

Summary of Discovery Projects Applications for Funding to Commence in 2006

Queensland

Griffith University

DP0664555 Prof GJ Bamber; Prof RD Lansbury; Prof TA Kochan

Approved Project Title **The Role of Employment Relations in the Competitive Strategies of Low Cost Airlines in Australia**

2006 : \$80,000

2007 : \$60,000

2008 : \$70,000

Primary RFCD 3502 BUSINESS AND MANAGEMENT

Administering Institution Griffith University

Project Summary

Employment-relations issues are key determinants of an airline's performance. Air transport is important for Australia. Australia has experienced failing airlines (e.g. Ansett, Compass); its most successful airline, Qantas, charges high fares and one of its priorities is improving its employment relations. This project will investigate airlines' critical success factors with special attention to the links between corporate strategies and employment relations. Besides investigating Qantas, it will link with MIT's Global Airline Industry Program to consider the transformation of Australia's aviation industry and, in particular, the innovations pioneered by low-cost airlines: JetStar and Virgin Blue.

DP0666833 Dr AJ Brown; Dr A Kay; A/Prof I Gray; Dr D Giorgas; Prof DJ Brunckhorst; Prof CA Saunders

Approved Project Title **Towards Sustainable Regional Institutions: The Nature, Role and Governance Implications of Contemporary Australian Regionalism**

2006 : \$160,000

2007 : \$100,000

2008 : \$130,000

Primary RFCD 3601 POLITICAL SCIENCE

Administering Institution Griffith University

Project Summary

This project is the first-ever national description of Australian regionalism, using insights from political and social science, constitutional theory and public administration. Built on successful pilots, this research will equip government, civil society, development agencies and regional policymakers with a region-by-region picture of the links between spatial variations in political culture, civic trust, social capital and challenges of regional institutional design. This new picture of Australian regional attitudes, expectations and possibilities will contribute directly to national environmental sustainability, sustainable urban and regional development, revitalised regional communities and a stronger social and economic fabric.

DP0667073 Dr RA Brown; Prof PD Renshaw

Approved Project Title **Researching Collective Argumentation in Mathematics and Science Classrooms**

2006 : \$80,000

2007 : \$55,000

2008 : \$50,000

Primary RFCD 3302 CURRICULUM STUDIES

Administering Institution Griffith University

Project Summary

The project will provide evidence-based pedagogical strategies for the reform of classroom teaching and learning in the crucial areas of mathematics and science. We will develop a form of pedagogy (Collective Argumentation) that enables students to be confident in deploying mathematical and scientific knowledge and skills in relation to the economic and social choices that they make in everyday contexts. Collective Argumentation can induct students into 'habits of mind and social practices' necessary for building an innovative learning community. This project will enable us to extend this innovative approach and to further develop its effectiveness.

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DP0666861 Dr M Fabbro

Approved Project Title Preventing genetic damage with BIX - a novel player in the DNA damage response pathway

2006 : \$95,000

2007 : \$85,000

2008 : \$85,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Institution 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 novel protein involved in DNA damage signalling will help in screening inhibitors of this pathway that could be applied in chemo-and/or radiotherapy. This 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.

DP0663401 Prof JM Giddings; A/Prof MK Robertson

Approved Project Title Access to Justice Without Lawyers: Understanding Legal Self-Help in Australia

2006 : \$70,000

2007 : \$35,000

2008 : \$80,000

Primary RFCD 3903 JUSTICE AND LEGAL STUDIES

Administering Institution Griffith University

Project Summary

While legal self-help is extensively practised, it is not well understood. Some people choose to do their own legal work while others have no option. The project will use case studies to identify the circumstances (in terms of context, user characteristics and available support) in which self-help is most likely to benefit the user as well as where such self-help should not be promoted. The project will benefit governments, courts, private companies, legal aid commissions, community legal centres and other agencies, all of which provide information services designed to assist people to handle law-related work themselves.

DP0665326 Dr MA Heazle

Approved Project Title Global Warming, Iraq, and the Washington Consensus: Three Case Studies on the Role of Specialist Advice in Policy Making

2006 : \$80,000

2007 : \$80,000

2008 : \$80,000

Primary RFCD 3601 POLITICAL SCIENCE

APD Dr MA Heazle

Administering Institution Griffith University

Project Summary

This project will provide a deeper understanding of critical global policy debates and Australia's role in such debates. Its analytical framework will suggest ways in which Australian engagement in this discourse can become more effective by focusing on the role of specialist advice in policymaking and the question of how the political process influences its interpretation and use by policy makers. The successful completion of this project ultimately will contribute to the development of more consistent and better quality policy outcomes.

