Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

New South Wales	
Anglo-Australian Observatory	1
Charles Sturt University	2
Macquarie University	5
Southern Cross University	1
The Garvan Institute of Medical Research	1
The University of New South Wales	15
The University of Newcastle	4
The University of Sydney	17
University of Technology, Sydney	1
University of Western Sydney	1
University of Wollongong	7
New South Wales	**55**
Victoria	
Baker IDI Heart and Diabetes Institute	2
Howard Florey Institute	1
La Trobe University	7
Ludwig Institute for Cancer Research Limited	1
Macfarlane Burnet Institute for Medical Research and Public Health	1
Monash University	11
National Stroke Research Institute	2
Peter MacCallum Cancer Centre	1
RMIT University	3
Swinburne University of Technology	2
The University of Melbourne	25
The Walter and Eliza Hall Institute of Medical Research	4
Victoria	**60**
Queensland	
Griffith University	8
James Cook University	2
Queensland Institute of Medical Research	5
The University of Queensland	16
University of Southern Queensland	1
Queensland	**32**
South Australia	
The Flinders University of South Australia	1
The University of Adelaide	5
University of South Australia	3
South Australia	**9**
Western Australia	
Curtin University of Technology	1
Murdoch University	2
The University of Western Australia	10
Western Australia	**13**
Tasmania	
University of Tasmania	4
Tasmania	**4**

Australian Capital Territory

Commonwealth Scientific and Industrial Research Organisation (CSIRO)	5
The Australian National University	21
University of Canberra	1
Australian Capital Territory	**27**
Total Number of Grants	**200**

New South Wales

Anglo-Australian Observatory

FT0992259 Dr CE Lidman

Approved Project Title **Venturing into the Cluster Desert**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Administering Organisation Anglo-Australian Observatory

Project Summary

Fundamental questions that ask about the nature and the fate of the Universe are of interest not only to astronomers, but also to the general public. In particular, the realisation that the Universe is dominated by dark energy has sparked wide public interest. We still know very little about dark energy. Is it Einstein's famous cosmological constant or something more exotic, such as a new particle or even new physics? This proposal aims to build a sample of very distant galaxy clusters that can then be used to search for a very special type of supernova - the Type Ia Supernova, which can be used as a tool to learn about the properties of dark energy.

Charles Sturt University

FT0990436 A/Prof GW Luck

Approved Project Title **Integrating the conservation and ecosystem-service value of Australia's catchments**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3008 ENVIRONMENTAL SCIENCES
Administering Organisation	Charles Sturt University

Project Summary

This project addresses the Priority Goal of Sustainable Use of Biodiversity by explicitly linking the intrinsic value of biodiversity and supporting ecosystems with the services they provide to humanity (e.g. carbon storage and nutrient cycling). It will employ a comprehensive, innovative approach to integrating conservation, market and non-market values of land holdings in Australia's catchments using the concept of nature's services. Through extensive collaboration among leading scientists and land managers, the project will identify sites of high value requiring special attention, yield important theoretical advancements to how we value ecosystems, and provide practical and easily applied guidelines for land managers.

FT0990588 Prof S McLeod

Approved Project Title **Speaking my language: International speech acquisition in Australia**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	Charles Sturt University

Project Summary

It is important to differentiate between children who have communication impairment (difficulty learning all languages) from those who only have difficulty learning subsequent language(s). Communication impairment in multilingual children is both undiagnosed and over-diagnosed due to lack of culturally-sensitive measurement tools. Early intervention can ameliorate communication impairment in children and can reduce subsequent educational, social and occupational outcomes of untreated communication impairment. By working with people around the world, this Fellowship will result in the development of the International Speech Assessment designed to differentially identify children and to specify holistic early intervention goals.

Macquarie University

FT0992161 Dr J Alroy

Approved Project Title **Quantifying the Tree of Life's Diversity with the Paleobiology Database**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2707 ECOLOGY AND EVOLUTION

Administering Organisation Macquarie University

Project Summary
The Paleobiology Database is the Internet's key source of scientific data on the fossil record. It records names and classification of fossil organisms and the ages, locations, and environments of the places that yield these fossils. It has often been used to estimate the number of species existing at different points in geological time. Macquarie will house the Database as it is expanded to record evolutionary relationships of many species. This information will help to estimate dates of origination for major groups such as mammals and birds. It will also help to show whether mass extinctions tend to target old groups with few surviving species, which will help to predict which groups will survive the current mass extinction.

FT0990447 Dr A Dosseto

Approved Project Title **The response of soil and river processes to climate change and human activity in Australia**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2603 GEOCHEMISTRY

Administering Organisation Macquarie University

Project Summary
This project will provide a much needed quantitative understanding of how soils and rivers have responded and adapted to climate change and human activity in Australia. The outcomes will inform models to predict how our environment is likely to adapt to new conditions in the future as a result of indirect (global warming) and direct (intensive land use) human-related stresses. This project will assess the extent and rate of depletion of soil resources in Australia and also contribute to the innovative character of Australian research through the development and implementation of a new approach to study soil and river processes.

FT0990983 Dr MA Kosnik

Approved Project Title **Quantifying the effects of western colonisation on Great Barrier Reef molluscan communities**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2707 ECOLOGY AND EVOLUTION

Administering Organisation Macquarie University

Project Summary
Dead shells provide a record of the pre-colonisation Great Barrier Reef (GBR) ecosystem. Using this record this research will determine what the GBR looked like before James Cook and the first fleet arrived in Australia. This study will also sample living molluscs to quantify the current state of these communities. Together these data will provide environment managers and stakeholders with the first quantitative estimates of human impacts on this world heritage ecosystem. This project will address the questions: Do protected areas return to a pre-colonial state or do they represent another non-natural state? What type of management scheme results in communities most similar to the pre-colonial state?

FT0990622 Dr RP Mildren

Approved Project Title **Raman conversion in diamond: Next generation long and far infrared and terahertz lasers**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Administering Organisation Macquarie University

Project Summary

Through the creation of practical and powerful long wave infrared and terahertz lasers, this project will enable more rapid progress in many fields of science and technology, and in important medical, environmental and safeguarding applications of national priority. Australia also stands to benefit economically via commercialization of diamond-based Raman lasers and instruments into the market. The project will produce highly-trained researchers and students in the theory, design and development of diamond sources, enhance Australia's existing strengths in waveguide optics and photonics, and place Australia at the forefront of research in long-wave infrared and terahertz science.

FT0991243 Dr JR Rabeau

Approved Project Title **Room-temperature quantum microscopy for advanced nanoscale imaging**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800

Primary RFCD 2499 OTHER PHYSICAL SCIENCES

Administering Organisation Macquarie University

Project Summary

Original, inspired and most often cross-disciplinary efforts are the only way to solve some of nature's most obscure mysteries. Successful development of high-resolution quantum microscopy will lead to a range of benefits for the community and the nation; from graduate student training in cutting edge technology, building links between academic, industry and government groups to providing new insights and approaches into disease identification and therapy. This project aims to demonstrate a world-first in imaging sensitivity, and success will directly enhance Australia's global reputation as a leader in innovation and collaboration.

Southern Cross University

FT0990910	Dr AM Scheffers	
Approved Project Title	**Unravelling Western Australia's Stormy Past - A Precisely-Dated Sediment Record of Cyclones over the past 7000 years**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	2601	GEOLOGY
Administering Organisation	Southern Cross University	

Project Summary

Australia has a vast coastline, much of which is vulnerable to cyclone impact. Clearly, historical human experience does not comprehend what the climate system is capable of in terms of epic storms. Our effort to understand the storm risks of the past is complicated by the limited length of the instrumental record which reaches back only 150 years of European settlement in tropical areas of Australia. This project will reconstruct the history of storms and cyclones using sedimentary signatures in Western Australia over the past 7000 years to assess storm and cyclone risks under changing future climates in a regional context.

The Garvan Institute of Medical Research

FT0992285	Dr S Grey	
Approved Project Title	**Gene therapy for islet transplantation**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	3202	IMMUNOLOGY
Administering Organisation	The Garvan Institute of Medical Research	

Project Summary

Improved understanding of aetiology of type I diabetes. Development of islet transplantation as a clinical therapeutic for type I diabetes. Improved efficacy of islet transplantation. Improved health for subjects with type I diabetes. Decreased diabetic complications. Improved quality of life for subjects with type I diabetes. Reduced burden on health system for management of diabetic complications for subjects with type I diabetes

The University of New South Wales

FT0992310 Dr PA Biro

Approved Project Title	**Linkages between productivity and consistent behavioural traits in fish: implications for harvesting, climate impacts, and selective breeding for aquaculture.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	The University of New South Wales

Project Summary

The extent to which behavior, growth and reproduction are genetically linked in fish populations is unknown, but critical for predicting the impacts of fish harvesting and climate warming, and developing fish stains for aquaculture. If strongly linked, fish harvest will always remove aggressive, large and productive fish, requiring their protection; in aquaculture, selecting for productive fish will also increase aggression-related injuries. If not strongly linked, we may be able to select for high productivity and low aggression in fish, or high productivity and low metabolism, thus reducing feed costs in aquaculture associated with aggressive behaviour leading to injury and infection, and reduced growth at warmer temperatures.

FT0991602 A/Prof LA Chappell

Approved Project Title	**The International Criminal Court and the Protection of Women's Rights in Conflict and Post-Conflict Contexts: International Developments and Regional Strategies**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3903 JUSTICE AND LEGAL STUDIES
Administering Organisation	The University of New South Wales

Project Summary

As a country with a strong commitment to human rights and a signatory to the International Criminal Court (ICC), Australia has a leading role to play in supporting ICC efforts to end impunity for perpetrators who commit crimes against humanity. This project will strengthen Australia's position as an international advocate for the Court by contributing expertise on the development, application and implementation of its decisions on women's rights in conflict and post-conflict situations. The research will strengthen the work of the Court in relation to gender-justice and will have practical benefit in the region in terms of recognisng women's rights in East Timor and Cambodia.

FT0992002 Dr MC Ebach

Approved Project Title	**Comparative Biogeography of Australasian biota**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	The University of New South Wales

Project Summary

Establishing an internationally recognised biogeographical research program will help scientists, policy makers and the public understand the past and future distribution patterns of the plants and animals of Australia. Discovering these patterns will help conservation biologists and government implement the right policies and practices to deal with biodiversity loss and climate change.

FT0992041 A/Prof G Edmond

Approved Project Title	**Suspect sciences: Enhancing emerging identification technologies and forensic expertise**
2009 :	$ 93,192
2010 :	$ 191,605
2011 :	$ 193,325
2012 :	$ 189,385
2013 :	$ 94,472
Primary RFCD	3904 LAW ENFORCEMENT
Administering Organisation	The University of New South Wales

Project Summary

This project will enhance national security and the safety of Australians. It represents an innovative response to uncertainties associated with the use of identification technologies in national security operations, policing and criminal prosecutions. The project will provide those developing and using identification technologies and evidence with a much clearer indication of their capabilities and limitations. It will help to prevent exaggerated interpretations and will reduce the incidence of mistaken identifications. It will encourage more efficient use of surveillance infrastructures and prevent citizens from being 'identified', accused and wrongfully convicted on the basis of unreliable or error prone techniques and opinions.

FT0991717 Prof JJ Gooding

Approved Project Title	**A Generic Solution for Interfacing Electrodes with Biological Media**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)
Administering Organisation	The University of New South Wales

Project Summary

Electrodes are the critical element of stimulating implantable devices such as cardiac pacemakers, bionic eyes and cochlear implants, the most commercially successful biosensors, and are emerging as key to new technologies for testing new drug leads using cells. In all these applications of electrodes in biology there has never been a solution to stopping unwanted adsorption of biological material onto the electrode that does not dramatically decrease electrode performance. The proposed research finally provides a solution via surface modification. This strategy will enhance the performance of all the devices above and will open doors to new applications of electrochemistry within biology.

FT0991511 Dr M Green

Approved Project Title	**Imaging genetics in schizophrenia and bipolar disorder: shared neurocognitive endophenotypes**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2702 GENETICS
Administering Organisation	The University of New South Wales

Project Summary

Combined, schizophrenia and bipolar disorder afflict approximately 506,000 Australians at any one time, and are leading causes of disability and national economic burden. This study will delineate genetic underpinnings for these conditions in association with specific neurocognitive dysfunctions that are common to both disorders. These findings have important implications for the implementation of personalised pharmaceutical treatments on the basis of genotype, and the development of therapeutic agents to target cognitive function. These results will also aid detection of premorbid psychotic illness in young individuals who may benefit from early intervention that may thwart the illness trajectory.

FT0991566 Dr HG Groth

Approved Project Title	**Noise, Technology, Literature**
2009 :	$ 81,609
2010 :	$ 168,699
2011 :	$ 174,272
2012 :	$ 167,615
2013 :	$ 80,432
Primary RFCD	4202 LITERATURE STUDIES
Administering Organisation	The University of New South Wales

Project Summary

21st century life is pervaded by fears of sensory and information overload, the deafening interference of data generated by a digitalised global economy, as well as the literal noise of everyday life. These fears transcend national boundaries, connecting the experiences of contemporary Australians to a common global experience. It is this inter-connected trans-national history of the profound impact of noise on our lives that this project will begin to chart. Stretching back to the nineteenth century and into the present, this project is necessarily collaborative and ambitious in its engagement not only with ideas of noise as they are discussed within the confines of academia but also in the broader community.

FT0990942 Dr X Jiang

Approved Project Title	**Synthesis and Fundamental Understanding of Low-Dimensional Metal Oxide Nanoparticles for Gas Sensing Application**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2918 INTERDISCIPLINARY ENGINEERING
Administering Organisation	The University of New South Wales

Project Summary

This project is primarily devoted to material science and nanotechnology, one of the cutting-edge areas in Australia's National Research Priority. Successful completion of this project will result in controlled synthesis, functional assembly and fundamental understanding of low-dimensional metal oxide nanostructures. The research findings will be useful for developing new and complex nanostructures for functional applications in lithium ionic batteries, catalysts and gas sensors. The conduct of this project will significantly expand the knowledge creativity of Australia in advanced materials.

FT0990285 Dr AP Micolich

Approved Project Title	**Self-Assembled Semiconductor Nanowires: A New Platform for Spintronic Devices**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2402 THEORETICAL AND CONDENSED MATTER PHYSICS
Administering Organisation	The University of New South Wales

Project Summary

The multi-billion dollar semiconductor industry drives the extraordinary growth in information technology that we have witnessed in recent decades. This Fellowship will establish a new program to build electronic devices using tiny semiconductor 'nanowires'. It draws on UNSW's international reputation in nanoelectronics research, strongly enhances Australia's existing investment in the growth of nanowires at ANU, and will place Australia at the forefront of nanowire research on the international stage. This project will contribute strongly to Australia's ongoing efforts in semiconductor nanotechnology and quantum information science, and allow us to play a leading role in the development of next-generation computer technologies.

FT0992021 Prof V Sahajwalla

Approved Project Title **Transforming industrial waste into valuable carbons for iron-carbon alloys: Fundamental investigations of structure, impurity reactions and carbon dissolution**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400

Primary RFCD 2913 METALLURGY

Administering Organisation The University of New South Wales

Project Summary

This project will deliver the comprehensive science that will enable the ferrous alloy industry to utilize industrial waste as a carbon resource. Novel recycling process will enhance the international competitiveness and environmental sustainability of Australian industries. At the same time, our advances will allow ferrous alloy producers to consume substantial amounts of chemically inert, difficult to recycle industrial/composite waste, and significantly reduce the amount of waste being sent to landfills/illegal dumps. The technology will have a significant impact on the environment through reductions in greenhouse gas emissions, savings on raw materials and enhanced waste recycling.

FT0991273 A/Prof M Stenzel

Approved Project Title **Platinum drugs containing core-shell nanoparticles**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600

Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Administering Organisation The University of New South Wales

Project Summary

Many drugs such as cancer drugs contain metal ions. While the therapeutic benefits of metal containing drugs are highly promising, their administration is often accompanied by substantial side effects. Encapsulation of these drugs into nano-sized core-shell particles will prolong the circulation of the drug and therefore reduce the amount of repeated administrations. In addition, the shape and nature of the particle will enable the targeted delivery of these drug loaded nanocarriers to the tumor while healthy tissue remains unaffected.

FT0991348 Prof Dr M Thielscher

Approved Project Title **Autonomous Agents and Systems with General Intelligence**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation The University of New South Wales

Project Summary

Autonomous software agents and robotic systems with general intelligence are frontier technologies that have the potential to significantly enhance Australia's leading role in information and communication technology. A new generation of intelligent software is provided by computer programs that can adapt fully automatically to previously unknown situations without the need to be re-programmed. Innovative products will also emerge from a new generation of autonomous systems that are able to adapt to different environments.

FT0992111 Dr V Venturi

Approved Project Title	**T cell recognition and control of virus: the balance between T cell receptor diversity and degeneracy**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3202 IMMUNOLOGY
Administering Organisation	The University of New South Wales

Project Summary

T cells provide an important line of defence in the immune system's resistance against infectious diseases. However, changes to the T cell population during prolonged infection, and with age, can compromise the immune system's ability to fight effectively viral infections. The proposed research will greatly improve our understanding of the recognition and control of viral infections by T cells. The insights gained from this research will enable us to exploit key features of T cell responses to improve the outcome of viral infections in elderly individuals and to develop better vaccines for protection against a range of infectious diseases that affect the Australian population, including HIV and Hepatitis C.

FT0991990 Dr DP Wilson

Approved Project Title	**Using mathematical modelling to inform HIV/AIDS public health policy**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3212 PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	The University of New South Wales

Project Summary

This research will directly inform HIV/AIDS policy officials on the most effective strategies for preventing new cases in HIV in the community. Consequently, there are health benefits for Australia and for the other countries in which the research is being conducted. HIV/AIDS community groups, educators, and other advocacy groups will also be engaged in the research, leading to the development of focussed prevention campaigns by these stakeholders to inform the appropriate communities. Reducing the health burdens of HIV/AIDS will also have economic benefits.

