

Queensland

Griffith University

DP0879382 A/Prof SW Baum; Prof WF Mitchell

Approved Project Title **A society divided: a multilevel approach for understanding socio-economic opportunity and vulnerability**

2008 : \$ 63,000

2009 : \$ 56,000

2010 : \$ 60,000

Primary RFCD 3701 SOCIOLOGY

Administering Organisation Griffith University

Project Summary

Despite a strong economy since the early 1990s uneven socioeconomic outcomes remain characteristic of Australian society. The costs to individuals, communities and society itself of these uneven outcomes are significant. Crucially policy needs understand the multi-dimensional nature of the drivers of these uneven outcomes so as to ameliorate the negative cost. In its integration of multilevel research methodologies this project aims to advance understandings of well targeted and effective policy interventions. It combines the skills and knowledge of researchers trained in economics and sociology, whose collaboration is a direct result of a linkage formed within an ARC research network.

DP0877908 A/Prof DJ Bernhardt

Approved Project Title **Relative free energies from nonequilibrium simulations: algorithms for determination of binding affinities, conformational states and phase transitions**

2008 : \$ 125,000

2009 : \$ 120,000

2010 : \$ 115,000

Primary RFCD 2506 THEORETICAL AND COMPUTATIONAL CHEMISTRY

Administering Organisation Griffith University

Project Summary

Leading edge research will enable state of the art techniques in statistical mechanics to be applied to practical problems. All processes in biological, chemical and physical systems are governed by their free energy landscape, often only accessible computationally. This project will lead to an advanced tool for free energy calculation. Advancement of emerging technologies in nanoscience, porous materials, membrane transport and drug design will benefit from this capability. The project therefore addresses the Priority Goal 'Breakthrough science'. A PhD student and an Early Career Research will be trained in research, gaining a range of valuable skills in theory and simulation.

DP0879687 A/Prof SR Billett; A/Prof GC Johnson; Dr EW Hirst; Dr SA Thomas; Dr CR Sim

Approved Project Title **Towards a transformative model: re-shaping transitions between school and post-school life**

2008 : \$ 45,000

2009 : \$ 45,000

2010 : \$ 45,000

Primary RFCD 3301 EDUCATION STUDIES

Administering Organisation Griffith University

Project Summary

This project aims to transform senior schooling to support students with limited levels of educational achievement secure productive transitions to lives beyond school. Starting with understanding what productive transitions means for past-students, the project engages with current students, teachers, school leaders, community organisations and employers to develop, trial and evaluate effective senior school experiences for those young adults. The researchers will work collaboratively with four school communities and local employers. Through engagements with students, workplaces and community settings outside of schools, the project will identify, promote and support achieving productive post-school transitions for these students.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0879469 Dr GL Bradley; Prof BA Sparks; Prof JR McColl-Kennedy; Dr NL Jimmieson; Prof D Zapf

Approved Project Title **Balancing the needs of customers and employees following service failure: A dyadic psychosocial approach**

2008 : \$ 67,000

2009 : \$ 80,000

2010 : \$ 75,000

Primary RFCD 3801 PSYCHOLOGY

Administering Organisation Griffith University

Project Summary

Service industries dominate Australia's economy. When service fails, conflicts frequently ensue, leaving customers and employees feeling angry and stressed. Consequent social and economic costs are enormous. This project addresses the research priority of promoting and maintaining good health by identifying ways in which customers and employees can resolve service problems such that participants' psychosocial needs are met and outcomes for both parties are optimised. Findings will strengthen Australia's social and economic fabric by providing strategies to increase customer satisfaction and reduce worker stress. Service firms will benefit from a more loyal customer-base, and reduced employee absenteeism, turnover and compensation claims.

DP0877515 A/Prof JG Butcher; Prof RE Elson

Approved Project Title **Contesting the sea: maritime territoriality in the Indonesian archipelago since 1850**

2008 : \$ 59,123

2009 : \$ 71,000

2010 : \$ 45,381

Primary RFCD 4301 HISTORICAL STUDIES

Administering Organisation Griffith University

Project Summary

This project will contribute to a deeper understanding of the seas that Australia shares with Indonesia. It will give policymakers and the general public a historical perspective on many questions related to maritime territoriality that concern Australia such as why the sea has become an important part of Indonesia's national identity, the impact that the drawing of boundaries in the Arafura and Timor seas has had on peoples who previously moved about freely in these waters, and why the Indonesian government has had so little control over what goes on within its maritime territory. The project will shed light on the tensions between Australia and Indonesia concerning the seas they share and lay the foundation for greater cooperation.

