

# Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

## New South Wales

### Macquarie University

<b>FL100100080</b>	Prof Mark Westoby	
<b>Approved Project Title</b>	<b>Evolutionary ecology of vegetation</b>	
2010		\$265,776.00
2011		\$556,798.50
2012		\$582,045.00
2013		\$582,045.00
2014		\$582,045.00
2015		\$291,022.50
Primary FoR	0603	EVOLUTIONARY BIOLOGY

FL	Prof Mark Westoby
FLPDRA	2
FLPGR	2

**Administering Organisation** Macquarie University

#### Project Summary

A more fundamental understanding will be developed about the architecture and ecology of vegetation and why it varies around the world. Understanding confers benefits for land management as well as cultural value. Under a high carbon dioxide future scenario, models will be needed that operate through fundamental mechanisms of evolution, competition and physiology, rather than through extrapolation from present-day plants. Australia is a leader in globalising plant trait ecology, and the program will develop that role further. Through intensive short courses within the Sydney basin and at national scale, research capacity will be developed towards the coming four-way fusion among functional ecology, earth system science, comparative genomics and palaeobiology.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

### The University of New South Wales

**FL100100063** Prof Mark A Bradford  
**Approved Project Title** **An Innovative and Advanced Systems Approach for Full Life-Cycle, Low-Emissions Composite and Hybrid Building Infrastructure**

2010	\$138,371.50
2011	\$301,077.50
2012	\$310,662.00
2013	\$288,412.00
2014	\$262,577.50
2015	\$122,121.50
Primary FoR	0905 CIVIL ENGINEERING

FL Prof Mark A Bradford  
 FLPDRA 1  
 FLPGR 2

**Administering Organisation** The University of New South Wales

#### Project Summary

This project will develop a 'green' sustainable composite steel-concrete building frame system that reduces greenhouse gas emissions throughout the life-cycle of building construction, usage and deconstruction. It will eliminate the use of ordinary Portland cement, which is a major carbon dioxide producer, by using geopolymers made from fly-ash, and will use economic thin-walled, high-strength steel sections. Deconstructability is provided through bolted joints and by using tensioned bolts as shear connectors between the steel skeleton and concrete flooring. This project is underpinned by the extensive background of the candidate, and provides a very timely solution to a major contemporary engineering challenge facing Australia.

**FL100100195** Prof Chris S Turney  
**Approved Project Title** **Tipping points in Records of Extreme Events in Australasia: Using the Past to Understand and Plan for Abrupt Future Climate Change**

2010	\$308,805.00
2011	\$623,374.00
2012	\$632,636.50
2013	\$631,667.00
2014	\$549,284.50
2015	\$235,685.00
Primary FoR	0406 PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE

FL Prof Chris S Turney  
 FLPDRA 2  
 FLPGR 2

**Administering Organisation** The University of New South Wales

#### Project Summary

This project will generate the fundamental science outputs required to extend historical records of change and understand the complex linkages between Australian and global atmospheric, terrestrial and marine processes in the climate system, thereby assisting in: (i) identifying the mechanisms of past and future climate variability; (ii) developing and validating methodologies for improved climate reconstruction and robust chronological frameworks; (iii) predicting the response of Australian ecosystems to future climate change; and (iv) communicating the research outputs to the general public and state, national and international decision makers, helping scientific understanding and aiding resource management.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

<b>FL100100214</b>	Prof Matthew H England	
<b>Approved Project Title</b>	<b>Future risks associated with ocean surface warming: impacts on climate, rainfall, carbon, and circulation</b>	
2010		\$300,897.50
2011		\$592,979.50
2012		\$595,464.00
2013		\$591,464.00
2014		\$562,829.50
2015		\$274,747.50
Primary FoR	0405	OCEANOGRAPHY

