



**AUSTRALIA ISRAEL RESEARCH EXCHANGE
PROGRAM**

AUSTRALIAN DELEGATION TO ISRAEL

Neuroscience Workshop and associated technical visits

11-18 December 2012



ATSE President, Dr Alan Finkel AM FTSE with Professor Ruth Arnon, President of the Israel Academy of Sciences and Humanities



Her Excellency Ms Andrea Faulkner, Australian Ambassador to Israel (centre right); Minister Daniel Hershkowitz, Minister for Science and Technology, Israel (centre left); the Australian Delegation



Discussions between Dr Alan Finkel AM FTSE, Professor Esty Shohami, ISFN, and Mr Paul Israel, Australia Israel Chamber of Commerce



Minister Mark Butler, Minister for Mental Health and Ageing, Australia, and Professor Ehud Gazit, Chief Scientist, the Israeli Ministry of Science and Technology (MOST)



Australian Delegation

REPORT ON

**AUSTRALIA ISRAEL RESEARCHER EXCHANGE
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held in conjunction with the

Israel Society for Neuroscience (ISFN) Annual Meeting

11-18 December 2012

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Report

Background

The Australia Israel Research Exchange was established by the Israeli Ministry of Technology and Science and the Australian Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE), with the Australian Academy of Technological Sciences and Engineering (ATSE) administering the activities on the Australian side. This high level program is viewed by both Governments as an extremely significant opportunity - not only to discuss areas of mutual interest between Australia and Israel but also to act as a platform to develop strategic relationships.

The first AIRE activity was an Australian Delegation travelling to Israel, 11-18 December 2012, for a Neuroscience Workshop and associated technical visits, held in conjunction with the Israel Society for Neuroscience (ISFN) Annual Meeting. An Australian delegation of 12 (details in Appendix A) travelled to Israel to achieve a greater understanding by comparing approaches and technologies and explore new collaborative opportunities between Israel and Australia. The senior delegation members, led by Dr Alan Finkel AM FTSE, were chosen to represent Australian neuroscience across a variety of fields and progress individual and institutional linkages. The visit program included the ISFN Annual Meeting, technical visits to six Israeli institutions and networking opportunities, full details of the visit program can be seen in the Appendices.

This was followed up by a Fellowship funding call for Australian early to mid-career researchers in Neuroscience to travel to Israel to progress important linkages.

Overview

Neuroscience has the potential to address many of the major health issues faced by society. The research in neuroscience which is being undertaken in Israel is very impressive. Several areas were identified as key strengths, which included neuroimmunology, computational neuroscience, neurodegenerative disease and cognitive neuroscience, epilepsy, schizophrenia, optogenetics and electrophysiology. Australia's neuroscience is also highly regarded, and these areas provide opportunities for mutually-advantageous collaborations based on complementary skills.

Israel is very successful in terms of research, particularly in neuroscience, where there is great depth and breadth, as well as enthusiasm. Israeli neuroscientists are first class, frequently doing more with less, are not intimidated by challenges and apply lateral thinking in their search for solutions. They tackle big questions across a broad gamut of areas in brain research, collaborating with colleagues across the other faculties in their home institutes and with colleagues in other Israeli institutes and abroad.

The culture within Israeli institutions focuses on multidisciplinary approaches, with strong emphasis on collaboration and translation of work into clinical practice or into commercial products. Researchers are encouraged to approach problems with a "can do" attitude, and do not fear failure but move on quickly from a start-up or clinical trial which does not succeed, with a readiness to invest intellectual time and finance in high risk projects. All levels of researchers have an entrepreneurial outlook and are encouraged to partner with industry. This is also assisted by the organisations' strategic directions - some institutions target areas critical to their own society (such as the Technion establishing a school of oil and gas engineering for the engineers required to exploit Israel's first oil and gas field), and others have more directed focus on specific areas of research rather than spreading the research thinly.

Australia could learn aspects of research translation and commercialisation from Israeli colleagues. Israel has overcome administrative and bureaucratic issues which are still present in Australia, such as IP and technology transfer mechanisms while universities in Israel are far more efficient with a quick turnaround time on agreements. Israel also has gross R&D investment at 4.7 per cent of GDP, compared to Australia's two per cent, and the highest ratio of engineers per capita in the world.