FT0991403 Dr HR Yang

Approved Project Title	**The cellular dynamics of lipid droplets: implications for obesity and biodiesel production**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	The University of New South Wales

Project Summary

Obesity is a pandemic that if not stopped, will lead to huge social and economic problems in Australia. In essence, the hallmark of human obesity is the accumulation of cellular lipid droplets. This research will benefit Australia by providing a fundamental understanding of how lipid droplets are formed. This will have immediate international impact at the scientific level and will also identify novel compounds and strategies for treating obesity. The proposed study will also benefit Australian agriculture and energy industry by providing strategies to improve the production of plant oil and biodiesel.

The University of Newcastle

FT0991231	Dr V Haskins
Approved Project Title	**In Her Place: state intervention and Indigenous domestic service in Australia and the United States, 1880-1945**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	4301 HISTORICAL STUDIES
Administering Organisation	The University of Newcastle

Project Summary

As a transnational history of Indigenous domestic labour and government intervention, this project positions Australian scholarship at the forefront of major research initiatives in gender, race and colonialism studies, promoting Australian research among the international community of scholars. More importantly, by increasing public awareness of the complexity of race relations history in our society, and taking understanding beyond the confines of a purely national outlook, this project contributes to ongoing efforts to address, come to terms with, and indeed learn from the more traumatic aspects of our history, in positive and constructive new ways.

FT0990651	Prof SO Moheimani
Approved Project Title	**Advanced model-based control for ultra-fast and ultra-high-precision nanoscale positioning**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2903 MANUFACTURING ENGINEERING
Administering Organisation	The University of Newcastle

Project Summary

Australia faces unique challenges due to its small population and distance from international markets. To maintain a high standard of living Australia needs to further develop its high-tech base particularly in emerging fields such as nanotechnology. This research program is aimed at placing Australia at the forefront of international research in nanoscale positioning systems by building a world-class team of talented researchers and equipping them with world-class research infrastructure. The global market for nanotechnology is projected to be in the tens of billions of dollars by 2020. The proposed research will enhance Australia's competitive advantage through high-impact scientific and technological innovations in nanotechnology.

FT0991309	Prof MJ Ostwald
Approved Project Title	**Complex and nonlinear pattern analysis in architectural space, form and program: developing computational tools to support social and cultural design.**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	3101 ARCHITECTURE AND URBAN ENVIRONMENT
Administering Organisation	The University of Newcastle

Project Summary

In a country that is experiencing increasing urban density there is an urgent need for the development of tools and models for the production of socially and culturally responsive environments. The Fellowship develops a new quantitative and qualitative understanding of the experiential and semiotic characteristics of buildings. The project, assisted by developments in robotics technology, produces a leading-edge computational model for analysing complex and non-linear patterns in architectural space, form and program from a social and cultural perspective. Such a model will assist design practitioners, scholars, town planners and policy writers to shape rich, responsive and inclusive architectural environments.

FT0991128	Dr MW Parsons	
Approved Project Title	**Prediction of tissue fate and functional outcome in acute ischemic stroke with advanced imaging analysis - experimental validation and translational studies**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	3210	CLINICAL SCIENCES
Administering Organisation	The University of Newcastle	

Project Summary

Stroke is predominantly a disease of ageing and the commonest cause of adult disability. In Australia, 55,000 people have a stroke each year (>80% are over age 65). The total number of strokes per year worldwide will rise 60% within the next two decades as the proportion of elderly in our population increases. This research will improve brain imaging selection for acute stroke therapies in clinical trials and practice. Better acute stroke therapies limit the size of brain damage from stroke and reduce long-term disability. Thus, this research will directly translate into allowing our population to 'age well and productively'.

The University of Sydney

FT0992302 Dr F Allon

Approved Project Title	**The Wealth Effect: A cultural analysis of prosperity, financialisation and everyday life in contemporary Australia**
2009 :	$ 82,550
2010 :	$ 167,200
2011 :	$ 168,100
2012 :	$ 164,500
2013 :	$ 81,050
Primary RFCD	4203 CULTURAL STUDIES
Administering Organisation	The University of Sydney

Project Summary

Financial and real estate markets are now central to Australian family life. But current government policies to individualise responsibility for saving and borrowing decisions often exceed the individual capacity to manage complex financial choices and unknown market risks. Growing levels of home and property ownership bring new benefits but they also increase exposure to economic downturn. For many households the Great Australian Dream of home ownership and prosperity has now turned into a nightmare. This project responds to the pressing need for greater understanding of these developments, and will advance our understanding of this new socio-economic terrain.

FT0992063 Dr MM Barbour

Approved Project Title	**Novel laser isotopic techniques to assess the potential for water-use efficiency improvement of Australian crops**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2704 BOTANY
Administering Organisation	The University of Sydney

Project Summary

This project aims to develop new methods to reduce the water used by grain crops while maintaining productivity by advancing knowledge of the regulation plant carbon gain and water loss. Novel laser-lased measurement systems developed and applied in this project will provide new mechanistic understanding of plant carbon-water dynamics for individual leaves and at the whole crop scale. Water availability is the most pressing environmental issue facing the Australian grain industry, so improvements in the efficiency with which water is used will have profound economic and environmental effects.

FT0992212 Dr K Belov

Approved Project Title	**The genetics of resistance to devil facial tumour disease.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2702 GENETICS
Administering Organisation	The University of Sydney

Project Summary

Tasmanian devils are on the brink of extinction due to a new contagious cancer: Devil Facial Tumour Disease (DFTD). The aim of this project is to determine the genetic nature of DFTD resistance in order to directly contribute to the conservation management of this iconic and ecologically important species. This research will generate fundamental information about genetic diversity in Tasmanian devils and establish the feasibility of breeding resistant animals for release into the wild.

FT0990730 Dr AD Corn

Approved Project Title	**Indigenising the Semantic Web: Ontologies for Indigenous knowledge and heritage resources on a machine-readable Web**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	4101 PERFORMING ARTS
Administering Organisation	The University of Sydney

Project Summary

This project will put Australia at the forefront of international efforts to realise a functioning Semantic Web in which all data transactions are handled by machines talking to machines. It addresses the government's call for the creation of infrastructure and e-research tools that enable high-speed distributed access to Indigenous knowledge and culture resources, and its outcomes will revolutionise the way that these resources are managed, accessed and understood by users everywhere. Indigenous communities will benefit from increased protections for knowledge and heritage resources, and ability to access these in instantaneously customisable ways that promote wellbeing.

FT0992079 Dr AC Doherty

Approved Project Title	**Quantum control in mesoscopic condensed matter systems**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2402 THEORETICAL AND CONDENSED MATTER PHYSICS
Administering Organisation	The University of Sydney

Project Summary

Semiconductor devices are at the foundation of modern technology. Industrial nanofabrication techniques can now produce devices near the atomic scale, and state-of-the-art experiments have demonstrated the previously unimaginable ability to manipulate individual electrons. This project will develop new techniques to control such quantum circuits and couple them together to form useful devices. New experiments to test these schemes will be proposed. This project will provide a foundation for future information processing technologies such as quantum computers.

FT0992069 Dr PJ Franks

Approved Project Title	**Past and future effects of climate change on the carbon-water balance of plants**
2009 :	$ 91,100
2010 :	$ 188,200
2011 :	$ 189,200
2012 :	$ 190,200
2013 :	$ 98,100
Primary RFCD	2799 OTHER BIOLOGICAL SCIENCES
Administering Organisation	The University of Sydney

Project Summary

Over the coming century, climate change will profoundly impact Australian vegetation via the direct effects of elevated atmospheric carbon dioxide (CO2) on plants and the indirect effects of CO2-forced changes in rainfall and temperature, with major implications for agricultural production and water resources. This project will address these threats by providing new tools for measuring and predicting vegetation-climate feedbacks. It will determine the combined effects of elevated atmospheric CO2 and drought on the productivity of natural and agricultural landscapes, and provide the biophysical framework for developing the next generation of high-yielding, drought tolerant crop varieties for the rapidly approaching greenhouse world.

FT0992214 Dr G Gottwald

Approved Project Title **Stochastic Methods in Mathematical Geophysical Fluid Dynamics**

2009 : $ 95,250
2010 : $ 185,650
2011 : $ 185,650
2012 : $ 185,650
2013 : $ 90,400
Primary RFCD 2301 MATHEMATICS

Administering Organisation The University of Sydney

Project Summary
The project will develop analytical and numerical methods for long-term weather forecasting and climate modelling. The project deals with the mathematical aspects and fundamental mechanisms underpinning numerical climate forecasting. The project will develop new methodology for accurate modelling of the important and dominant slow global processes without explicitly resolving the precise detail of the weather of each day at all scales. Using sophisticated mathematics, this project investigates how to parameterize the fast and small processes by using stochastic processes in a controllable and adaptive way.

FT0992123 Dr IM Harris

Approved Project Title **Seeing the forest and the trees: Cognitive and neural mechanisms underlying recognition of individual objects and sets**

2009 : $ 85,800
2010 : $ 170,775
2011 : $ 168,250
2012 : $ 166,550
2013 : $ 83,275
Primary RFCD 3801 PSYCHOLOGY

Administering Organisation The University of Sydney

Project Summary
When confronted with a set of similar objects, such as a crowd of faces or a flow of oncoming cars, human observers can rapidly and seemingly automatically extract summary statistics of these sets of objects (e.g., mean expression or location). This research will provide insights into how the human visual system executes this massive feat of computation. This represents a vital step in understanding vision in general and in eventually applying our knowledge to the development of artificial vision systems and to rehabilitation of visual disorders. The research will also investigate the effects of attentional load on perception of summary statistics of the environment, which is critical for tasks such as driving in busy traffic.

FT0990767 Dr AO Holcombe

Approved Project Title **Position perception, attention, object motion, and action**

2009 : $ 78,320
2010 : $ 162,748
2011 : $ 153,598
2012 : $ 137,000
2013 : $ 67,830
Primary RFCD 3801 PSYCHOLOGY

Administering Organisation The University of Sydney

Project Summary
The research will achieve a deeper understanding of the neural processing of the visual perception of position, and of the associated behavioural limits. This will provide a foundation for the development of a range of technologies to assist disabled and elderly people. The results will help reveal the link between the perception of moving objects and the capacity for visually guided movement. This link will benefit areas such as engineering of vehicles and road systems, and the design of telepresence systems. The first applications are likely to be in the rehabilitation of brain injury and the decline of mental function with age.

FT0991246 Dr DJ Hunter

Approved Project Title	**The early osteoarthritis (OA) phenotype**
2009 :	$ 85,800
2010 :	$ 167,850
2011 :	$ 152,350
2012 :	$ 140,600
2013 :	$ 70,300
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	The University of Sydney

Project Summary

Australia like many other developed countries is undergoing a major demographic shift involving significant growth in the aged population. From both a patient perspective and a societal perspective, research into the underlying determinants of osteoarthritis such as those outlined in this proposal are of great importance to the aged population. Nearly one in five Australians has arthritis; indeed more Australians have arthritis than any other national health priority condition. From an individual point-of-view, the pain and disability due to osteoarthritis (OA) can lead to loss of independence and diminished in quality of life for older adults.

FT0991895 Dr BT Kuhlmey

Approved Project Title	**Ringed photonic crystal fibres for broadband nonlinear optics**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2404 OPTICAL PHYSICS
Administering Organisation	The University of Sydney

Project Summary

The technology developed from this project will enable organic molecules to be detected, identified and quantified. Because the technology is compact, easily engineered and low cost, it will lead to a dramatically increased capability for infrared spectroscopic measurement throughout biology and medicine, with specific benefits in agriculture, the food industry and defence.

FT0991861 A/Prof J Latimer

Approved Project Title	**Innovative solutions to primary care management of back pain**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 193,586
2012 :	$ 168,586
2013 :	$ 73,600
Primary RFCD	3212 PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	The University of Sydney

Project Summary

Each year in Australia over $1billion is spent on low back pain treatment. Part of the reason for this massive expenditure is that back pain is extremely common. Most existing treatments involve highly skilled practitioners and considerable cost to the patient. This program of research will look at evaluating simple, low-cost care for patients with back pain. It will also consider the delivery of back pain care by community pharmacists, an approach not previously evaluated. Prevention of recurrent back pain will also be studied. Such methods of delivering care will provide enormous savings to the health system while still ensuring best practice care for the patient.

FT0992081 Dr HY Liu

Approved Project Title **Fatigue Life Prediction of Nano-filler Modified Composites**

2009 : $ 82,100
2010 : $ 161,950
2011 : $ 155,700
2012 : $ 150,200
2013 : $ 74,350
Primary RFCD 2914 MATERIALS ENGINEERING

Administering Organisation The University of Sydney

Project Summary
The proposed project aims to study the behaviour and the failure mechanisms of polymer nanocomposites under cyclic loading. The outcomes of the project will make original contributions to our knowledge base on such materials. The mechanics modelling and statistical analysis of the prediction of fatigue life will provide a sound physical basis and a useful tool for any future improvement and optimisation of the composites to achieve better reliability and integrity in their intended applications. This study will bring economic benefits to the end-users of advanced material technology including the Australian materials industries.

FT0991314 A/Prof AJ Martin

Approved Project Title **Academic Buoyancy and Academic Resilience: New Approaches to Examining and Understanding Adversity and Setback in the Academic Domain**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 3301 EDUCATION STUDIES

Administering Organisation The University of Sydney

Project Summary
Although Federal & State/Territory governments inject millions of dollars into schools, multitudes of students fall short of their academic potential due to an inability to deal with academic adversity. Essentially, these students are not academically buoyant or resilient. This diminishes their personal capacity through life & ultimately Australia's capacity to compete globally. The proposed Research Program conducts a comprehensive analysis of academic buoyancy & resilience & the attributes pivotal to them. In so doing, it seeks to promote & maintain young people's good academic health. According to Australian authorities (eg. Australian Bureau of Statistics, The Ministerial Council on Education, Employment, Training and Youth Affairs), young people's academic health is vital to our nation's economic, cultural, & social success.

FT0990485 Prof Dr T Maschmeyer

Approved Project Title **Sustainable Solar Hydrogen Production from Waste Water**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Administering Organisation The University of Sydney

Project Summary
The world energy demand, expected to triple by 2100, must be met from sustainable and non-polluting sources. Sunlight is the largest available carbon-neutral energy source, with enough energy striking the planet in one hour to satisfy our current requirements for about a year. With the novel catalysts designed in this project, we will use this energy to simultaneously generate hydrogen and destroy organic pollutants by oxidation. The hydrogen can then be used as a clean source of sustainable energy and the water recycled. Our climate, proximity to major economies of the future, and long commercial and research experience in solar energy make Australia an ideal location for a hydrogen production industry.

FT0992291	Dr ME Thomas	
Approved Project Title	**Expedition to Arnhem Land: Intercultural inquiry in a trans-national context**	
2009 :	$ 84,023	
2010 :	$ 158,679	
2011 :	$ 149,352	
2012 :	$ 149,058	
2013 :	$ 74,361	
Primary RFCD	4203	CULTURAL STUDIES
Administering Organisation	The University of Sydney	

Project Summary

In terms of National Research Priorities, the project will encourage cultural health and cohesiveness in Arnhem Land by providing access to cultural property held until now in remote archives. It will enhance understanding of our region and the world by studying cross-cultural interactions within Australia. Furthermore, it will illuminate how Aboriginal territory and knowledge were used to shore up the Australia-US relationship at a formative historical moment.

FT0991918	Dr JY Yang	
Approved Project Title	**New statistical methods for identifying micro-ribonucleic acid (miRNA) regulatory networks**	
2009 :	$ 80,800	
2010 :	$ 151,600	
2011 :	$ 151,600	
2012 :	$ 151,600	
2013 :	$ 70,800	
Primary RFCD	2302	STATISTICS
Administering Organisation	The University of Sydney	

Project Summary

Understanding gene regulatory networks is critical in the understanding of fundamental biological systems. These networks have important implications for the discovery of fundamental mechanisms relating to the diagnosis and management of many illnesses. This research will provide new statistical methods to identify regulatory micro-ribonucleic acid modules and to understand their relationship in gene regulatory networks through multiple covariance estimation and multivariate classification techniques. My results should enable researchers to better understand the regulation underlying biological systems, leading to improved human health, medical and biological research outcomes.

University of Technology, Sydney

FT0990811	Dr S Li	
Approved Project Title	**Spatial Cognition—Expressive Representation Formalisms and Effective Reasoning Mechanisms**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	3803	COGNITIVE SCIENCE
Administering Organisation	University of Technology, Sydney	

Project Summary

The project will contribute significantly to the advancement of knowledge in breakthrough science in qualitative spatial reasoning and smart information use in geographic information systems. Expressive spatial languages are important in organising spatial knowledge, defining spatial query languages and guiding spatial data mining. Effective spatial reasoning mechanisms bring theory closer to applications including consistency checking and spatial query pre-processing. The project will help in extracting knowledge from massive spatial databases, meeting the growing needs of naive users for spatial information and establishing Australia as a major player in spatial cognition research and in the development of geo-location services.

University of Western Sydney

FT0991433	Dr Z Tao	
Approved Project Title	**Behaviour and design of concrete-filled stainless steel tubular columns at ambient and elevated temperatures**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	2908	CIVIL ENGINEERING
Administering Organisation	University of Western Sydney	

Project Summary

Stainless steel is recognised as an advanced construction material for its merits of corrosion resistance, attractive appearance and ease of maintenance. It has enormous potential for use in steel-concrete composite construction, which will provide the structural engineering community with greater choice in terms of aesthetics, constructability, cost and sustainability. The research put forward in this proposal will promote the better use of stainless steel in Australia's building, bridge and offshore infrastructure, thereby providing significant socio-economic benefits to Australia. Moreover it will greatly increase Australia's infrastructure maintenance capability.

University of Wollongong

FT0990391 Dr Z Cheng

Approved Project Title **Manipulation of Spin by Electric Field**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2914 MATERIALS ENGINEERING
Administering Organisation	University of Wollongong

Project Summary
Spin manipulation is one of the most challenging topics in the new emerging spintronics technology. This project will develop a novel solution for the problem of spin manipulation and falls into the National Research Priority: Frontier Technologies for Building and Transforming Australian Industries. This project will provide training for postgraduate students and develop patentable science and technologies. The successful accomplishment of this project will consolidate the knowledge and technology background that is needed for Australia to develop the next generation of spin-base electronics. In the long term, spin-based electronics with high efficiency and very low energy consumption will benefit the Australian manufacturing industry.

