

**New South Wales**

**The University of Sydney**

**LP0989486** Dr BJ Ackermann; Prof DT Kenny; Dr TR Driscoll

**Approved Project Title** **Sound practice: Supporting sustainable careers in orchestral musicians through Occupational Health and Safety initiatives**

**2009 :** \$ 240,000  
**2010 :** \$ 118,000  
**2011 :** \$ 129,000  
**2012 :** \$ 91,000  
**2013 :** \$ 156,042

**Primary RFCD** 3210 CLINICAL SCIENCES

APA(I) Award(s): 2

**Collaborating/Partner Organisation(s)**

Australia Council for the Arts  
 Sydney Symphony Orchestra  
 The Queensland Orchestra  
 Melbourne Symphony Orchestra  
 Orchestra Victoria  
 Tasmanian Symphony Orchestra  
 Adelaide Symphony Orchestra  
 West Australia Symphony Orchestra  
 Australian Opera and Ballet Orchestra

**Administering Organisation** The University of Sydney

**Project Summary**

This project will produce new knowledge about musician health, well-being and injury prevention and management. It will establish the first injury surveillance system for musicians internationally and the first set of rigorous studies to evaluate the effectiveness of injury management interventions for orchestral musicians. We will establish musician-specific assessment protocols, practices and interventions leading to effective OHS policies, thus enabling global improvement in OHS in the music industry, preventing economic and personal loss from premature career termination due to injury, and assisting, through mentoring, the new generation of young orchestral musicians.

**LP0989881** Prof MA Adams; Dr TL Turnbull; Dr TN Buckley; Dr NG Phillips; Prof DT Tissue; Dr RW Vervoort; Dr CJ Hepplewhite

**Approved Project Title** **Testing climatic, physiological and hydrological assumptions underpinning water yield from montane forests**

**2009 :** \$ 260,000  
**2010 :** \$ 213,000  
**2011 :** \$ 204,000  
**2012 :** \$ 108,000

**Primary RFCD** 2704 BOTANY

APA(I) Award(s): 3

**Collaborating/Partner Organisation(s)**

ACTEW Corporation Limited

**Administering Organisation** The University of Sydney

**Project Summary**

Water collected in dams and reservoirs remains the mainstay water resource for Australian cities, towns and industry. Overwhelmingly, that water is collected from forested catchments where the water balance of forest stands is dominated by the amount of water used by trees. Characterising tree water use, its response to changing climatic and nocturnal conditions, and other aspects of stand hydrology, are crucial to our ability to predict and model future water yields. Working in the Cotter catchment near Canberra and the upper Kiewa catchment in north-east Victoria, we aim to help the agencies responsible for water and catchment management to improve the security of their forecasts of water yield and their on-ground management.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989387** Prof LA Baur; Prof A Bauman; Dr B Smith; Ms K Chapman

**Approved Project Title** **Food and drink company sponsorship of children's sport: publicity or philanthropy?**

**2009 :** \$ 87,000

**2010 :** \$ 118,000

**2011 :** \$ 85,000

**Primary RFCD** 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

The Cancer Council NSW

**Administering Organisation** The University of Sydney

**Project Summary**

Currently food and beverage company sport sponsorship in Australia has not been analyzed or regulated. The proposed research will incorporate both of these neglected areas by determining current patterns of food company sponsorship and by driving new programs and policies to support sporting organisations in promoting children's health in a consistent fashion. This study will challenge commonly held assumptions and social norms relating to the value of food company sponsorship, which is classically viewed as good corporate behaviour, but may in fact have adverse health effects.

