

# 24th International Australasian Winter Conference on Brain Research



**AWCBR**

**Programme  
2006**



*26-30 August 2006  
Cophthorne Resort Hotel, Queenstown, New Zealand  
[www.awcbr.org](http://www.awcbr.org)*

# SATURDAY 26 AUGUST

3.00-6.00 pm      *Registration*, Copthorne Resort Hotel

6.00 pm            *Opening Reception* (nibbles and cash bar)  
Copthorne Resort Hotel

7.45 pm            Opening Remarks

## 1. Nervous System Plasticity

**Chair:**            Steve Kerr

8.00 pm    1.1      **Keynote Address**  
Steve Redman, *Australian National University, Australia*  
Adventures with synaptic plasticity: Calcium and quanta

8.50 pm            Coffee break

9.00 pm    1.2      **Andrea Olson, *University of British Columbia, Canada***  
Hippocampal structural and functional deficits that result from  
prenatal ethanol exposure can be rescued by voluntary exercise

9.15 pm    1.3      **David Genoux, *University of Auckland, New Zealand***  
Control of AMPA and NMDA receptor targeting to excitatory  
synapses by SAP97 isoforms

9.30 pm    1.4      **Johanna Montgomery, *University of Auckland, New Zealand***  
A novel trafficking pathway for NMDA receptors to synapses

9.45 pm    1.5      **Michael Babcock, *Montana State University, USA***  
Inhibition of hippocampal glutamate transporter 3 (EAAC1)  
using AAV antisense delivery: Effects of working memory

# SUNDAY 27 AUGUST MORNING SESSION

7.30 am Light breakfast available

Posters to be set up at this time

## 2. Motor Control

Chair: Brian Hyland

- 8.00 am 2.1 **Greg Anson, *University of Otago, New Zealand***  
Effects of memorisation of target location on reaction time and brain event related potentials
- 8.15 am 2.2 **Otmar Bock, *German Sport University, Germany***  
Sensorimotor adaptation to visual and mechanical distortions is based on a common mechanism
- 8.30 am 2.3 **Ju-Ying Chang, *National Cheng Kung University, Taiwan***  
Learning joint mobilization skill: Effectiveness of two forms of feedback
- 8.45 am 2.4 **John Semmler, *University of Adelaide, Australia***  
Motor unit synchronization measured by cross-correlation is not increased with strength training of a hand muscle
- 9.00 am 2.5 **Charles Worringham, *Queensland University of Technology, Australia***  
Reference frames for visuomotor transformation: Evidence from spontaneous movements without directional feedback
- 9.15 am 2.6 **Jim Phillips, *Monash University, Australia***  
Motor constancy/equivalence and the relationship between tangential velocity and radius of curvature

# SUNDAY 27 AUGUST AFTERNOON SESSION

4.00 pm Tea and coffee available

## 3. Neurological Disorders and Disease I

Chair: Dorothy Oorschot

- 4.30 pm 3.1 Ia Chevyreva, *University of Auckland, New Zealand*  
Assessing RNA quality in postmortem human brain
- 4.45 pm 3.2 Natasha Deters, *University of Sydney, Australia*  
Motor phenotype in a novel mutant tau transgenic mouse model
- 5.00 pm 3.3 Adrian Kells, *University of Auckland, New Zealand*  
Protection against Huntington's disease progression:  
AAV-mediated delivery of biotherapeutics
- 5.15 pm 3.4 Yun-An Lim, *University of Sydney, Australia*  
Investigating Pick's disease: A novel tau transgenic mouse model
- 5.30 pm 3.5 Sarah Saunders, *University of Otago, New Zealand*  
Hyperactivity and memory deficits after repeated hypoxia during  
development. A novel rat model of extreme prematurity
- 5.45 pm 3.6 David Palmer, *Lincoln University, New Zealand*  
Initial studies towards gene therapy in ovine Batten disease

## 4. Evening Poster Session

6.00-7.30 pm Presenters will be in attendance during this time  
Posters available for viewing from 6.00 pm  
Tea, coffee and nibbles available

