

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

Queensland

The University of Queensland

LP100100394 Prof Kirill Alexandrov

Approved Project Title **Development of a novel high yield cell-free protein expression system**

2010 \$145,000.00

2011 \$145,000.00

2012 \$145,000.00

Primary FoR 0601 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations

Jena Bioscience GmbH

Administering Organisation The University of Queensland

Project Summary

Recombinant proteins are used as vaccines, drugs, and research tools, as well as food and detergent additives, comprising a A\$100 billion international market. Their production requires laborious, expensive, and time-consuming construction of transgenic organisms or cells. Alternatively, recombinant proteins can be produced in extracts prepared from cells or organisms. The aim of this proposal is to develop a new technology that will make cell-free production of recombinant proteins rapid, cheap, and scalable. This will advance Australia's intellectual leadership in the area of biotechnology and will bring numerous economic benefits by accelerating pharmaceutical development.

LP100100659 Dr Stevens M Brumbley, Dr Kristi D Snell, Prof Lars K Nielsen

Approved Project Title **Redirecting Carbon Flow through Mesophyll and Bundle Sheath Cells of Sugarcane to Produce Poly-3-Hydroxybutyrate**

2010 \$385,000.00

2011 \$325,000.00

2012 \$400,000.00

2013 \$340,000.00

2014 \$228,558.00

Primary FoR 0601 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations

BSES Ltd, Metabolix

Administering Organisation The University of Queensland

Project Summary

This project is part of the National Priorities "Frontier Technologies for Building and Transforming Australian Industries." Using innovative plant metabolic engineering technologies combined with sophisticated computer modeling we are generating green plants that produce renewable, biodegradable, bioplastics possessing properties such that they are suitable replacements for petroleum-derived products in many applications. During the course of these studies, we are increasing our basic level of understanding of plant metabolism of important bioenergy crops. The production of renewable, bioplastics in sugarcane will help to diversify the Australian sugarcane industry by providing a value-added product with significant world-wide markets.

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LP100100375 Dr Dave P Callaghan, A/Prof Tom E Baldock, A/Prof Peter Nielsen
Approved Project Title **Development of an adaptive statistical model for oceanic flooding hazards along the East Australian coast.**

2010 \$75,000.00
2011 \$68,000.00
2012 \$70,000.00
Primary FoR 0911 MARITIME ENGINEERING
APAI 1

Partner Organisations

DHI Water and Environment Pty Ltd, NSW Department of Environment and Climate Change (DECC)

Administering Organisation The University of Queensland

Project Summary

Planning of invaluable coastal infrastructure and housing is critical to the economic and social well-being of Australian communities. Devastating flooding along coasts and estuaries in Australia frequently occurred before 1980, but has been less common since. However, the risks are clear and enormous as demonstrated in recent disasters like Hurricane Katrina and the 2004 Boxing Day tsunami. Climate change makes flood predictions even more difficult. This project will develop a new adaptive model which accounts for both the present and future climate and also regional variability. The research will be in collaboration with the NSW Dept of Climate Change to enable rapid government action to improve community trust in flood protection.

LP100100650 Dr Norman C Duke, Dr Ian R Tibbetts, Dr Kathy A Townsend, Adj/Prof Michael W White
Approved Project Title **Using biodiesel cleanup agents to reduce impacts on mangroves and tidal wetland ecosystems from oil spills**

2010 \$40,000.00
2011 \$40,000.00
2012 \$40,000.00
Primary FoR 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT
APAI 1

Partner Organisations

Australian Maritime Safety Authority

Administering Organisation The University of Queensland

Project Summary

This Linkage project will demonstrate Australia's commitment towards minimisation of the ecological impacts of key pollutants like oil in the marine environment. It will also advance Australia's leadership position in the management of oil spill remediation and will, through the robust partnership developed with Australian Maritime Safety Authority build a skilled team better able to respond effectively when such disasters occur. The challenge is to maintain this research focus and create some stability and continuity of the knowledge and experiences gained at the University of Queensland. Significantly the project will provide career-oriented research training opportunities in a field that clearly underpins National Research Priorities.

