

New South Wales

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 RFGD 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 strains 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 RFGD 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 recognising 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 RFGD 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.

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

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.

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

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.

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

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.

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

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.