FT0991986 A/Prof B Garner

Approved Project Title **Targeting brain lipid homeostasis to treat Alzheimer's disease**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3207 NEUROSCIENCES
Administering Organisation	University of Wollongong

Project Summary
Dementia affects approximately 250,000 people in Australia at an estimated cost (in 2002) of $6.6 billion per annum. The major cause of dementia (accounting for approximately 70% of all cases) is Alzheimer's disease (AD); a progressive neurodegenerative illness for which there is no curative or disease-stalling treatment. Due to increases in life expectancy, the incidence of AD is predicted to triple by 2050 unless disease-modifying treatments are developed. This research program will provide novel realistic pharmaceutical approaches to treat AD. Even if the onset of AD could be delayed by a few years the personal and financial benefits would be enormous. The potential for this research to generate commercially viable Australian intellectual property is also significant.

FT0991193 A/Prof CR Gibson

Approved Project Title **Crisis and change: cultural-economic research on the adaptability and sustainability of Australian households**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3704 HUMAN GEOGRAPHY
Administering Organisation	University of Wollongong

Project Summary
This research will enable better understanding of the ways in which households respond to governmental imperatives to become more sustainable in their own circumstances. It will reveal unheralded patterns of adaptation and innovative responses among ordinary households to the problems of climate change, financial crisis, and demographic transition. Funding this research will provide an opportunity for government to listen to Australian households, and to learn from their experiences as they grapple with contemporary economic, environmental and demographic challenges. It will enhance Australia's ability to become more environmentally sustainable, strengthen the social fabric of communities and reveal vernacular forms of innovation culture.

FT0990846 Dr MP in het Panhuis

Approved Project Title **Soft carbon nanotube materials**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2915 BIOMEDICAL ENGINEERING

Administering Organisation University of Wollongong

Project Summary
There is no doubt that the realisation of new bionic materials will dramatically improve quality of life for many individuals. The new soft conducting materials proposed will impact on several areas of bionics, including the development of the next generation Bionic Ear, conduits for spinal cord regeneration as well as muscle regeneration and other applications. This project will further enhance the international profile of the ARC Centre of Excellence for Electromaterials Science in the field of Bionics. The end-user network already in place will ensure all opportunities are fully exploited.

FT0992328 Prof VC Mackie

Approved Project Title **From Human Rights to Human Security: Changing Paradigms for Dealing with Inequality in the Asia-Pacific Region**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 4301 HISTORICAL STUDIES

Administering Organisation University of Wollongong

Project Summary
This project is particularly timely as we celebrate the 60th anniversary of the Universal Declaration of Human Rights. It is clearly aligned with the national research priority goals of Understanding our Region and the World and Strengthening Australia's Social and Economic Fabric. The question of human rights is a pressing issue throughout the Asia-Pacific region and much is to be gained by a comparative approach which considers strategies for embedding human rights practice and principles in particular local contexts and how they may be adapted in other national contexts.

FT0990287 Dr AJ Oakley

Approved Project Title **Fragment Based Screening for new Antibiotics by Protein X-Ray Crystallography**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Organisation University of Wollongong

Project Summary
Due in part to rising levels of antibiotic resistance, the death toll from pathogenic bacteria is expected to skyrocket over the next 15 years. There is therefore a pressing need for new antibiotics to treat bacterial infection. This project will use a relatively new discovery tool called fragment based screening to discover a new generation of antibacterial agents. This tool will allow for the rapid economical discovery of new drugs, and will complement other investments in Australian biotechnology infrastructure.

FT0991397 A/Prof W Susilo

Approved Project Title	**Secure and Efficient Fair Exchange Protocols**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2805 DATA FORMAT
Administering Organisation	University of Wollongong

Project Summary

Information security is becoming increasingly important in the rapidly growing field of e-commerce. This project will enable the development of secure fair exchange protocols and schemes, which will be absolutely crucial to Australia's national security. The project will also strengthen international collaboration through the reciprocal exchange of researchers leading to a more collaborative and productive research environment. Furthermore, the project will help to maintain the high research profile of Australian researchers and provide cutting-edge information technology for the Australian telecommunication industry, business and government.

Victoria

Baker IDI Heart and Diabetes Institute

FT0991657 Dr JR McMullen

Approved Project Title	**Targeting genes elevated in the athlete's heart to improve function of the failing heart**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	Baker IDI Heart and Diabetes Institute

Project Summary

Cardiovascular disease affects about 3.7 million Australians and heart failure ranks as one of the major killers, representing a huge burden on our health care system and economy. This situation is likely to get worse with an increasing ageing population. Current therapeutics for heart failure patients largely delay disease progression but generally fail in significantly improving heart function and quality of life. The proposal has focused on targeting the protective effects of 'good' heart growth by identifying genes elevated in the heart in response to exercise. Targeting genes elevated in the athlete's heart to improve function of the failing heart represents a new strategy for the treatment of heart failure.

FT0992210 Prof K Peter

Approved Project Title	**Defining targets and generating tools/therapeutic agents for prevention, diagnosis and therapy of atherothrombosis**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3299 OTHER MEDICAL AND HEALTH SCIENCES
Administering Organisation	Baker IDI Heart and Diabetes Institute

Project Summary

Atherosclerosis and its complications such as myocardial infarction and stroke are a major cause of death and disability in Australia and worldwide. The proposed research program investigates new therapeutic targets and concepts (e.g. targeting of stem cells) to treat atherosclerosis and aims to develop new therapeutic agents using modern biotechnological methods. The project further aims to develop nanoparticle-based diagnostic tools to identify and preventatively treat atherosclerotic plaques that are prone to cause myocardial infarction. The expected outcome will provide direct benefit to patients and create new economic opportunities in Australian bio-/nanotechnology.

Howard Florey Institute

FT0990467	Dr JP Rubio	
Approved Project Title	**The Genetic Analysis of Neurological Diseases**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	3207	NEUROSCIENCES
Administering Organisation	Howard Florey Institute	

Project Summary

Multiple sclerosis and Parkinson's are debilitating neurodegenerative diseases, which affect 16,000 and 80,000 Australians, respectively. Between them, these diseases cost the community $7.8 billion per annum, and there is no cure. This proposal will study the genes that influence a person's predisposition to developing these diseases, and what makes some people have particular characteristics. It will provide novel insights into the diseases themselves and information that could help in the development of new and more effective drugs, and biomarkers to assist in the prediction of prognosis. Such advances would decrease the economic impact of these diseases and improve quality of life for those affected.

La Trobe University

FT0991801 Dr LR Bennett

Approved Project Title **Compromised fertility in contemporary Indonesia**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	La Trobe University

Project Summary

This project will benefit the community by informing service provision for infertility treatment, and by identifying the potential for prevention strategies. It will consolidate Australia's position at the forefront of research into assisted reproductive technologies, through the extension of this expertise to our near neighbours. It will contribute to the current gap in knowledge of infertility in Southeast Asia and in developing countries more broadly, and advance research on infertility conducted from human rights and anthropological perspectives. The project will reinforce the relevance of the United Nations definition of reproductive health, for all people regardless of whether they live in highly or lesser developed nations.

FT0991923 Dr SM Cutts

Approved Project Title **Improvement of anthracycline chemotherapy by enhancement of apoptotic responses and tumour targeted activation**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3203 MEDICAL BIOCHEMISTRY AND CLINICAL CHEMISTRY
Administering Organisation	La Trobe University

Project Summary

Improved outcomes for anthracycline anticancer chemotherapy is of clear benefit to the nation. Tumour-localised treatment is expected to lead to improved responses, reduced side-effects and improved quality of life while rational selection of drug combinations is expected to enable treatment of tumours that were previously resistant to anthracyclines. With an aging population in Australia the incidence of cancer is predicted to rise dramatically - improved treatment outcomes and better use of chemotherapeutics will be of obvious national benefit. The development of new tumour-targeted agents is the subject of joint Intellectual Property between Australia and the USA, offering potential economic benefit.

FT0991464 Dr CJ Hawkins

Approved Project Title **Apoptotic signalling in virally infected and normal cells.**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	La Trobe University

Project Summary

Viral diseases contribute substantially to mortality and morbidity, in Australia and internationally. Emerging viral diseases, including H5N1 avian influenza, have the potential to severely impact on human health and the global economy. Concerns also exist that viruses may be used as bioweapons. This project seeks to define the mechanisms by which cell death occurs and is regulated in healthy cells, and how this is altered in virally infected or oncogenically transformed cells. Outcomes of this work may contribute to development of novel anti-cancer and anti-viral therapies, diagnostic reagents and vaccines.

FT0991412	Prof Dr B Hellwig
Approved Project Title	**Semantic categories: Exploring the history of the Baining languages of Island Melanesia**
2009 :	$ 85,800
2010 :	$ 152,600
2011 :	$ 127,600
2012 :	$ 121,600
2013 :	$ 60,800
Primary RFCD	3802 LINGUISTICS
Administering Organisation	La Trobe University

Project Summary

The project adds to our knowledge of the historical, linguistic and ethnic relationships within Island Melanesia, thus contributing directly to our understanding of the complexities of this region. This regional focus expands Australia's expertise in Melanesian research, and reaffirms Australia's leading position in this area. Such expertise attracts outstanding international students and researchers to Australia, strengthens the Australian research community, and increases the international visibility of Australian-based research. Furthermore, studying semantic categories provides a unique insight into how speakers of different languages categorise the world around and within them, thereby facilitating intercultural understanding.

FT0990683	Dr H Puthalakath
Approved Project Title	**Studies on the regulation of the pro-apoptotic protein Bim in mammalian development and cancer.**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	La Trobe University

Project Summary

This project is aimed at understanding the regulation of a gene, which is a tumour suppressor and is often mutated or down regulated in many different forms of cancers. A better understanding of how this gene works may eventually lead to better therapeutics to treat these cancers. This is relevant in the Australian context given that our aging population and obesity epidemics (the link between obesity, insulin resistance and various forms of cancers is well established) are leading to a rapid increase in new cancer cases, thus driving a rapid increase in demand for better treatments. This is particularly relevant in Indigenous health where obesity is on the rise following the transition from a traditional to an urban lifestyle.

FT0992258	Dr C Smith
Approved Project Title	**Molecular Archaeology: Carbon isotope analysis of amino acids as a means to investigate diets, physiology, metabolism and palaeoenvironment.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	4302 ARCHAEOLOGY AND PREHISTORY
Administering Organisation	La Trobe University

Project Summary

The investigation of the bones of past societies and animals at the molecular level opens up a whole array of alternative data about palaeodiet and environment. Investigating the past in this way provides a unique perspective about how diet and health have changed in humans and about how animals and the environment have changed. When we understand the past in this manner we can better understand current health issues linked to diet and how the environment and climate is changing.

FT0992033	Dr KN Truscott
Approved Project Title	**Mitochondrial proteases and their contribution to protein homeostasis**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	La Trobe University

Project Summary

This research will examine how a critically important cellular organelle known as the mitochondrion maintains its functional integrity by sensing and signalling protein perturbations. As mitochondrial dysfunction is central to a number of neurodegenerative diseases understanding the molecular biology of this fundamentally important cellular process could, in the future, provide for better health outcomes for an aging Australian population. The training of post-graduate students is an integral component of this study and thus will contribute to building national research capacity. International collaborations and new discoveries will also contribute to the recognition of Australian research.

Ludwig Institute for Cancer Research Limited

FT0992234	A/Prof JM Mariadason
Approved Project Title	**Role of Histone deacetylase 3 (HDAC3) in intestinal epithelial cell homeostasis and tumorigenesis**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	Ludwig Institute for Cancer Research Limited

Project Summary

Colon cancer is the most common cancer that affects men and women in Australia. Annually, in Victoria alone, more than 3400 people are diagnosed with colon cancer. Colon cancer arises through the accumulation of mutations in key genes over time. Identification of cancer causing genes provides the basis for the design of new cancer therapies. We recently identified a gene called Histone deacetylase 3 (HDAC3) as potentially involved in promoting colon cancer. The current proposal will now extend and validate this finding in mice. Importantly, drugs which inhibit HDAC3 have recently been developed for the treatment of cutaneous T-cell lymphoma. Defining the role HDAC3 plays in colon cancer will justify testing these drugs in colon cancer patients.

Macfarlane Burnet Institute for Medical Research and Public Health

FT0992322	Dr AL Gavin	
Approved Project Title	**The roles of novel pathways in the activation and regulation of the adaptive immune response in health and disease.**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	2701	BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	Macfarlane Burnet Institute for Medical Research and Public Health	

Project Summary

The immune system is designed to protect us against infection and vaccines exploit this with great success in preventing many infections. However, the immune system can also 'fail' and attack the body in a process called autoimmunity e.g. destroying joints in rheumatoid arthritis. This proposal will define how white blood cells work to make better vaccines against infection and how these same immune cells can malfunction to create autoimmune diseases like Crohn's disease.

Monash University

FT0991840 Dr SR Batten

Approved Project Title **Building Advanced Materials from the Bottom Up**

2009 : $ 111,375
2010 : $ 222,150
2011 : $ 220,300
2012 : $ 220,900
2013 : $ 111,375
Primary RFCD 2502 INORGANIC CHEMISTRY

Administering Organisation Monash University

Project Summary
This proposal will result in new advanced materials with a range of useful properties, such as storage or trapping of gases such as hydrogen (for use in environmentally friendly transportation), methane and carbon dioxide (for pollution control), magnetic switching (with potential applications such as molecular sensors or data storage), new bulk and discrete nanometer sized magnets, and new liquids with novel solvent properties. These will be constructed from carefully designed polymeric materials and unusual nanometer sized molecules. This proposal will also enable the applicant to develop and enhance overseas collaborations, particularly with a number of research groups in the emerging economy of China.

FT0991199 Dr JS Broad

Approved Project Title **Mary Astell (1666-1731): An Historical-Intellectual Role Model for Women in Philosophy**

2009 : $ 68,100
2010 : $ 138,900
2011 : $ 136,600
2012 : $ 131,600
2013 : $ 65,800
Primary RFCD 4401 PHILOSOPHY

Administering Organisation Monash University

Project Summary
Mary Astell was an early modern English philosopher of exceptional eloquence and skill. This project will produce the first overview of her philosophical thought, the first authoritative critical edition of her magnum opus, and the first assessment of her philosophical relevance today. These outputs have the potential to encourage women's participation in philosophy and in intellectual life more generally, outcomes that would be of tremendous benefit to Australia's social and economic fabric. The project will also enhance Australia's already outstanding scholarly reputation for early modern studies and the history of women's ideas.

FT0991598 Dr DK Galloway

Approved Project Title **High-energy probes of dense matter and distorted spacetime**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2401 ASTRONOMICAL SCIENCES

Administering Organisation Monash University

Project Summary
This is an ambitious but achievable program with the potential for results which will be highly significant to physicists worldwide. The expected outcomes have the potential to alter our understanding of fundamental physics, and will demonstrate that Australia's high-energy research ability is on par with the world's best. The techniques of X-ray astronomy are increasingly a standard part of the professional astronomer's toolkit, although Australia has a limited track record in recent years. The international collaborations that this project will build and maintain will help to improve access to, and utilisation of, multi-million dollar international satellite observatories by local observers.

FT0991036 Dr CR Hutchinson

Approved Project Title	**Dynamically responding metals: a new generation of engineering alloys**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2913 METALLURGY
Administering Organisation	Monash University

Project Summary

The manufacture of engineering metals is a major Australian industry and the worldwide metal manufacturing sector is estimated to be worth $1 trillion USD per annum. Advanced materials and, particularly the light metals, are both designated national research priority areas. The availability of new classes of metals with greatly improved combinations of properties will profoundly affect not only metal use by existing industry, through the introduction of new, stronger and safer metal grades, but also allows for new engineering designs which will lead, for example, to lighter and more efficient automobiles and more sustainable construction.

FT0991045 A/Prof GM Martin

Approved Project Title	**A Bayesian State Space Methodology for Forecasting Stock Market Volatility and Associated Time-varying Risk Premia**
2009 :	$ 102,400
2010 :	$ 204,800
2011 :	$ 212,300
2012 :	$ 212,300
2013 :	$ 102,400
Primary RFCD	3404 ECONOMETRICS
Administering Organisation	Monash University

Project Summary

Accurate prediction of stock market volatility is critical for effective financial risk management. Along with information on volatility embedded in historical stock market returns, the prices of options written on the underlying stocks also reflect the option market's assessment of future volatility. This project will exploit this dual data source in a completely new way, using it to produce forecasts of both volatility itself and the premia factored into asset prices as a result of traders' perceptions of volatility risk. State-of-the-art statistical methods will be used to produce up-dates of the probability of extreme volatility and/or extreme risk aversion, as new market data becomes available each trading day.

FT0991248 Dr A Mazumdar

Approved Project Title	**Origins of our Universe**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS
Administering Organisation	Monash University

Project Summary

The present proposal will study the origins of our Universe, which is one of the grand challenges of 21st century physics. As such it will utilise insights and discoveries in many areas of physics, ranging from string theory and particle physics at the highest energies, to x-ray, optical and radio astronomy. The research program will add to our understanding of a fundamental branch of science - extending it in new directions - thereby considerably boosting the quality of cosmology and theoretical physics research in Australia. In concert with our international collaborations, work arising from this fellowship will enhance the Australian presence on the international cosmology, astro-particle, and theoretical physics scene.

FT0990681 Dr PG Ranjith

Approved Project Title **An assessment of carbon dioxide storage capacity of water bearing sedimentary basins**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2907 RESOURCES ENGINEERING

Administering Organisation Monash University

Project Summary
Dealing with the problems caused by climate change and global warming is among the greatest challenges facing Australia today. One of the approaches being considered to minimise anthropogenic influence over climate is the geo-sequestration of carbon dioxide (CO2). The proposed project will lead to greater understanding of storage capacity of sedimentary basins and identification of optimum injection conditions for geo-sequestration in such aquifers, and any potential mechanisms that could lead to migration of CO2 from the source rock back to the atmosphere.This will contribute to national efforts to reduce global warming, safeguard the Australian economy, and allow continued electricity generation from coal-fired plants.

