am	2.4	<b>Paul Smith, <i>University of Otago, New Zealand</i></b> The effects of galvanic vestibular stimulation on cell proliferation in the rat hippocampus and spatial memory
9.00 am		Tea/Coffee break

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# SUNDAY 25 AUGUST

## MORNING SESSION



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### 3. COGNITION AND BEHAVIOUR

CHAIR: DAVID HARPER

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9.15 am	3.1	<b>Neil McNaughton, <i>University of Otago, New Zealand</i></b> Approach, avoid, or not? Trait anxiety, neuroticism and the frontal asymmetry of behavioural inhibition
9.30 am	3.2	<b>Brook Perry, <i>University of Canterbury, New Zealand</i></b> Memory following mammillothalamic tract lesions in rats
9.45 am	3.3	<b>Jian Guan, <i>University Auckland, New Zealand</i></b> Supplementation of dairy complex lipid concentrate (DCLC) improved the memory of aged rats
10.00 am	3.4	<b>Nigel Jones, <i>University of Melbourne, Australia</i></b> Functional relevance of gamma oscillations in schizophrenia

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# SUNDAY 25 AUGUST AFTERNOON SESSION

3.30 PM

AFTERNOON TEA AVAILABLE

## 4. DISORDERS OF THE NERVOUS SYSTEM II

CHAIR: JOHN REYNOLDS

4.00 pm	4.1	<b>PLENARY LECTURE:</b> <b>Anne Young, <i>Harvard Medical School, United States of America</i></b> Perspectives on Huntington's disease: From original observations to current therapies
4.45 pm	4.2	<b>Richard Faull, <i>University of Auckland, New Zealand</i></b> Region-specific cortical degeneration is a key component in understanding the neural basis of clinical heterogeneity in Huntington's disease
5.00 pm	4.3	<b>Shamim Shaikh, <i>Living Cell Technologies Limited, New Zealand</i></b> Recovery of neurological functions in non-human primate model of Parkinson's disease (PD) by transplantation of encapsulated neonatal porcine choroid plexus cells
5.15 pm	4.4	<b>Song Yee Paek, <i>University of Auckland, New Zealand</i></b> Adenosine A <sub>1</sub> receptor signalling ameliorates noise-induced hearing loss
5.30 pm	4.5	<b>Sandy Shultz, <i>University of Melbourne, Australia</i></b> Sodium selenate reduces hyperphosphorylated tau and improves outcome in a rat model of repeated brain concussions
5.45 pm	4.6	<b>Yu Jing, <i>University of Otago, New Zealand</i></b> Repeated phencyclidine treatment alters arginine metabolism in rat hippocampus and prefrontal cortex

**SUNDAY 25 AUGUST**



## *Conference Dinner*

*7.30 pm*

### *Skyline Restaurant*

Tickets must be purchased in advance.  
The ticket includes return gondala transport to the restaurant.

The Skyline is a licensed restaurant but wine and beer will be provided.

The function room will be open from 7.00 pm,  
with dinner commencing at 7.30 pm

Musical entertainment will be provided.



# MONDAY 26 AUGUST

## MORNING SESSION

6.00-8.00 AM

LIGHT BREAKFAST AVAILABLE

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### 5. NERVOUS SYSTEM DEVELOPMENT

CHAIR: CHRISTINE JASONI

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9.00 am	5.1	<b>Dorothy Oorschot, <i>University of Otago, New Zealand</i></b> Myelin deficits, with no change in the absolute number of mature oligodendrocytes, in male repeated hypoxic rats closely resembles human extreme prematurity
9.15 am	5.2	<b>Amy Smith, <i>University of Auckland, New Zealand</i></b> Microglia from neurogenic regions of the adult human brain are more proliferative than their cortical counterparts
9.30 am	5.3	<b>Kathryn Jones, <i>University of Auckland, New Zealand</i></b> Direct reprogramming of adult human dermal fibroblasts into neural precursor cells for in vitro disease modelling
9.45 am	5.4	<b>Miaomiao Mao, <i>University of Auckland, New Zealand</i></b> The functional development of the pyramidal cells in the dorsal cochlear nucleus of the mouse
10.00 am		Tea/Coffee break

