Australian Government
Australian Research Council

2009 Australian Laureate Fellow

Dr Bernard Balleine

The neural bases of decision-making

Current Organisation: University of California
Administering Organisation: The University of Sydney
Primary research field: Central Nervous System
National Research Priority: Promoting and Maintaining Good Health

Dr Bernard Balleine conducts his research in the Department of Psychology at the University of California. His laboratory is recognised as one of the leading laboratories in the world studying the neural bases of goal-directed action and decision-making.

The aim of Dr Balleine's project is to develop an understanding of the neural determinates of the cognitive and emotional processes through which we acquire, select, evaluate and initiate volitional as opposed to more reflexive, habitual actions. This project will provide critical new information on the functional changes in brain circuits mediating cognitive-emotional integration during decision-making and the acquisition of new goal-directed actions.

Dr Balleine was awarded his PhD from the University of Cambridge in Comparative Psychology. After obtaining his PhD, Dr Balleine was elected to a Research Fellowship at Jesus College Cambridge. He was elected a Fellow of the American Psychological Association and appointed Associate Director for Research at the Brain Research Institute.

Dr Balleine has received a number of awards such as the Pavlovian Research Award from the Pavlovian Society and FIRST Award from the National Institute of Mental Health. He is the Associate Editor of the Quarterly Journal of Experimental Psychology and Frontiers in Integrative Neuroscience as well as Consulting Editor of Learning & Behavior.

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2009 Australian Laureate Fellow

Professor Richard Bryant

An Empirical Model of Aboriginal Mental health

Current Organisation: The University of New South Wales
Administering Organisation: The University of New South Wales
Primary research field: Psychiatry
National Research Priority: Promoting and Maintaining Good Health

Professor Richard Bryant is a current Australian Research Council Australian Professorial Fellow in the Department of Psychology at The University of New South Wales. He is internationally recognised as the leading authority on early psychological responses after trauma.

The poor health, academic, and mental health functioning of Aboriginal children is one of Australia's major public health problems. This project aims to determine the social and emotional well-being of Indigenous children and their families in remote Australia. This project will identify the specific factors that lead to these problems and provide an evidence base to shape future empirically-informed interventions to reduce violence and mental health problems in Aboriginal communities.

Professor Bryant was awarded his PhD from Macquarie University in Psychology. He is currently on the Board of Directors of the International Society of Traumatic Stress Society and was Chair of the 2006 World Congress Committee for the International Society of Traumatic Stress Society. He is an advisor to the Trauma-Related Disorders Work Group for the American Psychiatric Association's revision of international classification of psychological disorders and a Fellow of the Academy of the Social Sciences in Australia.

Professor Bryant has been the recipient of many distinguished awards. These include the Australian Society for Psychiatric Research Founders Medal, the Australian Association for Cognitive Behaviour Therapy Lifetime Achievement Award, the Eureka Prize for Science, and the Academy Medal of the Academy of the Social Sciences in Australia.

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2009 Australian Laureate Fellow

Professor Lesley Head

Cultural environmental research: the missing link in multidisciplinary approaches to sustainability

Current Organisation:	University of Wollongong
Administering Organisation:	University of Wollongong
Primary research field:	Social and Cultural Geography
National Research Priority:	An Environmentally Sustainable Australia

Professor Lesley Head is Professor and Head of the School of Earth and Environmental Sciences at the University of Wollongong. Her research has focused on long-term changes in the Australian landscape and the material and conceptual interactions that both prehistoric and contemporary peoples have had with these environments.

Professor Head's project will bring together two main intellectual currents; geographical and archaeological understandings of long term environmental change, including anthropogenic contributions, combined with a critical social sciences perspective on relations between human and non-human worlds. This research will contribute to building Australia's international research presence in the cultural dimensions of environmental sustainability, with particular strengths in ethnographic and related social science methods.

Professor Head was awarded her PhD in Geography from Monash University. She was appointed the King Carl XVI Gustaf Visiting Professor of Environmental Science at Kristianstad University, Sweden. She is the only Australian to have received this award. Professor Head was Director of the GeoQuEST Research Centre and has been elected a Fellow of the Australian Academy of Humanities and is currently the President of the Institute Australian Geographers.

Professor Head has been involved in a number of committees, and has been the Chair (20096–08) of the Australian Academy of Science National Committee for Geography.

