

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

## Victoria

### Monash University

**LP0989415** Dr A Bouazza; Dr WP Gates; Prof RK Rowe

**Approved Project Title** **Improved Landfill Barrier Design for Changing Climates**

**2009 :** \$ 52,280

**2010 :** \$ 52,280

**2011 :** \$ 52,280

**Primary RFCD** 2908 CIVIL ENGINEERING

APA(I) Award(s): 2

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

Geofabrics Australasia Pty. Ltd.

Clayton Road Joint Venture

**Administering Organisation** Monash University

#### **Project Summary**

The proposed research project will develop advanced methods and guidelines for practising engineers for improved engineering and design of waste containment barrier systems, leading to improved protection of groundwater resources and the environment and sustainable development of the country. The project will contribute to the priority area of building an environmentally sustainable Australia with a specific focus on water as a critical resource.

**LP0989340** Prof RL Boyd; Dr A Michalska; A/Prof MA Kirkland

**Approved Project Title** **Application of direct protein transduction of Stem Cell Factors to reprogram mouse and human somatic cells into pluripotent stem cells**

**2009 :** \$ 200,000

**2010 :** \$ 220,000

**2011 :** \$ 220,000

**Primary RFCD** 2701 BIOCHEMISTRY AND CELL BIOLOGY

APA(I) Award(s): 1

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

Cytomatrix Pty. Ltd.

**Administering Organisation** Monash University

#### **Project Summary**

This project aims to generate embryonic stem cell-like cells from human somatic cells, using direct protein transduction of defined factors, rather than through retroviral delivery. This will bring stem cell application closer to a therapeutic setting. The cells produced will be free from genetic modification and will yield products for patient-specific cell-based therapies that will be accepted by recipients without the need for immunosuppressant therapy. This development is expected to revolutionize the current approach to treating disease and injury, and is likely to result in the generation of highly marketable potent cell reprogramming therapeutics.

**LP0989714** Dr KA Coghill; Dr R Donohue; Dr PJ Holland; A/Prof CH Lewis; The Hon KR Rozzoli; Ms Y Smith; Mr AM Richardson; Prof GH Hassall

**Approved Project Title** **Parliamentary Careers: Design, Delivery and Evaluation of Improved Professional Development**

**2009 :** \$ 61,000

**2010 :** \$ 92,000

**2011 :** \$ 78,000

**Primary RFCD** 3601 POLITICAL SCIENCE

APA(I) Award(s): 1

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

AusAID

Inter-Parliamentary Union

**Administering Organisation** Monash University

#### **Project Summary**

National/community benefits arise from improved design, delivery and evaluation of professional development programs for parliamentarians, thereby enhancing their central constitutional roles in making laws, approving budgets and holding government policy and administration to account. This innovative cross-disciplinary project

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generates theoretical and practical understanding concerning the duration, content and learning modes of parliamentarians' professional development programs. Australian assistance programs to parliaments in the Pacific

will have improved design, delivery and evaluation and be more effective in improving parliamentary performance, national governance and enhanced political stability in Australia's region.

**LP0989435** Prof PM Collier

**Approved Project Title** **Developing a Resource Allocation Framework to support more effective police investigations of major crime**

**2009 :** \$ 31,000

**2010 :** \$ 38,000

**2011 :** \$ 35,000

**Primary RFCD** 3501 ACCOUNTING, AUDITING AND ACCOUNTABILITY

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

Victoria Police Crime Department

**Administering Organisation** Monash University

### **Project Summary**

The project addresses National Research Priority 4: Safeguarding Australia. This priority has a goal to protect Australia from terrorism and crime. Improving resource allocation decisions will enable police resources to be more effective in detecting and preventing crime. The project addresses the goal of all police agencies to reduce crime by enhancing the capability to manage resources more efficiently and effectively. This requires a more innovative culture that uses the available management information intelligently to make better (in terms of outcomes) resource allocation decisions.