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DP0663837 A/Prof LH Liew; A/Prof PA Creed; Prof CM Chu

Approved Project Title **Risk and Heterogeneity: AIDS and SARS Policymaking in China**

2006 : \$53,000

2007 : \$65,000

2008 : \$60,000

Primary RFCD 3499 OTHER ECONOMICS

Administering Institution Griffith University

Project Summary

This research will provide significant new knowledge on AIDS and SARS policymaking and implementation in China, which will help Australian policymakers and international agencies engage China on the very important issue of controlling the global spread of communicable diseases. Successfully engaging China is critical for the enhancement of global health security, because of China's enormous and increasingly internationally mobile population.

DP0667066 Dr AJ Moran

Approved Project Title **The Culture of International TV Format Flows: Two studies in its development and genesis**

2006 : \$40,000

2007 : \$45,000

2008 : \$40,000

2009 : \$40,000

Primary RFCD 4001 JOURNALISM, COMMUNICATION AND MEDIA

Administering Institution Griffith University

Project Summary

Global movements of cultural knowhow affect all creative industries, especially TV. As 'recipes' for making programs, formats have reorganized this trade along lines familiar in service industries. What though are the institutions, atmosphere, rituals, presuppositions and so on that organise it worldwide? Little is actually known about how the format market works, how it was innovated and how it has developed. This pioneering investigation will clarify understanding of the complex patterns of commercial and cultural linkage operating in the business. Its major outcome will be to suggest how Australia can take greater future advantage of this development.

DP0664691 Prof AR Nesdale; Prof MJ Lawson; Prof B Mullen; Prof K Durkin

Approved Project Title **Children's Intergroup Prejudice: The Roles of Cognitive Representations and Self-presentation.**

2006 : \$55,000

2007 : \$50,000

2008 : \$60,000

Primary RFCD 3801 PSYCHOLOGY

Administering Institution Griffith University

Project Summary

Research indicates that intergroup prejudice remains a problem in most Australian schools. For example, children as young as 5-6 years assign negative attributes to indigenous Australians and Pacific Islander children, they prefer not to play with these children, and they do not even want them living nearby. The proposed research will examine the possible basis of age effects in these attitudes. It will have a substantial national benefit because it will increase our understanding of this insidious social phenomenon and provide a basis for developing an intervention that will minimise a problem that has the potential to devastate community relations.

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DP0667162 Dr J Neuzil

Approved Project Title **Novel vitamin E analogues disrupt autocrine signalling and angiogenesis: Mechanistic studies and relevance to cancer management**

2006 : \$86,000
2007 : \$76,000
2008 : \$76,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Institution Griffith University

Project Summary

Breast and mesothelioma cancers present a severe problem in Australia and many patients succumb due to lack of appropriate treatment. We believe that vitamin E analogues, selective drugs efficient against cancer cells, hold a promise as future drugs against these two pathologies. Vitamin E analogues act by several mechanisms, including toxic effect on the cancer cells and also on cells that are necessary for efficient progression of tumours, such as cells of the malignant blood vessels. Results of this project will be used to prepare clinical testing of these highly promising drugs.

DP0667042 Prof PD Renshaw; Dr RA Brown; Dr EW Hirst; Prof Dr E Elbers; Dr M De Haan; Prof RN Saljo

Approved Project Title **Researching teachers' funds of knowledge and teaching repertoires in relation to student diversity.**

2006 : \$65,000
2007 : \$45,000
2008 : \$50,000

Primary RFCD 3301 EDUCATION STUDIES

Administering Institution Griffith University

Project Summary

Diversity in the Australian community has been recognised as a valuable national asset. This project will provide insight into how classrooms can be formed to value diversity among students and provide learning opportunities for all students whatever their background or needs. Students' experiences within schools provide them with a blueprint of the way communities operate, particularly in terms of how inclusion and exclusion are decided, how conflicts are dealt with, and how consensus between members of a group can be built. This project will help clarify how inclusive communities for students and teachers are formed and managed over time.

DP0666107 Dr K Wang; Prof R Topor; Prof G Antoniou

Approved Project Title **Towards automated and intelligent processing of web-based information**

2006 : \$73,000
2007 : \$63,000
2008 : \$65,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Institution Griffith University

Project Summary

The successful outcome of this project will enhance Australia's research reputation in an important, practical area of ICT, will contribute to emerging Web standards, will produce frontier technology that will eventually be of benefit to Australian industry, and will train several postgraduate students.