# POSTER PRESENTATIONS

- 4.1 **Sumeer Chadha, *University of Southern Mississippi, USA***  
Modafinil fails to attenuate working memory decline of rats in a swim task
- 4.2 **Juliette Cheyne, *University of Auckland, New Zealand***  
Plasticity-induced regulation of Group I metabotropic glutamate receptors in cultured hippocampal neurons
- 4.3 **Kirsten Cheyne, *University of Otago, New Zealand***  
Environmental enrichment alters hippocampal representation of context and behavioural response to context change
- 4.4 **James Coxon, *University of Auckland, New Zealand***  
Selective volitional inhibition of prepared action
- 4.5 **James Crandall, *University of Massachusetts, USA***  
Neuronal migration from the ganglionic eminence to the cerebral cortex in dopamine receptor knockout mice
- 4.6 **Ruani Fernando, *University of Melbourne, Australia***  
AT<sub>4</sub> ligands potentiate neuronal glucose uptake: A potential mechanism underlying memory enhancing effects
- 4.7 **Melita Giummarra, *Monash University, Australia***  
The menacing phantom: What triggers phantom limb pain and why?
- 4.8 **James Harley, *University of Otago, New Zealand***  
Orosomucoid influences both antidepressant tolerance and response
- 4.9 **Vishal Jain, *Auckland University of Technology, New Zealand***  
Brain-Gene ontology (BGO)
- 4.10 **Yerina Ji, *University of Auckland, New Zealand***  
The neural basis of dyslexia: An fMRI study
- 4.11 **Benjamin Knight, *University of Auckland, New Zealand***  
Neurophysiological correlates of the McCollough effect: Evidence for neuronal plasticity?
- 4.12 **Hsiao-Yu Lee, *Far East University, Taiwan***  
Development of virtual reality environment for behavioral study of rats

# POSTER PRESENTATIONS

- 4.13 Ryan Martinus, *University of Waikato, New Zealand*  
Mitochondrial stress and inflammation in the diabetic CNS
- 4.14 Thomas Matyas, *La Trobe University, Australia*  
Abnormalities in somatosensory psychophysical functions after stroke
- 4.15 Bruce Russell, *University of Auckland, New Zealand*  
The acute effects of benzylpiperazine on human working memory and vigilance using EEG recording
- 4.16 Shogo Sakata, *Hiroshima University, Japan*  
Event-related potentials during the auditory discrimination oddball task in the rat
- 4.17 Manja Schubert, *University of Auckland, New Zealand*  
Kindling-induced plasticity changes in the lateral amygdala
- 4.18 Daniel Shepherd, *University of Auckland, New Zealand*  
Bring the noise: A search for stochastic resonance in the auditory system
- 4.19 Rachel Sizemore, *University of Otago, New Zealand*  
Cortical inputs to cholinergic interneurons in the striatum of the rat: Optimisation of methods
- 4.20 Saskia van Stockum, *Van der Veer Institute, New Zealand*  
Eye movement control and cognition in Parkinson's disease
- 4.21 Andrew Tattersfield, *University of Auckland, New Zealand*  
The profile of subventricular-derived neuroblast migration into the quinolinic acid (QA) lesioned adult rat striatum
- 4.22 Soe Kyaw Tin, *Singapore General Hospital, Singapore*  
Brain reactive autoantibodies in autoimmune diseases, psychiatric disorder (psychosis) and neurologic disorder (epilepsy): Preliminary results
- 4.23 Hélio Zangrossi, *University of São Paulo, Brazil*  
Chronic treatment with Alprazolam enhances 5-HT<sub>2A</sub> receptor-mediated inhibition of a panic-like behavior in the rat dorsal periaqueductal gray

# MONDAY 28 AUGUST MORNING SESSION

7.30 am Light breakfast available

## 5. Motor Control and Motor Dysfunction

Chair: Greg Anson

- 8.00 am 5.1 Jason Chen, *National Cheng Kung University, Taiwan*  
Time-course assessment of muscle tone in raclopride-treated Parkinsonian rats
- 8.15 am 5.2 Aymar de Rugy, *University of Queensland, Australia*  
Neuro-musculo-skeletal couplings in rhythmic multijoint arm movement
- 8.30 am 5.3 Vanessa Lim, *University of Auckland, New Zealand*  
Functional magnetic imaging (fMRI) during simple and complex movements in controls and patients with basal ganglia dysfunction
- 8.45 am 5.4 Brian Hyland, *University of Otago, New Zealand*  
Globus pallidus activity in a rat model of Parkinson's disease and the effect of treatment with L-DOPA
- 9.00 am 5.5 Cristian Voicu, *University of Otago, New Zealand*  
Adenosine A2A receptor stimulation does not change activity of substantia nigra pars reticulata neurons in the freely moving rat
- 9.15 am 5.6 Michael Lee, *University of New South Wales, Australia*  
Cortical voluntary drive to wrist extensors measured with transcranial magnetic stimulation