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2009 Australian Laureate Fellow

Professor Richard Hobbs

Intervention ecology: managing ecosystems in the 21st century

Current Organisation: Murdoch University
Administering Organisation: The University of Western Australia
Primary research field: Terrestrial Ecology
National Research Priority: An Environmentally Sustainable Australia

Professor Richard Hobbs is a current Australian Research Council Australian Professorial Fellow in the School of Environmental Science at Murdoch University. He is internationally recognised as a leader in the fields of restoration ecology and landscape ecology.

This project aims to develop intervention ecology as a means of improving the effectiveness of ecosystem and landscape management in Australia and elsewhere, through increased understanding of ecosystem dynamics in rapidly changing environments. There is a strong need for the development of a more effective ecology that facilitates the analysis and management of ecosystems in a rapidly changing world. The project will produce significant advances in this new intervention ecology by the combination of empirical, synthetic and management-focused research.

Professor Hobbs obtained his PhD in Ecology from the University of Aberdeen. He was previously Head of the School of Environmental Science at Murdoch University as well as a member of the Natural Heritage Trust Advisory Committee. Professor Hobbs has been elected to the Australian Academy of Science.

Currently, Professor Hobbs is Editor in Chief of the journal Restoration Ecology, serves on several editorial boards including the journals Landscape Ecology and Ecological Management and Restoration. He is also Associate Editor of the Island Press Restoration Ecology book series.

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RESEARCH in the national interest – enabling the future

2009 Australian Laureate Fellow

Professor Peter Hodgson

Metal Processes and Products for a Sustainable Future

Current Organisation:	Deakin University
Administering Organisation:	Deakin University
Primary research field:	Material Engineering
National Research Priority:	Frontier Technologies for Building and transforming Australian Industries

Professor Peter Hodgson is a current Australian Research Council Federation Fellow and Director of Research for the Institute for Technology Research and Innovation at Deakin University. He is internationally recognised for his research contributions in a number of fields and is regarded as Australia's leading researcher in steel processing and product development.

The aim of Professor Hodgson's project is to develop metal manufacturing processes and products that will contribute to a more sustainable industry. This program of research will develop new products, processes and methodologies that will both support current industries and offer the potential for a step change in metal related manufacturing for a sustainable future.

Professor Hodgson was awarded his PhD in Engineering from The University of Queensland. He spent sixteen years with BHP Research Laboratories where he led research activities related to steel processing and the development of new alloys. He has served on many committees and boards including the Victorian Centre for Advanced Materials Manufacturing, the Auto CRC and the Geelong Manufacturing Council.

Professor Hodgson has received a number of awards including an Honorary Medal from AGH Poland, the Michael Tenenbaum Award, the Robert Hunt Silver Medal, the Edgerton Award and Florence Taylor Medal from the Institute of Materials Engineers Australia. He has been made an Alfred Deakin Professor at Deakin University and was awarded an Honoris Doctoris Cusa from The University of Valenciennes.

enabling the future

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RESEARCH *in the national interest – enabling the future*

2009 Australian Laureate Fellow

Professor Chennupati Jagadish

Nanowire Quantum Structures for Next Generation Optoelectronics

Current Organisation:	The Australian National University
Administering Organisation:	The Australian National University
Primary research field:	Nanotechnology
National Research Priority:	Frontier Technologies for Building and transforming Australian Industries

Professor Chennupati Jagadish is a current Australian Research Council (ARC) Federation Fellow and Head of the Semiconductor Optoelectronics Group in the Research School of Physics and Engineering at The Australian National University. He has an extremely high international profile and widely recognised as the pre-eminent Australian researcher in the fields of optoelectronics and nanotechnology.

Nanowire research is a new and emerging field growing at an incredibly fast pace. Professor Jagadish aims to build a world class research program on quantum nanowire optoelectronics leading to next generation nanowire lasers, optical switches and optical interconnects. The project has the potential to lead to fundamental discoveries and technologies of immense industrial interest.

Professor Jagadish obtained his PhD in Physics from the University of Delhi. He is a Fellow of a number of international professional societies including the Australian Academy of Science, Australian Academy of Technological Sciences and Engineering, Institute of Electrical and Electronics Engineers, and American Physical Society.

Professor Jagadish is currently the President of the Institute of Electrical and Electronics Engineers Nanotechnology Council, Convenor of the ARC Nanotechnology Network and Director of the Australian National Fabrication Facility. He serves on editorial boards of a number of journals in optoelectronics, nanotechnology, applied physics and materials science. He has won a number of awards including the Institute of Electrical and Electronics Engineers Millennium Medal and the Peter Baume Award from The Australian National University.