**LP0989752** Prof BJ Eggleton; Dr S Frisken

**Approved Project Title** **Tailoring ultrafast pulses for Tb/s transmission with advanced modulation formats**

**2009 :** \$ 96,000

**2010 :** \$ 95,000

**2011 :** \$ 90,000

**Primary RFCD** 2917 COMMUNICATIONS TECHNOLOGIES

**Collaborating/Partner Organisation(s)**

Optium (Australia) inc

**Administering Organisation** The University of Sydney

**Project Summary**

Ultrahigh bandwidth communications technologies will play an increasingly important role in the social and economic development of Australia. The potential benefit is emphasised by the recent decision to build a broadband network valued at \$8 B that will link the vast majority of Australian homes and businesses by high speed optical fibre. In this project we will investigate innovative approaches for optical transmission of data at the ultrahigh bit rates required by these next generation networks. These approaches will be based on technology developed in Australia by the Partner Organisation Optium Corporation, leading to further growth opportunities within the Australian manufacturing operation of this company.

**LP0989190** Prof D Feng; Dr J Kim; Prof MJ Fulham; A/Prof S Eberl

**Approved Project Title** **A new generation of multi-modality biomedical image visualisations**

**2009 :** \$ 150,000

**2010 :** \$ 170,000

**2011 :** \$ 150,000

**Primary RFCD** 2801 INFORMATION SYSTEMS

**Collaborating/Partner Organisation(s)**

Royal Prince Alfred Hospital

**Administering Organisation** The University of Sydney

**Project Summary**

This research will overcome the urgent and significant burden in the routine clinical visualisation of multiple-modality biomedical image data, which are complex and exquisitely detailed from the new generation of high-resolution medical imaging scanners. Together with our industry partner RPA Hospital, we will produce 3D visualisation methodologies that will simplify and revolutionise the way biomedical data are visualised, analysed and interpreted by imaging specialists and disseminated to doctors and patients. Given the pivotal role that imaging plays in modern healthcare, this will improve diagnosis and assessment, and enhance Australia's leading position in the development of frontier technologies.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0990067** Prof J George; Dr JY Yang; Dr FC McKay; Dr V Suppiah; Dr DR Booth; Prof G Stewart; Dr M Bahlo

**Approved Project Title** **Functional Genomics to Predict and Enhance Response to Interferon**

**2009 :** \$ 145,000

**2010 :** \$ 110,000

**2011 :** \$ 115,000

**Primary RFCD** 2702 GENETICS

APA(I) Award(s): 1

APDI Dr V Suppiah

**Collaborating/Partner Organisation(s)**

Roche Australia LTD

**Administering Organisation** The University of Sydney

### Project Summary

The increasing number and huge cost impost of new therapies to health providers, both worldwide and nationally, has not yet resulted in a concomitant increase in strategies to optimise their use. Many of the new therapies are proteins (recombinant human proteins or humanised monoclonal antibodies). The improved use of one of Australia's most expensive commonly used protein drugs, pegylated interferon ribavirin (Peg-IFN-R), could potentially produce savings to the Pharmaceutical Benefits Scheme (PBS), and improve delivery of healthcare to thousands of Australians.

**LP0989594** Dr DJ Hawes; Prof BE Barnett

**Approved Project Title** **The HPA-axis as a marker for disruptive behaviour disorder subtypes in toddlers**

**2009 :** \$ 80,000

**2010 :** \$ 90,000

**2011 :** \$ 70,000

**Primary RFCD** 3212 PUBLIC HEALTH AND HEALTH SERVICES

**Collaborating/Partner Organisation(s)**

Karitane

**Administering Organisation** The University of Sydney

### Project Summary

Emerging neurobiological models of antisocial behaviour emphasise the role of the hypothalamic-pituitary-adrenal (HPA) axis in the onset of disruptive behaviour disorders (DBDs). Given the broad consensus that antisocial trajectories originate in the toddler years, this project will use cortisol measures of HPA-axis activity to identify the mechanisms through which developmental factors interact with parenting and family environment to shape persistent DBDs; this will be achieved by following toddlers with severe DBDs across a controlled trial of a parenting intervention.