DP0877235 Dr NB Cartwright; A/Prof P Nielsen; Dr TE Baldock; Prof CW Letchford

Approved Project Title **Contribution of surf zone wind stress to storm surge inundation**

2008 : \$ 115,000

2009 : \$ 84,000

2010 : \$ 69,000

Primary RFCD 2604 OCEANOGRAPHY

Administering Organisation Griffith University

Project Summary

In the present era of climate change, storm surge forecasting is becoming an increasingly important part of disaster management planning. The responsible state and national agencies require accurate forecasting tools in order to best safeguard communities and plan infrastructure. Storm surges result from low pressure atmospheric conditions and wind forces on the ocean. However, the wind forces on the surf zone are unknown, with the result that inaccurate warnings are issued to communities. This project will lead to significant improvements in forecast accuracy by providing this missing data and by developing new models for the surf zone wind forcing.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0879253 Dr MJ Coster

Approved Project Title **Environmentally sustainable asymmetric synthesis: design and development of chiral hydrogen bonding organocatalysts**

2008 : \$ 115,000
2009 : \$ 114,000
2010 : \$ 109,000

Primary RFCD 2503 ORGANIC CHEMISTRY

Administering Organisation Griffith University

Project Summary

There is a pressing need for more environmentally sustainable and economically viable methods for asymmetric synthesis. This project aims to design, synthesise and evaluate new organocatalysts based on the principle of hydrogen bonding activation, a common feature of Nature's catalysts, enzymes. These inexpensive, non-toxic, air- and moisture-stable catalysts may prove to be more efficient, selective and have broader applicability than catalysts based on transition metals. The growing Australian pharmaceutical and biotechnology industries will benefit from the development of these new Advanced Materials and the training provided to young scientists in the sought-after fields of asymmetric synthesis and catalysis.

DP0879691 Prof K Daly

Approved Project Title **Innovative Justice Responses to Sexual Violence: A Global Analysis**

2008 : \$ 113,000
2009 : \$ 120,000
2010 : \$ 107,000
2011 : \$ 92,000

Primary RFCD 3904 LAW ENFORCEMENT

Administering Organisation Griffith University

Project Summary

Aligned with United Nations initiatives to end violence against women, Australian governments have emphasised that gender violence is a crime. This is correct, but the practical problem is what to do next. The project will benefit Australia by identifying innovative ways of responding to sexual violence that are practical, effective, and meaningful for victims' justice needs and economically viable for government. In taking a global perspective, more imaginative responses to violence in Australian Indigenous communities will be identified. In studying countries where Australia has a security and peacekeeping presence, the role of those forces in maintaining security for women and children can be enhanced.

DP0881331 Prof D DeLeo

Approved Project Title **Beyond psychopathology: Pathways to suicide in mentally well young adult males**

2008 : \$ 111,100
2009 : \$ 102,956
2010 : \$ 70,931

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

Administering Organisation Griffith University

Project Summary

Increased knowledge of risk factors for suicide among mentally well males can lead to better informed preventive health policies, earlier intervention and community education. The tragic impacts of suicide lead to long-term societal problems which result in disconnection and alienation, particularly for those who are left behind; findings from this study will assist development of initiatives aimed at increasing social connectedness and awareness. Also, males compose the predominant workforce in Australia and the costs saved as a result of effective prevention initiatives may be enormous, given that economic costs to suicide are estimated at 900 million dollars annually.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0877929 Dr Y Gao

Approved Project Title **Feature-Level Fusion with Incomplete Data for Automatic Person Identification**

2008 : \$ 68,000

2009 : \$ 68,000

2010 : \$ 60,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation Griffith University

Project Summary

This research addresses the current key problems in automated person recognition with incomplete data using multiple traits. The outcomes of this research will not only make a significant contribution to fundamental theory but also result in a wide range of crime and terrorism preventing applications including police database searching, access control, security monitoring and surveillance. They can be used either by police and law enforcement agencies, or at places of airport, government buildings, military facilities and even sensitive areas in offices and factories. It will help reduce crime, enhance the security of the nation to a world-advanced level, and generate new industry and export opportunities for Australian security industry.

DP0880372 Dr K Khanna

Approved Project Title **Understanding the role of the corepressor protein KAP1 in DNA damage response pathway**

2008 : \$ 136,000

2009 : \$ 134,000

2010 : \$ 131,500

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Organisation Griffith University

Project Summary

Defects in the DNA damage response pathway underpin many human genetic disorders and diseases, including cancer. A detailed understanding of this process has enormous implications for future medicine. Our characterization of a new player involved in DNA damage signalling will help in screening of inhibitors of this pathway that could be applied in chemo-and/or radiotherapy. The proposal will place Australia among the leaders in this internationally significant and highly competitive area of research leading to the creation of new compounds. Capture of this technology will create the opportunity for IP income, novel exports and new enterprises for Australia.