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2009 Australian Laureate Fellow

Professor Jennifer Martin

Towards antibacterials without resistance

Current Organisation:	The University of Queensland
Administering Organisation:	The University of Queensland
Primary research field:	Enzymes
National Research Priority:	Frontier Technologies for Building and transforming Australian industries

Professor Jennifer Martin is Professor in the Institute for Molecular Bioscience at The University of Queensland. She has developed an international reputation as a research leader in crystallography, particularly protein crystallography and structure-based drug design.

Australia plays an international leading role in drug discovery research. This project will contribute to Australia's role by using innovative automation technologies to create and investigate a revolutionary new approach to disable pathogenic superbugs, bacteria resistant to multiple antibiotics. The chemicals created and proteins evaluated in this project will advance fundamental knowledge about the molecular weapons that bacteria produce to cause disease.

Professor Martin received her PhD in Protein Crystallography and Drug Design from The University of Oxford. She has won a number of awards including the Women in Biotechnology's Outstanding Researcher of the Year Award and the Australian Society for Biochemistry and Molecular Biology Roche Medal. Professor Martin was also awarded an Australian Research Council Queen Elizabeth II Fellowship and is responsible for establishing the first protein crystallography laboratory in Queensland.

Currently, Professor Martin is on the editorial boards of the Journal of Biological Chemistry and the Journal of Structural and Functional Genomics. In addition to this, she is Chair of the Australian Academy of Science National Committee for Crystallography. She also represents Australia as one of three voting members at the last two General Assemblies of the International Union of Crystallography. Professor Martin was President of the Society for Crystallographers in Australia and New Zealand.

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Australian Research Council

2009 Australian Laureate Fellow

Professor Dietmar Muller

The Virtual Geological Observatory: a four dimensional view into the Earth through deep-time data-mining

Current Organisation: The University of Sydney
Administering Organisation: The University of Sydney
Primary research field: Geotectonics
National Research Priority: An Environmentally Sustainable Australia

Professor Dietmar Muller is Professor and Head of the School of Geoscience at The University of Sydney. His research has focused on understanding Earth processes by merging conventional geological and geophysical data with advanced kinematic and dynamic models. Professor Muller is regarded as an international leader in reconstructing the Earth's geological evolution.

Professor Muller aims to reveal the underlying processes of plate tectonic cycles, palaeogeography, sea-level change and the formation of ore deposits and hydrocarbon resources since the explosion of life during the Cambrian period. This project will build on the AuScope National Collaborative Research Infrastructure and the EarthByte research project to create an international virtual geological observatory.

Professor Muller obtained his PhD in Earth Science from Scripps Institution of Oceanography. After receiving his PhD, he moved to Australia and established The University of Sydney Institute of Marine Science and was the Director until 2005. He has also been involved in building the international EarthByte e-research group.

Professor Muller is a Fellow of the American Geophysical Union and a member of the Geoscience Committee of the Australian Academy of Sciences. He has been awarded the British Council's Fresh Science Prize and the Carey Medal for contributions to the understanding of global tectonics.

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2009 Australian Laureate Fellow

Professor Peter Mumby

Adapting the sustainable exploitation of coral reef resources to provide for climate change

Current Organisation:	University of Exeter
Administering Organisation:	The University of Queensland
Primary research field:	Conservation and Biodiversity
National Research Priority:	An Environmentally Sustainable Australia

Professor Peter Mumby is Professor in the School of Biological Sciences at the University of Exeter. Professor Mumby's research on coral reef remote sensing remains the most-heavily cited in the field and has strongly influenced the monitoring of marine ecosystems from space.

Professor Mumby aims to quantify the impacts of climate change on coral reefs and harnesses remote sensing technology and ecological modelling to provide new tools for reef management. The outcomes of this research will help government bodies adapt management of marine production systems to take account of climate change, and thereby help ensure the sustainable delivery of ecosystem services including tourism, recreation, fisheries, and the sustainability of Australia's marine biodiversity.

Professor Peter Mumby received his PhD in Coral reef remote sensing from the University of Sheffield. He is responsible for establishing the Marine Spatial Ecology Lab at the University of Exeter. Professor Mumby has focused on delivering science to improve the management of coral reefs.

Professor Mumby is currently on the editorial board of Philosophical Transactions of the Royal Society B, a Review Editor of the Marine Ecology Progress Series, and Ecology Editor of the journal Coral Reefs. Professor Mumby has received the gold medal for conservation from the Living Oceans Foundation.