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# MONDAY 26 AUGUST

## MORNING SESSION



### 6. NEURAL EXCITABILITY AND PLASTICITY

CHAIR: LOUISE PARR-BROWNLIE

10.15 am	6.1	<b>Richard Piet, <i>University of Otago, New Zealand</i></b> Estrous cycle plasticity in hyperpolarization-activated current is mediated by 17 $\beta$ -estradiol in preoptic kisspeptin neurons
10.30 am	6.2	<b>Karl Iremonger <i>University of Otago, New Zealand</i></b> Using genetically encoded calcium indicators to study the excitability of neurosecretory nerve terminals
10.45 am	6.3	<b>Katharina Dormanns, <i>University of Canterbury, New Zealand</i></b> Say "NO" to Alzheimer's! The importance of an uncommon messenger molecule shown in computational simulations
11.00 am	6.4	<b>Tim David, <i>University of Canterbury, New Zealand</i></b> Models of neurovascular coupling
11.15 am	6.5	<b>Clementine Bosch-Bouju, <i>University of Otago, New Zealand</i></b> Optogenetic stimulation of basal ganglia inputs to motor thalamus affects reaching in parkinsonian rats
11.30 am		Student travel grants distributed



## 7. POSTER SESSION

- COMBINED WITH MEDSCI

NB: BEN LOMOND ROOM, RYDGES HOTEL

<p>1.30 - 4.00 pm</p>	<p>Presenters will be in attendance during this time</p> <p>Presenters for Posters A will be in attendance from 1.30 to 2.45 pm</p> <p>Presenters for Posters B will be in attendance from 2.45 to 4.00 pm</p> <p>The poster session will be followed by a postgraduate dinner to be held at Winnies at 8.00 pm</p>
<p>7.1 - A</p>	<p><b>Alice Lagas, <i>University of Auckland, New Zealand</i></b></p> <p>A short course of fluoxetine does not enhance visual perceptual learning in healthy adults</p>
<p>7.2 - A</p>	<p><b>Andrea Loftus, <i>Curtin University, Australia</i></b></p> <p>Testing the activation–orientation account of spatial attentional asymmetries using transcranial direct current stimulation</p>
<p>7.3 - A</p>	<p><b>Jordan Searle, <i>University of Auckland, New Zealand</i></b></p> <p>Attention to the front and then rotate: An ERP study of rotated object discriminations</p>
<p>7.4 - A</p>	<p><b>Natalia Brzowska, <i>University of Sydney, Australia</i></b></p> <p>Repeated low-dose <math>\Delta^9</math>-THC promotes long-term reductions in the acute neurobehavioral effects of the atypical antipsychotic risperidone</p>
<p>7.5 - A</p>	<p><b>David Clarke, <i>University of Sydney, Australia</i></b></p> <p>Transmembrane domain Nrg1 mutant mice show altered neurobehavioural responses to THC exposure in a conditioned place preference paradigm</p>
<p>7.6 - A</p>	<p><b>Ashlea Dassanayake, <i>University of Canterbury, New Zealand</i></b></p> <p>The dopamine uptake inhibitor JHW 007 blocks methamphetamine (MA)-induced locomotor activity, MA self-administration and reinstatement of MA seeking behaviour</p>

- 7.7 - A **Diyani de Silva, University of Auckland, New Zealand**  
Visual long term potentiation and directed forgetting
- 7.8 - B **Laura Ewens, University of Auckland, New Zealand**  
Effects of expertise: a functional magnetic resonance imaging study of visuospatial processing in expert musicians
- 7.9 - A **Logan Knox, University of Otago, New Zealand**  
Effects of acute phencyclidine administration on behavioural function and brain arginine metabolism in rats
- 7.10 - A **Stephanie Mercer, University of Canterbury, New Zealand**  
Behavioural relevance of retrosplenial c-Fos hypoactivation after anterior thalamic lesions
- 7.11 - A **Joanne Ong, University of Auckland, New Zealand**  
Identity-based competition in the human extrastriate visual cortex
- 7.12 - A **Peter Ranger, Victoria University of Wellington, New Zealand**  
Gene-environment interactions as a causative factor in an animal model for autism
- 7.13 - A **Natalia Samorow, University of Auckland, New Zealand**  
The Catechol-*O*-methyltransferase (COMT) gene and its implications for mental well-being
- 7.14 - A **Shabah Shadli, University of Otago, New Zealand**  
Optimising a biomarker for anxiety: Auditory and visual stop signals are different
- 7.15 - A **Sophie Grenfell, University of Canterbury New Zealand**  
Reduced default mode network connectivity and autobiographical memory in mild cognitive impairment
- 7.16 - A **Alana Oakly, Victoria University of Wellington, New Zealand**  
A genetic deletion in the serotonin transporter greatly enhances the reinforcing properties of MDMA in rats
- 7.17 - A **Susan Rapley, University of Canterbury New Zealand**  
C-type Natriuretic Peptide in prefrontal cortex is associated with learning and memory in rodents