FT0990986 Dr JT Smith

Approved Project Title **Masterminding Reproduction: Kisspeptin and RFamide-Related Peptide**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 3207 NEUROSCIENCES

Administering Organisation Monash University

Project Summary
There are a number of concerning trends in reproductive health. Women are reporting difficulty conceiving and maintaining pregnancies; while sperm count and quality are declining in men. More concerning is the increase in reproductive cancers. Gonadotropin-releasing hormone (GnRH) antagonist and agonist have been used for decades to treat reproductive cancers (such as breast cancer and prostate cancer), infertility and precocious puberty. Kisspeptin and RF-related peptide may offer more physiological alternatives to GnRH, without detrimental side effects. We will fully explore these two newly defined and major players in reproduction and provide a physiological framework for their progression to clinical use.

FT0991356 Dr B Winther-Jensen

Approved Project Title **Electro-Catalytic Conjugated Polymers**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Administering Organisation Monash University

Project Summary
The Future Fellowship will tackle some of the challenging issues regarding the conversion of our society into a post-petroleum era through: Development and understanding of a new class of catalysts for efficient conversion and storage of energy. Developing cheap and effective electrodes structures for next generation transport and storage technologies i.e. fuel-cells for cars and flexible solar-cells for electricity production. Collaborating at an international level with leading groups in the sustainable energy field. These outcome will contribute to National Research Priorities 2; Frontier Technologies for building and transforming Australian Industries and 1; An Environmentally Sustainable Australia

FT0990695	Dr J Zhang
Approved Project Title	**Three Dimensional Anti-biofouling Conducting Polymer Hydrogel Electrodes for Biosensor and Biofuel cell Applications**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2504 ANALYTICAL CHEMISTRY
Administering Organisation	Monash University

Project Summary

Exploitation of advances in nanotechnology, electrochemical technology, biosensor, biofuel cell and material science are important to Australia's prosperity from a societal industrial perspective. Currently, research in this field is being actively conducted around the world due to their huge potential for commercial applications. Therefore, through the development of new principles and concepts, and the synthesis of newly designed materials, this project will bring significant benefits in improving the efficiency of these devices and to promote Australian leadership in the field of medical devices and alternative energy generation.

FT0991010	Dr L Zhang
Approved Project Title	**Generation of Ultra-Clean Fuel from Victorian Brown Coal and Its Oxygen-Enriched Combustion Characteristics**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2999 OTHER ENGINEERING AND TECHNOLOGY
Administering Organisation	Monash University

Project Summary

Completion of this project can significantly contribute to the national priority of developing alternative energy technologies and ecologically sustainable power generation systems, as well as provide solutions to reduce and capture greenhouse gas emissions during Victorian brown coal firing. Improvements in the quality of Victorian brown coal and its value in national/international trade markets can be achieved through the generation of ultra-clean fuel from coal. Substitution of ultra-clean fuel for Victorian brown coal in energy industries would greatly improve the competitiveness of the Victorian economy in a carbon-constrained future, and ensure power generation near-zero emissions.

National Stroke Research Institute

FT0991086 A/Prof J Bernhardt

Approved Project Title	**Improving Outcome after Stroke through Earlier Rehabilitation: The Very Early Rehabilitation Research Program**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	National Stroke Research Institute

Project Summary

Stroke presents a major, growing global public health challenge accounting for 25% of all chronic disability. Treatments that reduce the burden of stroke are urgently needed, and early rehabilitation may significantly reduce chronic disability. A large, high quality, National Health and Medical Research Council funded clinical trial is at the heart of the A Very Early Rehabilitation Trial (AVERT) program. The trial tests whether a simple, rehabilitation intervention (early and intensive out of bed activity) results in fewer deaths and less disability for stroke sufferers and is cost effective. If effective the intervention could be adopted across different health services both here and overseas, reducing the global burden of stroke.

FT0992299 Prof LM Carey

Approved Project Title	**Improved identification of patients 'at risk' of depression, and optimal targeting of rehabilitation post-stroke through novel brain imaging and biomarkers.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	National Stroke Research Institute

Project Summary

Use of novel brain imaging and biomarkers for identification of stroke survivors at risk of depression and recurrent stroke will permit early access to preventative and effective treatments for depression and improve capacity to benefit from rehabilitation. Development of predictive models to guide selection of most optimal rehabilitation strategies based on viable brain will maximise the capacity for persons with stroke to reach their full potential for recovery and ensure rehabilitation is more targeted and cost efficient. Improved capacity to benefit from treatment will have ongoing benefits for activity participation and productive living in Australians who experience stroke.

Peter MacCallum Cancer Centre

FT0991446	Dr NJ Waterhouse	
Approved Project Title	**Understanding the critical processes that control cell death and using this knowledge to kill cells that have evaded death.**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	2701	BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	Peter MacCallum Cancer Centre	

Project Summary

Cell death is essential for protecting the body against cancer, and defects in cell death pathways contribute to cancer progression. To design new and better cancer therapies we must understand the critical processes which control cell death, and develop effective ways to either reset, or bypass, defects in cell death pathways that contribute to cancer. The program as outlined will elucidate the process of mitochondrial outer membrane permeabilization, a critical event in cell death by apoptosis, and determine how to kill cells in which this event is blocked.

RMIT University

FT0990337 Dr HC Lingard

Approved Project Title **Differentiation not disintegration: Integrating strategies to improve Occupational Health and Safety in the construction industry**

2009 : $ 93,726
2010 : $ 191,821
2011 : $ 192,483
2012 : $ 192,988
2013 : $ 98,600
Primary RFCD 3102 BUILDING

Administering Organisation RMIT University

Project Summary
Almost ten percent of all injury and death claims in Australia are attributed to construction, creating a significant social and economic burden. Organisational, technological and cultural fragmentation of the supply chain impedes the integration of Occupational Health and Safety (OHS) into construction planning and design. The research will effect critical and sustainable improvements in construction OHS, through: (i) the engagement of all industry participants in the OHS improvement effort; (ii) the identification of new technologies which can improve OHS; and (iii) the establishment of a unity of purpose regarding OHS among construction industry stakeholders, contributing significantly to a reduction in the social and economic costs of occupational death, injury and illness.

FT0992226 A/Prof J Lu

Approved Project Title **Modelling, Identification and Control of Complex Networks**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2301 MATHEMATICS

Administering Organisation RMIT University

Project Summary
Australia has been well known for its leading research in systems and control and many real-world applications in, for instance, telecommunications, defence, power grids and life sciences. This project will further promote Australia's leading position in the emerging new research field - complex networks by theoretical breakthrough in modelling, identification and control of complex networks, and cutting-edge platform technology that can help Australian energy industry to reduce greenhouse emissions. It will also result in education of the next generation research leaders in this emerging field.

FT0992254 Dr QT Stevens

Approved Project Title **What is successful public art today?: exploring how contemporary public art and memorial design shapes public engagement, perceptions and behaviour**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 3101 ARCHITECTURE AND URBAN ENVIRONMENT

Administering Organisation RMIT University

Project Summary
Much public money is invested in public art and memorials. The research explores critical questions of value: what the public enjoys about such artworks, if and how artworks contribute amenity to public spaces, and whether recent artworks engage effectively with social memory, identity and politics. The research situates local practice within international trends, to inform Australian designers, policymakers, art patrons and public space managers about recent innovations in technology, craft, creativity and critique, so they can create and choose public artworks and memorials which engage with the potentials of contemporary arts practice, the complexities of contemporary culture, and the diversity of social behaviour in public spaces.

Swinburne University of Technology

FT0991594 Dr LL Andrew

Approved Project Title **Increasing internet energy and cost efficiency by improving higher-layer protocols**

2009 :	$ 85,800
2010 :	$ 171,100
2011 :	$ 170,600
2012 :	$ 170,600
2013 :	$ 85,300
Primary RFCD	2302 STATISTICS
Administering Organisation	Swinburne University of Technology

Project Summary

Australians rely heavily on our telecommunications infrastructure due to our geographic dispersion. We are also very susceptible to climate change, given our reliance on agriculture. Information technology is consuming a rapidly increasing fraction of our power and our budget. This research will help to reverse both those trends, by finding novel and practical ways to use our infrastructure more efficiently, and to minimise its energy use. This will enable the Australian telecommunications industry to provide better service (including to Australian industries and rural communities) at lower economic and environmental cost. This project will put Australia on the international stage as a leading contributor to energy-efficient internet technology.

FT0990405 Dr SM Russell

Approved Project Title **Polarity in lymphocytes: Regulation of immune function and cancer.**

2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	Swinburne University of Technology

Project Summary

The Fellow will elucidate the mechanisms and consequences of a fundamental new phenomenon in immunology. This is likely to profoundly impact upon approaches to detecting and treating immune-related diseases such as autoimmunity, transplantation, vaccination and immunodeficiencies. The ongoing project and the work that led to our discovery involves interdisciplinary collaborations between physicists and biologists to apply frontier laser technologies to biological studies. These technologies will not only facilitate our elucidation of immune development and function, but will also be made available to other research in Australia and overseas.

The University of Melbourne

FT0991187 Dr PJ Anderson

Approved Project Title **Improving the quality of life of children born very premature.**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3210 CLINICAL SCIENCES

Administering Organisation The University of Melbourne

Project Summary

This research program is in line with the national research priority to promote good health and well being, and more specifically to provide a healthy start to life for high-risk infants. This research program is attempting to improve the quality of life of infants born very preterm by improving our understanding of the nature of the problems faced by these high-risk children. This knowledge will inform future preventative care and early intervention strategies. More directly, this research program incorporates a series of randomised controlled trials which are all attempting to improve the health and well being of these vulnerable infants.

FT0991472 Dr N Barker

Approved Project Title **Molecular signals that regulate the regenerative properties of intestinal epithelial cells**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3210 CLINICAL SCIENCES

Administering Organisation The University of Melbourne

Project Summary

Most cancer deaths are due to the cancer spreading to other organs. Cancer is much more difficult to treat once it has spread to other organs in the body where the cancer cells can exist in a dormant state. Dormant cancer cells evade conventional anticancer treatment and can remain dormant for a very long time before they change back to a 'tumour-growing' state. An understanding of how the cancer initiating (stem cell) property of tumour cells is maintained offers potential novel avenues to eliminate persistent cancer cells. This knowledge will ultimately lead to better management and treatment of cancer, and increase survival. An understanding of stem cell behaviour is also central to the control of degenerative conditions.

FT0991413 Prof K Bennell

Approved Project Title **Knee osteoarthritis: Getting moving with physiotherapy**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3210 CLINICAL SCIENCES

Administering Organisation The University of Melbourne

Project Summary

Knee osteoarthritis (OA) is a prevalent chronic musculoskeletal condition causing pain, disability and reduced quality-of-life. Further rises in the prevalence of knee OA and associated patient and economic costs are expected due to an ageing population and increasing risk factors for OA such as obesity. This research will provide important information about the role of modified footwear and gait retraining in management of knee OA which can influence current clinical practice. This has the potential to reduce the burden of knee OA from both an individual and societal perspective. Furthermore, the research will result in a commercially available shoe suitable for people with knee OA.

FT0991117 Dr MJ Brear

Approved Project Title **Enabling low greenhouse gas emissions from road vehicles through the proper use of alternative fuels**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 170,850
2013 : $ 85,050

Primary RFCD 2999 OTHER ENGINEERING AND TECHNOLOGY

Administering Organisation The University of Melbourne

Project Summary

A major increase in alternative transport fuel use appears necessary in our response to the challenges of climate change and energy security. This proposal will advance our fundamental understanding of key aspects of the combustion of particular alternative fuels, thus enabling proper engine design and so maximising greenhouse and energy security benefits. Further, the Australian automotive industry is a major employer and exporter, and needs to develop and/or maintain international leadership in low emission technologies to ensure its long term viability. This proposal builds a consortium of local organisations with common interests, thus helping local industry respond to several, significant challenges that they presently face.

FT0990583 Dr RA Caruso

Approved Project Title **Engineered materials for future energy technologies**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Administering Organisation The University of Melbourne

Project Summary

The development of new technologies to be applied in fuel generation, energy conversion and environmental remediation will have wide national and international impact. The cross-disciplinary and cross-institution research program proposed will draw on expertise within Australia and in Europe for the fabrication of materials for next generation energy devices. In the future, there is the potential that these materials could be fabricated within Australia and therefore lead to employment nationally, and income generated through the export of advanced catalysts, solar cells and sequestration materials.

FT0991404 Dr RR Dagastine

Approved Project Title **Fundamentals and applications of dynamic interfacial forces in soft matter**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Administering Organisation The University of Melbourne

Project Summary

The proposed program will make an internationally significant contribution to the fundamental understanding of soft matter on the nanoscale. This has a direct impact upon processes that are key to a wide range of Australian industries ranging from the manufacture of functional foods to minerals recovery to pharmaceutical formulation, where innovative solutions can substantially improve productivity, increase export potential and reduce environmental impact. The outcomes of this work, in the form of high impact papers and conference presentations, will build and enhance Australia's reputation as a world leader in nanotechnology and colloid science.

FT0990531 Dr MR Duckham

Approved Project Title **Ambient spatial intelligence: Spatial analysis and event detection in environmental geosensor networks**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2910 GEOMATIC ENGINEERING

Administering Organisation The University of Melbourne

Project Summary
This project will design and test innovative new decentralised algorithms for responding to spatiotemporal queries in environmental monitoring networks. The research is essential for constructing larger, denser, and more reliable networks, helping to embed spatial intelligence within the environment itself (ambient spatial intelligence). The project builds on Australia's existing research excellence in geographic information science. By making smarter use of spatial information, the project will further strengthen Australia's world-leading spatial information industry, and support sustainable and economic environmental management through important applications like conservation contracts and carbon sequestration monitoring.

FT0991640 Dr RJ Elith

Approved Project Title **Improved methods for predicting species' distributions under environmental change**

2009 : $ 78,900
2010 : $ 152,950
2011 : $ 148,100
2012 : $ 148,100
2013 : $ 74,050
Primary RFCD 3008 ENVIRONMENTAL SCIENCES

Administering Organisation The University of Melbourne

Project Summary
Understanding the impacts of climate change and invasive species on the distribution and persistence of species is an issue of global and national significance and concern. This project will provide tools essential for the effective management of Australia's ecosystems by delivering clear guidelines and practical methods that will substantially improve the modelling of future species distributions.

FT0991558 Dr JD Gehman

Approved Project Title **Maximizing solid state Nuclear Magnetic Resonance (NMR) with maximum entropy**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Administering Organisation The University of Melbourne

Project Summary
Nuclear magnetic resonance is an essential technology for the characterisation of important industrial and biomedical molecules, molecular chains and complexes. This project aims to considerably expand the fundamental capability of experimental techniques for the study of materials in the solid state, in particular for a new class of biological nanoparticle. These advances will have important global implications for research into life-saving therapeutic strategies aimed at many pharmaceutical targets embedded in cell membranes, protein misfolding disorders such as Alzheimer's disease and Huntington's disease, as well as development of the next generation of "green" plastics and other advanced polymers.

FT0990267 Dr EL Hartland

Approved Project Title	**The biology, structure and function of bacterial virulence effectors**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3204 MEDICAL MICROBIOLOGY
Administering Organisation	The University of Melbourne

Project Summary
This project is closely aligned with the National Research Priority of Promoting and Maintaining Good Health and will establish a research framework to investigate novel virulence processes that allow bacterial pathogens to infect humans and cause disease. This fresh approach to the study of bacterial pathogenesis will sit outside classic genetic methods to investigate infection and immunity which rely heavily on genetic manipulation of the pathogen. Other than providing fundamental information on host-pathogen interactions, this work may lead to novel disease interventions by inhibition of bacterial virulence factor activity and/or enhancement of host inflammatory and immune responses.

FT0991395 A/Prof M Kelaher

Approved Project Title	**Agreements as a mechanism for community participation in health policy: Understanding process and evaluating effectiveness**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3212 PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	The University of Melbourne

Project Summary
Improving the health of Indigenous people requires health policy that is inclusive and proactive rather than crisis driven. Formal agreements outline responsibilities and accountabilities in a shared framework that respects the rights of the parties involved. This project will evaluate the quality and effectiveness of agreements in Indigenous health by assessing their ability to change the way governments and communities work together to improve health. The project will help ensure that future agreements reflect shared solutions for improving the health of Indigenous people in a respectful and effective way. It will also determine whether agreements work to bring community and government together to reduce inequalities in health.

FT0991470 Dr R Kippen

Approved Project Title	**Epidemics, mortality and longevity in Tasmania, 1838-1930**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3705 DEMOGRAPHY
Administering Organisation	The University of Melbourne

Project Summary
This project will investigate areas of contemporary importance that can only be explored using historic-demographic data. National benefits include (1) gaining a better understanding of how epidemics spread through families and communities, and possible mortality and case-fatality rates, to assist in preparation for future epidemics; (2) improved accuracy in projecting older-age mortality and population ageing in Australia and other countries; and (3) more precise estimates of women's capacity to naturally conceive and carry to term by characteristics such as her age, her partner's age, and her number of previous births. The project will also result in augmentation of a unique publicly available dataset.

FT0990892 Dr TP Lane

Approved Project Title **The dynamics of deep convective clouds and their role in the climate system**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2606 ATMOSPHERIC SCIENCES

Administering Organisation The University of Melbourne

Project Summary
Deep convective clouds are the source of some of the largest uncertainties in climate projection models. This research will better characterise turbulence, mixing and momentum transport processes around clouds and develop new methods to include these effects in climate models, leading to more robust estimates of future climate change. An additional benefit of this work is that it will develop new guidelines for cloud-induced turbulence avoidance for use by the aviation industry and lead to increased aviation safety.

FT0991110 A/Prof C Lim

Approved Project Title **Unified digital networking for wireless and optical access**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

Administering Organisation The University of Melbourne

Project Summary
The provision of broadband services is a high priority for the Australian government as evidenced by the various initiatives around Australia. The merging of backbone infrastructures for access environment will overcome unnecessary cost of maintaining and upgrading two separate networks for wired and wireless applications. The merged infrastructure will potentially provide inexpensive and cost-effective solutions for truly broadband services with a choice of wired or wireless connectivity to customers and will remove the rural-urban broadband divide that has been challenging Australia. The outcomes of this project can lead to new business ventures and will further strengthen the telecommunication industry.