DP0878364 Prof P Mazerolle; Prof RK Wortley; Dr HL Johnson

Approved Project Title **Developmental Pathways to Intimate Partner Homicide: Understanding Individual and Situational Dimensions**

2008 : \$ 89,464

2009 : \$ 235,032

2010 : \$ 80,446

Primary RFCD 3904 LAW ENFORCEMENT

Administering Organisation Griffith University

Project Summary

Intimate partner homicide is a serious public health and safety issue. This project will have several benefits. The findings will extend understanding of pathways leading to partner homicide. The findings will contribute to improved decision-making models by police and social welfare agencies. With more valid information about the changing characteristics leading to partner homicide, the findings will foster more effective and efficient responses. Additionally, the findings will inform victims of partner violence of risks related to escalation toward fatal outcomes and should facilitate help seeking behaviour. Collectively, project findings should expand understanding, improve service delivery and save lives.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0881632 Prof AR Nesdale; Prof M Killen
Approved Project Title **School Bullies and Victims: The Influence of Children's Groups**
2008 : \$ 44,000
2009 : \$ 41,000
2010 : \$ 46,000
Primary RFCD 3801 PSYCHOLOGY
Administering Organisation Griffith University

Project Summary

School bullying is commonly displayed in Australian schools with serious effects for the victims. This project will enhance our understanding of the influence of children's social groups on school bullying and victimization. Increasing understanding of this devastating social phenomenon will provide a basis for developing focused intervention strategies that are directed at both bullies and victims. In turn, this will improve the learning context for all students, enhance the environment in which teachers work, and strengthen the fabric of communities by contributing to the development of harmony and cooperation between people.

DP0880324 A/Prof J Neuzil; Dr SJ Ralph; Prof RA Smith
Approved Project Title **Developing efficient cancer therapies by targeting of vitamin E analogues to mitochondria**
2008 : \$ 120,000
2009 : \$ 120,000
2010 : \$ 120,000
Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY
Administering Organisation Griffith University

Project Summary

We propose a new strategy of developing efficient anti-cancer agents. Results of this project will lead to establishing highly promising anti-cancer drugs and will open new approaches for the design of novel agents that efficiently kill cancer cells.

DP0877516 Prof KK Paliwal
Approved Project Title **Robust feature extraction for automatic speech recognition**
2008 : \$ 58,000
2009 : \$ 58,000
2010 : \$ 53,000
Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING
Administering Organisation Griffith University

Project Summary

Speech is perhaps the most natural and efficient mode of communication for humans. Therefore, it has always been a dream for many people to communicate with machines via speech. Significant advances have been made in the last five decades in the area of automatic speech recognition. Though the currently available speech recognisers work reasonably well in noise-free office environments, their performance deteriorates drastically when they are deployed in real-life situations due to the presence of background noise and other distortions. The problem of robust speech recognition will be researched in this project.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0877554 Dr S Poulsen; Prof CT Supuran; Prof PG Parsons; A/Prof SA Charman
Approved Project Title **Development of therapeutic agents that target carbonic anhydrase enzymes**
2008 : \$ 127,439
2009 : \$ 125,439
2010 : \$ 122,939
Primary RFCD 2503 ORGANIC CHEMISTRY
Administering Organisation Griffith University

Project Summary

This research will discover new chemical entities (compounds) that may lead to therapies for the treatment of cancer, glaucoma and malaria. The research underpins a mechanism to add value to our compounds before partnering with industry to transform the discoveries made here to deliverable therapies that could benefit the health of millions, thus offering a potentially high value contribution to the Australian economy. The experience and commitment of the multi-disciplinary network of researchers offers exceptional training and employment opportunities for tomorrow's scientists in techniques for discovery and characterisation of novel chemicals, and their interaction with disease targets.

DP0878560 Dr RT Sang; Dr D Kielinski; Prof B Lohmann; Prof KR Bartschat; Prof Dr JH Ullrich
Approved Project Title **Attosecond physics with ultra cold metastable neon**
2008 : \$ 120,000
2009 : \$ 120,000
2010 : \$ 120,000
Primary RFCD 2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS
Administering Organisation Griffith University

Project Summary

This research will generate new knowledge about how atoms behave when they are placed in strong optical fields. One of the phenomena which can be observed in these systems is the production of extreme ultraviolet radiation. This radiation has potential applications in areas as diverse as precision spectroscopy and structural biology. The research will use the recently ARC funded, state-of-the-art short pulse laser facility, ultra-cold atom trap technology and will provide excellent research training opportunities for higher degree students. The outcomes of the research project will enable Australian researchers to make significant contributions to the exciting field of attosecond science which is still in its infancy.