**LP0989529** A/Prof TA Langrish; Dr C Loo; A/Prof HT See

**Approved Project Title** **Improving iron ore agglomeration by studying underlying mechanisms using experimental studies and dimensional analysis**

**2009 :** \$ 80,000

**2010 :** \$ 70,000

**2011 :** \$ 75,000

**Primary RFCD** 2906 CHEMICAL ENGINEERING

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

BHP-Billiton Technology

**Administering Organisation** The University of Sydney

### Project Summary

The revenue from Australia's iron ore exports is currently worth over \$15 billion. Over 80% of the shipped ores are fines (ie material smaller than 9mm), which have to be sintered to produce a lumpy product prior to reduction and smelting in iron making blast furnaces. An understanding of this process at the fundamental level is essential for enhancement of the nation's technological standing with our key trading partners - that is, to enable Australian iron-ore exporters to become 'knowledgable' suppliers. In addition, local iron-making industries will gain direct economic benefit from the improved sintering processes developed.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989201** Dr Q Li; Prof MV Swain; Mr R Pieper  
**Approved Project Title** **Design Optimisation for Fabrication of Ceramic Prosthetic Devices**

**2009 :** \$ 88,000  
**2010 :** \$ 110,000  
**2011 :** \$ 111,000

**Primary RFCD** 2915 BIOMEDICAL ENGINEERING

APA(I) Award(s): 1

### **Collaborating/Partner Organisation(s)**

Sirona Dental Systems

**Administering Organisation** The University of Sydney

### **Project Summary**

The project aims to develop computer aided design and fabrication for ceramic prosthesis. It will help establish a world-class biomedical instrumentation company having part of its research and development in Australia. The study will not only foster domestic research expertise, but also provide the local prosthetic community and biomedical industry with an opportunity to participate in further innovation of biomaterials, biomedical software and equipment. The outcomes will directly benefit the Australian prosthetic profession. Improvement in prosthesis restorative longevity for our increasing ageing population will support the national research goal of ageing well, ageing productively.

**LP0989687** A/Prof AJ Martin; Dr MJ Anderson; Dr R Gibson; Dr DR Sudmalis

**Approved Project Title** **The Role of Arts Education in Academic Motivation, Engagement, and Achievement**

**2009 :** \$ 120,000  
**2010 :** \$ 124,000  
**2011 :** \$ 100,000

**Primary RFCD** 3301 EDUCATION STUDIES

APA(I) Award(s): 2

### **Collaborating/Partner Organisation(s)**

Australia Council for the Arts

**Administering Organisation** The University of Sydney

### **Project Summary**

Research is needed to examine the impact of arts education on students' motivation, engagement, and achievement. Findings will help better direct funding and policy to arts education that makes a real difference in the academic and non-academic lives of children and young people. In the school context, findings will link directly to aspects of arts education and achievement motivation that enhance educational attainment, reduce disengagement, and instil greater satisfaction with school life. At a national level, findings will provide an evidence base for the integrated development of cultural, educational and social capital that better enable Australia to contribute to leadership and advocacy in the arts internationally.

**LP0989825** Prof AB McBratney; Dr B Minasny; Dr JJ De Gruijter

**Approved Project Title** **The auditability of soil carbon**

**2009 :** \$ 112,000  
**2010 :** \$ 112,000  
**2011 :** \$ 112,000

**Primary RFCD** 3001 SOIL AND WATER SCIENCES

APA(I) Award(s): 1

### **Collaborating/Partner Organisation(s)**

Environmental Earth Sciences International P/L

3D-Ag P/L

**Administering Organisation** The University of Sydney

### **Project Summary**

Agriculture has the capacity to capture and store carbon emission in soil. However there is no guarantee that the industry will be able to benefit from carbon offsets in the current and future carbon economy, because there is no accurate and efficient way of measuring soil carbon storage. This project will provide a methodology that can measure and monitor soil carbon storage on individual farms with statistical confidence, which is crucial to the agricultural industry taking part in the carbon economy.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989312** A/Prof D Muller; Dr G Iaffaldano; Dr C Heine; Dr P UNTERNEHR; Dr MI Ross

**Approved Project Title** Integrating deep-earth and surface processes for frontier-basin exploration

**2009 :** \$ 160,000

**2010 :** \$ 180,000

**2011 :** \$ 185,000

**Primary RFCD** 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

APDI Dr C Heine

APDI Dr G Iaffaldano

**Collaborating/Partner Organisation(s)**

TOTAL

Shell International Exploration & Production, Inc.

