

Queensland

The University of Queensland

LP0884051 Prof PF Alewood; Dr HC Deeth; Dr MC Broome

Approved Project Title **Markers of milk quality in commercially produced UHT milks and milk powders**

2008 : \$ 35,000

2009 : \$ 70,000

2010 : \$ 70,000

2011 : \$ 35,000

Primary RFCD 2901 INDUSTRIAL BIOTECHNOLOGY AND FOOD SCIENCES

Collaborating/Partner Organisation(s)

Dairy Innovation Australia Ltd

Administering Organisation The University of Queensland

Project Summary

Efficient production of safe, wholesome food relies on the application of the best available knowledge of the food material and the processing technologies involved. This project applies proteomics, the most advanced protein analysis technique, to determine the changes that occur in milk during high heat treatment and subsequent storage of the heat-processed milk product. Armed with such knowledge, the dairy processing industry will be able to make informed decisions about processing and storage conditions to ensure the final products provided to the consumer are of the highest possible quality.

LP0883462 Dr J Batley; A/Prof D Edwards

Approved Project Title **Characterising genetic variation in Brassica napus**

2008 : \$ 141,509

2009 : \$ 283,019

2010 : \$ 283,019

2011 : \$ 141,509

Primary RFCD 2702 GENETICS

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Bayer BioScience N.V.

New South Wales Department of Primary Industries

Australian Genome Research Facility Ltd

Administering Organisation The University of Queensland

Project Summary

Applying the latest scientific advances supports society through promoting a knowledge based economy, as well as through securing agricultural productivity and biomedical applications. Establishing these methods places Australia at the forefront of genomics technology with direct applications for Australian agricultural, biomedical and biotechnology industries. Maintaining agricultural production in an unreliable environment remains a national challenge, both for rural and urban communities. This technology will provide a detailed understanding of crop genome variation in relation to agronomic traits and lead to the development of crops that are better suited to the Australian climate, supporting a sustainable agricultural industry.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883861 Dr JJ Corcoran; Dr P Chhetri; Prof RJ Stimson

Approved Project Title **Enhanced agency response strategies through modelling geo-temporal characteristics of emergency services calls**

2008 : \$ 16,458

2009 : \$ 34,731

2010 : \$ 38,887

2011 : \$ 20,614

Primary RFCD 3704 HUMAN GEOGRAPHY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Queensland Fire and Rescue Service

Administering Organisation The University of Queensland

Project Summary

Understanding the timing and geographic distribution of emergency calls to agencies such as Fire, Police and Ambulance, is critical to improving emergency response and developing effective preventive strategies. In turn, improved response and prevention strategies can help save lives and minimise economic costs. This project uses advanced geographic and statistical methods to analyse fire incidents and develop the evidence base necessary to inform effective response and prevention strategies. The project will critically assist emergency fire response, but will also provide a case study that can be adapted for other kinds of emergency response.

LP0883806 Prof BM Degnan; Dr MJ Sellars

Approved Project Title **An investigation of the underlying mechanisms that control gender and fertility in the Moreton Bay Bug, *Thenus orientalis***

2008 : \$ 20,000

2009 : \$ 45,000

2010 : \$ 50,000

2011 : \$ 70,000

2012 : \$ 45,000

Primary RFCD 3007 FISHERIES SCIENCES

Collaborating/Partner Organisation(s)

Lobster Harvest Pty Ltd

Administering Organisation The University of Queensland

Project Summary

To date there is no available information on the underlying biochemical and genetic mechanisms that control gender and fertility in *Thenus* spp. Understanding how gender and fertility are controlled in this lobster species will allow development of technologies to exploit desired commercial traits such as reproductive sterility (for genetic protection). Such technologies will facilitate rapid uptake of commercial culture of this high-value species in Australia and establishment of international markets.