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LP100100755 Prof Craig E Franklin
Approved Project Title **Movement patterns and behavioural strategies of Estuarine Crocodiles: A long-term remote monitoring study using an underwater acoustic array.**

2010 \$115,000.00
2011 \$115,000.00
2012 \$115,000.00
Primary FoR 0602 ECOLOGY

Partner Organisations

Australia Zoo

Administering Organisation The University of Queensland

Project Summary

The on-going recovery of the estuarine crocodile population is creating a paradox for Australians. Although a salient species, an iconic animal, and a firm tourist attraction, estuarine crocodiles pose a significant risk to the public. Knowledge of where crocodiles go, what they do when they get there, and why they select particular habitats at certain times is critical for sustaining the Australian crocodile population, whilst ensuring public safety. This long term study will utilise the latest advancement in underwater acoustic technology to monitor the behavioural and physiological strategies used by estuarine crocodiles in occupying critical habitats, providing vital information for resource managers and policy makers.

LP100100225 Prof Robert G Gilbert
Approved Project Title **The first structure/function-derived starches for the food and related industries**

2010 \$82,000.00
2011 \$82,000.00
2012 \$82,000.00
Primary FoR 0303 MACROMOLECULAR AND MATERIALS CHEMISTRY

APAI 1

Partner Organisations

DSM Nutritional Products

Administering Organisation The University of Queensland

Project Summary

The project will use equipment and theory, developed in Australia, to create the first understanding of the characteristics that govern the performance of complex polymers as emulsifiers. The insights so gained will be a key step towards developing improved modified starches for the food and other industries. These advances will also provide the science by which new modified starches can be produced from sorghum, a drought-resistant crop well suited to Australia.

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LP100100495 Prof Graeme L Hammer, Dr Carlos D Messina, Dr David R Jordan, Dr Scott C Chapman
Approved Project Title **Enabling Molecular Plant Breeding for Drought Adaptation Using Genome-to-Phenome Modelling Technologies**

2010	\$240,280.00
2011	\$235,000.00
2012	\$235,000.00
Primary FoR	0607 PLANT BIOLOGY
APAI	1

Partner Organisations

Pioneer Hi-Bred International, Inc., Qld Department of Primary Industries and Fisheries

Administering Organisation The University of Queensland

Project Summary

Effective molecular plant breeding for improved water productivity of sorghum would generate significant economic and social benefits for rural communities in NE Australia. There is a significant opportunity to expand the sorghum industry in the region. Despite the global financial crisis, global demand for meat continues to increase, generating strong demand from intensive livestock industries for feed grain. Price is projected to return to high levels given continuing use of major feed grains for biofuel. A 10% increase in sorghum production would add net value of \$48M annually, much via employment. The scientific content of this project positions Australia at the leading edge globally in this emerging research field.

LP100100380 Prof Brian W Head, Dr Adrian Cherney, Prof Paul R Boreham
Approved Project Title **The utilisation of social science research in policy development and program review**

2010	\$145,000.00
2011	\$84,000.00
2012	\$143,000.00
Primary FoR	1605 POLICY AND ADMINISTRATION

Partner Organisations

Australian Bureau of Statistics, Productivity Commission, QLD Department of Communities, QLD Department of Employment, Economic Development and Innovation, Qld Department of Health, QLD Department of Premier and Cabinet, VIC Department of Planning and Community Development

Administering Organisation The University of Queensland

Project Summary

This project will enhance the use of evidence in social policy and improve the relevance of applied social research. It will produce new insights into factors affecting the success of evidence-based decision-making by examining social research utilisation within various agencies at federal and state levels. National and community benefits centre on how to improve the policy uptake of social research. This will contribute to the development of improved support systems to enhance the consideration of evidence-based policy. Outcomes will be applicable to governments, policy-makers and academics in Australia and abroad. Ways to improve research partnerships between academic social scientists and public sector agencies will be identified.