**LP0989160** Dr LL Dawson; Dr VM Plummer; A/Prof J Fisher; Dr AP Howard; Mr RM Ribbons; Mrs TM Harlem

**Approved Project Title** **Enhancing patient management at point of care using electronic-based clinical pathways**

**2009 :** \$ 50,000

**2010 :** \$ 35,000

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

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

NEC Business Solutions

Peninsula Health

Fraser & Jenkinson P/L trading as Print Media Group

**Administering Organisation** Monash University

### **Project Summary**

Clinical pathways have been adopted by most Australian hospitals and the development of a 'proof of concept' digitised clinical pathways management system (DCPMS) would provide significant benefits to the Australian healthcare system in improving the efficiency of this approach. These include improved outcomes of care arising from a better match of patient requirements to nursing care and other health resources and better management of resources where savings can be re-directed into front-line patient care. This Australian innovation can then be exported to international health systems that are increasingly turning to hospital funding models that utilise clinical pathway information.

**LP0990059** A/Prof J Etheridge; Dr C Dwyer; Dr PC Tiemeijer; Dr MA van der Stam

**Approved Project Title** **A Method to Characterise an Aberration-Corrected Electron Wave Field - a step towards quantitative electron microscopy**

**2009 :** \$ 72,000

**2010 :** \$ 82,000

**Primary RFCD** 2499 OTHER PHYSICAL SCIENCES

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

FEI Company

nanoTechnology Systems

**Administering Organisation** Monash University

### **Project Summary**

Australia has recently invested in a powerful, new electron microscope, one of the first in the world, which can image features at the atomic scale that could not be seen before. This project will forge a strategic partnership with

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the designer and the distributor of this microscope, to develop special new methods that will further increase the microscope's imaging power. This will give Australian scientists unique capabilities with which to investigate and engineer new materials for advanced technological applications and it will train young Australian scientists in these cutting-edge techniques.

**LP0989469** A/Prof J Fisher; Dr C Lang; A/Prof HJ Forgasz; Mrs A Craig; Ms RT Ellul; Ms B Harlos

**Approved Project Title** **Digital Divas: Designing approaches to enthuse girls' interest in ICT studies and ICT careers**

**2009 :** \$ 102,000

**2010 :** \$ 80,000

**2011 :** \$ 87,000

**Primary RFCD** 3301 EDUCATION STUDIES

APA(I) Award(s): 1

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

Department of Education and Early Childhood Development

VicICT for Women Network

Australian Computer Society

Netspace Online Systems

Brentwood Secondary College

**Administering Organisation** Monash University

### **Project Summary**

A strong information and communications technology (ICT) industry, a skilled ICT workforce and excellence in ICT research is vital to Australia's future. However, girls' interest in ICT, and the numbers of women entering the ICT workforce, are at record lows, while Industry skills are critically short. Digital Divas will pioneer a program to build girls' ICT skills and confidence, increasing their motivation to study ICT and enter the ICT workforce. The benefits of education will be maximised by addressing the gender digital divide evident in classrooms, universities and professions.

**LP0989823** Prof GB Garnier; Dr WJ Batchelor; Dr W Shen; Prof PA Webley; Prof GP Simon; Dr P Stuart

**Approved Project Title** **Novel Cellulosic Products and Sustainable Bioresource Engineering**

**2009 :** \$ 225,000

**2010 :** \$ 220,000

**2011 :** \$ 215,000

**Primary RFCD** 2914 MATERIALS ENGINEERING

APA(I) Award(s): 4

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

Visy Packaging & Recycling

Amcor Australasia

Australian Paper

Norske Skog

SCA Hygiene Australasia

**Administering Organisation** Monash University

### **Project Summary**

The paper industry is a key industry in the Australian economy and particularly in rural and regional Australia.

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people are employed directly by the paper manufacturing companies and many thousands more employed in providing services and inputs to the industry. This grant aims to assure the future of the industry by developing standards to measure the environmental impact; by using these standards and innovative materials to greatly reduce the environmental impact of the industry; and by developing new highly profitable products for the industry including a lightweight corrugated box that won't sag when wet, a paper-mineral composite to capture and store green house gases.