- 7.18 - A **Chris Thompson, *University of Auckland, New Zealand***  
 BDNF val66met polymorphism does not affect the FN400 evoked potential in human facial recognition memory
- 7.19 - A **Yaqub Jonmohamadi, *University of Otago, New Zealand***  
 Application of source-space ICA in detection of brain connectivity
- 7.20 - A **Jarol Chen, *Lincoln University, New Zealand***  
 Progress in molecular dissection of neuroinflammation in ovine Batten disease
- 7.21 - A **Morgayn Read, *University of Otago, New Zealand***  
 Developing a kainic acid model of seizure-induced cardiomyopathy
- 7.22 - A **Henry Waldvogel, *University of Auckland, New Zealand***  
 New perspectives in energy metabolism in human brain: Immunohistochemical localisation of creatine transporter and creatine kinases
- 7.23 - A **Laura Boddington, *University of Otago, New Zealand***  
 Behavioural evaluation of theta-burst stimulation after forelimb motor cortex lesion in rats
- 7.24 - A **Tariq Chohan, *The Brain and Mind Research Institute, Australia***  
 Neuregulin 1 and stress interact to trigger sensorimotor gating deficits, enhanced synaptic connectivity in the prefrontal cortex and neuroendocrine hypoactivity
- 7.25 - A **Claude Dennis, *University of Sydney, Australia***  
 Microglial proliferation in alcoholics with hepatic encephalopathy
- 7.26 - A **Hanane Belhoul, *Victoria University of Wellington, New Zealand***  
 Construction and optimization of novel recombinant Adeno-Associated Virus rAAV2/5 for targeting microglia to regulate immune responses during neuroinflammation
- 7.27 - A **Dave Bergin, *University of Otago, New Zealand***  
 A single amyloid beta<sub>25-35</sub> brain infusion induces long-term changes in L-arginine metabolism in the rat hippocampus and prefrontal cortex

# POSTER SESSION



- 7.28 - A **Sreekari Vogeti, University of Auckland, New Zealand**  
Within-category competition based modulation of the N170 – An ERP study
- 7.29 - B **Emma Gowing, University of Otago, New Zealand**  
The effect of Shh on sprouting after stroke: A neuronal tracer study in young and aged mice
- 7.30 - B **Laetitia Debernard, University of Otago, New Zealand**  
Grey matter hypoperfusion occurs in the presence of preserved grey matter structural integrity in early relapsing-remitting multiple sclerosis patients
- 7.31 - B **Kevin Lee, University of Auckland, New Zealand**  
Altered expression of group I metabotropic glutamate receptors in autism related ProSAP2/Shank3 mutants
- 7.32 - B **Shane Little, University of Otago, New Zealand**  
Neuronal activity in reticular thalamic nucleus in urethane-anaesthetized rats
- 7.33 - B **Hannah Lumley, University of Otago, New Zealand**  
Alterations in striatal spine morphological gene expression during L-DOPA induced dyskinesia
- 7.34 - B **Kim Parker, University of Otago, New Zealand**  
PEGylated insulin-like growth factor I treatment efficacy in young and aged stroked mice
- 7.35 - B **Go Sato, University of Tokushima, Japan and University of Otago, New Zealand**  
Risk factors for poor outcome of a single Epley maneuver and residual positional vertigo in patients with benign paroxysmal positional vertigo
- 7.36 - B **Kyla-Louise Wood, Universities of Canterbury and Otago, New Zealand**  
Criteria for parkinson's disease with mild cognitive impairment associated with increased progression to dementia
- 7.37 - B **Mohamad Yahaya, National University of Malaysia and University of Otago, New Zealand**  
Lentivirus-mediated sAPP $\alpha$  overexpression in an Alzheimer disease mouse model rescues the deficit in long-term potentiation
- 7.38 - B **Lisa Zhou, University of Otago, New Zealand**  
Effects of prefrontal cortex stroke on learning and memory