FT0990930 Dr A McKendrick

Approved Project Title **Resolving multi-sensory conflict as we age: audio-visual integration and the role of normal and abnormal sensory decline**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 3801 PSYCHOLOGY

Administering Organisation The University of Melbourne

Project Summary
Australia has an ageing population. Even the healthiest older individuals undergo some deterioration of vision and hearing, however, these senses are almost invariably studied in isolation. The real world is multisensory. This project will enhance our knowledge of how ageing impacts on the interpretation of visual and auditory information regarding the timing and location of objects; essential precursors to many real world tasks, for example: driving, interpreting speech, and hazard avoidance. This knowledge is essential for the optimisation of audio-visual environments for the elderly, and for the development of tools to improve performance in the presence of sensory decline due to age-related eye disease.

FT0991646 Dr J Moss

Approved Project Title	**Climate Justice**
2009 :	$ 76,198
2010 :	$ 151,190
2011 :	$ 151,190
2012 :	$ 151,190
2013 :	$ 74,992
Primary RFCD	4401 PHILOSOPHY
Administering Organisation	The University of Melbourne

Project Summary

The project will offer significant insights into the effects of climate change and adaptation policy on the key area of rural well being and energy use. The project will be able to gauge whether current and proposed carbon trading schemes are just and how in particular, Australia's climate policy interacts with the Pacific region. In addition, the project will also consider the important political issue of whether democratic participation in the formation of climate policy is required and in what ways.

FT0990727 Prof D Nesic

Approved Project Title	**Networked control systems: harnessing an emerging technology**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2301 MATHEMATICS
Administering Organisation	The University of Melbourne

Project Summary

Drive-by-wire cars, fly-by-wire aircraft and sensor/actuator wireless networks in process and manufacturing industries are just a few examples of emerging networked control technologies that are currently reshaping our world. These technological advances have a vast potential to reduce the cost, weight and volume of engineered systems, simplify their maintenance and installation and their novel architectures and features may enable us to address significant environmental and socio-economic challenges, such as an increased demand for energy and other limited resources.This project will develop a systematic design methodology for networked control systems that will be essential in ensuring that its full potential is exploited.

FT0991245 Dr MA Perugini

Approved Project Title	**Molecular evolution of a model oligomeric enzyme from bacterial extremophiles**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2505 MACROMOLECULAR CHEMISTRY
Administering Organisation	The University of Melbourne

Project Summary

The national benefits of this research program include insight into the sustainability of marine microorganisms that play an important role in Australia's diverse ecosystem, the development and applications of frontier technologies including high-performance computing on the world's largest supercomputer facility for life science research, and knowledge impacting on the discovery of novel antibiotics that target pathogenic bacteria, like Golden Staph. This program will also train several young Australians in highly sought after skills, including bacteriology, biophysics, enzymology, molecular biology, molecular modelling, protein chemistry and structural biology.

FT0990350 Dr SA Ralph

Approved Project Title **Transfer ribonucleic acid (tRNA) synthetases as drug targets in Plasmodium falciparum**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 3204 MEDICAL MICROBIOLOGY

Administering Organisation The University of Melbourne

Project Summary
Malaria is a major worldwide infectious disease. The disease kills around 2 million people every year, and current drugs are increasingly failing due to parasite drug resistance, creating an urgent demand for new drugs, that inhibit different targets. The Fellow will study a new class of parasite drug targets, the transfer ribonucleic acid (tRNA) synthetase enzymes to find novel inhibitors. Compounds blocking these enzymes may lead to new drugs to combat malaria.

FT0990628 Dr CA Reid

Approved Project Title **Understanding the neuronal mechanisms underlying inherited epilepsies**

2009 : $ 82,300
2010 : $ 164,600
2011 : $ 164,600
2012 : $ 164,600
2013 : $ 82,300
Primary RFCD 3207 NEUROSCIENCES

Administering Organisation The University of Melbourne

Project Summary
Epilepsy is a serious disease that impacts severely on individuals and the community as a whole. Conservative estimates suggest a financial cost of more than $2 billion per annum. Drug treatment for this disease is often not adequate. Recent advances have allowed scientists to determine mutation in human genes that cause epilepsy. New models of epilepsy based on this knowledge will allow us to better understand what causes epilepsy enabling us to devise new and potent therapeutic strategies to treat the disease.

FT0990539 Dr TA Reuter

Approved Project Title **Religion and Spirituality in the Contemporary World: An Indonesian Case Study**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 3703 ANTHROPOLOGY

Administering Organisation The University of Melbourne

Project Summary
Religious extremism in Indonesia became a major security concern for Australia after the Bali bombing. Research thus focused on the networks of small and rather marginal Islamic radical groups such as Jemaah Islamiyah (JI), while the broader national and international trends that give rise to this and other, more moderate and popular new forms of religiosity remained unexplored. This emphasis on extremism contributed to a stereotyping of Islam as intransigent, and of multi-ethnic and multi-religious Indonesia as an Islamic nation. The current project will deliver a more balanced appraisal of the impact of resurging religiosity in our region by focusing on the pluralistic and relativistic religious attitudes more representative of Indonesian society today.

FT0991296 Prof A Scott

Approved Project Title	**Incentives and performance in the health care system**
2009 :	$ 90,078
2010 :	$ 180,157
2011 :	$ 180,157
2012 :	$ 178,507
2013 :	$ 88,428
Primary RFCD	3402 APPLIED ECONOMICS
Administering Organisation	The University of Melbourne

Project Summary

Changes in financial incentives for health care providers will have direct effects on their behaviour, which in turn influences patients' health outcomes, quality of care, and access to health care for the population. The research will provide a richer understanding of the effects of incentives, and will influence policy on the design of incentives for health care providers in Australia. Changes in incentives will ensure patients receive more appropriate, higher quality, and less costly health care, in the most appropriate settings, and delivered by the most appropriate health care providers. This will have direct effects on population health and well-being and the capacity of individuals to lead healthy and productive lives.

FT0991385 Dr Y Tan

Approved Project Title	**Real time optimisation by extremum seeking control and learning control**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2301 MATHEMATICS
Administering Organisation	The University of Melbourne

Project Summary

Optimal control technology provides the systematic design of systems that exhibit optimal behaviour, such as maximal productivity, best efficiency, minimal cost and best quality. Real time optimisation finds the solution of the optimal control in real time, relaxing requirements on the system knowledge. The proposed research will build on Australia's well-established strength in control and optimisation, and aim to establish within Australia world-leading expertise in real time optimisation theories and applications. This will have direct benefits to the Australian economy through various engineering applications ranging from vehicle dynamics to emissions reduction to manufacturing process to efficiency improvement of power generation systems.

FT0991326 Dr A Turpin

Approved Project Title	**Smart Algorithms Linking Medical Image Data and Measures of Dysfunction**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2899 OTHER INFORMATION, COMPUTING AND COMMUNICATION SCIENCES
Administering Organisation	The University of Melbourne

Project Summary

Losing sight has a profound affect on a person's quality of life. Advances in devices that monitor vision have not been matched by advances in computer software that analyses data from those devices. This project will combine computer science, visual neuroscience and clinical expertise to devise algorithms and build software that will vastly improve clinician's abilities to diagnose and monitor vision loss. In turn, this will dramatically improve the chances of those with diseases such as glaucoma to preserve their sight into old age. Furthermore, outcomes from this project will inform the development bionic eye technologies, which will assist those with eye diseases such as retinis pigmantosa and age-related macular degeneration to see.

FT0991854	A/Prof B Vo	
Approved Project Title	**Optimal Control of Multi-Object System**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	2301	MATHEMATICS
Administering Organisation	The University of Melbourne	

Project Summary

Better understanding of multi-object systems developed from this research, in particular, optimal control algorithms for multi-object systems have several significant socio-economic benefits. Application areas that benefits from our research include aerospace applications such as radar, sonar, guidance, navigation, and air traffic control and non-aerospace areas such as image processing, oceanography autonomous vehicles and robotics, remote sensing, and biomedical research. The sensor network discipline also stand to benefit from the understanding of multi-object system and control framework.

The Walter and Eliza Hall Institute of Medical Research

FT0992317 Dr JG Beeson

Approved Project Title **Identifying the major targets of protective antibodies against malaria**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 3210 CLINICAL SCIENCES

Administering Organisation The Walter and Eliza Hall Institute of Medical Research

Project Summary
This project aims to understand how immunity to malaria develops and to use this knowledge to develop effective vaccines against malaria. The development of a malaria vaccine would be of great value in Australia's region where malaria is a leading cause of death and illness and impairs economic development. The project will advance our knowledge of how the immune system fights infections and will contribute to building Australia's strength in infectious diseases research and developing strategies to combat important infections. The project will help build and maintain expertise in developing vaccines in Australia and the approaches used and knowledge gained will be applicable to understanding and combating other important infections.

FT0992105 Dr PE Czabotar

Approved Project Title **Structural investigations into the regulation of programmed cell death**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Organisation The Walter and Eliza Hall Institute of Medical Research

Project Summary
One in three men and one in four women in Australia will develop cancer by the age of 75 at current incidence rates. At its heart, cancer is a disease of uncontrolled cell proliferation. One of the body's main defence mechanisms against excess cell proliferation is Programmed Cell Death, a process which becomes dysfunctional in cancer cells. This work will provide three dimensional images of the machinery that controls Programmed Cell Death. This information is critical for the development of drugs designed to re-initiate Programmed Cell Death in cancer cells.

FT0992164 Dr A Kallies

Approved Project Title **Transcriptional and epigenetic regulation of terminal lymphocyte differentiation and alterations of the same that lead to leukemia.**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2702 GENETICS

Administering Organisation The Walter and Eliza Hall Institute of Medical Research

Project Summary
In the developed world infection diseases are the number three killer behind heart disease and cancer, and huge financial effort is put into treatment and prevention. Despite this, results have often been disappointing. One cause of these poor outcomes is the lack of knowledge of how effective immune responses are generated. This project aims to better understand the processes that control the generation of protective lymphocytes. It will deliver information that may enable a more targeted approach to vaccine-development and treatments of infections. As defective differentiation can also be a cause of leukemia it may also lead to targets of cancer treatment.

FT0992257	Dr A Uren
Approved Project Title	**Unraveling the genetic networks of cancer development.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2702 GENETICS
Administering Organisation	The Walter and Eliza Hall Institute of Medical Research

Project Summary

Cancer causes nearly 30% of all deaths in Australia and the aging of our population means that its incidence will increase for the foreseeable future. The past two decades of cancer research have yielded great advances in identifying the genetic mutations that contribute to cancer, but our understanding of how these mutations cooperate to transform a healthy cell into a tumour cell remains limited. High-throughput genomic analysis of DNA from large numbers of tumours is essential to identify and understand the combinations of cancer mutations that are most deadly. Such studies can form the basis for developing better diagnostics and new treatments for patients whose tumours are resistant to current therapies.

Queensland

Griffith University

FT0991213 Dr KT Andrews

Approved Project Title	**New drugs for malaria that target histone deacetylases**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2703 MICROBIOLOGY
Administering Organisation	Griffith University

Project Summary

There is no vaccine for malaria and current drugs are failing, contributing to millions of malaria-related deaths each year. The aim of this project is to develop new drugs to address this significant global health issue. This project will focus on drugs that act in novel ways to existing malaria drugs by targeting enzymes that are involved in altering gene expression in the parasite. These kinds of enzymes are recognised drug targets in other diseases such as cancer. The outcomes of this project will include advances in malaria drug development that build on Australian drug discovery efforts, seeding further funding opportunities from industry and other sources and contributing research training and capacity building in Australia.

FT0991574 Dr BA Buchan

Approved Project Title	**A Colonial and Conceptual History of Asymmetric Warfare and Security**
2009 :	$ 64,540
2010 :	$ 133,380
2011 :	$ 133,640
2012 :	$ 137,768
2013 :	$ 72,968
Primary RFCD	3601 POLITICAL SCIENCE
Administering Organisation	Griffith University

Project Summary

War and terrorism feature prominently in popular, political and scholarly perceptions of Australia's colonial past and its geopolitical future. Our understanding of what constitutes war and terrorism emerged from a long colonial and conceptual history of Western international and political thought. The national and community benefits of this program of research derive precisely from its ability to link the uniqueness of Australia's colonial history to its global context, and to use both to provide new insight into current debates on terrorism and security that are integral to Australia's capacity to interpret itself to the rest of the world.

FT0990547 Dr C Chen

Approved Project Title	**Forest ecosystem diversity, function and service in response to perturbations: the key regulatory role of biogeochemical cycling**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3001 SOIL AND WATER SCIENCES
Administering Organisation	Griffith University

Project Summary
The natural and anthropogenic perturbations such as elevated atmospheric carbon dioxide (CO2), nitrogen(N) deposition, fires and land contamination have transformed much of the land surface on the earth and significantly modified terrestrial biogeochemical cycles in the past century. This project seeks to develop and apply novel nuclear magnetic resonance spectroscopy, isotopic and bio-molecular techniques to examine the key role of interactive biogeochemical cycles of carbon and major elements (N, Phosphorous) in regulating forest ecosystem responses to these perturbations. This project will result in improved mitigation and adaptation strategies for such perturbations, thereby restoring and sustaining forest ecosystems and conserving biodiversity in natural ecosystems.

FT0991557 Dr SM Dennison

Approved Project Title	**What about the children? A study of the intergenerational consequences of paternal incarceration**
2009 :	$ 65,350
2010 :	$ 140,700
2011 :	$ 151,200
2012 :	$ 144,950
2013 :	$ 69,100
Primary RFCD	3904 LAW ENFORCEMENT
Administering Organisation	Griffith University

Project Summary
Parental incarceration may have a profound and detrimental effect on children, heightening risk of offending and extreme disadvantage. The proportion of children affected is certain to increase as prison populations continue to grow. This research will identify policies and prevention strategies that will interrupt the cycle of disadvantage for children of prisoners and prevent social exclusion. Significant cost-savings and prevention of victimisation could result from effectively targeting this high-risk population, reducing risk of offending and increasing the young person's ability to contribute meaningfully to society. Appropriately timed programs can deliver a range of long-term benefits for children, families and communities.

FT0991711 Dr JM Elias

Approved Project Title	**The Gender Politics of Global Economic Competitiveness in Southeast Asia**
2009 :	$ 85,750
2010 :	$ 171,550
2011 :	$ 171,200
2012 :	$ 166,550
2013 :	$ 81,150
Primary RFCD	3601 POLITICAL SCIENCE
Administering Organisation	Griffith University

Project Summary
States such as Malaysia face similar economic challenges to Australia - for example maintaining economic competitiveness in the face of rising competition from low(er) wage labour countries (especially China), maintaining and enhancing a competitive ICT infrastructure and building successful and sustainable technology policies. Critically assessing the role that women and the family can play in Malaysia's attempts to transition to a more knowledge intensive economy will invariably open up policy lessons for Australia.

FT0991003 A/Prof SW Smallbone

Approved Project Title	**Testing theoretical propositions concerning the onset and progression of child-sex offending, and field testing a new sexual abuse prevention model**
2009 :	$ 97,732
2010 :	$ 196,248
2011 :	$ 191,692
2012 :	$ 183,646
2013 :	$ 90,470
Primary RFCD	3904 LAW ENFORCEMENT
Administering Organisation	Griffith University

Project Summary

Child sexual abuse poses serious threats to the health and well-being of Australian children. Data from a variety of sources indicate that, for a variety of reasons, Indigenous children are exposed to a heightened risk of sexual abuse. The present project is expected to lead to new discoveries about the causes of sexual abuse and to new evidence-based prevention methods both within Indigenous communities and in the wider community. The project will therefore contribute at a national level, as well as at a local community level, to broader efforts to improve the life chances of Australian children.

FT0991785 Dr K Su

Approved Project Title	**Model checking Multi-Agent System and its applications**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING
Administering Organisation	Griffith University

Project Summary

This research project directly addresses two of the Australian Government's four National Research Priorities: National Research Priorities 3 and 4. It will develop an enabling technology that is applicable to the development of safety-intensive and highly dependable software systems like medical equipment and airport controlling systems. The security protocol analysis technologies developed by this project can be useful for providing improved ways of military operation flows, and for making Australian security communication systems more dependable.

FT0991554 Dr S Zhang

Approved Project Title	**Development of a photoelectrochemical system based on Titanium dioxide nanotubes/boron doped diamond heterojunction for online water quality monitoring**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2914 MATERIALS ENGINEERING
Administering Organisation	Griffith University

Project Summary

The reuse of purified recycled wastewater (PRW) creates an additional water supply source and improves the sustainability of the overall water resources. This calls for online water quality monitoring systems to prevent potential water quality risk from organic contaminants in PRW and enable industries and government bodies to monitor and manage our water resources effectively. The success of the project would lead to a robust and reliable environmental monitoring system capable of online, real-time monitoring of organic pollutants and toxins, which will transform the existing water quality monitoring technology and directly benefit water resource management practice in Australia.

James Cook University

FT0990835 Dr GR Almany

Approved Project Title **Enhancing coral reef resilience to climate change**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	James Cook University

Project Summary

Coral reefs provide enormous economic, cultural and environmental benefits to Australia and its near neighbours. For reefs to remain healthy in the face of climate change and other stresses, they must be managed using best practices. Measuring how reef populations are connected and developing new tools to translate this knowledge into improved management can enhance fisheries, ensure reef health, and protect the livelihoods that reefs sustain. This research with partners from Europe, the United States of America, Papua New Guinea and Indonesia places Australia at the forefront of addressing the impacts of climate change and enhances its international reputation as the world leader in coral reef science and management.

FT0990652 Dr AH Baird

Approved Project Title **Testing the adaptive capacity of reef corals to rising sea surface temperatures**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	James Cook University

Project Summary

Australia's reefs are highly profitable resources. Tourism on the Great Barrier Reef contributes over $6 billion annually to the nation's economy and employs over 65,000 people. This proposal will produce world class research to quantify the extent to which corals can respond to climate change; a question central to managing these important resources. The research will also consolidate Australia's position as the leading nation in coral reef studies. Priority Goals addressed include Responding to Climate Change and Sustainable use of Australia Biodiversity.