FL	Prof Matthew H England
FLPDRA	2
FLPGR	2

**Administering Organisation**      The University of New South Wales

### **Project Summary**

Climate change is already affecting Australia, with harsh drought, more intense bushfire seasons, increased monsoon rains, heatwaves, and warmer temperatures all a feature of the past few decades. Climate change is expected to accelerate in the future, warming the oceans at an increased rate. This will affect ocean circulation, carbon uptake and ocean-atmosphere modes, such as El Nino, with unknown intensity. This project will improve our preparedness for climate change by better quantifying the risks that ocean warming will transform Australia's climate, rainfall, and sea level; as well as the ocean's uptake of carbon and the global ocean circulation. This will benefit sectors including agriculture, water management, fisheries, and tourism.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

### The University of Sydney

**FL100100114** Prof Bryan M Gaensler

**Approved Project Title** **A Survey of the Universe's Magnetism**

2010		\$270,422.00
2011		\$550,444.50
2012		\$566,317.00
2013		\$572,207.00
2014		\$555,643.50
2015		\$269,731.00
Primary FoR	0201	ASTRONOMICAL AND SPACE SCIENCES

FL Prof Bryan M Gaensler

FLPDRA 2

FLPGR 2

**Administering Organisation** The University of Sydney

#### Project Summary

This project will significantly advance our understanding of the structure and evolution of the Universe and will maintain our nation's outstanding track record of astronomical discovery by delivering ground-breaking world-class scientific discoveries, produced by Australian astronomers using an Australian telescope. The project will help demonstrate the viability of the technology that Australia is advocating for the design of the Square Kilometre Array by carrying out innovative experiments with powerful new instrumentation. Finally, the project will provide new capacity for research and innovation by training the next generation of scientists and by providing them with unique skills and expertise.

**FL100100203** Prof Peter M Goodyear

**Approved Project Title** **Learning, technology and design: architectures for productive networked learning**

2010		\$276,742.50
2011		\$559,328.00
2012		\$561,600.00
2013		\$562,725.00
2014		\$533,721.00
2015		\$250,010.50
Primary FoR	1303	SPECIALIST STUDIES IN EDUCATION

FL Prof Peter M Goodyear

FLPDRA 2

FLPGR 2

**Administering Organisation** The University of Sydney

#### Project Summary

Learning how to tackle new challenges is more important today than ever before, yet learning is also becoming much more complicated. This project will investigate better ways of supporting people in learning what they need to learn. It will provide ways of analysing and improving the increasingly complex systems in which learning takes place, especially those where computer technology plays a strong role. This project will focus on networked learning - where people learn through collaboration that is wholly or partially online. It will explain how better tools and resources for networked learning can be designed, and how everyone can play a significant role in improving how, where and what they learn.

# Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

## Victoria

### Swinburne University of Technology

FL100100099 Prof Min Gu

**Approved Project Title** An accelerating journey to the new era of Petabyte optical memory systems

2010		\$242,635.50
2011		\$500,612.50
2012		\$488,909.50
2013		\$452,059.50
2014		\$438,659.50
2015		\$217,532.50
Primary FoR	1007	NANOTECHNOLOGY

FL Prof Min Gu  
FLPDRA 2  
FLPGR 2

**Administering Organisation** Swinburne University of Technology

#### Project Summary

Optical data storage is one of the core aspects of optical information technology which has been globally recognised as one of the next generation high-technology areas that can boost our economy for sustainable development. However, the emergence of blue ray or high-definition DVDs has identified that current optical data storage technology will soon approach the limit of the data storage capacity of approximately 100 Gigabytes. The ground-breaking Petabyte data storage technology we will research will result in the storage capacity of 10,000 DVDs in one disc and thus underpin every sector of our modern life such as remote education, portable banking, global e-security and telemedicine as well as lead to enormous economic benefits in Australia.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

### The University of Melbourne

**FL100100066**      Prof Ary A Hoffmann  
**Approved Project Title**      **New approaches for pest control and maintaining healthy environments under climate change**

2010	\$163,186.00
2011	\$324,592.00
2012	\$320,562.00
2013	\$320,562.00
2014	\$278,043.00
2015	\$116,637.00

Primary FoR	0604	GENETICS
	0608	ZOOLOGY

FL                      Prof Ary A Hoffmann

FLPDRA              1

FLPGR                2

**Administering Organisation**      The University of Melbourne

#### Project Summary

Natural environments are rapidly changing due to climate and human population pressure, affecting food supply and natural heritage. Insects and other invertebrates perform essential services like pollination, pest control and soil turnover, and provide food for wildlife. These services are under threat, and ways of maintaining them and protecting biodiversity need to be developed. This project will identify the genetic and evolutionary mechanisms that insects use to deal with environmental changes and the processes that promote evolutionary resilience to safeguard environmental services. This should lead to guidelines for sustainable agricultural production and biodiversity protection in threatened environments like the Australian Alps.