Key strengths of this trip included involvement by key Government officials from both countries – Minister Daniel Hershkowitz, Minister for Science and Technology, Israel and Minister Mark Butler, Minister for Mental Health and Ageing, Australia – as well as a range of senior stakeholders from Israel and Australia.

The visits attended by the senior Australian researchers allowed for a broader range of neuroscience to be discussed than if visits were undertaken independently, and synergies between the various Australian research groups were also identified.

Next Steps

There will be many outcomes as a direct result from the mission, with many more Australian and Israeli researchers exploring collaborations, and follow-up meetings planned. It is important that Australia takes advantage of this opportunity. Already, under the Australia Israel Research Exchange, there have been Neuroscience Fellowships announced, providing early to mid-career researchers an opportunity to undertake a short-term exchange in Israel, which will assist in allowing the collaborations to foster. Delegates from the visit have also held many discussions with Australian and Israeli colleagues to explore various opportunities for future joint partnerships, there have been meetings in regards to institutional level collaborations and joint research proposals are in development.

It is important that there is support for an ongoing relationship between Australia and Israel in neuroscience research. There are various suggestions to how this may be done.

There should be high level engagement to leverage the outcomes with specific funding and plans; university-to-university and institute-to-institute linkages should be further explored; funding opportunities need to be maximised to facilitate and consolidate nascent collaborations; and individual collaborations should be promoted by local communication about the existing opportunities.

For the funding opportunities for this important relationship, there are several options which could be considered for support. It would be beneficial to Australia and Israel to have a large fund, made up by funding from the Israeli government, the Australian government and a smaller amount of philanthropic funding from the Australian community. This fund would support exchanges of scientists for up to 12 months at a time, to directly participate in collaborative projects, building knowhow across the spectrum of research, translation to the clinic, and commercialisation.

Continued Australia-Israel collaboration in this area would reap the health benefits which Australia is aiming for.

This important activity was possible due to the support provided by the Australia Ambassador to Israel, Her Excellency Ms Andrea Faulkner and staff at the Australian Embassy in Israel, and ATSE thanks Ms Faulkner for hosting a reception at the Australian Embassy; the Australian Government; Minister Daniel Hershkowitz, Professor Ehud Gazit, Ms Ilana Lowi, Dr Ahmi Ben-Yehudah and colleagues at the Ministry of Science and Technology, Israel; and Professor Gabi Amitai, Professor Esty Shohami, Dr Dan Frenkel, Ms Liat Nissanov and colleagues at the Israel Society for Neuroscience.

Thanks also are expressed to Professor Ruth Arnon, Dr Raphael Mechoulam, Dr Bob Lapidot and colleagues at the Israeli Academy of Sciences and Humanities for their support and hosting a networking reception; His Excellency Mr Yuval Rotem and staff at the Embassy of Israel in Australia, Mr Paul Israel, Mr Leon Kempler and colleagues at the Australia Israel Chamber of Commerce; the Presidents and key staff of the institutions visited - Tel Aviv Medical Centre Ichilov, the Tel Aviv University, Bar Ilan University, the Technion, the Weizmann Institute of Science, and the Hebrew University of Jerusalem.

The successful visit was due to the significant contributions by Dr Alan Finkel AM FTSE, Professor Geoff Donnan AO and the Australian delegation, and the support of their home institution is gratefully acknowledged.

Appendices

Appendix A Australian Delegation and Itinerary

Dr Alan Finkel AM FTSE – President, Australian Academy of Technological Sciences and Engineering (ATSE); Chancellor, Monash University

Professor Geoff Donnan AO – Director, the Florey Institute of Neuroscience and Mental Health

Professor Sam Berkovic FAA FRS – Director, Epilepsy Research Centre, University of Melbourne

Professor Ashley Bush FTSE – Head, Oxidation Biology Laboratory, University of Melbourne

Professor Sarah Dunlop – Principal Research Fellow, University of Western Australia; Past-President, Australian Neuroscience Society

Professor Andrew Kaye – Professor of Surgery, Director of Neurosurgery and Head, Department of Surgery, University of Melbourne, The Royal Melbourne Hospital