LP0883650 Prof J Foster; Prof JC Quiggin; Dr PE Simshauser; Mr CJ Nalder

Approved Project Title **Assessing the impacts of proposed carbon trading and tax schemes on the Australian electricity industry and the overall economy**

2008 : \$ 51,647

2009 : \$ 102,106

2010 : \$ 107,689

2011 : \$ 57,231

Primary RFCD 3402 APPLIED ECONOMICS

Collaborating/Partner Organisation(s)

Babcock & Brown Power Pty Ltd

Administering Organisation The University of Queensland

Project Summary

Currently, policymakers require a much clearer understanding of the impacts of different carbon abatement policies. Mounting evidence on global warming is making this an increasingly urgent priority. The proposed project is specifically concerned with using state of the art economic modelling approaches to give the best advice possible to policymakers in crafting an environmentally sustainable set of economic policy instruments that can maintain our enviable standard of living well into the future. The findings of the project will be available before the new Kyoto negotiation round commences.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883377 Dr MM Foster; Dr P Henman; Dr JM Fleming; Dr CF Tilse

Approved Project Title **Financing and management of lifetime care for adults with acquired disabilities and high care needs**

2008 : \$ 36,217

2009 : \$ 63,177

2010 : \$ 45,215

2011 : \$ 18,255

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Motor Accident Insurance Commission

The Public Trustee of Queensland

Administering Organisation The University of Queensland

Project Summary

Lifetime care for adults with acquired disabilities is of growing public concern. Substantial levels of unmet need, poorly coordinated services and inadequacy of care arrangements to guarantee lifetime care are pressing concerns. Coordinating multi-sector and service inputs is an ongoing problem for policy makers and providers in Australia. The proposed project will develop an empirical understanding of how current systems of financing and management of lifetime care operate at policy and service delivery levels for adults with acquired disabilities. This provides a strategic foundation for policy development and enhanced lifetime care arrangements that will be of relevance to other populations.

LP0883644 Prof MJ Gidley; Dr GR Monteith; Dr SJ Roberts-Thomson; Prof PN Shaw; Dr RG Dietzgen

Approved Project Title **Nutritional properties of mango fruits: linking plant genomics to cellular bioactivities**

2008 : \$ 45,000

2009 : \$ 90,000

2010 : \$ 90,000

2011 : \$ 45,000

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

QLD Department of Primary Industries and Fisheries

Administering Organisation The University of Queensland

Project Summary

Mango fruits are prized for their sensorial properties, but little information is available on potential nutritional benefits. By using a broad-based bioactivity screen, followed up with specific bio-activity assays, molecular components within mango fruits that have the potential to deliver nutritional health benefits will be identified. This information will be used both to provide information on the properties of current mango varieties and to develop breeding tools for enhancing nutritional properties in future varieties.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883881 Prof RG Gilbert; Dr MT Gaborieau; A/Prof ID Godwin

Approved Project Title **Graft copolymers from starch and synthetic monomers**

2008 : \$ 65,000

2009 : \$ 135,000

2010 : \$ 145,000

2011 : \$ 75,000

Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

APA(I) Award(s): 1

APDI Dr MT Gaborieau

Collaborating/Partner Organisation(s)

BASF Australia

Administering Organisation The University of Queensland

Project Summary

Polymer dispersions, manufactured as latexes in large quantities in Australia and elsewhere, have myriad applications, such as in adhesives, bitumen modifiers, paints and paper coatings. This project will create the enabling science to replace by starch the current synthetic products used to stop these dispersions from coagulating. This will create new uses for renewable resources and will reduce environmental insult by avoiding the leaching of biologically incompatible chemicals. By using starch from crops suited for Australia's arid climate, the new technology will reduce both our dependence on imported products and our greenhouse gas emissions.

LP0883808 A/Prof ID Godwin; Prof CP Grof; Mr ND Muller

Approved Project Title **eSorghum as a bio-fuel feedstock for arid environments**

2008 : \$ 149,813

2009 : \$ 295,576

2010 : \$ 285,050

2011 : \$ 293,047

2012 : \$ 153,760

Primary RFCD 3002 CROP AND PASTURE PRODUCTION

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Pacific Seeds

Administering Organisation The University of Queensland

Project Summary

Increasing fuel costs, finite resources and the need to develop more carbon neutral and cleaner fuels have created a need for renewable sources. Ethanol and future generation biofuels (butanol and more energy-rich alcohols) can be extracted from biomass sources. Sorghum is an ideal bioenergy feedstock in the hotter, drier areas of Northern Australia, where starch (grain), sugar and lignocellulose (stover) can be amassed in this water efficient plant. Identifying and manipulating the genes to enable the improvement of sorghum as a dedicated bioenergy crop, will enable the increased efficiency of the Australian biofuels industry and create sustainable rural industries.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883448 A/Prof PJ Halley; A/Prof BR Bhandari; Dr JA Cichero; A/Prof LC Ward; Dr TM Nicholson