- 7.39 - B **Yanfeng Zhang, University of Otago, New Zealand**  
Functional relations between the vestibular system and hippocampus
- 7.40 - B **Hao Chang, University of Auckland, New Zealand**  
The pharmacokinetics of Adenosine Amine Congener (ADAC) in plasma and inner ear
- 7.41 - B **Shelly Lin, University of Auckland, New Zealand**  
The role of P2 receptor signalling in hair cell survival under stress
- 7.42 - B **Winston Tan, University of Auckland, New Zealand**  
Noise-induced inflammatory response in the cochlea
- 7.43 - B **Ravindra Telang, University of Auckland, New Zealand**  
Influence of sound stress on cochlear function and endolymph electrochemistry in aging C57BL/6 mice
- 7.44 - B **Helen Murray, University of Auckland, New Zealand**  
Development of a Golgi staining method for human post-mortem brain tissue to facilitate investigations into neurogenesis in Alzheimer's disease
- 7.45 - B **Tanya Poppe, University of Auckland, New Zealand**  
fMRI of the dorsal extrastriate visual cortex in children
- 7.46 - B **Shane Ohline, University of Otago, New Zealand**  
Birthdating two cohorts of adult-born granule cells within-animal for comparisons of maturity-dependent cell excitability
- 7.47 - B **Yvette Lamb, University of Auckland, New Zealand**  
Antenatal maternal stress and the catechol-O-methyltransferase (COMT) Rs165599 polymorphism interact to influence childhood IQ
- 7.48 - B **Antonia Berretta, University of Otago, New Zealand**  
Perlecan domain V reduces the levels of tissue plasminogen activator in astrocyte-neuron co-culture
- 7.49 - B **Brigid Ryan, University of Otago, New Zealand**  
MicroRNA, miR-28-5p, is down-regulated at dentate gyrus synapses after long-term potentiation induction *in vivo*
- 7.50 - B **Lucy Goodman, University of Auckland, New Zealand**  
Super resolution imaging of hippocampal synapses

# POSTER SESSION



7.51 - B

**Victoria Low, *University of Auckland, New Zealand***

Cell proliferation dynamics in the adult sheep and human neurogenic niches

7.52 - B

**Justin Rustenhoven, *University of Auckland, New Zealand***

C/EBP $\delta$  expression in human brain glial cells

7.53 - B

**Sarah Bradbury, *Victoria University of Wellington***

Disruption of MDMA-produced reinforcement following forced abstinence

4.00 pm

Posters to be removed at this time



# MONDAY 26 AUGUST

## EVENING EVENTS

### 8. OPENING OF QUEENSTOWN RESEARCH WEEK

6.00 pm

**PROFESSOR PETER SHEPHARD**

Venue: Rydges Hotel, Ben Lomond

6.30 pm

**QUEENSTOWN RESEARCH WEEK NOBEL LAUREATE LECTURE**

**PROFESSOR SUSUMU TONEGAWA**

RIKEN-MIT Center for Neural Circuit Genetics, Massachusetts Institute of Technology, USA

8.00 pm

**MEDSCI AND AWCBB SOCIAL MIXER**

Venue: Rydges: Coronet/Remarkables

8.00 pm

**AWCBB STUDENT DINNER**

Venue: Winnies Gourmet Pizza and Bar, 7-9 The Mall, Queenstown

8.00 pm

**ILLUMINA PARTY**

Venue: Chicos

# TUESDAY 27 AUGUST

## MORNING SESSION



6.00-8.00 AM

LIGHT BREAKFAST AVAILABLE

### 9. ADDICTION

CHAIR: SUE SCHENK

8.00 am	9.1	<b>Yue Pei, <i>University of Canterbury New Zealand</i></b> Activation of trace amine-associated receptor 1 prevents relapse to cocaine seeking
8.15 am	9.2	<b>Peter Bosch, <i>Victoria University of Wellington, New Zealand</i></b> Identifying cellular changes in the reward system following methamphetamine self-administration in rats using a multi-omics approach
8.30 am	9.3	<b>Amy Ewald, <i>Victoria University of Wellington, New Zealand</i></b> Behavioural and cellular effects of AL-1-99, a novel kappa opioid receptor agonist
8.45 am	9.4	<b>Fraser Putt, <i>Victoria University of Wellington, New Zealand</i></b> Tobacco particulate self-administration in rats: A role for non-nicotinic constituents in tobacco dependence
9.00 am	9.5	<b>Dane Aronsen, <i>Victoria University of Wellington, New Zealand</i></b> MDMA self-administration attenuates the adipic effect of a 5-HT <sub>1b</sub> agonist in rats
9.15 am		Tea/Coffee break