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2009 Australian Laureate Fellow

Professor Brian Schmidt

Mining the Southern Sky

Current Organisation: The Australian National University
Administering Organisation: The Australian National University
Primary research field: Astronomy and Astrophysics
National Research Priority: Frontier Technologies for Building and transforming Australian Industries

Professor Brian Schmidt is a current Australian Research Council Federation Fellow in the Research School of Astronomy and Astrophysics at The Australian National University. He leads Mount Stromlo's effort to build the SkyMapper Telescope, a new facility that will provide a comprehensive digital map of the southern sky from ultraviolet through near infrared wavelengths.

This project will use the new SkyMapper Telescope to create the most comprehensive survey of the southern sky and undertake research in several key areas of astronomy. This research will make significant, high profile discoveries in astronomy ranging from understanding objects like Pluto, to discovering the first black hole in the distant Universe.

Professor Schmidt was awarded his PhD in Astronomy from Harvard University. He was elected as a Fellow of the Australian Academy of Sciences and the United States National Academy. Professor Schmidt was also elected as a Foreign Member of the Spanish Royal Academy of Sciences.

Professor Schmidt has been awarded the Australian Government's inaugural Malcolm McIntosh award for achievement in the Physical Sciences. He has also been the recipient of the Australian Academy of Sciences Pawsey Medal, and the Astronomical Society of India's Vainu Bappu Medal. Professor Schmidt was jointly awarded the Shaw Prize for Astronomy and the Gruber Prize for Cosmology.

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2009 Australian Laureate Fellow

Professor Stephen Simpson

Nutritional Dynamics: from Genes to Individuals to Ecosystems

Current Organisation: The University of Sydney
Administering Organisation: The University of Sydney
Primary research field: Sociobiology and Behavioural Ecology
National Research Priority: An Environmentally Sustainable Australia

Professor Stephen Simpson is a current Australian Research Council Federation Fellow and Professor in the School of Biological Sciences at The University of Sydney. He has made significant contributions to obesity, gerontology, immunology, livestock nutrition, ecology and conservation biology.

Professor Simpson will aim to explain how the genes, physiology and behaviour of individual organisms contribute to the populations, communities and ecosystems within which they exist, and how these features respond and adapt to changing environmental conditions. The project will help solve practical problems facing Australia and the world, including managing locust outbreaks, understanding obesity and ageing and optimising animal production system.

Professor Simpson received his PhD in Zoology from The University of London. After obtaining his PhD, Professor Simpson spent twenty-two years at Oxford University where he became Professor of the Hope Collections in the Department of Zoology, Curator of the University Museum of Natural History, Fellow in Biological and Human Sciences at Jesus College, Associate Head of Department in Zoology and Chair of the University Staff Committee.

Professor Simpson was elected a Fellow of the Australian Academy of Science and has been a Fellow of the Institute for Advanced Study (Wissenschaftskolleg), Berlin. He has received the Eureka Prize for Scientific Research and is currently the Inaugural 'Frontiers in Biology' Lecturer at Princeton University.

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RESEARCH in the national interest – enabling the future

2009 Australian Laureate Fellow

Professor Scott Sloan

Failure Analysis of Geotechnical Infrastructure

Current Organisation:	The University of Newcastle
Administering Organisation:	The University of Newcastle
Primary research field:	Geotechnical Engineering
National Research Priority:	Frontier Technologies for Building and transforming Australian Industries

Professor Scott Sloan is a current Australian Research Council Federation Fellow and Deputy Head of the School of Engineering at the University of Newcastle. Professor Sloan's research interests include computational limit and shakedown analysis, nonlinear finite element algorithms, modelling unsaturated soil behaviour, nonlinear optimization methods, and georemediation.

Professor Sloan's project will develop new methods for estimating the static and cyclic load capacity, and hence safety, of geostructures in two and three dimensions. The result of the project will strengthen Australia's leadership in computational methods for designing cheaper and safer infrastructure, supported by scientific publications and software.

Professor Sloan obtained his PhD from Cambridge University in Civil Engineering. After his PhD, Professor Sloan was elected to research fellowships at Trinity College, Cambridge and New College, Oxford. He is currently the Director of the Priority Research Centre for Geotechnical and Materials Modelling and serves on the editorial board for Computational Mechanics, Computers and Structures, the International Journal for Numerical and Analytical Methods in Geomechanics, Optimisation and Engineering and Engineering Computations.