Laureate Professor Colin Masters FAA FTSE – Executive Director, Mental Health Research Institute

Dr Michael Nilsson – Director, Hunter Medical Research Institute

Professor Linda Richards – Queensland Brain Institute, University of Queensland

Professor John Rostas – President, Australian Neuroscience Society; Deputy Head (Research), Faculty of Health, University of Newcastle

Professor Peter Schofield – Executive Director & CEO, Neuroscience Research Australia

Professor Cyndi Shannon Weickert – Macquarie Group Foundation Chair of Schizophrenia Research

Ms Anne Houston – Senior Project Officer, International, Australian Academy of Technological Sciences and Engineering (ATSE)

Tuesday, 11 December 2012
Technical Visit to Tel-Aviv Medical Center Ichilov - http://www.tasmc.org.il/sites/en/About/Pages/About.aspx
Technical Visit to the Tel-Aviv University - http://english.tau.ac.il/
Reception hosted by the Australian Embassy
Wednesday, 12 December 2012
Technical Visit to the Bar-Ilan University, Ramat Gan - http://www1.biu.ac.il/indexE.php
Technical Visit to the Technion, Haifa - http://www1.technion.ac.il/en
Dinner with Erik Messika, Coronis, organised by the Australia Israel Chamber of Commerce - http://www.aicc.org.au/
Thursday, 13 December 2012
Technical Visit to the Weizmann Institute of Science - http://www.weizmann.ac.il/
Technical Visit to the Hebrew University of Jerusalem - http://new.huji.ac.il/en/ (Professors Donnan and Berkovic to the Israeli Neurological Association annual meeting)
Dinner hosted by the President of the Israeli Academy of Sciences and Humanities - http://www.academy.ac.il/
Friday, 14 December 2012
Sightseeing and networking opportunities in Jerusalem
Saturday, 15 December 2012
Registration and Opening Dinner of the First Australian-Israeli Neuroscience Meeting
Sunday, 16 December 2012
Morning: The Australia-Israel Binational Symposium Afternoon: The Israel Society for Neuroscience (ISFN) Annual Meeting Evening: Opening Ceremony of the 21st ISFN Annual Meeting http://www.isfn.org.il/
Monday, 17 December 2012
The Israel Society for Neuroscience (ISFN) Annual Meeting
Tuesday, 18 December 2012
Morning: The Israel Society for Neuroscience (ISFN) Annual Meeting Afternoon: Delegates depart Israel

Appendix B Institutions and Researchers visited

Tel Aviv Medical Centre Ichilov

Professor Natan Bornstein, Chair, Department of Neurobiology - natanb@tlvmc.gov.il
Professor Gabi Barbash, Director General, Tel-Aviv Sourasky Medical Center (TASMC)
Dr Michal Roll, Director R&D - Research at TASMC
Professor Zvi Ram – Director Neurosurgery Department.
Dr Dafna Ben-Bashat – Brain Imaging Research
Professor Itzhak Fried – Dept. Neurosurgery – Single neuron recording in epileptic patients
Professor Jeff Hausdorff - Gait dynamics in aging and movement disorders
Professor Avi Orr-Urtreger – The Genetic Aspects of Parkinson
Dr Einor Ben-Assayag – Stroke Unit, Department of Neurology
Dr Arnon Karni – Neuro immunological Research – Department of Neurology
Dr Dalit Ben-Yosef – Embryonic stem cells, directed to neurons – IVF Unit, OB/GYN Division

Tel Aviv University

Professor Ilana Gozes – Director, the Adams Super Center for Brain Studies - igozes@post.tau.ac.il
Professor Yoav Henis – TAU Vice President for Research and Development
Professor Ehud Gazit – Chief Scientist of Ministry of Science & Technology, former TAU Vice President for R&D
Professor Uri Ashery – Head, the Sami Sagol School of Neuroscience
Dr Dan Frenkel - Sagol School of Neuroscience, Department of Neurobiology, Life Science Institute
Professor Naama Friedmann - Language & Brain Lab, School of Education & Sagol School of Neuroscience
Dr. Doron Gothelf – Faculty of Medicine
Professor Nathan Intrator - School of Computer Science, and School of Neuroscience
Professor Daniel M. Michaelson - Professor of Neurobiology, Department of Neurobiochemistry
Dr Roy Mukamel – School of Psychological Sciences
Professor Daniel Segal - The Nathan Galston Chair for Anti-Microbial Drug Research; Head of the Department of Molecular Microbiology & Biotechnology
Professor Miguel Weil – Head, Laboratory of Neurodegenerative Diseases & Personalized Medicine