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LP100100418 Prof Karen E Healy, Dr Michele M Foster, Dr Gai Harrison
Approved Project Title **A study of best practice in workplace support and development of newly qualified community services workers**

2010	\$42,000.00
2011	\$42,000.00
2012	\$48,000.00
Primary FoR	1607 SOCIAL WORK
APAI	1

Partner Organisations

Lifeline Community Care Queensland , Queensland Council of Social Services

Administering Organisation The University of Queensland

Project Summary

Community service systems are under strain, leaving many vulnerable Australians at risk. Between 2001 and 2006, the Australian community services workforce increased by 35.6%, making it one of the fastest growing sectors of employment in the country. The combination of workforce growth, ageing and turnover in this sector hampers its capacity to respond to the growing demand for, and complexity of, service delivery. Our project will contribute to the sustainability of the Australian community services workforce by building a practical knowledge base for workplace support and development of newly qualified workers entering the sector.

LP100100400 Prof Paul W Hodges, Prof James A Ashton-Miller, Prof Christos E Constantinou, Prof Robert A Gardiner, Dr Geoff D Coughlin, Mrs Ruth Sapsford
Approved Project Title **Urinary continence and incontinence in men: New insight through new technologies**

2010	\$100,000.00
2011	\$95,000.00
2012	\$90,000.00
Primary FoR	1116 MEDICAL PHYSIOLOGY

Partner Organisations

GE Healthcare, Mungovan, Breckenridge Physiotherapy and Associates

Administering Organisation The University of Queensland

Project Summary

Healthy ageing in men is largely overlooked. Disorders of continence are surprisingly common with increasing age, and are socially debilitating. To understand changes in continence and address healthy ageing it is first necessary to gain an understanding of continence mechanisms in healthy men. Continence in women has received wide attention, but anatomy and function differ, as do the challenges throughout life (childbirth vs. prostate disease). Using novel methods we will test a new hypothesis of male continence with the goal to provide new physiological discoveries, new methods, and baseline data upon which strategies to enhance healthy ageing and reduce the economic burden of disorders of continence can be developed and refined.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100100156 Prof Jane L Hunter, Dr Andreas Zankl
Approved Project Title **Skeletome - A Curated Online Knowledge Base Integrating Clinical and Biological Information on Skeletal Dysplasias and Related Conditions**

2010 \$95,000.00
 2011 \$90,000.00
 2012 \$88,000.00
 Primary FoR 0807 LIBRARY AND INFORMATION STUDIES
 APAL_IT 1

Partner Organisations

Royal Brisbane and Women's Hospital DHS

Administering Organisation The University of Queensland

Project Summary

The skeletal dysplasia knowledge base will:

- * establish Australia as a world-leader in skeletal dysplasia research;
- * provide researchers with an extensible and comprehensive online knowledge-base related to skeletal dysplasias;
- * enhance clinicians' understanding of the diagnosis, treatment and management of skeletal dysplasias;
- * facilitate collaborative discussions by patients, clinicians and researchers around specific cases to improve training, management and diagnosis; and
- * enhance Australia's research expertise in Semantic Web and social networking technologies.

LP100100614 Dr Joan Leach, Dr Richard D Fitzgerald, Ms Jennifer E Metcalfe
Approved Project Title **But does it work? Evaluation of science communication activities in Australia**

2010 \$26,669.00
 2011 \$26,669.00
 2012 \$26,669.00
 Primary FoR 2099 OTHER LANGUAGE, COMMUNICATION AND CULTURE
 APAL 1

Partner Organisations

Econnect Communication

Administering Organisation The University of Queensland

Project Summary

Public science communication activities such as talks, blogs, and social evenings are numerous and drawing larger audiences. But how do we measure their success? This project will collect existing evaluations and develop guidelines for science communication evaluation. The evaluation guidelines developed in this project will assist professional science communicators as well as researchers who wish to communicate the results of their scientific research, impacting a range of Australian audiences for science. This project aims to inform science communicators to create better science engagement activities, better ways of evaluating them, and, ultimately, audiences who are more engaged with the results of Australian scientific research.