Approved Project Title **A Novel Rheological and Chewing and Swallowing model for the Smart Design of Texture Modified Foods for Increased Aged Health**

2008 : \$ 65,000
2009 : \$ 125,000
2010 : \$ 120,000
2011 : \$ 60,000

Primary RFCD 2901 INDUSTRIAL BIOTECHNOLOGY AND FOOD SCIENCES

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)
RSL Care

Administering Organisation The University of Queensland

Project Summary

Difficulty in chewing and swallowing mean about 40% of elderly people require Texture Modified (TM) meals. Elders able to eat only very soft food textures have a 2.4 fold higher risk of mortality. However existing methods to assess the level of texture modification are poor; achieving a consistent level of TM meal is difficult; and TM meals have poor sensory properties (appearance, flavour, aroma). This work will use a novel chewing and swallowing model in conjunction with novel food flavour and property measurements to develop new texture modified foods with increased taste, ease of swallowing and nutritional value.

LP0883380 A/Prof BD Hankamer; Dr PM Schenk; Dr UC Marx; Prof Dr CH Posten; Dr O Kruse

Approved Project Title **Second generation biofuels: developing environmentally friendly high-efficiency microalgae for biofuel production**

2008 : \$ 115,926
2009 : \$ 228,124
2010 : \$ 221,246
2011 : \$ 109,048

Primary RFCD 2708 BIOTECHNOLOGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)
Pacific seeds
Advanta India Limited

Administering Organisation The University of Queensland

Project Summary

The development of CO₂-neutral (biodiesel) and CO₂-free (hydrogen) fuels is an urgent challenge facing our society to combat climate change and protect against oil price shocks. Successful outcomes from this project will bring this innovative technology closer to commercial reality. The solar-powered microalgal systems being developed, offer a number of national/community benefits including

1. A high-efficiency frontier-technology for clean fuel production for the Australian and international market
2. A new process to desalinate water
3. Frontier technology to sequester atmospheric CO₂
4. Frontier technologies for wealth generation in drought- or salinity-affected and naturally arid regions

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883314 Dr DK Harrison; Prof DC Joyce; Dr KM Davies

Approved Project Title **Australian native plant species as models for understanding the regulation and roles of betalain pigment synthesis**

2008 : \$ 16,040

2009 : \$ 31,108

2010 : \$ 28,868

2011 : \$ 13,799

Primary RFCD 3003 HORTICULTURE

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Aussie Colours Pty Ltd

Administering Organisation The University of Queensland

Project Summary

This project will have triple bottom line benefits. Economic: new cultivars developed from understanding betalains will sell worldwide, generating returns, incomes and employment in urban, peri-urban and rural Australia. Social: Novel Ptilotus and Calandrinia cultivars will adorn parks and gardens around Australia, thereby enhancing quality of life. Environmental: Ptilotus and Calandrinia are inherently drought resistant. Novel ornamental cultivars will have high water use efficiency and contribute to water conservation in urban Australia in the face of drought and global warming. Moreover, understanding their synthesis and roles could yield new strategies for enhancing stress tolerance in other species, including crop plants.

LP0883403 A/Prof SM Mahler; Prof MT Smith; Dr BD Wyse; Dr TM Woodruff; Prof PM Curmi; Dr DJ Naylor; Dr RJ Brown

Approved Project Title **Development of chaperonin 10-based second generation biopharmaceuticals for treatment of inflammatory diseases.**

2008 : \$ 45,000

2009 : \$ 90,000

2010 : \$ 90,000

2011 : \$ 45,000

Primary RFCD 3202 IMMUNOLOGY

Collaborating/Partner Organisation(s)

C-Bio Ltd.