Bar-Ilan University

Professor Moshe Bar - Director, Gonda Multidisciplinary Brain Research Center - Moshe.Bar@biu.ac.il
Dr. Eli Even - Director, Research Authority
Dr Eitan Okun - Department of Life Sciences, Neurobiology
Dr Avi Goldstein - Head, Electromagnetic Brain Imaging Unit

Technion

Professor Paul Feigin – Senior Executive Vice President - svpr@technion.ac.il
Professor Eliezer Shalev – Dean, Bruce Rappaport Faculty of Medicine
Professor Noam Ziv – Network Biology Research laboratories, Lorry I. Lokey Interdisciplinary Centre for Life Sciences and Engineering
Professor Yoram Gutfreund – Head of the Auditory and Visual Systems Laboratory
Dr Itamar Kahn – Head of the Brain System Organisation and Neurodegeneration Laboratory

The Weizmann Institute of Science

Professor Rafi Malach – Head, Department of Neurobiology - Rafi.Malach@weizmann.ac.il

Professor Alon Chen – Department of Neurobiology

Dr Oren Schuldiner – Department of Molecular Cell Biology

Dr Tali Kimchi – Department of Neurobiology

Professor Menahem Segal – Department of Neurobiology

Visited **Professir Michal Schwartz's** lab

Hebrew University of Jerusalem

Professor Aharon Lev-Tov - Chair, Department of Medical Neurobiology - aharonl@ekmd.huji.ac.il

Professor Eilon Vaadia - Director of the Edmond and Lily Safra Center for Brain Sciences

Professor Yoel Yaari - The Henri and Erna Leir Professor for Research in Neurodegenerative Diseases, Department of Medical Neurobiology, Institute for Medical Research Israel-Canada (IMRIC)

Professor Ronen Segman – Senior Lecturer in Psychiatry

Professor Avihu Klar - School of Medicine-IMRIC-Medical Neurobiology

Professor Amir Amedi – Head, Artificial Vision for the Blind Project, Multisensory Cognition Lab

Professor Tamir Ben-Hur - Department of Neurology, Hadassah – Hebrew University Medical Center

Appendix C

Australian Delegation Biographies



Dr Alan Finkel AM FTSE

President, Australian Academy of Technological Sciences and Engineering (ATSE); Chancellor, Monash University

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Dr Alan Finkel AM FTSE is an engineer, entrepreneur and philanthropist and has served as Chancellor of Monash University since January 2008. He is President-elect of ATSE, former Chief Technology Officer of Better Place Australia and Chairman of the Australian Centre of Excellence for All-Sky Astrophysics. For 20 years Dr Finkel ran Axon Instruments, an American company that made electronic instruments used by pharmaceutical companies, and later established two magazines. Cosmos magazine, promotes science awareness and the G magazine promotes environmental sustainability. He established the Australian Course in Advanced Neuroscience to provide advanced training to young scientists and the STELR secondary school science program, administered by ATSE, which is currently running in nearly 300 secondary schools around Australia.



Professor Geoff Donnan AO

Director, the Florey Institute of Neuroscience and Mental Health

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Professor Geoffrey Donnan is currently Director of the Florey Institute of Neuroscience and Mental Health, and was founding Director of the National Stroke Research Institute and Professor of Neurology, University of Melbourne, Austin Hospital campus. His research interest is clinical stroke management and he was co-founder of the Australian Stroke Trials Network. He is a Past-President of the World Stroke Organisation. He received the American Stroke Association William Feinberg Award for Excellence in Clinical Stroke Research in 2007 and in 2012 was appointed an officer in the Order of Australia (AO) for his distinguished service to neurology and research contributions.