**Administering Organisation** The University of Sydney

### Project Summary

It is well-known that mantle convection has a profound influence on basin evolution, and the next step will be to quantify this relationship and provide the science that will make these concepts applicable to exploration. To do this, we will develop a workflow to link plate-reconstruction software with the mantle convection modelling to link plate motions mantle convection and the history of sedimentation systematically for the first time for frontier basin-scale applications. We will apply these emerging technologies to the evolution of basins in the Arctic borderlands frontier for resource exploration and on the Australian continent.

**LP0989786** Prof BD Roufogalis; Dr CC Duke; Dr VH Tran

**Approved Project Title** Ginger-based agents for delaying the onset of metabolic syndrome: type-2 diabetes and dyslipidemia

**2009 :** \$ 100,000

**2010 :** \$ 75,000

**2011 :** \$ 75,000

**Primary RFCD** 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

Buderim Ginger Pty Limited

**Administering Organisation** The University of Sydney

### Project Summary

We will determine the potential of ginger, a relatively safe and popular food and spice, to be developed as a preventative nutraceutical agent to delay the onset of type 2 diabetes and its complications. Our research will allow us to formulate a standardised ginger preparation of known mechanism of action that delivers safe and reproducible effects. The project has the capacity to reduce the debilitating effects of type 2 diabetes in the nation's health and its high economic costs, and to improve the quality of life of the Australian community, more than 1 million of whom are affected by this growing epidemic.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989241** A/Prof RJ Stancliffe; A/Prof C Bigby; Prof SA Balandin

**Approved Project Title** **Transition to retirement by adults with chronic disabilities: increasing community capacity**

**2009 :** \$ 108,000

**2010 :** \$ 111,000

**2011 :** \$ 117,000

**Primary RFCD** 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

AFFORD Australian Foundation for Disability

St John of God Accord

**Administering Organisation** The University of Sydney

**Project Summary**

This project will contribute to healthy, productive ageing by people with chronic disabilities. This group are living longer and will retire from their disability-specific supported employment and day program services. They then risk social exclusion, loneliness and associated poor health outcomes. This project will provide training and support to local community groups and voluntary work settings, to increase community capacity to support this group to participate actively in and contribute to their community in retirement. This will result in increased participation by this group and improvements in their well-being. Training resources developed by the project will be available to disability service providers nationally.

**LP0989291** Dr GA Sword; Dr S Sukkarieh; Prof SJ Simpson; Dr GM Brooker; Mr PA Spurgin

**Approved Project Title** **Autonomous tracking and predictive modelling of Australian plague locust migratory band movement**

**2009 :** \$ 120,000

**2010 :** \$ 120,000

**2011 :** \$ 100,000

**Primary RFCD** 2707 ECOLOGY AND EVOLUTION

**Collaborating/Partner Organisation(s)**

Australian Plague Locust Commission

**Administering Organisation** The University of Sydney

**Project Summary**

We will use advances in robotics, engineering, mathematics and biology to develop a new computer model for the control of one of the world's most damaging pest insects: locusts. Autonomous aerial robotic systems will be used to collect data on Australian plague locusts travelling in devastating migratory bands. These data on band movement and the behaviour of individual locusts within the band will be used to develop a particle physics-inspired predictive model of migratory band movement, which will be used to optimise locust control operations. Economic, environmental and social benefits will arise through reductions in the amount of time, money, manpower and insecticides necessary to combat locust outbreaks.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989129** Dr CR Warren