**FL100100117**      Prof Paul Mulvaney  
**Approved Project Title**      **Molecular Plasmonics - From Single Electrons to Quantum Catalysis and Optical Logic Gates**

2010	\$297,809.50
2011	\$581,140.00
2012	\$561,207.00
2013	\$545,913.00
2014	\$497,774.50
2015	\$229,738.00

Primary FoR	0306	PHYSICAL CHEMISTRY (INCL. STRUCTURAL)
-------------	------	---------------------------------------

FL                      Prof Paul Mulvaney

FLPDRA              2

FLPGR                2

**Administering Organisation**      The University of Melbourne

#### Project Summary

After a decade of basic research, Nanotechnology is now entering its most disruptive phase. New nanoscale phenomena are being exploited and converted into viable technologies. Plasmonics - the manipulation of light using metal nanostructures - is one of the most promising of these. Plasmonics will enable scientists to achieve optical computing, reach higher data storage densities, and synthesize better catalysts. Other applications include bio-sensing and rapid pathogen detection. To realise these potential outcomes, a leading international cluster focussing on plasmonics will be set up and this cluster will link state-of-the-art materials science, instrumentation and theory.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

### Queensland

#### James Cook University

**FL100100150** Prof William F Laurance

**Approved Project Title** **Advancing Australian Leadership in Tropical Conservation Science**

2010	\$158,812.50
2011	\$330,959.50
2012	\$344,294.00
2013	\$344,294.00
2014	\$330,959.50
2015	\$158,812.50

Primary FoR 0501 ECOLOGICAL APPLICATIONS  
0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

FL Prof William F Laurance

FLPDRA 2

FLPGR 2

**Administering Organisation** James Cook University

#### Project Summary

Tropical forests are vital for Australia. They protect coral reefs, reduce flooding and soil erosion, and help stabilise the climate by promoting life-giving rainfall and storing massive stocks of carbon that would otherwise worsen global warming. They also sustain stunning biodiversity and provide livelihoods for hundreds of millions of people worldwide. Via a dynamic environmental research and policy program, this project will promote sustainable forest use in tropical Australia, the imperilled Asia-Pacific region, and beyond. It will build world-leading research capacity, strengthen ties with Australia's neighbours, and provide Australian scientists with an array of new challenges and research opportunities.

#### The University of Queensland

**FL100100014** Prof Lorraine A Mazerolle

**Approved Project Title** **Multi-Site Trials of Third Party Policing: Building the Scientific Capacity for Experimental Criminology and Evidence-Based Social Policy in Australia**

2010	\$270,221.00
2011	\$560,700.00
2012	\$580,362.00
2013	\$581,416.00
2014	\$450,345.50
2015	\$158,812.50

Primary FoR 1608 SOCIOLOGY

FL Prof Lorraine A Mazerolle

FLPDRA 2

FLPGR 2

**Administering Organisation** The University of Queensland

#### Project Summary

The estimated cost of crime in Australia is \$36 billion with \$6.9 billion spent on police services each year. This project will fund a series of field experiments testing the effectiveness of Third Party Policing: a promising, new policing approach that involves police partnering with communities, businesses and other government agencies to use regulations and civil laws to better control crime. The research will strengthen Australia's social and economic fabric, grow Australia's capacity to conduct multi-site, multi-country field trials, institutionalise the use of scientific experimental evidence to guide crime control policies, and help safeguard and protect Australia from terrorism and crime.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