Administering Organisation The University of Queensland

Project Summary

Diseases caused by malfunctioning of the body's immune system (inflammatory diseases) such as rheumatoid arthritis, psoriasis and Crohn's disease cause illness in all cultures and societies, and impose financial strain on health care providers. Current treatment relies on biopharmaceuticals that block inflammatory mediators in the body or with pharmaceuticals such as anti-inflammatory drugs; both these treatments may have serious side effects. Cpn10 suppresses the body's inflammatory response while maintaining immune function to combat infections. The project seeks to develop new, safe and effective biopharmaceuticals based on Cpn10 for the treatment of a variety of chronic inflammatory diseases and autoimmune disorders.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883689 Dr PA Meehan; Dr W Daniel; Dr S Ding

Approved Project Title **Optimal transitional surface for a new continuous press forming process**

2008 : \$ 35,000

2009 : \$ 70,000

2010 : \$ 70,000

2011 : \$ 35,000

Primary RFCD 2903 MANUFACTURING ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Australian Tube Mills Pty Ltd

Administering Organisation The University of Queensland

Project Summary

This project addresses the National Research Priority - Frontier Technologies for Building and Transforming Australian Industries through smart information use. This project aims to gain fundamental scientific understanding of a manufacturing process with the aim of developing a tool that will enhance existing manufacturing processes and controls from an 'art of expertise' to a scientific understanding and improvement. This manufacturing area represents a niche market for Australian manufacturing and the development of a product that enhances productivity and reduces costs has the potential to elevate Australian manufacturers in the export market and create economic benefit for Australia.

LP0883675 Dr JF Mueller; Dr DW Hawker; Dr ME Bartkow; Dr K Booij; Dr SD Costanzo; Dr RK Symons; Mr AJ Watkinson; Dr BL Tan; Dr BI Escher

Approved Project Title **Development and calibration of aquatic passive sampler technologies for emerging water pollutants**

2008 : \$ 50,000

2009 : \$ 120,000

2010 : \$ 110,000

2011 : \$ 40,000

Primary RFCD 2911 ENVIRONMENTAL ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Queensland Environmental Protection Agency

Great Barrier Reef Marine Park Authority

South Australian Environmental Protection Authority

Environmental Protection Authority, Victoria

Queensland Health Forensics and Scientific Services

National Measurement Institute

Brisbane Water

Department of Water, WA

SEQWater Corporation

NSW Dept of Environment & Climate Change

Administering Organisation The University of Queensland

Project Summary

Contaminated water is a key exposure source for many emerging pollutants either direct via consumption of water or indirect via consumption of aquatic biota. Monitoring of emerging aquatic pollutants remains a challenge. In this project we will develop cost effective monitoring technologies for emerging aquatic pollutants. The outcome will allow a more comprehensive and cost-effective monitoring of these pollutants and related to that a decrease in risk related to water pollution. Furthermore it will enhance consumer confidence, improve water management and allow more comprehensive identification of emerging risks related to aquatic pollutants.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883616 Prof HP Possingham; Dr KA Wilson

Approved Project Title **Spatial prioritization in the context of climate change and unforeseen opportunities: maximizing conservation outcomes in Gondwana Link**

2008 : \$ 53,058

2009 : \$ 107,367

2010 : \$ 108,617

2011 : \$ 108,617

2012 : \$ 54,308

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

Collaborating/Partner Organisation(s)

The Nature Conservancy
The Wilderness Society Inc
Greening Australia

Administering Organisation The University of Queensland

Project Summary

The economic wealth of Australia is underpinned by its remarkable biological diversity. However, land and water degradation are eroding Australia's natural asset base and climate change is expected to magnify these impacts. Given limited funds for biodiversity conservation, we need to maximise the benefits of our investment in natural resource management. This research will deliver approaches and tools to ensure that we maximise the protection of biological diversity in the context of a changing world climate and a limited budget. We will share the results of our research with decision makers, scientists, and the general public.

LP0883663 Dr AJ Richardson; Dr MA Burford; A/Prof K Yin; Prof HP Possingham; Dr D Rissik

Approved Project Title **Resilience of Moreton Bay to climate change: Links between nutrient inputs and plankton dynamics**

2008 : \$ 80,000

2009 : \$ 160,000

2010 : \$ 160,000

2011 : \$ 80,000

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

APA(I) Award(s): 4

Collaborating/Partner Organisation(s)

Healthy Waterways Partnership
Environmental Protection Agency

Administering Organisation The University of Queensland

Project Summary

A healthy Moreton Bay, with its lucrative fishing, iconic turtles, dugongs and seabirds, helps support the \$9 billion per annum tourist industry in SE Queensland. Moreton Bay is under increasing threat from nutrients produced by a mushrooming coastal population and from climate change impacts. Here we investigate nutrient-plankton relationships and develop a simple model to evaluate future impacts on bay health. This project will put Australian scientists at the forefront of research focused on the adaptation of coastal marine environments to climate impacts, and ensure that Moreton Bay remains healthy now and into the future