Queensland Institute of Medical Research

FT0991222 Dr Y Li

Approved Project Title	**Development of new interventions and treatment for schistosomiasis morbidity control**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	Queensland Institute of Medical Research

Project Summary

Australia has played a lead role in Parasitology research. It is vital to remain at the forefront in combating the human and livestock diseases that parasites cause. Vaccine assessment and the large scale analysis of patient tissues are vital to the biotechnology, agriculture and pharmaceutical industries with outcomes leading to innovative strategies for control. Politically there is value as it is altruistic to develop new tools, technologies and treatments for the Asia/Pacific region. Economically, Australia will have first pass at developing the intellectual property arising. As well, the therapies would be developed locally to the benefit of Australia's human therapeutics industry and bio-reagent manufacturers.

FT0991022 Dr DR Nyholt

Approved Project Title	**Elucidating the molecular mechanisms underlying migraine and endometriosis via genetic dissection**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2702 GENETICS
Administering Organisation	Queensland Institute of Medical Research

Project Summary

The research aims to identify genetic variants underlying migraine and endometriosis susceptibility. Advances in the genetics of these common and painful disorders, including identification of genetic biomarkers (genetic variations that can predict disease susceptibility, disease outcome, or treatment response), will offer better rationales for scientific enquiry, helping the discovery of new treatment pathways and improve predictions of drug efficacy and safety. Thus providing improved treatment strategies for the individual sufferer and reduce the direct medical and indirect economic costs to individual sufferers as well as to the general community.

FT0991671 Dr DJ Richard

Approved Project Title	**The role of human single-stranded binding protein (hSSB1) in DNA damage repair and tumorogenesis.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	Queensland Institute of Medical Research

Project Summary

Cancer is a leading cause of disease related death world wide, accounting for over 13% of all deaths in 2007. Approximately 38,000 people died in Australia from cancer in 2005. Cancer results from a single cell losing a vital part of its genetic information, this results in the cell losing its normal programming and initiates a process of rapid growth and multiplication. This research project aims to look at the mechanisms that exist to prevent this initial loss of genetic material within an individual cell. It further aims to translate theses discoveries into the clinic, providing new tools for diagnosis and prognosis of specific cancers and to establish links with major pharmaceutical companies to develop novel anticancer therapies.

FT0990987	Dr DC Whiteman	
Approved Project Title	**Studies in cancer control**	
2009 :	$ 111,400	
2010 :	$ 222,800	
2011 :	$ 222,800	
2012 :	$ 222,800	
2013 :	$ 111,400	
Primary RFCD	3212	PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	Queensland Institute of Medical Research	

Project Summary

As life expectancy in Australia (and throughout the world) continues to rise, so will the burden of cancer escalate. Treating cancer after diagnosis is costly, and in many instances, unsuccessful. Preventive strategies promise to reduce the future cancer burden, yet our knowledge in this arena is limited by the lack of credible research as to what works and what does not. This application addresses this gap directly by conducting research into the control of two cancers which exact a growing toll in Australia and elsewhere. The work seeks to identify and understand the causal pathways to cancer, and then use this information to devise evidence-based strategies for cancer control.

FT0991360	Dr NR Wray	
Approved Project Title	**Dissecting the shared genetic architecture of psychiatric and psychological traits with application to prediction of genetic risk.**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	3210	CLINICAL SCIENCES
Administering Organisation	Queensland Institute of Medical Research	

Project Summary

Identification of the early phase of psychiatric disorders is considered critical for early intervention which is the essence of prevention. At present, the main obstacle to targeted early intervention strategies in psychiatric disorders is the non-specific nature of early stage symptoms. Many psychiatric disorders present with symptoms of depressed mood and anxiety in the early stages, yet best intervention treatments are dependent on the final (unknown) diagnosed disorder. Prediction of genetic risk is likely to make an important contribution for identification of individuals at risk of specific psychiatric disorders so that the best early intervention treatment can be administered.

The University of Queensland

FT0991479 Dr AM Abbosh

Approved Project Title	**Hybrid Imaging System for Breast Cancer Detection**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2917 COMMUNICATIONS TECHNOLOGIES
Administering Organisation	The University of Queensland

Project Summary

Due to the ever increasing number of breast cancer mortalities in Australia, there is an urgent need for an efficient and reliable diagnostic imaging system. This research utilises a novel method to build an imaging system, which is accurate and reliable in the early detection of tumours. The work of this fellowship will improve quality of life of Australian women and put us at the international forefront of research in medical imaging, enhancing our already significant international presence in the area. The project will potentially lead to valuable intellectual property for commercialisation opportunities besides strengthening key international collaborations.

FT0991611 Prof K Alexandrov

Approved Project Title	**High throughput engineering of genetically encodable fluorescent sensors of intracellular signalling networks**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2499 OTHER PHYSICAL SCIENCES
Administering Organisation	The University of Queensland

Project Summary

Understanding of biochemical processes in living organisms is central to biological research and drug discovery. At present, the field suffers from a chronic paucity of adequate observation methods. The proposed project represents an interdisciplinary effort to create approaches for real-time monitoring of complex cellular chemistries. This work will deliver novel technologies for use in diagnostics and drug development. It will provide vital information on the changes in cellular processes induced by malignant transformation, viral infection and aging. This work will generate both health and economic benefits for the community and have a positive impact on the international visibility of Australian biomedical research.

FT0991052 Dr H Baumgardt

Approved Project Title	**Advanced computer simulations of star cluster evolution**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2401 ASTRONOMICAL SCIENCES
Administering Organisation	The University of Queensland

Project Summary

The topic of this fellowship is dynamical simulations of star clusters using high-end graphics cards originally developed for the computer gaming industry. The proposed fellowship will thereby enhance Australia's capacity in the exploitation of high-performance computing and will give it a strong position in the new field of graphics card based simulations. The computer cluster built during the fellowship will also be an outstanding environment for the training of students. In addition, while Australia has a strong tradition in star cluster astronomy, it has so far not captured a leadership role in the theoretical analysis. The four years of this fellowship will allow it to establish a world-leading position in star cluster simulations.

FT0991525 Prof MW Blows

Approved Project Title **Genetical Genomics of Mutational Variance**

2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2702 GENETICS
Administering Organisation	The University of Queensland

Project Summary

Mutation is the ultimate source of all genetic variation. Understanding the nature of mutation, its frequency, the distribution of effects, and the forces of selection that remove mutational load from populations is therefore a central concern of genetics. The accumulation of mutational load both in endangered species and human populations, where the natural forces of selection tend not to operate, has the potential to create serious problems in these populations. The goal is to understand what types of mutations are targeted by selection at the gene expression level and why.

FT0991468 A/Prof R Cunnington

Approved Project Title **The human mirror system and the perception of others' actions**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3801 PSYCHOLOGY
Administering Organisation	The University of Queensland

Project Summary

This research will provide greater understanding of how the human mirror system operates for the perception of actions, a crucial first-step toward understanding disorders of action perception such as autism and apraxia. The research program will also contribute greatly to building national capacity in cognitive neuroscience research, using advanced brain imaging methods. The fellow actively encourages and mentors young scientists, organises advanced workshops that bring brain imaging researchers around the world to Australia, and builds international collaborations based around high-field brain imaging. The Future Fellowship will substantially enhance these activities, building capacity and enhancing Australia's reputation in cognitive neurosciences.

FT0991634 Dr GI de Zubicaray

Approved Project Title **The articulate brain**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3801 PSYCHOLOGY
Administering Organisation	The University of Queensland

Project Summary

Language is essential to human interaction, yet we know comparatively little about the mental processes involved and how they are represented in the brain, how genetic and environmental factors contribute to the development of language, or how effective treatments of language disorders work. The significance of this program of research lies in its capacity to enhance our understanding of a range of mechanisms responsible for a fundamentally human ability, and provide information that will ultimately inform clinical practice. In particular, new knowledge about the brain mechanisms involved in language processing and recovery will inform clinicians about the optimal choice of treatment to maximise outcomes for the individual patient.

FT0991283 Dr AF Dexter

Approved Project Title **Designed peptides as functional surfactants**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Administering Organisation The University of Queensland

Project Summary
Surfactants are essential in many applications for making oil-water mixtures, e.g. in dissolving drugs, extracting crude oil or spraying crops. However, chemical surfactants are toxic and can accumulate in the environment. This work will develop biodegradable surfactants that can be switched "on" and "off" as needed and do not cause toxicity to living organisms. One of many potential applications is in vaccines for use in remote Aboriginal communities. In these communities, skin infections from scabies and streptococcus are epidemic, and can lead to kidney failure and heart disease. A non-damaging skin cream based on the peptides could both treat short-term discomfort and deliver a vaccine to prevent long-term health consequences.

FT0990685 Dr M Fine

Approved Project Title **Changing Seas at Cellular to Cross-Ocean Scales**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2705 ZOOLOGY

Administering Organisation The University of Queensland

Project Summary
Australia relies greatly upon its rich natural environmental resources for goods, services and for economic growth (tourism, fisheries, and recreational industries). Climate change is one of the biggest threats to the natural marine environment. As the climate warms and oceans become more acidic, corals, the framework builders of reefs, experience unfavourable conditions. This project aims to better understand the processes by which ocean acidification and climate change affect corals, and to develop management tools for the mitigation of, and acclimation to, climate change. By so doing, this project will enable managers of Australia's Great Barrier Reef to better respond to the threatening challenges that climate change poses.

FT0991982 Prof MA Kendall

Approved Project Title **Optimising the body's immune response with a Nanopatch that delivers biomolecules to the skin**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 2915 BIOMEDICAL ENGINEERING

Administering Organisation The University of Queensland

Project Summary
The team is developing a new improved way to vaccinate against deadly infectious diseases such as influenza and malaria. They believe their Nanopatch technology will boost the power of seasonal influenza vaccination and could even solve vaccine shortages in an influenza pandemic. This is because the Nanopatch needs much less vaccine per person than a conventional syringe. They also predict that vaccines delivered with a Nanopatch will require less refrigeration than conventional vaccines and can be safely administered by individuals without medical training, making the benefits of vaccination accessible to more people more cheaply, even in remote areas.

FT0991606 Dr BG Knols

Approved Project Title **Novel control strategies for mosquitoes threatening Australia**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 2708 BIOTECHNOLOGY

Administering Organisation The University of Queensland

Project Summary
Increased global transport and human mobility have led to the spread and establishment of potential disease vectors and pathogens of public health importance in many parts of the world from which these were absent or had been eradicated. Aversion of this risk can be more effective when applying area-wide rather than focal (e.g. insecticide) control efforts. We will further the development of genetic and biological control tactics. We aim to reduce the risks posed by two important dengue-vectoring mosquitoes: the yellow fever and the Asian tiger mosquito. This will lead to environmentally friendly and sustainable mosquito control and protect the Australian population and its regional neighbours against the threats of mosquito-borne disease.

FT0990978 A/Prof MJ Monteiro

Approved Project Title **Transformer 3D Nanostructures: Stimuli Responsive Polymers**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Administering Organisation The University of Queensland

Project Summary
This research program will develop smart nanostructures that will be capable of producing high value added products using cheap polymer materials but achieving a much greater design capacity for end-use functions. The knowledge gained from this project will have potential applications in many areas where nanomaterials and polymers are used, including high strength coatings, conducting coatings for the electronic industry, drug and vaccine delivery devices, tissue scaffolds, nanosensors, and gene delivery. These polymer techniques will enable Australian Industry to significantly improve product performance by providing advanced features and capabilities previously unavailable.

FT0991722 Dr AJ Richardson

Approved Project Title **The resilience of marine ecosystems and fisheries to climate change: exploring adaptation strategies**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 3007 FISHERIES SCIENCES

Administering Organisation The University of Queensland

Project Summary
This project will underpin Australia's commitment to maintaining environmental biodiversity and sustainability in the face of climate change. The Fellowship investigates the consequences of climate change on marine plants and animals, harvested resources and ecosystem functioning by identifying vulnerable species and habitats. It will provide management advice on balancing biodiversity and economic output under climate change. This information is of immediate use to a range of stakeholders including national, state and local government agencies. With its focus on ecological, economic and social impacts, this project will put Australian scientists at the forefront of research on the adaptation of marine ecosystems to climate change.

FT0991576 Dr KJ Stacey

Approved Project Title	**Foreign DNA is a danger signal for mammalian cells**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3202 IMMUNOLOGY
Administering Organisation	The University of Queensland

Project Summary

This project investigates how cells normally respond to foreign DNA, and is relevant to understanding how the body fights infections, particularly by viruses. The results will help us to design more effective treatments for infectious disease. Studying responses to DNA will also promote the design of new treatments for the autoimmune disease lupus, and help improve technologies or treatments where DNA is introduced into cells or tissues. This includes gene therapy, new strategies for vaccination, and the production of proteins as drugs by biotechnology. The project will promote National Research Priorities in the areas of preventative healthcare, ageing well ageing productively, breakthrough science and new technologies.

FT0991552 Prof R Thomas

Approved Project Title	**Understanding and regulating autoimmune disease through the nuclear factor kappa-light-chain-enhancer of activated B cells (NF-kappaB) family transcription factor, v-rel reticuloendotheliosis viral oncogene homolog B (RelB).**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	3202 IMMUNOLOGY
Administering Organisation	The University of Queensland

Project Summary

This program is well-aligned with the national research priority: Promoting and Maintaining Good Health. The disabling conditions rheumatoid arthritis and type 1 diabetes affect over 1% of Australia's population. They are incurable, so disability and the need for treatment persist into old age and life expectancy is reduced. The program focuses on more effective and safer treatment, and future disease prevention, with immune therapy. This will have social and economic benefits to Australia. The research will advance Australia's intellectual leadership in Immunology, providing research training and career opportunities, and will lead to strong collaborations between basic scientists, clinicians and industry.

FT0991224 Dr C Yu

Approved Project Title	**Novel Synthesis and Bio-applications of Functional Macroporous Ordered Siliceous Foams**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2906 CHEMICAL ENGINEERING
Administering Organisation	The University of Queensland

Project Summary

This project will lead to advances in materials science and nanotechnology, providing high efficiency separation and purification for viruses or plasmid deoxyribonucleic acid (DNA), which are important in modern gene engineering for the treatment of genetic and acquired diseases. Application benefits also include developing a new protocol in the detection of trace amount proteins, which will afford a significant improvement in diverse fields such as health care. Through this project, novel macroporous materials will be fabricated using an economically and environmentally sustainable approach. These new materials will have unique structures and properties compared to conventional macroporous materials, advancing Australia's intellectual position in this discipline.

FT0990356	A/Prof J Zou	
Approved Project Title	**Understanding the role of catalysts in the growth of epitaxial semiconductor nanowires and their hierarchical heterostructures**	
2009 :	$ 111,400	
2010 :	$ 222,800	
2011 :	$ 222,800	
2012 :	$ 222,800	
2013 :	$ 111,400	
Primary RFCD	2914	MATERIALS ENGINEERING
Administering Organisation	The University of Queensland	

Project Summary

This Fellowship aims to comprehensively determine the role of catalysts during nanowire growth, solving the bottle-neck problem for growing device-applicable nanowires. In order to address this complicated scientific challenge, the project plans to collaborate with several world-leading researchers in different areas, such as growth, property measurements and modelling. The outcomes of this Fellowship will not only provide new science in terms of nanowire growth, but also provide guidelines for designing, developing and manufacturing nanowire-based nanostructures for future nanodevices and nanosystems. This is strategically important to place Australia at the forefront of developments on nanoscience and nanotechnology.

University of Southern Queensland

FT0990768	Dr N Mai-Duy	
Approved Project Title	**Direct simulation of composite microstructures in fluid and elastic media**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	2918	INTERDISCIPLINARY ENGINEERING
Administering Organisation	University of Southern Queensland	

Project Summary

The proposed innovative computational methodology will improve the design and performance of a wide range of mechanisms and industrial processes involving particulate inclusions, from engineering to biological applications. The resultant technology will make a contribution to maintain and enhance Australia's role in the development of advanced engineering materials through manipulating their composite microstructures. The proposed computational method will also lead to new opportunities for Australian companies that develop computer simulation software. Our researchers in computational mechanics will gain further opportunities to extend the advances this project will make.

South Australia

The Flinders University of South Australia

FT0990901	Dr DJ Keating	
Approved Project Title	**Identifying novel roles of disease-related proteins in the regulation of exocytosis and nervous communication.**	
2009 :	$ 85,800	
2010 :	$ 171,600	
2011 :	$ 171,600	
2012 :	$ 171,600	
2013 :	$ 85,800	
Primary RFCD	3206	MEDICAL PHYSIOLOGY
Administering Organisation	The Flinders University of South Australia	

Project Summary

This research aims to identify new molecules involved in regulating nerve communication and hormone secretion and which are relevent to human diseases and conditions including Type 2 Diabetes, Down Syndrome, Alzheimer's Disease and Huntington's Disease. The findings may provide new targets in the treatments of such conditions. This research is therefore of special relevance to National Research Priority 2: Promoting and Maintaining Good Health and especially to the sub-areas of this Research Priority 2: Ageing well, ageing productively and Preventative healthcare.

The University of Adelaide

FT0991420 Dr P Cassey

Approved Project Title **The evolution of species traits and spread during biological invasions**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

Administering Organisation The University of Adelaide

Project Summary
Exotic species pose a dire threat to Australia's biodiversity and natural resources due to the speed at which non-indigenous pests spread and the ecological and environmental damage they are capable of causing. The proposed research, on identifying traits associated with the spread of exotic vertebrate species and modelling the reproductive and dispersal parameters among different populations, will provide new knowledge and aid in developing innovative solutions for arresting the spread of exotic species. The validation of current models of spread will represent a major and timely addition to the national research capability on exotic species, and add substantially to Australia's reputation as a global leader in evolutionary ecology.

FT0991953 A/Prof SD Connell

Approved Project Title **Kelp forest ecosystems near and far: Putting a new theory explaining dynamic ecological systems to the test**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2707 ECOLOGY AND EVOLUTION

Administering Organisation The University of Adelaide

Project Summary
Few, if any, ecological models account for the biological diversity and observed vulnerability of ecosystems, from the molecular to the oceanic scale. This project aims to investigate kelp forests in ways that integrate previously disparate approaches to the study of ecosystems in order to prove the value of a novel framework for understanding how broad-scale and local phenomena interrelate to maintain the diversity and function of ecosystems or to provoke their decline, transition or collapse. This new conceptualisation of ecosystem processes will assist in forecasting the consequences of their management and the effects of external stimuli on normally robust systems.