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LP100100408 Dr Barbara M Masser, Dr Katherine M White, Dr Liliana L Bove, Prof Deborah J Terry
Approved Project Title **The initiation and maintenance of plasma and platelet donation in Australia: An analysis of the role of donor identity and commitment**

2010	\$99,000.00
2011	\$111,000.00
2012	\$161,000.00
Primary FoR	1701 PSYCHOLOGY

Partner Organisations

Australian Red Cross Blood Service

Administering Organisation The University of Queensland

Project Summary

Australia strives to be self-sufficient in the provision of plasma and platelets in a context where demand is forecast to grow. Our research will be of significant social and applied benefit to Australia in identifying the key psychosocial determinants of plasma and platelet (apheresis) donation initiation and maintenance. In addition, our research will design and assess practical interventions to facilitate the recruitment and retention of apheresis donors. Greater understanding of the determinants of apheresis donor behaviour will help to increase the numbers of Australians choosing to become regular apheresis donors. This will allow Australia to ultimately meet its goal of self-sufficiency in providing critical medical resources.

LP100100738 Dr Clive A McAlpine, Mr Jozef I Syktus
Approved Project Title **Impact of reforestation on the mitigation of climate extremes in eastern Australia resulting from global warming**

2010	\$154,621.00
2011	\$150,020.00
2012	\$80,359.00
Primary FoR	0401 ATMOSPHERIC SCIENCES

APAI 1

Partner Organisations

QLD Department of Environment and Resource Management

Administering Organisation The University of Queensland

Project Summary

This project will provide new information for climate change policy development and the goal of an Environmentally Sustainable Australia. It has a strong policy-management imperative, investigating the need for the maintenance and restoration of healthy native vegetation cover as part of Australia's climate change mitigation and adaptation strategies. Our previous research has shown that land clearing has contributed to climate change, including more severe and persisting droughts, in eastern Australia. Successful implementation of the research findings will lead to an increased ability of regional landscapes to buffer against a more extreme future climate driven by increased concentrations of greenhouse gases.

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LP100100761 Prof Peter D Renshaw, Dr Ron Tooth
Approved Project Title **Storythread pedagogy: transforming teachers' and students' knowledge and values regarding environmental sustainability**

2010 \$46,222.00

2011 \$47,408.00

2012 \$48,593.00

Primary FoR 1302 CURRICULUM AND PEDAGOGY

Partner Organisations

Education Queensland

Administering Organisation The University of Queensland

Project Summary

In this project an innovative teaching method, Storythread, is investigated as an effective way of developing in primary school-aged students a commitment to the values and practices of sustainability. Acquiring knowledge about the environment is important but not sufficient to transform everyday practices and values. Storythread not only assists students to develop relevant knowledge, but links that knowledge to specific actions and consequential decisions that people make with regard to the environment. By assisting teachers to use Storythread effectively with diverse groups of students, this project will provide a way of developing future citizens with clear environmental values and practices so necessary in contemporary society.

LP100100356 Dr Justin G Ryan, Dr Paul J Dargusch, Dr John N Callow, Dr Paul A Lawrence
Approved Project Title **Testing the potential of integrated vegetation bands to increase water retention, buffer climate extremes, sequester carbon and enhance production**

2010 \$80,182.00

2011 \$80,182.00

2012 \$80,182.00

Primary FoR 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

APDI Dr Justin G Ryan

Partner Organisations

QLD Department of Environment and Resource Management, SEQ Catchments Inc.