# MONDAY 28 AUGUST AFTERNOON SESSION

4.00 pm Afternoon tea available

## 6. Auditory and Vestibular Systems

Chair: Ping Liu

- 4.30 pm 6.1 Jean-Ha Baek, *University of Otago, New Zealand*  
Cannabinoid receptor down-regulation in the ventral cochlear nucleus in a salicylate model of tinnitus
- 4.45 pm 6.2 Lin-Chien Huang, *University of Auckland, New Zealand*  
Synapse elimination in the cochlea: A model for synaptic remodeling
- 5.00 pm 6.3 Paul Smith, *University of Otago, New Zealand*  
Why is the vestibular inner ear necessary for a normal hippocampus?
- 5.15 pm 6.4 Peter Thorne, *University of Auckland, New Zealand*  
Surface imaging microscopy of the mammalian cochlea
- 5.30 pm 6.5 Yiwen Zheng, *University of Otago, New Zealand*  
Impairment and recovery on a spatial forced alternation task following bilateral vestibular deafferentation
- 5.45 pm 6.6 Cynthia Darlington, *University of Otago, New Zealand*  
Effects of bilateral vestibular deafferentation on performance in an elevated plus maze in rats

**MONDAY 28 AUGUST**

**CONFERENCE DINNER**

7.30 pm

Skyline Restaurant

Tickets must be purchased in advance; the ticket includes return gondola transport to the restaurant. The Skyline is a licensed restaurant and there will be a cash bar from 7.00 pm, with dinner commencing at 7.30 pm. Please see the conference organisers as soon as possible if you require a ticket.



# TUESDAY 29 AUGUST MORNING SESSION

8.30 am Light breakfast available

## 7. Neurological Disorders and Disease II

Chair: Neil McNaughton

9.00 am 7.1 Robert Weston, *University of Melbourne, Australia*  
AM-36 and minocycline reduce retrograde microglial activation  
in the spinal cord following focal head injury in rats

9.15 am 7.2 Ailsa McGregor, *University of Auckland, New Zealand*  
Neuroblast migration into the QA lesioned adult rat striatum:  
A retroviral tracing study

9.30 am 7.3 Hiren Chotalita, *University of Adelaide, Australia*  
Expression of Aquaporin-1 & 4 in optic nerve after traumatic  
brain injury

9.45 am 7.4 Punam Sawant, *University of Otago, New Zealand*  
*In vivo* seizure induction by domoic acid and isodomoic  
acids-A and -C

10.00 am 7.5 Mike Nicholls, *University of Melbourne, Australia*  
Bumping to the right: A consequence of pseudoneglect?

10.15 am 7.6 Yuki Shirakura, *Van der Veer Institute, New Zealand*  
Predictive eye and arm movement in Parkinson's disease

10.30 am Coffee Break

10.45 am ANNUAL GENERAL MEETING  
All conference participants are invited to attend

# TUESDAY 29 AUGUST AFTERNOON SESSION

3.30 pm                      Tea and coffee available

## 8. Modeling and Computer-Based Approaches

Chair:                      Ian Kirk

- 4.00 pm    8.1    **David Cumin, *University of Auckland, New Zealand***  
Extending the Kuramoto model to encompass neuronal  
synchronisation
- 4.15 pm    8.2    **John Fink, *University of Otago, New Zealand***  
Validation of numerical fluid simulations in the Circle of Willis  
using phase contrast MRI
- 4.30 pm    8.3    **Logan Voss, *University of Auckland, New Zealand***  
The dynamics of the transition from slow-wave sleep to REM  
sleep: (1) Experimental data
- 4.45 pm    8.4    **Jamie Sleigh, *University of Auckland, New Zealand***  
The dynamics of the transition from slow-wave sleep to  
REM sleep: (2) Theoretical Modelling
- 5.00 pm    8.5    **Alistair Steyn-Ross, *University of Waikato, New Zealand***  
The critical-slowness challenge for neurophysiologists
- 5.15 pm    8.6    **Marcus Wilson, *University of Waikato, New Zealand***  
Including higher-order statistics in cortical mean-field modelling
- 5.30 pm                      Afternoon tea available