**LP0989157** A/Prof DR Honnery; Mr A de Bono; Dr PH Dayawansa

**Approved Project Title** **Innovative and human-centred design in underground coalmining: a new concept vehicle for safe personnel transport**

**2009 :** \$ 120,000

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**2010 :** \$ 120,000  
**Primary RFCD** 4104 DESIGN STUDIES

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

Kestrel Coal Pty Ltd  
PJ Berriman & Co Pty. Ltd

**Administering Organisation** Monash University

## **Project Summary**

Australian coalminers commute daily on a system of underground roads to the 'longwall', the site where their work can begin, in vehicles that are primitive by aboveground standards. These current vehicles contribute to short- and long-term injuries amongst mining personnel. This project will develop benchmark standards for an innovative underground personnel carrier that promotes a safer and healthier working environment by contributing to reduced injury rates and ensuring the comfort of workers. This project contributes to the health and welfare of coalminers in regional Australia and in the international mining sector through innovative and 'human-centred' design.

**LP0989355** Dr NC Karmakar; Dr YD Vashishtha

**Approved Project Title** **Smart Information Management of Partial Discharge in Switchyards using Smart Antennas**

## **Project Title**

**2009 :** \$ 120,000

**2010 :** \$ 107,000

**2011 :** \$ 107,000

**Primary RFCD** 2917 COMMUNICATIONS TECHNOLOGIES

APA(I) Award(s): 2

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

SP Ausnet

**Administering Organisation** Monash University

## **Project Summary**

Currently no single robust technology for partial discharge (PD) detection, location and unique identification of faulty power apparatus is commercially available. The proposed method will bring a new technological breakthrough in the market for PD monitoring, management and prevention. On-line real time fault detection and monitoring system of expensive power installations will save significant revenue for power industries in Australia and worldwide. This real time monitoring system will also give Australia a leading edge technological advantage over overseas competitors.

**LP0989652** Dr NC Karmakar; Dr GF Swiegers

**Approved Project Title** **Printable Multi-Bit Radio Frequency Identification for Banknotes**

## **Project Title**

**2009 :** \$ 250,000

**2010 :** \$ 180,000

**2011 :** \$ 180,000

**Primary RFCD** 2917 COMMUNICATIONS TECHNOLOGIES

APA(I) Award(s): 2

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

SatNet Pty Ltd  
Securency International Pty Ltd

**Administering Organisation** Monash University

## **Project Summary**

This project will investigate inexpensive radio-frequency transponders on banknotes that enjoy all of the advantages of, and, indeed, operate in a manner somewhat similar to barcodes. Transponders of this type may potentially replace barcode technology, thereby allowing automated identification of individual banknotes at multiple

points in transaction chains. The resulting efficiencies in banknote authentication and other applications will generate a significant economic benefit for Australia. Additionally, the development of state-of-the-art transponders

based on fundamental microwave- and antenna engineering prospectively gives Australia a cutting-edge advantage as a leading player in the fast-growing RFID market.

**LP0989455** Dr RY Lapovok; Dr I Timokhina; Prof PD Hodgson; Prof LS Toth; Mr D Bhattacharjee

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**Approved Project Title** **Enhanced Mechanical Properties of Steel Sheet through Novel Approach in Asymmetric Rolling**

**2009 :** \$ 100,000

**2010 :** \$ 100,000

**2011 :** \$ 100,000

**Primary RFCD** 2905 MECHANICAL AND INDUSTRIAL ENGINEERING

APA(I) Award(s): 1

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

Laboratoire de Physique et Mécanique des Matériaux

Tata Steel Limited

**Administering Organisation** Monash University

## **Project Summary**

Steel sheet production is one of the major industries in Australia, which impacts the automotive and construction industries. There is an ongoing requirement to increase the strength of steel sheet without compromising ductility, which improves the strength / weight ratio and the automobile fuel efficiency. The novel rolling process proposed has the potential to address these requirements. The industrial partner Tata Steel is a global steelmaker who has strategic partnerships with Bluescope Steel in Australia. The technology to be developed will be exploited both overseas and within Australia and assist in bringing Australia to a leading position in this area of research.