DP0881857 Mr AW Selth
Approved Project Title **Burma's Role in Shaping the Asia-Pacific Strategic Environment**
2008 : \$ 94,000
2009 : \$ 84,000
2010 : \$ 78,648
Primary RFCD 3601 POLITICAL SCIENCE
APD Mr AW Selth
Administering Organisation Griffith University

Project Summary

Australia is an active participant in global security affairs, not only as a close ally of the United States but also as an independent middle power with its own perceived sphere of influence. Developments in the strategic environment and the way in which countries attempt to influence state behaviours are central to our national security posture and alliance relationships. Also, the diverse security challenges in the Asia-Pacific region, such as those associated with so-called 'pariah' states like Burma, and the management of related transnational threats, are critical to the formulation and implementation of Australia's foreign and defence policies.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0877936 Dr EW Streed

Approved Project Title **A Photonic Interconnect for Trapped Ion Quantum Computing**

2008 : \$ 190,000
2009 : \$ 186,000
2010 : \$ 142,000

Primary RFCD 2404 OPTICAL PHYSICS

APD Dr EW Streed

Administering Organisation Griffith University

Project Summary

Computer networks are the foundation of our digital economy. Quantum computing offer revolutionary solutions to current limitations by taking advantage of quantum physics. Methods for factoring large numbers or searching unordered databases run with significantly fewer operations on quantum computers. Quantum encryption offers completely secure communication. There have been small-scale demonstrations of these technologies, and clear roadmaps exist for large-scale implementations. We will advance the state of the art by interconnecting light based quantum communication and trapped ion quantum computing together with phase Fresnel lenses, a micro-fabricated optic similar to a computer generated holographic plate.

DP0877463 Prof PS Tacon; Dr J Ross; Dr AG Paterson; Dr SK May

Approved Project Title **Picturing change: 21st Century perspectives on recent Australian rock art, especially that from the European contact period.**

2008 : \$ 155,000
2009 : \$ 150,000
2010 : \$ 150,000
2011 : \$ 110,000

Primary RFCD 4203 CULTURAL STUDIES

APD Dr SK May

Administering Organisation Griffith University

Project Summary

Australia, long known for its prehistoric rock art of world heritage value, will now also be known for its unique and diverse body of contact rock art. This project will benefit tourism in remote regions, many of which are or are near World Heritage Areas (eg. Kakadu, Uluru, Blue Mountains). Contemporary indigenous knowledge about important cross-cultural landscapes will be synthesised along with other new knowledge to assist with the protection of sites, the development of new management plans and applications to place particular groups of sites on a new UNESCO World Heritage rock art list. Aboriginal participants will receive research skills training and both individuals and communities will reconnect to significant remote places.

DP0878192 Prof E Whitelaw; Dr S Chong; Prof JJ McGrath

Approved Project Title **The role of epigenetics in the early gestational programming of adult phenotype by ethanol**

2008 : \$ 67,000
2009 : \$ 67,000
2010 : \$ 67,000

Primary RFCD 2702 GENETICS

Administering Organisation Griffith University

Project Summary

The concept of foetal programming is changing the way we think about the aetiology of complex disease in adults. Our studies would emphasise that adverse events during pregnancy can have long-term health implications, with concomitant social and economic consequences. In America, the prevalence of foetal alcohol syndrome is comparable with rates for Down syndrome. The Aboriginal community in Australia has been identified as a high-risk group. The knowledge gained from this project could aid in the development of screening strategies to predict the likelihood of disease developing later in life, providing an opportunity for presymptomatic healthcare.

Summary of Discovery Projects Proposals for Funding to Commence in 2008

DP0879808 Prof Y Xu

Approved Project Title **Nuclear Giants? Prospects for Nuclear Energy in China and India**

2008 : \$ 59,637

2009 : \$ 55,869

2010 : \$ 54,368

Primary RFCD 3601 POLITICAL SCIENCE

Administering Organisation Griffith University

Project Summary

Since the traditional path of energy consumption is not an option for China and India, nuclear energy is recommended as a clean and sustainable alternative. If either China or India or both start expanding their nuclear energy capacity, Australia has a direct interest as a major supplier of coal, natural gas and uranium. As two unconventional great powers, their ability to expand nuclear energy to an extent necessary to meet the challenges will have security implications in the region. Understanding the nuclear politics in these two countries is a necessary requirement for Australia.

DP0879856 Prof RR Yeo

Approved Project Title **Memory, notebooks and archives: making early modern science**

2008 : \$ 45,000

2009 : \$ 40,000

2010 : \$ 35,000

Primary RFCD 4301 HISTORICAL STUDIES

Administering Organisation Griffith University

Project Summary

What information should be memorized? To what extent should we rely on looking things up? Striking the proper balance between what we retain in memory and what is best checked in books, databases or archives is a preoccupation in public discussion. The project gives this issue an historical perspective, showing how priorities have changed from an emphasis on memory and personal notebooks to an acceptance of retrieval from external sources. Focussing on the period of the Scientific Revolution, it contributes to the understanding of our early modern European heritage - a field in which Australian scholars have a strong reputation.