

Summary of Linkage Projects Applications for Funding to Commence in 2006

New South Wales

The University of Sydney

LP0668279 Prof R Booy; A/Prof CR MacIntyre; Dr D Dwyer; Prof RI Lindley

Approved Project Title Economic and Social Benefits of treating and preventing influenza in Aged Care Facilities

2006 : \$188,290

2007 : \$188,290

2008 : \$188,290

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

Partner Organisation(s)

Moran Health Care Group

Administering Institution The University of Sydney

Project Summary

Influenza is a deadly issue for the elderly, their carers and the community. It reduces quality of life and productivity through hospitalisation and work absenteeism. By preventing influenza using an antiviral drug for residents and staff in aged care facilities there should be considerable economic and social benefits. This controlled scientific experiment will determine how much disease and death can be averted and provide real data that is critical to planning for an influenza pandemic. It will direct where emphasis should be placed between the control measures of infection control (eg hand-washing, masks), vaccination and use of antiviral drugs. Annual outbreaks will be curtailed.

LP0667442 A/Prof IH Cairns; Prof PA Robinson

Approved Project Title Predicting Space Weather Using Solar Radio Bursts

2006 : \$63,500

2007 : \$69,500

2008 : \$75,500

Primary RFCD 2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS

Partner Organisation(s)

IPS Radio and Space Services

Administering Institution The University of Sydney

Project Summary

Australia's scientific standing and expertise will be enhanced in the fields of space weather, space physics, plasma physics, and complex systems by the new prediction methods and scientific discoveries expected. Better predictions will increase the utility of Ionospheric Prediction Service reports to customers in defence (better communications) and satellite operations (improved survivability), industry (reduced infrastructure damage), and elsewhere. Australia's research base will be strengthened by high-level training of Research Associates and students, while its scientific infrastructure and role in international space efforts will be enhanced.

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LP0667593 Dr MG Chapman; Dr TM Glasby

Approved Project Title **Building seawalls to sustain intertidal biodiversity in altered and urbanized estuaries**

2006 : \$85,000

2007 : \$83,250

2008 : \$76,250

Primary RFCD 2707 ECOLOGY AND EVOLUTION

APA(I) Award(s): 1

Partner Organisation(s)

NSW Department of Primary Industries (Fisheries)
BIO-ANALYSIS: Marine, Estuarine & Freshwater Ecology
Dept of Environment and Conservation
NSW Maritime
Department of Infrastructure, Planning and Natural Resources
Sydney Ports Corporation
Hornsby Shire Council
Mosman Council
North Sydney Council
Wyong Shire Council

Administering Institution The University of Sydney

Project Summary

Increased urbanization along Australia's coasts is inevitable. The challenge is to achieve desired levels of development, while sustaining biodiversity. Coastal development increases the amount of shoreline which is altered from natural to built habitat. Seawalls have documented negative effects on intertidal biodiversity. There are, however, options in ways walls can be built, which may reduce these impacts. This project will explore the ways that different types of seawalls affects intertidal biodiversity, using existing sites and planned programmes of construction and repair of seawalls as experiments. This will ensure that recommendations from the research are economically and structurally sound, as well as environmentally valid.

LP0667611 A/Prof JS Cohn

Approved Project Title **Dairy Milk Phospholipids in the Prevention of Atherosclerosis**

2006 : \$70,000

2007 : \$64,750

2008 : \$57,750

Primary RFCD 3203 MEDICAL BIOCHEMISTRY AND CLINICAL CHEMISTRY

APA(I) Award(s): 1

Partner Organisation(s)

MG Nutritionals

Administering Institution The University of Sydney

Project Summary

The present project is expected to provide novel information pertaining to the separation of phospholipid (PL) fractions from buttermilk. In addition, it will generate scientific/medical knowledge concerning the use of dietary PL preparations in the prevention of arterial atherosclerosis. Together, this innovative research will help support the commercial development of PL separation from buttermilk. It will also lay the ground-work for additional studies into the therapeutic benefit of dietary PLs and the commercialization of milk PL as a nutraceutical or functional food. The present project thus has significant academic, commercial and therapeutic value of potential benefit to all Australians.