FT0992331 Prof A Cooper

Approved Project Title **From Biodiversity to Health: Performing the first genetic audits of Australia**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 3008 ENVIRONMENTAL SCIENCES

Administering Organisation The University of Adelaide

Project Summary
This project will establish a new technology for the rapid measurement of environmental biodiversity, whether that be in natural resources such as forests, or pathogens in water supplies or hospitals. The method is fast, low-cost and will provide much higher resolution than current methods. It will provide some of the first ever comprehensive environmental impact assessments, permitting responsible resource development with major benefits to industry and the economy. It also provides a common platform for government agencies, from Department of Environment and Heritage to the Federal Police, and will create new tools to improve water management, biosecurity, forensics/policing and human health, as reflected by the wide range of industry partners supporting the project.

FT0990785 Dr DL Russell

Approved Project Title	**Regulation of tissue morphogenesis in reproductive function and metastatic cancer**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	3210 CLINICAL SCIENCES
Administering Organisation	The University of Adelaide

Project Summary

Infertility, endocrine and metabolic disorders and reproductive cancers are all increasing medical problems and principal contributors to morbidity and mortality in the Australian community. This research takes the novel approach of investigating the mechanisms of dynamic remodeling in reproductive organs. Novel hormonally controlled mechanisms of tissue remodeling unique to reproductive organs and cancers in adults have been discovered. The results are being applied to new medical alternatives for infertile patients and new diagnostics and therapeutics for patients with metastatic cancers. The information is also being applied to improve reproductive efficiency in animal production industries.

FT0991910 Dr CJ Sumby

Approved Project Title	**Internally decorated discrete Metallo-supramolecular Assemblies and infinite Metal-Organic Frameworks as molecular containers**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2599 OTHER CHEMICAL SCIENCES
Administering Organisation	The University of Adelaide

Project Summary

In the macroscopic world, containers are used to hold, provide physical protection, or create a modified environment for their contents. This project will result in the synthesis of novel molecular container materials that provide decorated internal surfaces capable of selectively binding chemical species. In addition to the breakthrough scientific benefits of establishing the fundamentals of these systems, the binding of chemicals, which are environmental contaminants, will provide the grounding for applications that will contribute to the national priority of 'Frontier technologies'. Furthermore, this research will lead to the training of the next generation of Australian scientists by quality international researchers.

University of South Australia

FT0990797 Dr EE Roughead

Approved Project Title	**Coverage with Evidence Development: Application to pharmaceutical reimbursement decisions**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3212 PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	University of South Australia

Project Summary
Some new medicines produce only a small improvement in health but have considerable costs. When these medicines are trialled on only small numbers of people, uncertainty results about the value of the medicine, which can create problems for decision makers. Funding medicines where there is uncertainty may lead to harm when medicines are later found to be unsafe, or waste millions of dollars when they are overpriced relative to effectiveness. Not funding medicines may disadvantage patients in whom the medicines are effective. Methods to enable access to medicines while reducing uncertainty will offer significant benefit to patients, clinicians and taxpayers.

FT0991338 A/Prof J Slay

Approved Project Title	**Data Exploitation for Critical Infrastructure Protection: Gathering Intelligence from Digital Evidence Collected from IT Networks and Process Control Systems.**
2009 :	$ 73,300
2010 :	$ 146,600
2011 :	$ 146,600
2012 :	$ 146,600
2013 :	$ 73,300
Primary RFCD	3904 LAW ENFORCEMENT
Administering Organisation	University of South Australia

Project Summary
This proposal addresses the National Priority of Safeguarding Australia and its results will serve as a major input into current Australian Federal Government and Defence initiatives in digital evidence collection and exploitation as part of process control system security. It will play a significant part in satisfying the Australian community that steps are being taken to safeguard national services and will develop techniques for protecting Australia against criminal or terrorist cyber attack on national services infrastructure. It will serve to develop niche Australian research expertise in this very specialised international field.

FT0991871 Dr CP Whitby

Approved Project Title	**Particles at Interfaces—Controlling Detachment**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)
Administering Organisation	University of South Australia

Project Summary
Small, solid particles affect the processes used by the Australian mining industry to recover precious metals and valuable minerals in ways that remain poorly understood. The outcomes of this project will make significant contributions to the fundamental understanding of the role of particles in emulsions and foams. The results will also ultimately transfer to, and have a substantial impact on, the pharmaceutical industry, which is poised to use nanotechnology to revolutionise drug delivery.

Western Australia

Curtin University of Technology

FT0991864 A/Prof TG Butler

Approved Project Title	**Improving health and criminal justice outcomes among Australia's offender population using a multi-disciplinary, all of government approach**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	3212	PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	Curtin University of Technology	

Project Summary

Offender populations comprise some of the most marginalised and socially excluded individuals in society. With this comes poor health, engagement in risk behaviours and reduced social outcomes. Violence, mental health, infectious diseases, and substance misuse are all characteristics of offender populations and have a huge impact on the wider community. The research programme linked to this application will collect new information aimed at reducing this impact and also develop a much needed intervention to reduce violent reoffending. Indigenous people are over-represented in the Australian prison system and will benefit from the work programme associated with this application.

Murdoch University

FT0991741 Dr M Bunce

Approved Project Title **An inventory of past biodiversity in Western Australia using ancient DNA.**

2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	Murdoch University

Project Summary

Fossil bones and museum skins are genetic time capsules that facilitate the exploration of Australia's past biodiversity. Travelling back in 'genetic time' provides important insights into how ecosystems functioned prior to the arrival of Europeans and the feral species that accompanied them. This funding will facilitate research into the genetic heritage of endangered WA species such as Woylies and Cockatoos. Native species face increasing pressures from climate change and invasive species. Compiling a genetic inventory of WA's past biodiversity will assist in developing scientifically sound conservation management responses. Such approaches are critically important if this biodiversity hotspot is to be preserved for future generations.

FT0991885 Dr VR Hadiz

Approved Project Title **State, Class and Islamic Populism: Indonesia in Comparative Perspective**

2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	3601 POLITICAL SCIENCE
Administering Organisation	Murdoch University

Project Summary

This study will provide a different basis for the assessment of Australian policy responses to Islamic radicalism in Indonesia. It will expose the social foundations of Islamic populism as a particular expression of political Islam and in so doing allow the Australian public and policymakers to understand the complex networks and relationships that generate and sustain Islamic populism, including its radical streams. It will enable an identification and differentiation of the social forces resisting or advancing democratic governance reforms in Indonesia. With this knowledge, programmes intended to help develop domestic pro-democratic coalitions to stem the rise of radical Islamic groups have a sounder social scientific base.

The University of Western Australia

FT0991289 Dr K Bekki

Approved Project Title	**Simulating the Magellanic system using new special-purpose computers for gravitational dynamics**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2401 ASTRONOMICAL SCIENCES
Administering Organisation	The University of Western Australia

Project Summary

Australia is renowned for its significant contribution to great progress in observational studies of the Large and the Small Magellanic Clouds. The proposed state-of-the-art computer simulations will provide new and better understanding of the Magellanic Clouds and thus stimulate public interest, in particular, the next generation of Australian scientists. The extensive comparison between results from fastest computers and world-class telescopes will make important breakthroughs in the areas of computational astrophysics and extragalactic astronomy and thus inspire many scientists and engineers in other fields.

FT0990301 Prof MJ Cassidy

Approved Project Title	**Engineering solutions for the next generation of offshore oil and gas infrastructure**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2908 CIVIL ENGINEERING
Administering Organisation	The University of Western Australia

Project Summary

Offshore extraction of oil and gas reserves is a key industry for Australia, annually contributing A$21 billion to the economy, and underpinning much of our prosperity. With reserves close to shore being exhausted and A$1 trillion of gas reserves (four times that already developed) known to be 'stranded' in deep and remote locations, the outcomes of the proposed research programme will help scientifically underpin the reliable design of the next generation of Australia's exploration and development infrastructure. It continues Australia's leadership in the field of offshore geotechnics and engineering, fostering tomorrow's engineering leaders and ensuring the future competitiveness of Australia's offshore oil and gas industry.

FT0991008 Dr A Filipovska

Approved Project Title	**Targeting mitochondrial dysfunction in disease**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	The University of Western Australia

Project Summary

Defects in mitochondria, the energy producing compartments within cells, lead to severe neurodegenerative diseases and contribute to the development of cancer. Treatment for such diseases caused by mutations in mitochondrial DNA remains unsatisfactory and mostly confined to supportive measures. The identification of proteins that regulate gene expression within mitochondria provides an unexplored resource of potential disease modulators and drug targets. This research will lead to new strategies in the design of improved anticancer drugs, which is an important Australian research priority that will promote and maintain good health, and provide potential commercial outcomes.

FT0991458 Prof C Gibson

Approved Project Title **Increasing the effectiveness of remote and cross-cultural collaborations in organisations**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 3801 PSYCHOLOGY

Administering Organisation The University of Western Australia

Project Summary
Minerals, oil and gas exports dominate the Australian economy, and the effective organisation and management of collaborative work spanning remote, dispersed, environmentally fragile and culturally sensitive locations in this industry is a key challenge. Findings will provide insight into the systems, processes, and skills that are required to collaborate in these domains, improving international competitiveness and global impact. Extensive efforts to interpret, synthesize and disseminate findings for scholars and non-scientists will also help inform educational agendas within industry and higher education to better prepare future collaborators.

FT0991249 Prof MA Griffin

Approved Project Title **A multilevel approach to leadership and dynamic capabilities in organisations**

2009 : $ 111,400
2010 : $ 222,800
2011 : $ 222,800
2012 : $ 222,800
2013 : $ 111,400
Primary RFCD 3502 BUSINESS AND MANAGEMENT

Administering Organisation The University of Western Australia

Project Summary
The quality of leadership in Australian organisations has an impact on business productivity, international competitiveness, and employee health and well-being. This research will support the development of leadership skills at different organisational levels. For senior leaders, these skills include developing strategy, allocating resources, and supporting innovation. For team leaders, skills include team coordination, employee support, and creating flexibility. By supporting interventions that build adaptivity and flexibility in organisations, the research will provide resources to support dynamic organisations to be better equipped to compete in demanding international markets.

FT0991631 A/Prof AN Luiten

Approved Project Title **The Quest for Ultimate Measurement Precision**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2404 OPTICAL PHYSICS

Administering Organisation The University of Western Australia

Project Summary
Precision measurement is the foundation upon which modern technological society is built. The highest quality measurement devices rely on stable clocks for their operation. The group's existing research has been aimed at developing some of the world's most precise measurement tools based on clocks and lasers. In parallel with this, other scientists have developed the means for exquisite control of light on the microscopic scale. By combining these two technologies, both of which lie at the extreme limit of precision, the group will develop a new generation of technology for fundamental science objectives as well as for industrial needs.

FT0992120 Dr CS Peacock

Approved Project Title **Genomic and molecular characterisation of a novel Australian leishmania pathogen.**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 2702 GENETICS

Administering Organisation The University of Western Australia

Project Summary
Leishmaniasis is the second most serious protozoal disease after malaria. This project will help characterise the first Leishmania species identified in Australia providing molecular tools to monitor the pathogen and a detailed assessment of any potential risk to human health. Comparative analysis with more pathogenic species will help identify genes and mechanisms that determine the progression of human disease leading to the potential identification of new drug and vaccine targets. The methodologies and expertise developed will be used will be available to other research groups working on infectious diseases.

FT0991113 Dr O Rackham

Approved Project Title **Engineering synthetic genetic codes**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2702 GENETICS

Administering Organisation The University of Western Australia

Project Summary
Large, high quality libraries of new drugs are absolutely essential resources to find new medicines. However, their use is restricted to a few pharmaceutical giants. We will engineer cells to make a wide variety of drug-like polymers, providing a drug discovery resource accessible to almost any scientific laboratory. As each cell could make a different polymer, billions of different potential drugs could be produced in a single tube. This technology provides an opportunity to put the future of drug discovery in the hands of the wider scientific community and new tools for Australian industries.

FT0991617 Dr L Wen

Approved Project Title **Real-Time Searches for Gravitational Waves and Identification of Their Radio and Optical Counterparts**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800
Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation The University of Western Australia

Project Summary
The proposed project will directly address the national research priority in development of frontier technologies, directly involve Australians in frontier work in gravitational wave astronomy that will result in break-through sciences and improve the chance of the international Square-Kilometer-Array project being sited at Australia. In addition, it will foster a close collaboration of top international researchers with an Australian team. The research at The University of Western Australia will attract students from around the world and serve to educate and inspire young people in Australia.

FT0991816 Prof DJ White

Approved Project Title	**Seabed engineering to unlock Australia's deepwater oil and gas resources**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2908 CIVIL ENGINEERING
Administering Organisation	The University of Western Australia

Project Summary

The development of offshore petroleum contributes $25 billion annually to the Australian economy. The majority of our $1 trillion of reserves are currently untapped, being in deep water, remote from shore. This Fellowship will generate a scientific understanding of the mechanics of seabed sediments when disturbed by infrastructure and ocean storms, and lead to procedures for designing the seabed pipelines and facilities needed to unlock Australia's isolated deep water petroleum reserves. These procedures will provide economic solutions for safely transmitting the hydrocarbons to shore. The resulting expertise will enhance Australia's global reputation in offshore geotechnics and engineering and raise the competitiveness of our petroleum industry.

Tasmania

University of Tasmania

FT0991727 Dr J Bailey

Approved Project Title	**Community and ecosystem consequences of adaptive evolution in Eucalyptus**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	University of Tasmania

Project Summary

There is emerging evidence across plant systems that genes in one species influence biodiversity and the services ecosystems provide, including soil fertility, carbon storage, and pollination. These results suggest that adaptive evolution in plants can lead to change in biodiversity and ecosystem function. If this finding proves to be true, results from this proposal might be critical to future decisions on the ecosystem consequences of landscape level selective events. There may be major implications for the rapidly expanding environmental and forestry plantings across Australia and temperate regions of the world where choice of seed source may have far reaching consequences.

FT0990521 Dr EF Hilder

Approved Project Title	**High performance chromatography based on nanostructured monolithic polymers**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2504 ANALYTICAL CHEMISTRY
Administering Organisation	University of Tasmania

Project Summary

The proposed project will generate highly significant, fundamental advances in separation science by developing new stationary phases and separation technologies suitable for the analysis of very complex samples which cannot be addressed by current methods. These technologies will be applied in a wide range of areas of national importance including pharmaceutical analysis and drug discovery; environmental, clinical, and forensic analysis; energy generation and foods. The project will also lead to very significant new intellectual property having extremely high commercial potential worldwide, and thereby generates the promise of considerable direct financial returns to Australia.

FT0991524	Dr KA Sanderson
Approved Project Title	**Epidemiologic and economic approaches to reduce the burden of depression and related chronic diseases in the workforce**
2009 :	$ 66,800
2010 :	$ 133,600
2011 :	$ 133,600
2012 :	$ 133,600
2013 :	$ 66,800
Primary RFCD	3212 PUBLIC HEALTH AND HEALTH SERVICES
Administering Organisation	University of Tasmania

Project Summary

Employers and governments alike are increasingly recognising that mental health impacts productivity, but many employers remain uninformed about the magnitude of the productivity consequences and what they can do about it. The ongoing individual and economic burden from depressive and anxiety disorders among working adults necessitates multi-disciplinary solutions. This series of studies will provide nationally and internationally significant new data to both inform understanding of the magnitude of the problem, and to provide cost-effective solutions to addressing it. Findings will directly inform workplace mental health promotion and prevention activities and be usable by employers, clinicians, and governments.

FT0990308	Dr PG Strutton
Approved Project Title	**Southern Ocean productivity and carbon dioxide (CO2) exchange under current and future climate regimes**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2604 OCEANOGRAPHY
Administering Organisation	University of Tasmania

Project Summary

This project will contribute to Australian ocean science expertise in key areas of data synthesis, satellite oceanography and the understanding of marine ecosystems' response to climate change. Collaborations will be developed and strengthened among Australian research institutions, and between Australia and the United States. The focus of the research is the Southern Ocean, which impacts global climate, and on which Australia's southern coastal ecosystems depend. The expertise and techniques developed will have application to other Australian regional seas.

Australian Capital Territory

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

FT0991968 Dr D Haylock

Approved Project Title **Bioreactors for manufacture of human platelets**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600

Primary RFCD 3210 CLINICAL SCIENCES

Administering Organisation Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Project Summary

Blood cell transfusion is a critical part of medicine that is supported by volunteer donors. Unfortunately, the demand for blood cells for transfusion far outstrips supply and therefore new strategies are required for manufacture of blood cells. This project will lead to the development of technology for manufacture of human platelets from stem cells. The systems devised will be applicable to a broad range of other blood cell types.

FT0991969 Dr SM Lucey

Approved Project Title **Advanced Interface Technologies for Computational Science & Simulation**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Project Summary

The project will research novel computer vision technologies that enable the next generation of visualisation portals for scientific collaboration. The development of new computer vision tools is key to truly natural human-machine interaction. The research outcomes of this project directly align with National Research Priority 3: Frontier Technologies. It supports four of the five relevant priority goals - Breakthrough Science, Frontier Technologies, Smart Information Use, and Promoting an Innovation Culture and Economy. Outcomes of this research are also relevant to Research Priority 4: Safeguarding Australia, and has direct applications to video surveillance technology. Significant commercial opportunities, including licensing and spin-offs exist.

FT0991892 Dr N Maeda

Approved Project Title **Mechanisms of nucleation with special emphasis on gas hydrates**

2009 : $ 85,800
2010 : $ 171,600
2011 : $ 171,600
2012 : $ 171,600
2013 : $ 85,800

Primary RFCD 2907 RESOURCES ENGINEERING

Administering Organisation Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Project Summary

Successful recovery of natural gas from hydrate reservoirs, flow assurance in natural gas pipelines, prevention of undesirable dissociation of methane hydrates in deep ocean sediments, sequestration of carbon dioxide and high density gas storage, all depend on timely formation and dissociation of gas hydrates. Controlled extraction of methane hydrates from, and simultaneous sequestration of carbon dioxide to, deep ocean sediments have been considered to be the 'next big thing' in energy and environment sectors. Sequestration of carbon dioxide is necessary not only for reducing the greenhouse gases in the atmosphere but also to stabilise the sediments once methane is extracted.