Professor Sam Berkovic FAA FRS

Director, Epilepsy Research Centre, University of Melbourne

Email: s.berkovic@unimelb.edu.au

Professor Sam Berkovic is Laureate Professor in the Department of Medicine, University of Melbourne. He is a clinical neurologist and clinical researcher with strong basic science collaborations. His group, together with molecular genetic collaborators in Adelaide and Germany, discovered the first epilepsy gene in 1995 and subsequently have been involved in the discovery of many of the known epilepsy genes. This has changed the conceptualisation of the causes of epilepsy and is having a major impact on epilepsy research, and on strategies for diagnosis and development of new treatments. He was elected a Fellow of the Royal Society (London) in 2007.



Professor Ashley Bush FTSE

Head - Oxidation Biology Laboratory, University of Melbourne

Email: ashleyib@unimelb.edu.au

Professor Ashley I. Bush (MB BS, DPM, FRANZCP, PhD, FTSE) heads the Oxidation Biology Laboratory at the Florey Institute, is Professor of Pathology, The University of Melbourne, co-director of biomarker development within the Australian Imaging Biomarker Lifestyle Study (AIBL), Chief Scientific Officer of the CRC for Mental Health, lecturer in psychiatry at Harvard Medical School and adjunct professor of neuroscience at Cornell University. He has received numerous awards including the Potamkin Prize and the Beeson Award. Professor Bush has authored over 250 publications, with >20,000 citations, 21 patents and founded 3 biotechnology companies. He discovered the interaction of beta-amyloid with zinc as a major factor in Alzheimer's disease.



Professor Sarah Dunlop

Principal Research Fellow, University of Western Australia; Past-President, Australian Neuroscience Society

Email: sarah.dunlop@uwa.edu.au

Professor Sarah Dunlop is a research scientist who leads an integrated program of laboratory and clinical research to promote functional recovery after neurotrauma. Laboratory studies focus on preventing the spread of secondary degeneration to intact tissue using technologies such as red light, pulsed magnetic fields and nanotechnology to target drug delivery. Translation to the clinic involves three randomized controlled trials “Spinal Cord Injury and Physical Activity (SCIPA)” in Australia and New Zealand to examine novel ways to exercise the paralysed limbs to promote neurological recovery and improve health. SCIPA is also developing a community program to help increase participation and exercise once patients are living in the community.



Professor Andrew Kaye

Professor of Surgery, Director of Neurosurgery and Head, Department of Surgery, The University of Melbourne, The Royal Melbourne Hospital

Email: andrew.kaye@mh.org.au

Professor Andrew Kaye graduated from The University of Melbourne in 1973, and subsequently trained in Neurosurgery at The Royal Melbourne Hospital and The Royal Children’s Hospital in Melbourne. He undertook further neurosurgery training in Oxford, London and at The Cleveland Clinic. On returning to Australia in 1983 he was appointed Neurosurgeon at The Royal Melbourne Hospital, and commenced research into neuro-oncology at the Ludwig Institute for Cancer Research. He was appointed Professor of Neurosurgery at The University of Melbourne in 1992, and the James Stewart Professor of Surgery and Head of the Department of Surgery at The University of Melbourne, Royal Melbourne Hospital in 1997. He is the Head of the Department of Neurosurgery at The Royal Melbourne Hospital. For the past ten years he has been the Chairman of the Board of Examiners for final year Medicine at the Faculty of Medicine, Dentistry and Health Sciences at The University of Melbourne. In 2010 he was appointed by the New Zealand Government to Chair the Board of the New Zealand South Island Neurosurgery Service.

His main clinical and research interest involves neuro-oncology and cerebrovascular disease. In 1992 he was awarded the John Mitchell Crouch Fellowship by the Royal Australasian College of Surgeons, and in 1997 was appointed the Sir Arthur Sims Commonwealth Travelling Professor. In 2003 the American Association of Neurological Surgeons honoured him with the Ronald Bittner Award for contributions to the treatment of brain tumours and in 2006 the Paul Bucy Award for his contribution to neurosurgery education. In 2004 he presented the Sir John Eccles Lecture at the Australian Neuroscience Society.

In 2010 he was awarded the Medal of Honour from the World Federation of Neurosurgical Societies for ...”outstanding contribution to neurosurgery..”

He was awarded the Commonwealth of Australia Centenary Medal in 2003 and Order of Australia in 2004.