Administering Organisation The University of Queensland

Project Summary

The project will integrate a complex set of functions into one landscape restoration design which will benefit production and conservation objectives. These functions are improved use of surface runoff using native vegetation to reduce velocities and increase infiltration, improved soil and catchment condition through decreased erosion, lowering wind speeds which desiccate landscape and erode valuable topsoil, providing a system of corridors for biodiversity, and sequestering carbon in woody biomass. IVB's configuration captures the beneficial structural and functional attributes of vegetation while minimising competitive interactions. This will increase the resilience and productivity of Australian farming landscapes in a changing climate.

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LP100100165 Dr Karen M Steel, Prof Edward T White, Dr Luca Pala
Approved Project Title **Development of a novel process for recovering fluoride from spent pot-lining as AIF₂(OH) using industrial waste solutions**

2010 \$26,669.00

2011 \$26,669.00

2012 \$26,669.00

Primary FoR 0914 RESOURCES ENGINEERING AND EXTRACTIVE METALLURGY

APAI 1

Partner Organisations

Fluorsid SpA

Administering Organisation The University of Queensland

Project Summary

Every year approximately 40,000 tonnes of a hazardous waste known as spent pot-lining is generated by Australia's aluminium industry. It contains significant levels of leachable cyanide and fluoride and is currently being stored awaiting a suitable treatment technology. This project will develop a novel low-energy and low-cost process for extracting the fluoride as a useful aluminium fluoride product that can be recycled back into the aluminium industry; destroy the cyanide; and recover other components for use in the metallurgical industry. If commercialised the benefit will be an end to the stockpiling of spent pot-lining in Australia, a more sustainable aluminium industry, and protection of the world's natural fluoride resources.

LP100100342 Dr Scarla J Weeks, Dr Peter R Fearn, Dr Gene C Feldman, Dr Zhongping Lee, Dr Miles J Furnas

Approved Project Title **Improved tools for comprehensive monitoring of water-clarity and light availability in coral reef ecosystems**

2010 \$162,624.00

2011 \$111,424.00

2012 \$111,424.00

Primary FoR 0909 GEOMATIC ENGINEERING

APAI_IT 1

Partner Organisations

Great Barrier Reef Foundation, NASA Goddard Space Flight Center

Administering Organisation The University of Queensland

Project Summary

The Great Barrier Reef is a World Heritage Area, home to over 1 million species and provides Australia with \$6 billion in annual revenue. The capacity to monitor Australia's natural resources and changes in condition are integral components of a sustainably and adaptively managed resource. By providing key synoptic tools to comprehensively monitor water quality and ecosystem status, the project will contribute directly to an Environmentally Sustainable Australia and improve national capacity for responding to climate change and variability in coral reef environments. It will enable Australian remote sensing scientists to contribute knowledge and tools to the international community for application to coral reef and coastal waters globally.

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LP100100325 Prof Zhiguo Yuan, Dr Raymond J Zeng, Prof Jurg Keller, Dr Eva G Abal, A/Prof James W Udy
Approved Project Title **Nitrous oxide and methane emissions from South East Queensland waterways and influence of wastewater discharges**

2010 \$120,000.00

2011 \$98,000.00

2012 \$75,000.00

Primary FoR 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

APAI 2

Partner Organisations

SEQWater, South East Queensland Healthy Waterways Partnership

Administering Organisation The University of Queensland

Project Summary

Climate change caused by greenhouse gas emissions is one of the most serious challenges facing mankind. Substantial emission reduction must be achieved, with responsibilities to be shared by all sectors. Rivers, estuaries and water storages contribute considerably to global nitrous oxide and methane emissions, much of which is anthropogenic contributed by urban and agricultural run-off and wastewater discharges. Through an in-depth study on several rivers, estuaries and reservoirs in South East Queensland, this project will provide data to enable reliable estimation of such emissions in Australia, and deliver knowledge and tool support for the development of strategic catchment management strategies.