FT0991965	A/Prof S Nilsson	
Approved Project Title	**Mimetics and small chemical compounds for hemopoietic stem cell mobilisation**	
2009 :	$ 98,600	
2010 :	$ 197,200	
2011 :	$ 197,200	
2012 :	$ 197,200	
2013 :	$ 98,600	
Primary RFCD	3210	CLINICAL SCIENCES
Administering Organisation	Commonwealth Scientific and Industrial Research Organisation (CSIRO)	

Project Summary

This project will result in the design and synthesis of new chemical compounds that could be used clinically to help collect blood stem cells for bone marrow transplantation. For patients this will mean more effective and less painful ways to collect stem cells and better transplant outcomes. There is a large, ongoing international market for this type of drug and likelihood of significant financial benefit.

FT0991956	Dr M Wang	
Approved Project Title	**Long noncoding RNAs and their regulatory roles in epigenetic control of gene expression in plants**	
2009 :	$ 111,400	
2010 :	$ 222,800	
2011 :	$ 222,800	
2012 :	$ 222,800	
2013 :	$ 111,400	
Primary RFCD	2702	GENETICS
Administering Organisation	Commonwealth Scientific and Industrial Research Organisation (CSIRO)	

Project Summary

Epigenetic control of gene expression plays a critical role in development, environmental adaptation, stress response and disease resistance in plants, but its molecular basis remains largely unknown. The proposed study should contribute to the emerging field of epigenetics by discovering new regulatory noncoding RNAs involved in epigenetic mechanisms in plants. These new discoveries could potentially provide new opportunities and platforms for improving the performance, yield and quality of crop plants. The proposed study is therefore consistent with the national research priority goals such as breakthrough science, frontier technologies and promoting an innovation culture.

The Australian National University

FT0991820 Dr M Abbasi Shavazi

Approved Project Title	**Changing patterns of migration from Afghanistan with implications for Australia**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	3705 DEMOGRAPHY
Administering Organisation	The Australian National University

Project Summary

As a signatory to the UN Refugee Convention, a major location for the resettlement of refugees and a major player in the international system with a stated commitment to humanitarian issues, Australia is well placed to play a lead role in promoting more effective solutions to the plight of refugees. This study is designed to contribute to that objective through research of one of the world's most important refugee groups, the Afghans. It will also provide a better understanding of the security issues involved in refugee migration.

FT0991448 Dr OK Atkin

Approved Project Title	**Climate dependence of plant respiration in a warmer, drier world**
2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2704 BOTANY
Administering Organisation	The Australian National University

Project Summary

This research will greatly assist in predictions of future net carbon exchange that are necessary if Australia is to better manage its vegetation resources. Crucial to predicting future rates of net carbon exchange is an understanding of how drought and long-term changes in temperature impact on plant respiration. Using laboratory and field studies, this research will develop an understanding of how water availability and temperature impact on plant respiration of a broad range of economically important and ecologically relevant plant species. Equations will be formulated that allow modellers to better predict drought-dependent variations in plant respiration (and thus plant productivity), both now and in a future, warmer world.

FT0991007 Dr R Ball

Approved Project Title	**The charXive challenge and the clean coal quest: thermokinetic principles and methods for capturing and sequestering carbon dioxide.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)
Administering Organisation	The Australian National University

Project Summary

Article 6 of the Kyoto Protocol, which Australia signed in 2007, states that a transfer of carbon credits may only take place if the associated activity provides a reduction in emissions by sources or an enhancement of removals by sinks that is additional to any that would otherwise occur. Since biochar production reduces emissions from biomass decay and transfers oxidized carbon from the atmosphere to the inactive black carbon pool this project will contribute to the national effort in additional greenhouse gas abatements. The Australian Government is also committed to clean coal technologies, which are expensive. An economically viable method of capturing carbon emissions from electricity generators will result from this project.

FT0992193 Dr LD Bromham

Approved Project Title	**Exploring evolvability: its causes, consequences and practical applications in a changing environment.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2707 ECOLOGY AND EVOLUTION
Administering Organisation	The Australian National University

Project Summary

Are some species better able to adapt to a changing world? This question has been the focus of theoretical debate, but, as the scale of current environmental change becomes apparent, it has increasing practical importance, because it concerns the ability of biological communities to respond to climate change and the potential for agriculture to adapt a changing landscape. This project is the first of its kind, because it translates theoretical concepts into practical information needed for the development of salt-tolerant crops, new strategies for avoiding the growing problem of resistance in parasites, and new ways of detecting biological communities at risk of extinction and invasion.

FT0990591 Dr GR Clark

Approved Project Title	**The Power and Reach of Chiefly Societies in Fiji-West Polynesia**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 169,100
2012 :	$ 169,100
2013 :	$ 85,800
Primary RFCD	4302 ARCHAEOLOGY AND PREHISTORY
Administering Organisation	The Australian National University

Project Summary

Australia as a Pacific Ocean nation must understand and engage with its Central Pacific island neighbours. The 2nd millennium AD saw the growth of the powerful Tongan maritime chiefdom, arguably the most complex Pacific society of its time. The titles and individuals associated with the ancient Tongan chiefdom are politically prominent even today. Archaeological investigations will benefit modern regional relationships by establishing the antiquity and significance of prehistoric interaction. The benefit lies in building collaboration between Australian and Pacific Islander heritage organisations, contributing to Pacific scholarship and maintaining Australian expertise in the politically fractious Fiji-West Polynesia region.

FT0991933 A/Prof VS Craig

Approved Project Title	**Specific-ion effects in non-aqueous solvents. A test for Hofmeister.**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)
Administering Organisation	The Australian National University

Project Summary

A colloidal solution is a liquid that contains a finely dispersed material. The properties of these solutions are critical in many industrially important practices and in the everyday processes of life. Though not understood, it is observed that the type of salt in solution controls how the colloid behaves. Through a series of very careful experiments we seek to learn precisely how different salts influence the properties of a colloidal solution. This world-leading research will enable us to improve our fundamental understanding of colloids and thereby facilitate advances in topics as diverse as enzymatic action and minerals purification, ensuring Australia remains at the forefront of science in this field.

FT0990722 A/Prof TA Faunce

Approved Project Title **Fostering Safe Nanotechnology Research Focused on Critical Public Health Problems**

2009 : $ 74,175
2010 : $ 146,600
2011 : $ 145,100
2012 : $ 150,100
2013 : $ 77,425
Primary RFCD 3901 LAW

Administering Organisation The Australian National University

Project Summary
This Project builds upon the applicant's unique interdisciplinary research and collaborations to develop an innovative framework for improving occupational health and safety standards of nanotechnology research at the Australian National University and fostering its focus on critical public health problems such as biosecurity, food and water safety, pollution control and equitable access to health technologies.

FT0991462 Dr S Friel

Approved Project Title **Food systems, urban health equity and climate stabilisation: the need for a common agenda**

2009 : $ 98,600
2010 : $ 197,200
2011 : $ 197,200
2012 : $ 197,200
2013 : $ 98,600
Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

Administering Organisation The Australian National University

Project Summary
This research will help address two great contemporary human struggles - achieving health equity and climate stabilisation. Action concerned with economic and social policy, food systems and urban living will improve Australian and global health, and help reduce social inequity such that communities are better able both to cope with the impacts of climate change and to avert further damage to the global environment. Providing an evidence base that demonstrates, for the first time, what can be done in an integrated manner, will help mobilise political and popular support for a radical break with the compartmentalised and short term approach that dominates the political agenda at state, national and global levels.

FT0990895 A/Prof A Hassell

Approved Project Title **The Spectral Theory and Harmonic Analysis of Geometric Differential Operators**

2009 : $ 86,100
2010 : $ 172,200
2011 : $ 172,200
2012 : $ 172,200
2013 : $ 86,100
Primary RFCD 2301 MATHEMATICS

Administering Organisation The Australian National University

Project Summary
The project will involve mathematical research of the highest international standard in two very active and far-reaching field of mathematics: quantum chaos, and harmonic analysis. Progress in these fields will have implications in areas such as communications technology (e.g. image compression), quantum theory, and mathematical analysis (e.g. partial differential equations).

FT0990972 Dr W Hillier

Approved Project Title	**Developing an Essential Research Platform for the Molecular Engineering of Photosystem II**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2499 OTHER PHYSICAL SCIENCES
Administering Organisation	The Australian National University

Project Summary
Sunlight reaching the earth is used by plants and algae to drive photosynthesis and to store chemical energy. Possibly the most fundamental contribution photosynthesis makes to earth is to generate gaseous oxygen, the result of solar driven water-splitting chemistry. However, the mechanism behind water-splitting is not exactly known. In this proposal we will construct a new model cyanobacteria host to study water splitting. The host organism will be genetically modified to enable mechanistic questions of water oxidation to be tested and will provide new and pure forms of isolated protein. This model organism will provide team of international researchers with a remarkable tool new to study photosynthesis.

FT0991899 Dr MJ Hole

Approved Project Title	**Fusion Energy and the Physics of Burning Plasmas**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS
Administering Organisation	The Australian National University

Project Summary
The world faces a global energy crisis. Our standard of living, which is largely powered by base-load electricity supply, is unsustainable. Fusion power is a near zero greenhouse gas technology, which promises millions of years of base-load electricity, free from weapon proliferation. This promise has galvanised the international community to accelerate fusion development by committing to the next-step technology-enabling $16 billion experiment, International Thermonuclear Experimental Reactor (ITER). In anticipation of ITER, this fellowship will foster growth of Australian fusion research, and address a grand science challenge facing ITER: how do we maintain burn in the face of potentially damaging plasma instabilities? The answer will affect both ITER and the viability of fusion power.

FT0991709 Dr T Huber

Approved Project Title	**3D Structure determination of biomacromolecular assemblies from sparse data**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation	The Australian National University

Project Summary
This project has direct impact on pharmaceutical research: Biomacromolecular interactions are key points for pharmaceutical intervention and detailed structural knowledge of dynamic protein interactions can significantly accelerate drug development. Australia has invested in expensive instrumentation that can be used with new laboratory methods to obtain information on delicately balanced biomacromolecular interactions, and how they malfunction in disease. This project will provide a computational framework to increase the impact of this investment by integrating measurements from a range of novel technologies and developing understanding of changes in structure of large protein complexes in different functional states.

FT0990805 Prof P Lam

Approved Project Title **Quantum Opto-Mechatronics**

2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	2404 OPTICAL PHYSICS
Administering Organisation	The Australian National University

Project Summary

Quantum science is the precise study of the physical world in the nanoscopic realm. It accurately predicts a wide range of physical phenomena that have no classical analogues. Understanding and controlling these quantum phenomena will play an increasingly important role in transforming 21st century technologies. This fellowship aims to realise the potential of combining optical, mechanical, and atomic systems in the quantum regime to deliver quantum enhancement to a range of applications such as future-proofing information security via quantum cryptography and improving sensor technology with quantum measurement.

FT0991771 Dr RE Mahony

Approved Project Title **Foundations of Vision Based Control of Robotic Vehicles**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2903 MANUFACTURING ENGINEERING
Administering Organisation	The Australian National University

Project Summary

Automated and partially automated robotic vehicles are an emerging technology in society. The safety and performance of such systems depends crucially on their sensing and control algorithms. Vision sensing is one of the few sensor modalities that has the potential to adequately represent the complexity of a real world environment. By providing simple and effective vision based control algorithms this project develops Frontier Technologies for Building and Transforming Australian Industries by enabling a wide range of robotic vehicle applications, including aerial, submersible, and wheeled vehicles.

FT0992129 Dr JP Rathjen

Approved Project Title **Plant immunity to fungal and bacterial pathogens**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2702 GENETICS
Administering Organisation	The Australian National University

Project Summary

Since 2003, the Australian wheat crop has been threatened by a continuing stripe rust epidemic, which has required an additional production expense of at least $100 million per annum in fungicides. This Australian National University (ANU) - Commonwealth Scientific and Industrial Research Organisation (CSIRO) joint proposal aims to exploit the next-generation genome sequencing and associated bioinformatic and proteomic methods which are poised to revolutionise biology to investigate the wheat-fungus interaction. We will develop new effective approaches for environmentally benign stripe rust control based on new knowledge about how this fungus causes disease and avoids the wheat's immune surveillance system.

FT0991917 Dr J Renz

Approved Project Title **Engineering Artificial Intelligence: A Spatial Representation and Reasoning Perspective**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING
Administering Organisation	The Australian National University

Project Summary

Spatial information is important in areas of national interest such as mining and exploration, environmental monitoring and planning, emergency response, and defence. Mission control centres, for instance, receive different forms of spatial data from satellites, radar, or people on the ground. They have to process the input data and make intelligent decisions in a very limited time. Intelligent systems that are able to assist with processing different forms of spatial data efficiently and that offer reliable decision support are essential for improving the quality and reliability of such applications. This research enables future intelligent systems with these capabilities. This will directly benefit applications in areas of national interest.

FT0992251 Prof J Schaffer

Approved Project Title **The Language of Knowledge**

2009 :	$ 111,400
2010 :	$ 222,800
2011 :	$ 222,800
2012 :	$ 222,800
2013 :	$ 111,400
Primary RFCD	4401 PHILOSOPHY
Administering Organisation	The Australian National University

Project Summary

Knowledge is central to our lives. The way we attribute knowledge to others governs whom we trust, how we reason, what we do, and whether we succeed. The significance of this project consists in a deeper understanding of our attributions of knowledge, situated within the context of questions. This project offers the benefits of quality foundational research in an interdisciplinary venue. It connects to a range of areas of National Research Priority including An Environmentally Sustainable Australia, Promoting and Managing Good Health, and Frontier Technologies for Building and Transforming Australian Industries, insofar as all of these areas of National Research Priority are concerned with the acquisition and transfer of knowledge.

FT0992071 Dr L Smith

Approved Project Title **Cultural heritage and the mediation of identity, memory and historical narratives**

2009 :	$ 91,085
2010 :	$ 173,928
2011 :	$ 177,241
2012 :	$ 175,672
2013 :	$ 81,274
Primary RFCD	3101 ARCHITECTURE AND URBAN ENVIRONMENT
Administering Organisation	The Australian National University

Project Summary

Anxiety pervades many Western countries about the direction, nature and expression of social debate regarding community identities, and the social and cultural values underpinning them. In developing our understanding of heritage, and how it is used to construct and legitimatise certain social values and identities in certain national, cultural and social contexts, the research will inform the development of museum and heritage exhibition/interpretation policies. In examining the agency of heritage audiences, the research will inform and facilitate the abilities of museum and heritage professionals to effectively convey messages about contentious issues or make more informed interventions into social debates.

FT0991938 Prof S Srivastava

Approved Project Title	**Sentiments of the City: An Ethnography of Transformations in Urban Life and Intimate Relations in India**
2009 :	$ 90,754
2010 :	$ 179,599
2011 :	$ 175,087
2012 :	$ 168,437
2013 :	$ 82,196
Primary RFCD	3703 ANTHROPOLOGY
Administering Organisation	The Australian National University

Project Summary

Australian scholarship has a long and illustrious history of intellectual engagements with India. Through exploring two specific sites of the momentous changes taking place in Indian cultural and social life, viz. those in the spheres of intimacies and urban life, this project will reinvigorate this history. It will also add to our understanding of the effects of globalization upon a major -- and increasingly important -- Asian country. The findings will be of interest to anthropologists, historians, urban studies scholars, and scholars interested in changing ideas of gender and power in the current era.

FT0991407 Dr SM Whitney

Approved Project Title	**Enhancing plant photosynthesis by engineering the carbon dioxide (CO2)-fixing enzyme Rubisco**
2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600
Primary RFCD	2708 BIOTECHNOLOGY
Administering Organisation	The Australian National University

Project Summary

Improving the ability of crops to use water, sunlight and fertiliser more efficiently would have economic benefits for Australia and ease the environmental impacts associated with agricultural practices. Photosynthesis research has confirmed that such improvements are theoretically possible by enhancing the efficiency of the protein, Rubisco, which initiates the conversion of carbon dioxide into carbon compounds required for growth. The biotechnological research proposed here uses unique capabilities to improve our understanding of structural features in Rubisco that influence its assembly and functional efficiency in plants. This knowledge will pave the way for transplanting more efficient Rubisco into crops to improve their growth.

FT0990907 Dr GM Yaxley

Approved Project Title	**Redox conditions in the earth's upper mantle and the implications for kimberlite petrogenesis, diamond formation and mantle metasomatism.**
2009 :	$ 85,800
2010 :	$ 171,600
2011 :	$ 171,600
2012 :	$ 171,600
2013 :	$ 85,800
Primary RFCD	2601 GEOLOGY
Administering Organisation	The Australian National University

Project Summary

Diamonds are an important and high value commodity. Australia is the world's leading producer in terms of carats, due mainly to the massive Argyle deposit in northern Western Australia. Although diamonds form at great depths in the earth, they are accessible at the surface because they are transported by rare volcanic rocks, kimberlites and lamproites. Despite their importance the genesis of these rocks is poorly understood. This research will address this, providing scientific constraints on models for formation of diamonds and their host volcanics, which will directly inform the minerals industry's exploration models. There will be an economic benefit to the nation in terms of more successful outcomes from exploration expenditure.

University of Canberra

FT0991272 Prof S Mahalingam

Approved Project Title **Mosquito-borne viruses—how they cause disease and novel approaches to prevention**

2009 :	$ 98,600
2010 :	$ 197,200
2011 :	$ 197,200
2012 :	$ 197,200
2013 :	$ 98,600

Primary RFCD 2703 MICROBIOLOGY

Administering Organisation University of Canberra

Project Summary

In Australia, Ross River virus (RRV) is the most common insect borne virus that affects human health. There were more than 60,000 confirmed cases of RRV between 1993 and 2008. While not fatal, the disease is responsible for significant morbidity that has both social and economic costs for the individual, their family and the community. This project has several national benefits. It will elucidate whether there is an association between RRV strain and the severity of disease and if there are human factors that affect the seriousness of symptoms. Knowledge of both of these could provide new avenues for the design of prevention and treatment strategies.