### Australian Capital Territory

#### The Australian National University

**FL100100137** Prof Amnon Neeman

**Approved** **Derived categories and applications**

**Project Title**

2010	\$178,812.50
2011	\$370,959.50
2012	\$384,294.00
2013	\$384,294.00
2014	\$370,959.50
2015	\$178,812.50

Primary FoR 0101 PURE MATHEMATICS

FL Prof Amnon Neeman

FLPDRA 2

FLPGR 2

**Administering Organisation** The Australian National University

**Project Summary**

This project will deepen our understanding of homological algebra, a mathematical tool that has proved useful in areas ranging from physics to the coding of information for computer transmission. Also, having a thriving research presence in Australia, of this vibrant, modern field, should inspire more students to seek a career in mathematics; this would help relieve the acute, well-documented shortage of mathematicians in Australia. It has been established that Australia is not producing enough mathematicians to meet the needs of industry; a lively centre, full of young, productive mathematicians, will go a long way towards correcting this problem.

**FL100100176** Prof Hilary C Charlesworth

**Approved** **Strengthening the international human rights system: Rights, regulation and ritualism**

**Project Title**

2010	\$182,500.00
2011	\$407,450.00
2012	\$458,850.00
2013	\$474,150.00
2014	\$453,900.00
2015	\$213,650.00

Primary FoR 1801 LAW

FL Prof Hilary C Charlesworth

FLPGR 2

FLPDRA 2

**Administering Organisation** The Australian National University

**Project Summary**

Australia has played a significant role in the development of the international human rights architecture since 1945. The promotion of human rights is now a major feature of Australia's foreign affairs and aid policies and it has become increasingly important in Australia's regional interactions. This project will build Australian capacity in a field of intense international interest and concern - the implementation of international human rights laws - and create internationally competitive research strength. It will provide training and support for a new generation of human rights law scholars.

## Summary of Successful Australian Laureate Fellowships Proposals for Funding to Commence in 2010 by State and Organisation

**FL100100183** Prof Hanna Kokko  
**Approved Project Title** **Biological adaptation under natural and anthropogenic conditions**

2010	\$205,207.50
2011	\$426,648.50
2012	\$445,033.00
2013	\$447,231.50
2014	\$433,944.50
2015	\$210,305.00
Primary FoR	0603 EVOLUTIONARY BIOLOGY

FL Prof Hanna Kokko  
 FLPDRA 2  
 FLPGR 2

**Administering Organisation** The Australian National University

### Project Summary

This project covers all four national priority areas. Nature abounds with conflicts between what is good for the individual or a larger entity (a population, a society, or a species). Researching them will explain why populations adapt or fail to adapt to novel conditions (e.g., climate change) and predict when interventions are beneficial. Similar rules govern the spread of invasive species. Even health problems, e.g., new virulent strains of human, animal or plant diseases, require such evolutionary thinking. Cutting-edge mathematical tools also prepare Australians for an era in the near future where genomic data are so cheap to acquire that training in complex mathematical and logical analysis becomes a factor limiting scientific progress.

**FL100100196** Prof Margaret A Jolly  
**Approved Project Title** **Engendering persons, transforming things: Christianities, Commodities and Individualism in Oceania**

2010	\$300,052.00
2011	\$590,216.00
2012	\$568,996.00
2013	\$548,806.50
2014	\$508,356.50
2015	\$238,382.00
Primary FoR	1601 ANTHROPOLOGY
	1699 OTHER STUDIES IN HUMAN SOCIETY

FL Prof Margaret A Jolly  
 FLPDRA 2  
 FLPGR 2

**Administering Organisation** The Australian National University

### Project Summary

This project will further Australia's pre-eminence in studies of Oceania by building national and international collaborations, training early career researchers and Islander scholars, thus enhancing high-quality social research in the region. It will contribute to Australia's capacity to deliver successful development assistance in gender justice, health and law. It will raise the Pacific profile of cultural institutions within Australia. Public events will contribute to debates and policy making in Australia, Oceania and globally. It will strengthen Australia's capacity to interpret and engage with the regional and global environment through greater understanding of languages, societies, politics and cultures.