**Approved Project Title** **Understanding plant uptake of organic and inorganic nitrogen for optimal fertiliser application in forestry**

**2009 :** \$ 86,000

**2010 :** \$ 86,000

**2011 :** \$ 80,000

**Primary RFCD** 3006 FORESTRY SCIENCES

APA(I) Award(s): 2

**Collaborating/Partner Organisation(s)**

Forestry Tasmania  
Great Southern Limited

**Administering Organisation** The University of Sydney

**Project Summary**

Nitrogen (N) in soils occurs in both organic and inorganic forms. Plants can take up inorganic N - nitrate and ammonium - but, on average, these account for only 5% of the soluble N in soils. Recent evidence suggests that plants may be able to tap into some of the 95% of N that occurs in organic forms. We will investigate the importance of organic N uptake for two plantation Eucalyptus species by tracing the uptake of different N forms by bacteria, fungi and eucalypts. This information will redefine what is meant by 'available N' and will guide the development of a new test for soil N status.

**LP0989926** Prof PM Waterhouse

**Approved Project Title** **Practical application of gene silencing: is delivery of long double stranded ribonucleic acid (dsRNA) by plant cells efficient in conferring host resistance to parasitic nematodes?**

**2009 :** \$ 80,000

**2010 :** \$ 70,000

**Primary RFCD** 2704 BOTANY

**Collaborating/Partner Organisation(s)**

NemGenix Pty Ltd

**Administering Organisation** The University of Sydney

**Project Summary**

Nematode that attack plants cause \$120 billion of crop losses worldwide. Chemicals used for their control are being phased out because of environmental concerns, and natural resistance is limited. The aim of this project is to use Australian IP to develop a new form of resistance to nematodes based on knowledge of the host-pathogen interactions. A successful outcome could contribute an additional 5-20% increase in crop yields (depending on the crop) through inherent resistance of crops to nematode pests. This would benefit rural communities and the national economy, and could also generate international royalties.

**LP0989144** Prof JI Westbrook; Prof J Braithwaite; A/Prof K Gibson; Dr RJ Paoloni

**Approved Project Title** **Use of information and communication technologies to support effective work practice innovation in the health sector: a multi-site study**

**2009 :** \$ 420,000

**2010 :** \$ 440,000

**2011 :** \$ 440,000

**2012 :** \$ 250,000

**Primary RFCD** 3502 BUSINESS AND MANAGEMENT

APA(I) Award(s): 2

**Collaborating/Partner Organisation(s)**

Sydney South West Area Health Service

**Administering Organisation** The University of Sydney

**Project Summary**

Australia must develop and implement new models of health service provision to increase capacity and reduce errors within workforce and resource constraints. Working with one of the largest area health services in NSW this project will address this challenge. The results will directly benefit the community by creating and testing new models for how health professionals can use information technologies to improve the safety, quality and efficiency of health care services. The findings will underpin national efforts to improve the productivity and effectiveness of the health workforce and its ability to respond to changing demands. The effective use of IT is a critical enabling factor for national productivity and growth.

## Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989998** Dr SB Williams; Dr O Pizarro; Dr D Fox

**Approved Project Title** **Autonomous repeatable surveys for long term monitoring of marine habitats**

**2009 :** \$ 120,000

**2010 :** \$ 105,000

**2011 :** \$ 95,000

**Primary RFCD** 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

### **Collaborating/Partner Organisation(s)**

Advanced Technology Systems Australia Defence Services Pty Ltd

**Administering Organisation** The University of Sydney

### **Project Summary**

Australia has committed to using marine resources in a sustainable manner and to conserve the biodiversity of its marine habitats. In order to manage its marine environment effectively, marine scientists, managers and policy makers require timely and accurate information on the state of the environment. Current knowledge and techniques are limited and will have difficulty scaling to satisfy Australia's needs. A monitoring system that relies on machines to perform a substantial fraction of survey work and basic data analysis can scale more easily and provide more information at lower costs.