Professor Sloan is the recipient of a number of distinguished awards such as the Telford Medal, a Centenary Medal, the Desai Medal and the Booker Medal from the International Association for Computer Methods and Advances in Geomechanics and the Thomas A. Middlebrooks Award from the American Society of Civil Engineers .

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2009 Australian Laureate Fellow

Professor Anthony Thomas

Advances at the frontiers of subatomic physics and cross-disciplinary applications of the associated techniques

Current Organisation:	Thomas Jefferson National Accelerator Facility
Administering Organisation:	The University of Adelaide
Primary research field:	Nuclear and Particle Physics
National Research Priority:	Frontier Technologies for Building and transforming Australian Industries

Professor Anthony Thomas is Chief Scientist and Associate Director for Theoretical and Computational Physics in the Jefferson Laboratories at the Thomas Jefferson National Accelerator Facility. He leads the Jefferson Laboratory's long range planning and helps shape the future of the laboratory.

Professor Thomas will aim to generate advances at the frontiers of nuclear and particle physics and their interface with astrophysics. The project will underline Australia's commitment to contribute its share to advancing fundamental science.

Professor Thomas was awarded his PhD in Theoretical Nuclear Physics from The Flinders University of South Australia. He is a Fellow of the Australian Academy of Science, American Physical Society, and the UK Institute of Physics. He is currently the Chair of the International Union of Pure and Applied Physics Working Group on International Cooperation in Nuclear Physics and a member of the Organisation for Economic Co-operation and Development Global Science Forum Working Group on Nuclear Physics.

Professor Thomas has received numerous national and international awards, including the Harrie Massey Medal, the Thomas Ranken Lyle Medal, a von Humboldt Research Prize, the Walter Boas Medal and the Inaugural Silver Jubilee Medal from Flinders University. He has served as President of the Australian Institute of Physics and Director of the Australian National Institute for Theoretical Physics.

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2009 Australian Laureate Fellow

Professor Michael Tobar

Frontiers of Precision Time and Frequency

Current Organisation:	The University of Western Australia
Administering Organisation:	The University of Western Australia
Primary research field:	Microwave and Millimetrewave Technology
National Research Priority:	Frontier Technologies for Building and transforming Australian Industries

Professor Mark Tobar is a current Australian Research Council Australian Professorial Fellow in the School of Physics at The University of Western Australia. Professor Tobar's expertise encompasses the broad discipline of microwave and optical technology and applications to fundamental and industrial physics.

The project will develop new techniques in time and frequency metrology to test fundamental physics and create essential technology for commercial, space and astronomical applications. This project will strengthen Australian knowledge and expertise, and place us in a position to participate in current and future space missions.

Professor Tobar received his PhD in Physics from The University of Western Australia. He is currently the Associate Editor for the Institute of Electrical and Electronics Engineers Transactions. He has also undertaken the role as National Delegate to the International Union of Radio Science Commission A, and was invited to be a member of the Australian Academy of Science National Committee of Radio Science.

Professor Tobar has received the Walter Boas Medal from the Australian Institute of Physics. He was elected to the Academy of Technological Sciences and Engineering and is a Fellow of the Institute of Electrical and Electronics Engineers.

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2009 Australian Laureate Fellow

Professor George Williams

Anti-Terror Laws and the Democratic Challenge

Current Organisation:	The University of New South Wales
Administering Organisation:	The University of New South Wales
Primary research field:	Law
National Research Priority:	Safeguarding Australia

Professor George Williams is the Anthony Mason Professor and Director of the Gilbert and Tobin Centre of Public Law at The University of New South Wales. He is regarded as one of Australia's leading constitutional law experts.

The project aims to answer an issue of international importance, that is, how can the law protect the community from terrorism while also maintaining the democratic and human rights values and traditions that underpin good governance and the rule of law. The project will build internationally competitive research capacity and, in dealing with unanswered questions at the forefront of debate, enable Australians to be leading participants in international scholarship.

Professor Williams obtained his PhD in Law from The Australian National University. He chaired a NSW Government inquiry into Options for a New National Industrial Relations System, and the Victorian Human Rights Consultation Committee that led to the enactment of the Victorian Charter of Human Rights and Responsibilities.

Professor Williams is a media commentator on legal issues and has written for major Australian newspapers. He was a member of the High Level Advisory Group on Federal-State Relations to Kevin Rudd and Bob McMullan. Professor Williams is on the editorial board of journals including Asia Rights, Australasian Parliamentary Review, Public Policy and the New Zealand Journal of Public and International Law.