He is a Director of the Hawthorn Football Club, Australian Football League. He is the President of the Asian Australasian Society of Neurological Surgeons and a Vice President of the World Federation of Neurosurgical Societies.

He is the foundation Editor-in-Chief of the Journal of Clinical Neuroscience. He has authored and co-authored over 150 journal articles and book chapters, as well as five books including being the co-author of “Brain Tumours”, a text recognised as being the definitive work on the subject.



Laureate Professor Colin Masters FAA FTSE

Executive Director, Mental Health Research institute

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Professor Colin Masters is a leader in research into Alzheimer's disease and other neurodegenerative disease, including Creutzfeldt-Jakob and other prion diseases, and his work over the last 35 years is widely acknowledged as having had a major influence on Alzheimer's disease research world-wide. This work has led to the continued development of novel drugs and therapeutic strategies to treat these diseases. Professor Masters has held many senior scientific positions and is currently the Director of the Mental Health Research Institute, and Laureate Professor at the University of Melbourne. He is the Chair of the NHMRC's Transmissible Spongiform Encephalopathies Advisory Committee, a consultant in neuropathology at the Royal Melbourne Hospital and a scientific advisor to Neurosciences Australia. His achievements have been recognised by the receipt of many international awards - including the King Faisal International Prize in Medicine (1996), The Lennox K Black Prize and the Grand Hamdan International Award for Medical Sciences (2006) and the Victoria Prize from the Minister for Innovation (2007) - and he is a prolific author, with many publications covering multidisciplinary aspects of neurodegenerative diseases.



Professor Michael Nilsson

Director, Hunter Medical Research Institute

Email: Michael.nilsson@hmri.com.au

Professor Michael Nilsson, MD, PhD, is an internationally well established neuroscientist with 2 decades of experience within the fields of astrocyte biology, brain plasticity and recovery after stroke. He started his research career in basic neuroscience at the University of Gothenburg, Sweden, studying astrocytic functions in vitro and in vivo. The role of enriched environment in plasticity and regeneration has also been a main focus and constitutes an important platform for ongoing animal studies as well as for clinical studies. Professor Nilsson has continued to explore key mechanistic questions at the cellular level, but as a Neurologist and Rehabilitation physician, he has gradually expanded his research group to include both clinicians and basic scientists. He has initiated, planned and established pioneering translational research programs that combine basic and clinical research in rehabilitation neuroscience involving studies on the effects of cardiovascular exercise, music and rhythm on cognition.

Before coming to The University of Newcastle, Professor Nilsson was the Director of Research, Development and Education at Sahlgrenska University Hospital in Gothenburg, Sweden - northern Europe's largest university hospital. In that role he was responsible for the strategic planning and support of clinical sciences. Prior to this appointment, he was the Director of Clinical Neurosciences (Neurology, Neurosurgery, Clinical Neurophysiology and Neurorehabilitation) at Sahlgrenska University Hospital. At the time of his appointment as Director of Neurorehabilitation at the same hospital, he was one of the youngest Directors of a clinical department in the hospital's history. Under Professor Nilsson's leadership the clinic was awarded top reviews for strong and visionary leadership in medical rehabilitation and translational neuroscience according to the international accreditation organisation "Commission on the Accreditation of Rehabilitation Facilities" He has received awards and honorary medals from the Swedish Parkinson Association and the Swedish Association for Neurologically Handicapped People. Professor Nilsson has two decades of experience as an entrepreneur. He has successfully been involved as an expert in venture capital financed companies; he has helped to raise money for the development of small companies and has been on the board of several enterprises.



Professor Linda J Richards

Queensland Brain Institute, University of Queensland
Email: Richards@uq.edu.au

Professor Linda Richards did her undergraduate degree at Monash University and obtained her BSc (Hons) and a PhD from The University of Melbourne and The Walter and Eliza Hall Institute in the laboratory of Prof. Perry Bartlett. Her thesis was on the determination of neuronal lineage in the developing spinal cord. She then moved to the USA to complete a postdoctoral fellowship at The Salk Institute for Biological Studies where she worked with Professor Dennis O’Leary on cortical development and formation of the lateral cortical projection through the internal capsule. She began her independent laboratory at The University of Maryland Medical School in 1997, in the Department of Anatomy and Neurobiology chaired by Professor Michael Shipley. In 2005 she moved her laboratory to The University of Queensland and was appointed as an Associate Professor in the Queensland Brain Institute and The School of Biomedical Sciences and in 2006, she was appointed as an NHMRC Senior Research Fellow. In 2010, she was promoted to Professor at The University of Queensland and promoted to NHMRC Principal Research Fellow in 2011. In addition to running her laboratory, Professor Richards is passionate about informing the public about science. In 2006 she founded the Australian Brain Bee Challenge, a program that inspires and excites high school students about science.