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LP0667603 A/Prof DP Coleman; A/Prof JL Finkelstein; Dr P Hyland

Approved Project Title **Minds, Bodies, Machines: a cultural and intellectual history of technologies in the 21st century**

2006 : \$113,559

2007 : \$116,230

2008 : \$111,117

Primary RFCD 4202 LITERATURE STUDIES

APA(l) Award(s): 2

Partner Organisation(s)

Constraint Technologies International

Administering Institution The University of Sydney

Project Summary

This project benefits the intellectual and cultural life of the nation by establishing a unique dialogue between the I.T. community and University researchers in the humanities and social sciences. Using an interdisciplinary methodology to explore technologically-driven social change across a period of more than two hundred years, the project will generate new and fresh ways of thinking about emerging areas of intense debate and controversy, such as humanoid robotics and artificial intelligence. The dialogue we propose will foster an environment of enhanced innovation, one in which knowledge translates directly and indirectly into social and economic benefits.

LP0667956 Prof BJ Eggleton; Dr S Frisken

Approved Project Title **Novel optical dispersion compensation techniques in an optical transmission system**

2006 : \$80,000

2007 : \$70,000

2008 : \$78,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisation(s)

Engana Ltd

Administering Institution The University of Sydney

Project Summary

The outcomes of the project will lead to crucial innovations in reconfigurable ultrahigh bit rate optical networks whose deployment in Australia will lead to widespread availability of broadband data communications services to individuals and businesses. This crucial infrastructure will create a platform for services and products from the Australian ICT sector in areas including e-education, e-health and telecommuting.

The outcomes of the project will be commercialized, leading to significant exports and employment opportunities for photonics scientists and engineers.

LP0667858 Dr PK Holyoake; Dr A Collins; Dr DL Emery

Approved Project Title **Reducing antibiotic usage in pig herds: controlling Lawsonia intracellularis by vaccination, housing and hygiene**

2006 : \$120,000

2007 : \$109,000

2008 : \$102,000

Primary RFCD 3005 VETERINARY SCIENCES

APA(l) Award(s): 2

Partner Organisation(s)

Boehringer Ingelheim

NSW DPI

Administering Institution The University of Sydney

Project Summary

Pigs are major consumers of antibiotics in Australia. Many of these antibiotics are fed to pigs to prevent proliferative enteritis (PE). There are increasing public concerns regarding the development and spread of antibiotic-resistant bacteria and the potential impact on human health. The adoption of an effective commercial vaccine to prevent PE will reduce the volume of antibiotics used in the pig industry and hence reduce the risk of antibiotic-resistant bacteria developing.

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LP0668410 Mr M Horsley

Approved **Equity and access: analysing the level and pattern of funding of teaching and learning resources in**

Project Title **Australian schools**

2006 : \$20,939

2007 : \$32,987

2008 : \$25,136

Primary RFCD 3301 EDUCATION STUDIES

Partner Organisation(s)

Australian Publishers Association

Administering Institution The University of Sydney

Project Summary

The project will develop indicators and evidence of best practice that will enable educators and schools to make improved and more informed decisions on how to support learners in the provision of teaching and learning resources.

LP0667846 Prof IR Kennedy; Dr PM Martin; Dr PB New

Approved **A Novel Phosphate Fertiliser Enhanced by Biofertiliser Technology**

Project Title

2006 : \$116,000

2007 : \$105,000

2008 : \$98,000

Primary RFCD 3099 OTHER AGRICULTURAL, VETERINARY AND ENVIRONMENTAL SCIENCES

APA(I) Award(s): 1

Partner Organisation(s)

Rindies Pty Ltd

Administering Institution The University of Sydney

Project Summary

This project will deliver efficient use of the limited supplies of high quality phosphorus minerals as fertiliser-P, simultaneously acting to reverse and prevent soil acidification. These cost-effective benefits from utilising Australia's microbial biodiversity will have major economic and environmental impacts in rural Australia, increasing the profitability of farming and reducing the potential for contamination of aquatic systems and groundwater with nutrients causing algal blooms. By solving needs for fertiliser-P while preventing acidification of soil, farmers are expected to welcome this novel fertiliser technology.