**LP0989246** Prof JJ Loughran; Dr AK Berry; A/Prof DJ Corrigan; Mr S Keast; Dr I Mitchell

**Approved Project Title** **Engaging science students' hearts and minds: Researching science teachers' professional learning in the development of contemporary understandings of scientific literacy**

**2009 :** \$ 108,000

**2010 :** \$ 88,000

**2011 :** \$ 102,000

**Primary RFCD** 3303 PROFESSIONAL DEVELOPMENT OF TEACHERS

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

Catholic Education office

**Administering Organisation** Monash University

## **Project Summary**

This project will develop, support and value the work of science teachers in developing students' scientific literacy and share the subsequent knowledge gains in the educational community to positively advance quality teaching and learning in school science. Improving science teaching and learning hinges on offering new ways of responding to the problems inherent in teaching science in the 21st century. By supporting and encouraging the creative and innovative ideas, concepts and approaches to quality science teaching and learning embedded in teachers' professional learning the development of the critical knowledge for challenging the status-quo will be advanced.

**LP0989429** Prof BF Oldenburg; Prof V Lin; Dr C Joyce; Prof K Eagar; A/Prof P Dugdale; Prof L Segal; Dr AJ Mutch; Prof JF Hartz-Karp; Prof CA Gericke; Mr MJ Tennant; Mr R O'Donoghue; Dr D Panter

**Approved Project Title** **Citizen engagement: Listening to citizens' views about Australia's health system and prevention**

**2009 :** \$ 90,000

**2010 :** \$ 80,000

**2011 :** \$ 80,000

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

APA(I) Award(s): 1

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

Department of Health, South Australia

Queensland Health

ACT Health

**Administering Organisation** Monash University

## **Project Summary**

This project will yield new and important perspectives from citizens on preventive health and health promotion, which can be used to develop better targeted and more effective prevention and promotion policies and strategies. Citizens views will be investigated in relation to vexed issues such as: new approaches to financing and program delivery, reorienting the health insurance sector, reorienting the health system to focus more on prevention and

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health promotion, improving current approaches of consumer participation in prevention and chronic disease management, tackling broader issues in public policy trade-offs between health and non-health, diversifying workforce roles and involving health professionals in prevention and promotion.

**LP0989603** Dr A Peeters; Dr M de Courten; Mr SA Bilsborough

**Approved Project Title** **Global Corporate Challenge Evaluation: The evaluation of a low-cost, low-impact physical-activity workplace intervention**

**2009 :** \$ 40,000

**2010 :** \$ 35,000

**2011 :** \$ 38,000

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

**Collaborating/Partner Organisation(s)**

Global Corporate Challenge

**Administering Organisation** Monash University

### Project Summary

Societal increases in obesity and physical inactivity have led to consideration of workplace interventions as a potential for improving health. However, long-term evaluations of such interventions are rare. Here we will evaluate the Global Corporate Challenge (GCC), which engages employees to participate in a four month pedometer-based program aimed at increasing their physical activity levels. We will follow 1000 participants for two years to determine the short and long-term health benefits of the program and to provide insight into factors that may improve the success of such programs. Such findings are essential for appropriate government and industry policy decisions in this area of chronic disease prevention.

**LP0989237** Prof JC Sarros; Dr AE Rafferty

**Approved Project Title** **Determinants, processes and outcomes of executive coaching**

**2009 :** \$ 61,000

**2010 :** \$ 47,000

**2011 :** \$ 53,000

**Primary RFCD** 3502 BUSINESS AND MANAGEMENT

**Collaborating/Partner Organisation(s)**

Executive Central Group Pty Ltd

**Administering Organisation** Monash University

### Project Summary

Research suggests that executive leaders in organisations have a critical impact on the long-term viability of organisations. This research program aims to contribute both to the theory and practice of executive coaching, which is an important leadership development tool. Our research will provide evidence on how to design coaching so as to maximize the likelihood of effective outcomes, and will also identify workplace and individual characteristics that influence the likelihood that this leadership development activity will be successful. This research program will provide a stronger theoretical and empirical foundation for executive coaching.