# TUESDAY 29 AUGUST EVENING SESSION

## 9. Reward and Addiction

Chair: Cliff Abraham

- 6.00 pm 9.1 Natalie Loxton, *Griffith University, Australia*  
The role of biologically based conceptualisations of impulsivity in the addictions
- 6.15 pm 9.2 Stephanie Robinson, *Monash University, Australia*  
Quantitative distribution of endocannabinoid component mRNA in mouse brain: Effects of cannabinoid tolerance
- 6.30 pm 9.3 John Reynolds, *University of Otago, New Zealand*  
Cholinergic interneurons in the striatum: It's time to pause and take notice
- 6.45 pm 9.4 Melissa Barry, *University of Otago, New Zealand*  
Mapping the crossed-corticostriatal pathway using antidromic activation
- 7.00 pm Coffee break
- 7.10 pm 9.5 Susan Schenk, *Victoria University of Wellington, New Zealand*  
Effects of repeated exposure to MDMA in rats
- 7.25 pm 9.6 Jan Schultz, *University of Otago, New Zealand*  
Induction of visual responsiveness in striatal spiny neurons by disinhibiting the superior colliculus
- 7.40 pm 9.7 Manfred Oswald, *University of Otago, New Zealand*  
Cortical stimulation evokes postsynaptic potentials and slow afterhyperpolarisations in striatal cholinergic interneurons *in vitro*

Posters to be removed

# WEDNESDAY 30 AUGUST

## MORNING SESSION I

8.00 am Light breakfast available

### 10. Brain and Behaviour

Chair: John Reynolds

8.30 am 10.1 **Brendon O'Brien, *University of Auckland, New Zealand***  
Expression and localization of voltage gated sodium channels in mouse retina

8.45 am 10.2 **Sarabjit Kaur Saggu, *University of Adelaide, Australia***  
The spatial and temporal pattern of optic nerve degeneration after excitotoxic retinal injury

9.00 am 10.3 **Keely Bumsted-O'Brien, *University of Auckland, New Zealand***  
Morphological characterisation of the central foveal region in the pigeon retina

9.15 am 10.4 **Craig Smith, *University of Melbourne, Australia***  
Studies in wild-type and relaxin-3 knock-out/*LacZ* knock-in mice reveal the central distribution of relaxin-3 and GPCR135 and suggest a role in attentional states, behavioral control and stress responses

9.30 am 10.5 **Martin Sale, *University of Adelaide, Australia***  
Assessment of the variability of two paired associative stimulation (PAS) protocols used to induce neuroplastic changes in human motor cortex

9.45 am Coffee Break

# WEDNESDAY 30 AUGUST MORNING SESSION II

- 10.15 am 10.6 Jeff Hamm, *University of Auckland, New Zealand*  
The N400 in response to non-current rehearsal items
- 10.30 am 10.7 Ian Kirk, *University of Auckland, New Zealand*  
Involvement of anterior cingulate and prefrontal cortices in the  
Stroop colour-word task: EEG and fMRI studies
- 10.45 am 10.8 Neil McNaughton, *University of Otago, New Zealand*  
Variation in frontal and posterior cortical theta-range  
rhythmicity in differing behavioural states
- 11.00 am 10.9 Ping Liu, *University of Otago, New Zealand*  
Effects of aging on NMDA receptor subunits in memory-associated  
brain structures
- 11.15 am 10.10 Cliff Abraham, *University of Otago, New Zealand*  
Aging-related decrease in synaptic protein synthesis in rat  
hippocampus
- 11.30 am Closing Remarks
- Presentation of the Goddard Prize for the best student  
oral presentation and the prize for best student poster  
presentation
- 12.00 noon Lunch

## Acknowledgements

We are deeply indebted to Ms Norma Bartlett, Mrs Margaret McMurtrie and Ms Sarah Hulme from the Department of Psychology, University of Otago for their help with the conference organisation and secretarial assistance. We are very grateful to the Neurological Foundation of New Zealand for its generous financial assistance toward student travel and registration. We would also like to thank the University of Otago's Neural System Structure and Function Research Theme for its support of the plenary speaker.