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DP0665078 Dr CA Wells

Approved Project Title **A Genomic analysis of macrophage differentiation: Epigenetic factors that determine transcriptional choices in a lineage dependant manner.**

2006 : \$100,000

2007 : \$77,000

2008 : \$77,000

Primary RFCD 2702 GENETICS

Administering Institution Griffith University

Project Summary

Our genetic information is fundamental to who we are, how we develop, & how we age. This project will build the research capacity of Australia's genome sciences, providing an analytical framework to describe & study the many products expressed from any single gene and to assess the function of genetic variation & test genome regulatory events. An immediate outcome is a better understanding of the regulation of our immune system. This approach will fuel the discovery of new signalling molecules & their effects on a population of cells, & likewise provides a novel approach to study the dysregulation of cell signalling pathways.

DP066516 Prof MS Wesley; Prof WT Tow; Dr BM O'Connor

Approved Project Title **The Politics of Alliance Affinity**

2006 : \$60,000

2007 : \$102,000

2008 : \$72,600

Primary RFCD 3601 POLITICAL SCIENCE

Administering Institution Griffith University

Project Summary

There is bipartisan consensus in Australia that the alliance with the US is the 'cornerstone' of Australia's security. However, many of the United States' alliances are increasingly being placed under strain by demographic and attitudinal changes, changing US force postures, and a shift in US policy on coalition military activities. Managing the alliance relationship with Washington will be a serious challenge for Australia's security policy makers. Australia also has significant security relationships with New Zealand and the UK. Understanding the domestic politics of their security policies will provide a much firmer basis for managing these aspects of Australia's international security.

DP0664154 Prof Z Xu; Prof S Linder; Prof R Oren; Prof JW Cairney; Dr C CHEN; Dr SE Boyd

Approved Project Title **Fingerprints of global climate change and forest management on rhizosphere carbon and nutrient cycling**

2006 : \$110,000

2007 : \$85,000

2008 : \$85,000

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

Administering Institution Griffith University

Project Summary

Using a series of innovative techniques, this project seeks to capture the excellent, exciting opportunities for studying impacts of global climate change (GCC) and forest management on plant-soil-microbe interactions in rhizosphere carbon and nutrient cycling, with two of the world's best GCC forest experiments in Sweden and USA and three long-term forest management experiments in Australia. The successful conduct of this multidisciplinary collaborative research will result in: improved understanding and management of forest ecosystems in response to GCC and effective biodiversity conservation in managed forests; and enhanced international reputation and expertise of the Australian scientists in the relevant research fields.

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DP0667184 Prof Z Xu; Dr C CHEN; Prof T Nasholm; Prof Dr HE Knicker

Approved Project Title **The nature and ecological functions of soil soluble organic nitrogen in contrasting forest ecosystems**

2006 : \$125,000

2007 : \$95,000

2008 : \$95,000

Primary RFCD 3001 SOIL AND WATER SCIENCES

Administering Institution Griffith University

Project Summary

This project employs a series of innovative techniques to investigate the dynamic nature and ecological significance of soil soluble organic nitrogen - one of the important nutrient pools, in contrasting tropical, subtropical and temperate forest ecosystems. The successful conduct of this project will lead to: a) better fertilization recommendation schemes, reduced ecosystem N losses, improved forest productivity and sustainability, minimised environmental pollution and improved water quality in forested watersheds; b) effective conservation of biodiversity in both managed and natural forests; and c) enhanced international cooperation and reputation of the Australian scientists in the relevant research fields.

DP0666561 Dr S Zhang

Approved Project Title **Development of Nanostructured TiO₂ Electrodes for Photoelectrocatalytic Degradation of Organic and Microbial Pollutants in Wastewater**

2006 : \$85,000

2007 : \$60,000

2008 : \$60,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Administering Institution Griffith University

Project Summary

Australia is one of the driest continents and re-use of water/wastewater has been an urgent issue. Photoelectrocatalytic oxidation processes based on nanostructured TiO₂ electrode are able to mineralize common aquatic organic and microbial pollutants. The proposed technology has the advantages of strong oxidation power and cheap production cost, and it is chemically stable, robust under UV illumination, and most importantly, environmentally friendly. The success of the project can place Australia in a leading position of developing cutting-edge TiO₂ nano-material-based photoelectrochemical technologies for environmental wastewater treatment and drinking water disinfection.