# TUESDAY 27 AUGUST

## MORNING SESSION

### 10. ALZHEIMER'S SYMPOSIUM

CHAIR: JOANNA WILLIAMS

9.30 am	10.1	<b>Michael Valenzuela, <i>University of Sydney, Australia</i></b> Towards dementia prevention by activating cognitive lifestyles
9.55 am	10.2	<b>Joanna Williams, <i>University of Otago, New Zealand</i></b> Altered expression of plasma microRNA in sporadic Alzheimer's disease
10.10 am	10.3	<b>Philip Wood, <i>Waikato District Health Board, New Zealand</i></b> Where the papers meet the patient
10.25 am	10.4	<b>Ping Liu, <i>University of Otago, New Zealand</i></b> Altered arginine metabolism in Alzheimer's brains
10.40 am	10.5	<b>Kristen Henty, <i>University of Auckland, New Zealand</i></b> Genetic approaches to dissecting Alzheimer's disease
11.00 am		<b>ANNUAL GENERAL MEETING</b> All conference participants are invited to attend  Tea/Coffee will be available for AGM attendees

# TUESDAY 27 AUGUST AFTERNOON SESSION



## SESSION WITH QMB TO BE HELD AT THE RYDGES HOTEL, QUEENSTOWN

### 11. MEMORY AND LEARNING

CHAIR: SUSAN SCHENK

1.00 pm	11.1	<b>Graham Collingridge, <i>University of Bristol, United Kingdom</i></b> Glutamate receptors and synaptic plasticity in health and disease
1.45 pm	11.2	<b>Johanna Montgomery, <i>University of Auckland, New Zealand</i></b> Alterations in synaptic function and plasticity in neurons expressing Autism-associated mutations in Shank3
2.10 pm	11.3	<b>Joanna Williams, <i>University of Otago, New Zealand</i></b> Regulation of microRNA following induction of long-term potentiation in vivo
2.35 pm	11.4	<b>David Bilkey, <i>University of Otago, New Zealand</i></b> Altered hippocampal function in the maternal immune activation model of schizophrenia



# TUESDAY 27 AUGUST

## AFTERNOON SESSION

3.30 PM

AFTERNOON TEA AVAILABLE, COPTHORNE

### 12. SENSORY AND MOTOR SYSTEMS II

CHAIR: JOHN DALRYPLE-ALFORD

4.00 pm	12.1	<b>PLENARY LECTURE:</b> <b>Professor Robert Shepherd, <i>University of Melbourne, Australia</i></b> Neural prostheses: Practical applications in neuroscience
4.40 pm	12.2	<b>Meagan Barclay, <i>University of Auckland, New Zealand</i></b> Attenuation of sound stimulation affects the molecular make-up of excitatory synapses in the developing cochlea
4.55 pm	12.3	<b>Nishani Dayaratne, <i>University of Auckland, New Zealand</i></b> Border cells: Generators of spontaneous morphological changes in supporting cells of the developing cochlea?
5.10 pm	12.4	<b>Kirsten McKenzie, <i>University of Nottingham, Malaysia</i></b> The mechanisms of somatic misperception
5.25 pm	12.5	<b>Martin Hitier, <i>University of Otago, New Zealand and INSERM, France</i></b> Eye movements during selective electrical vestibular stimulation in rats
5.40 pm	12.6	<b>Thierry Lints, <i>Texas A&amp;M University, United States of America</i></b> Statistical parametric mapping of experience-dependent immediate early gene expression in the initial phase of vocal learning
6.30 pm		Fashionomics Venue: Rydges

# WEDNESDAY 28 AUGUST

## COMBINED DAY WITH MEDSCI



6.00-8.00 AM

LIGHT BREAKFAST AVAILABLE, IMPRESSIONS RESTAURANT

### COMBINED MEDSCI AND AWCBBR PLENARY LECTURE

VENUE: RYDGES

9.00 am	13.1	<b>PLENARY LECTURE:</b> <b>Professor William Banks, <i>University of Washington, United States of America</i></b>  The blood-brain barrier: An interface in the neuroimmune and neuroendocrine systems
10.00 am		Tea/Coffee break

### MECHANISMS OF SIGNALLING ACROSS THE BLOOD BRAIN BARRIER

	13.2	<b>Professor William Banks, <i>University of Washington, United States of America</i></b>  Role of the blood-brain barrier in the evolution of feeding and cognition
	13.3	<b>Professor Alistair Ferguson, <i>Queen's University, Canada</i></b>  Hormone and metabolite signaling in the circumventricular organs
	13.4	<b>Dr Rosemary Brown, <i>University of Otago, New Zealand</i></b>  Prolactin transport into the brain does not require the prolactin receptor
	13.5	<b>Professor Ian Tucker, <i>University of Otago, New Zealand</i></b>  Delivering drugs to the brain via the Blood Brain Barrier
12.30 pm		CLOSING REMARKS
12.30 pm		LIGHT LUNCH AND STUDENT PRIZE PRESENTATION - RYDGES BAR

#### **Acknowledgements**

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