Professor Richards has had numerous invitations to speak at some of the world’s foremost forums on Developmental Neuroscience. Professor Richards’ publications are in leading journals, including Journal of Neuroscience, PNAS, Development, Nature Neuroscience etc. Since 2005 she has published 31 primary research papers in top-tier journals, 6 review articles (including Nature Reviews Neuroscience, Current Opinion in Neurobiology and TINS papers) and two book chapters (Novartis Foundation Symposium and Cold Spring Harbor Perspec. Biol.). Papers in Developmental Cell and Development in 2003 were designated “must read” by the Faculty of 1000. Her work has attracted over 2800 citations.



Professor John Rostas

President, Australian Neuroscience Society; Deputy Head (Research), Faculty of Health, University of Newcastle
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After two and half years as a Fullbright-Hays Fellow in the USA at University of California, Irvine and the University of Connecticut Professor Rostas returned to Monash University as a Queen Elizabeth II Research Fellow until, in 1981, he was appointed to the academic staff of the new medical school at the University of Newcastle, Australia. Professor Rostas was the founding Executive Director of the Hunter Medical Research Institute from 1999 until 2006. He is currently Deputy Head (Research) of the Faculty of Health at the University of Newcastle and the President of the Australian Neuroscience Society.

Professor Rostas has a distinguished research record in the study of molecular mechanisms of synaptic plasticity in many experimental systems, particularly in studies of brain development and maturation. He is an internationally recognised authority on the role and regulation of the important regulatory enzyme CaMKII and molecular studies of synaptic plasticity. Professor Rostas and his students were the first to show that developmental changes in subcellular distribution of CaMKII occur independently of the developmental change in expression level of the enzyme and that the subcellular translocation is indirectly regulated by thyroid hormone. Work from Professor Rostas’s laboratory was the first to demonstrate the existence of giant mossy fibre nerve terminals in the chicken hippocampus and, through the work of his PhD student (TW Margrie) co-supervised by Dr Pankaj Sah, of LTP (long term potentiation) and LTD (long term depression) at these synapses, and to show that CaMKII activation is required for presynaptic LTD at these synapses. Professor Rostas’s team was the first to show that the widely accepted predictions about sustained CaMKII autonomous activity in LTP were wrong, implying that additional mechanisms controlling CaMKII in vivo remain to be discovered. His work has recently identified a new mechanism that controls the function of CaMKII in vivo through molecular targeting. His current research explores the cellular functions controlled by this new regulatory mechanism, particularly in the context of stroke and cell proliferation and the therapeutic potential of drugs that interfere with this regulatory mechanism.

He was elected to the Councils of the International Society for Neurochemistry, the Asian Pacific Society for Neurochemistry and the Australian Neuroscience Society and has served on numerous scientific advisory committees for research and biotechnology development. He has always maintained a multidisciplinary approach in his research and active collaborations with colleagues in different disciplines (particularly neurophysiology, psychology, neuroanatomy, neurology, psychiatry and bioinformatics) both in Australia and overseas.



Professor Peter Schofield

Executive Director & CEO, Neuroscience Research Australia
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Professor Peter Schofield was appointed Institute head in 2004. Peter graduated from the University of Sydney with the University Medal and was awarded a PhD in genetics from The Australian National University in 1985. He undertook postdoctoral positions in biotechnology in the US and the University of Heidelberg. Peter was appointed a NHMRC Senior Research Fellow at the Garvan Institute in 1993, becoming head of the Neurobiology Research Program in 1999. His research interests focus on identifying genes that lead to mental illness and to dementia.