**LP0989518** Dr JD Stilwell

**Approved Project Title** **A highly resolved chronostratigraphic and palaeoenvironmental framework for Pre-Salt Brazilian core basins**

**2009 :** \$ 220,000

**2010 :** \$ 150,000

**2011 :** \$ 100,000

**Primary RFCD** 2601 GEOLOGY

**Collaborating/Partner Organisation(s)**

Shell International Exploration and Production Inc.

**Administering Organisation** Monash University

### Project Summary

Hydrocarbon production and exploration today support viable economies. The engagement of industry with higher learning institutions will advance and enhance the discipline of petroleum geology, with a resultant spectrum from new sources of oil and gas to significantly reducing CO2 emissions (and decreasing the impact of global warming). National and community benefits are diverse: training and research support for many graduate students and staff in Australia, a better understanding of ancient greenhouse climates, testing and refinement of new techniques (e.g.

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bioevents, biosteering) in petroleum studies and practical experience of integrating data from frontier exploration wells.

**LP0990038** Dr RM Thompson; A/Prof J Beringer; Dr TR Cavagnaro; Prof RC Mac Nally; Dr PJ Baker; Mr M Eigenraam; Mr L Metzeling  
**Approved Project Title** **More bang for your carbon buck: carbon, biodiversity and water balance consequences of whole-catchment carbon farming**  
**2009 :** \$ 128,000  
**2010 :** \$ 150,000  
**2011 :** \$ 150,000  
**2012 :** \$ 140,000  
**2013 :** \$ 140,000  
**Primary RFCD** 2707 ECOLOGY AND EVOLUTION  
APA(I) Award(s): 2  
**Collaborating/Partner Organisation(s)**  
Landcare CarbonSMART  
Goulburn Broken Catchment Management Authority  
Kilter Pty Ltd  
Department of Sustainability and Environment  
EPA Victoria  
NCCMA  
Department of Sustainability and Environment - River Health Division  
**Administering Organisation** Monash University

### Project Summary

Farming carbon via tree plantings on pasture land is becoming increasingly common to address the effects of climate change. This activity is likely to produce dramatic changes in Australia's rural landscapes, but we have little knowledge of likely effects on crucial ecosystem services and attributes such as stream water yields and biodiversity. This project will investigate the relationship between tree cover, carbon uptake, water yield and biodiversity. The outcomes will allow government agencies, landowners and carbon farming groups to better evaluate the effects of different landscape planning options and contribute to effective long-term planning for multiple goals.

**LP0989139** Prof BV Weiler; Mr LD Smith  
**Approved Project Title** **Fostering pro-environmental behaviour of zoo visitors through strategic communication**  
**2009 :** \$ 104,731  
**2010 :** \$ 104,731  
**2011 :** \$ 104,731  
**Primary RFCD** 3505 TOURISM  
APA(I) Award(s): 1  
APDI Mr LD Smith  
**Collaborating/Partner Organisation(s)**  
Taronga Conservation Society Australia  
Zoos Victoria  
Zoos SA  
Perth Zoo  
**Administering Organisation** Monash University

### Project Summary

A key part of achieving an Environmentally Sustainable Australia is to change human behaviour. Given annual visitation to Australia's zoos of 14.5 million, including about 4.2 million to the partner organisations, there is great potential for zoos to use their experiential platform to foster pro-environmental behaviour. How best to persuade people to change their behaviour, however, is still poorly understood. This research will improve the capacity of zoos to achieve pro-environmental behaviours among their visitors and thus have significant environmental and social benefits. Linking motivational factors with visitors' susceptibility to persuasion will assist any organisation that seeks to foster pro-environmental behaviour.