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883530 Dr PT Scott; Prof PM Gresshoff

Approved Project Title **Genetic transformation of the biodiesel producing tree legume Pongamia pinnata**

2008 : \$ 22,500

2009 : \$ 60,000

2010 : \$ 70,000

2011 : \$ 82,500

2012 : \$ 92,500

2013 : \$ 42,500

Primary RFCD 2708 BIOTECHNOLOGY

Collaborating/Partner Organisation(s)

Bioenergy Research Pty Ltd

Administering Organisation The University of Queensland

Project Summary

In response to global climate change and the threat of declining reserves of fossil fuels, liquid fuels of the future are to be manufactured in greater proportion from sustainable biological resources. Pongamia, a native legume tree, has the potential to make a significantly positive impact on the emerging biofuels industry. As a legume Pongamia requires no nitrogen fertiliser, is not a food crop, and can grow well on marginal lands unlikely to be used for food crops. Improvement of Pongamia through the genetic tools developed in this project will provide an environmentally sustainable source of biodiesel long into the future.

LP0883839 Dr JG Tichon; Dr GM Wallis; Dr MS Horswill

Approved Project Title **Improving Efficiency and Safe Workplace Operations in Heavy Industry: Training Problem Solving and Decision Making through Immersive Simulation**

2008 : \$ 60,000

2009 : \$ 130,000

2010 : \$ 120,000

2011 : \$ 90,000

2012 : \$ 90,000

2013 : \$ 50,000

Primary RFCD 3803 COGNITIVE SCIENCE

Collaborating/Partner Organisation(s)

The Construction Training Centre

Administering Organisation The University of Queensland

Project Summary

Civil construction is critical to Australia's economic growth. Currently the industry suffers from significant accident rates and severe labor shortages. Simulators offer a means to tackle both issues by accelerating training and familiarizing staff with unsafe, hazardous situations. This project will test and refine training programs to ensure they are both valid and effective. Results will maximize quality of simulator-based training for heavy industry and contribute to safer workplace practices on high risk work sites. Training innovations in heavy industry are essential to keep Australia's competitive edge in the domestic labor market and Asia-Pacific region.

Summary of Linkage Projects Proposals for Funding to Commence in 2008

LP0883837 Dr DJ Trott; Prof MR McGowan; Prof M Bellgard; Dr AE Lew

Approved Project Title **An integrated genomics approach to improve our understanding of the biology of genital campylobacteriosis in beef cattle**

2008 : \$ 75,000

2009 : \$ 145,716

2010 : \$ 130,000

2011 : \$ 59,284

Primary RFCD 3005 VETERINARY SCIENCES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

QLD Department of Primary Industries & Fisheries

Pfizer Australia

Gribbles Veterinary Pathology

Administering Organisation The University of Queensland

Project Summary

Beef is Australia's most valuable agricultural export estimated at \$9.6B annually and this industry accounts for one-third of full time employment in regional communities. Currently, unknown causes of reproductive losses in cattle in Northern Australian cost producers approximately \$15M per annum. Bovine genital campylobacteriosis is one of the major risk factors associated with this high cost due to the inability to accurately diagnose the disease. This research will integrate genomics and bioinformatics with infection and vaccination models to improve our understanding of the biology of the disease to develop appropriate control strategies securing Australia's beef industry.

LP0884013 Prof JE Wilson; Dr OR Wright; Prof DG Hegney; Dr EC Ward

Approved Project Title **Food services in residential aged care: Financial, personnel, and service delivery factors**

2008 : \$ 28,126

2009 : \$ 59,720

2010 : \$ 57,243

2011 : \$ 25,649

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Blue Care Head Office

TriCare

Administering Organisation The University of Queensland

Project Summary

Evaluating current services to identify systems that deliver satisfying, effective, high quality care to vulnerable older Australians in aged care facilities (ACFs) is of national significance. If residents are more satisfied with their meals, their nutritional status will either improve or stabilise, reducing their risk of malnutrition-related morbidity and mortality and the associated financial burden to health care services. The cost of residential aged care is significant and growing and is subject to increased monitoring and concern. This project will suggest refinements of the Aged Care Accreditation Standards to improve their applicability to ACF residents and appropriateness for evaluating resident-focused nutritional care.