Professor Schofield's research interests focus on understanding the role of genetics in brain function and in brain diseases. Areas of focus include identifying genes that predispose to psychiatric conditions such as bipolar disorder and depression and genes that cause dementias, including Alzheimer's disease and frontotemporal dementia. Other studies include examining how signalling in the brain occurs, through studies of neurotransmitter receptors, and the role of genetic variation in normal brain function.



Professor Cynthia Shannon Weickert

Macquarie Group Foundation Chair of Schizophrenia Research
Faculty – Department of Psychiatry, University of New South Wales
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Prof Shannon Weickert's research centers on the molecular developmental neurobiology of schizophrenia. She earned a PhD in Biomedical Science at Mount Sinai School of Medicine, New York City and completed postdoctoral training at the National Institutes of Mental Health rising to the level of Unit Chief of MiNDS (Molecules in the Neurobiology and Development of Schizophrenia). Her awards include the Eli Lilly Young Investigator Award, NIH Fellows Award for Research Excellence, Independent Investigator Award and two Young Investigator Awards from NARSAD. She was awarded a National Health and Medical Research Council Research Fellowship SRF A (2012-2016).

Prof Shannon Weickert has made seminal contributions to the conceptualization of schizophrenia as a neurodevelopmental disorder and is best known for her pioneering work on BDNF and estrogen receptor. She has also led studies that identified the birthplace of neuronal precursors in the human brain and studies that showed the postnatal recruitment of cortical inhibitory neurons is abnormal in schizophrenia. Her other work challenges long-held assumptions about human brain development including the nature of male-female differences and saliency of synaptic pruning.

She is recognized as a world leader in molecular human cortical development and her papers are the most numerous in the field. In total, Prof Shannon Weickert has 116 peer-reviewed papers with 38 in high impact journals (IF 6-15). To date she has a total of 4,653 cites with an h-index of 40. Her work has broad impact outside psychiatry including examining molecular mechanisms by which hormones and growth factors cooperate to control gene expression and experimental examination of how sex hormones impact social development in adolescence.

Prof Shannon Weickert is a popular international speaker with over 20 symposium presentations and with many invitations to chair. She is a full member of American College of Neuropsychopharmacology and is a Board member for Schizophrenia International Research Society. Prof Shannon Weickert is on 3 top-ranked editorial boards, *Molecular Psychiatry*, *BioMedCentral (BMC) Genomics* and the *Schizophrenia Research Journal*. She peer reviews for 18 journals and holds 8 professional memberships. Prof Shannon Weickert is an active reviewer for NHMRC and is on the Scientific Advisory Council for Tissue Resource Centre at University of Sydney. She provides intellectual leadership for a clinical treatment trial of raloxifene in schizophrenia. She works at the forefront of translational research approaches to personalized medicine based on subgroups of patients with schizophrenia.

The Australian Academy of Technological Sciences and Engineering (ATSE) is an independent, non-government organisation, promoting the development and adoption of existing and new technologies that will improve Australia's competitiveness, economic and social wellbeing, and environmental sustainability.

ATSE, one of Australia's four learned Academies, was founded in 1976 to recognise and promote the outstanding achievement of Australian scientists, engineers and technologists. It consists of some 800 Fellows, including 19 Foreign Fellows, drawn from the wide spectrum of the applied sciences. The strategic priorities of ATSE are to:

- Provide a national forum for discussion and debate on critical issues of Australia's future, ensuring a valuable source of technological sciences and engineering based advice to government, academe, industry and the community.
- Improve education in the technological sciences and engineering through programs such as STELR (Science and Technology Education Leveraging Relevance) Project. This is a national secondary school science education initiative of ATSE.
- Promote technological sciences and engineering linkages globally and to foster technology transfer through its international program;
- Champion excellence in the technological sciences and engineering

Within this framework, and taking into account issues of national importance, the work of ATSE is given focus through a series of Topic Forums, Working Groups and Advisory Groups on Energy, Climate Change Impact, Water, Education, Emerging Technologies, Health Technologies and Built Environment. These foci inform the design and direction of the international program.

ATSE's international program of missions, workshops and delegations, together with support from specific grants and schemes, is directed at strengthening Australia's access to global science, engineering and technology and to maximising the benefits of Australia's science base and its global linkages.



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