LP0667914 Dr KA Raphael; Dr M Frommer; Dr PJ Sharkey; Mr D Cartwright

Approved **Molecular technology for biological control of the most destructive horticultural pest in Australia**

Project Title

2006 : \$95,000

2007 : \$96,200

2008 : \$89,200

Primary RFCD 2708 BIOTECHNOLOGY

Partner Organisation(s)

Victorian Department of Primary Industries

Department of Primary Industries and Resources South Australia

Griffith City Council

Riverina Citrus

Plantation Fresh

Cobar Shire Council

Administering Institution The University of Sydney

Project Summary

As part of a world-wide effort to apply transgenic technologies for the improvement of the Sterile Insect Technique (SIT), this project will place Australian research at the forefront of the latest developments in the field. With a requirement for fruit fly free status of horticultural production and an increasing demand for pesticide free produce, improved SIT strains of Queensland fruit fly will be vital to maintain our competitiveness in international horticultural markets. Rural and regional areas will be the main beneficiaries from the outcomes, with health benefits, a clean and green image for horticulture, simplified marketing and reduced costs.

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LP0668434 Dr AJ Ruys; A/Prof RS Mason

Approved Project Title **Oxide Bioceramics for Drug Delivery**

2006 : \$24,650

2007 : \$24,650

2008 : \$24,650

Primary RFCD 2914 MATERIALS ENGINEERING

APA(I) Award(s): 1

Partner Organisation(s)

Epitan Limited

Administering Institution The University of Sydney

Project Summary

Australia has the highest rate of skin cancer in the world. One out of every two Australians will develop skin cancer at some stage during their lives. On average, 740,000 new cases of skin cancer are diagnosed in Australia every year (1 million in the USA). The cost to Australia is over \$200 million/year. While today more people are aware of the dangers of UV, the desire to be fashionable outweighs their health concerns. Melanotan is a novel sunscreen solution: a drug that stimulates the body's natural defence mechanism against UV light. Alumina and zirconia bioceramics are ideal implantable drug delivery vehicles because of the long leaching periods possible.

LP0667906 Dr SJ Scheduling; Prof HF Durrant-Whyte; Mr GR Peake; Mr L Erikson

Approved Project Title **Autonomous Cooking: Sensing, Estimation and Control**

2006 : \$80,000

2007 : \$75,000

2008 : \$70,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Partner Organisation(s)

Electrolux Major Appliances, Australia

Administering Institution The University of Sydney

Project Summary

This work aims to create the world's first truly intelligent oven, with sensing, estimation and control of the changes occurring within food as it is cooked. Consumer insight suggests that a product of this kind would be very successful in the market. The success of this project would result in significant economic benefit to Electrolux and the Australian economy through its 3,150 Australian employees, its many local subcontractors and through the thousands of consumers who will one day enjoy using a product of this kind.

LP0668335 Dr L Sedger; Dr JW Arthur; Dr DR Booth; A/Prof G Stewart; Dr R Heard; Ms FC McKay

Approved Project Title **Molecular response to interferon beta treatment in multiple sclerosis**

2006 : \$154,000

2007 : \$132,000

2008 : \$125,000

Primary RFCD 3207 NEUROSCIENCES

APA(I) Award(s): 2

APDI Ms FC McKay

Partner Organisation(s)

Biogen Idec Australia Pty Ltd

Sydney West Area Health Service

Administering Institution The University of Sydney

Project Summary

Interferon beta (IFN β) is the frontline drug for treatment of multiple sclerosis. However, in many patients this expensive drug provides no benefit, resulting in unnecessary, uncontrolled disease progression, and in a waste of many millions of dollars each year. A common explanation for this treatment failure is the development of neutralising antibodies (NABs). We will establish the prevalence and effects of NABs in Australian patients, use novel techniques to identify biomarkers for IFN β response, evaluate the diagnostic and therapeutic value of the biomarkers, and develop a new test for NABs. Tailored use of this drug, and possible new therapeutic targets, will result, benefiting the patient and community.

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LP0668209

Dr RH Stone

Approved Project Title **Vision Based Guidance, Navigation and Control of a Tail-Sitter Unmanned Aerial Vehicle**

2006 : \$26,000

2007 : \$25,000

2008 : \$25,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

APA(l) Award(s): 1

Partner Organisation(s)

Zylotech Ltd

Administering Institution The University of Sydney

Project Summary

The development of a high precision visual guidance system for vertical takeoff and landing UAVs will significantly enhance their operational effectiveness by allowing them to land accurately on the back of small vessels or in confined clearings. Together with the extra navigation-system redundancy vis-a-vis GPS system failure and the ability to self-identify reasonable emergency landing sites, the proposed vision-based system represents a significant capability improvement over what is currently available. It will thus enhance the ability of defence and civil-defence units to patrol Australian borders effectively and to react to threats. It will also have significant export potential to allied nations.