

Summary of Linkage Infrastructure Applications for Funding to Commence in 2006

Queensland

The University of Queensland

LE0668507 A/Prof BJ Carroll; Dr DJ Maclean; Dr PR Ebert; Prof M Trau; Prof MP Jennings; Dr PR Young; Prof RJ Henry; A/Prof LS Lee

Approved Project Title **Real time PCR and nanoparticle diagnostic facilities for high-throughput quantitative analysis of genomic structure and gene expression**

2006 : \$260,000

Primary RFCD 2702 GENETICS

Partner Organisation(s)

The University of Queensland
Southern Cross University

Administering Institution The University of Queensland

Project Summary

Modern molecular tools have led to an explosion in genome projects and unification of all areas of biology. The most basic need for such research is access to improving technologies for detecting DNA fingerprints that distinguish genetically-diverse genes, and determining which genes are "switched on" or "off" in various situations. Real time PCR technology, pioneered by The University of Queensland (UQ) and Southern Cross University (SCU) using ARC funding in 1996, is now the technology of choice for much of this research. This project will provide high-throughput equipment for real time PCR, and will develop complementary high-throughput "nanoparticle" DNA genotyping technologies, with applications to medicine and agriculture.

LE0668543 A/Prof MJ Garson; Dr SE Bottle; Prof MJ Gidley; Prof PN Shaw; Dr JJ De Voss; Dr JT Blanchfield; Prof I Toth

Approved Project Title **A high resolution, high-throughput chromatographic system for separation and characterisation of complex samples**

2006 : \$280,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisation(s)

The University of Queensland
Queensland University of Technology

Administering Institution The University of Queensland

Project Summary

Purchase of this equipment will support innovative and collaborative research addressing three of the National Research Priority areas. For example, defining novel drug delivery systems, or the chemical components present in Australia's bioresources, addresses 'Frontier technologies for building and transforming Australian industries', particularly the priority goals of breakthrough science and frontier technologies. The research into trace components in food products, and on fruit fly chemistry, relates to National Research priority four 'Safeguarding Australia', with a priority goal of protecting Australia from invasive diseases and pests. Nutraceutical research addresses the goal of 'Promoting and maintaining good health'.

LE0668521 A/Prof IR Gentle; Prof GM Lu; Prof M Trau; Prof J Drennan; Prof AK Whittaker; A/Prof JL Martin; A/Prof RL Frost; Dr JT Klopogge; Dr CL Brown

Approved Project Title **Small Angle Scattering Facility for the Materials and Biological Sciences**

2006 : \$300,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisation(s)

The University of Queensland
Queensland University of Technology
Griffith University

Administering Institution The University of Queensland

Project Summary

There are many benefits to the community from the application of modern technology for materials and protein characterisation, particularly one that is as broadly applicable as small angle scattering. For example, it can directly aid in the development of new materials for energy storage and generation, biomaterials for improved health and the process of design of drugs for many types of disease. This facility will benefit a large number of researchers and significantly enhance the outcomes of recent investments in high quality pure and applied research.

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LE0668241 Prof TJ Gonda; Dr BG Gabrielli; Dr SM Grimmond; Dr SC Barry; Prof PF Bartlett; Dr JP Whitehead; Prof M Crossley; Dr RW Johnstone; A/Prof EA Musgrove
Approved Project Title **A Facility for High-Throughput, Functional Gene Discovery Using Arrayed Retroviral Expression Cloning**
2006 : \$824,610
Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisation(s)

The University of Queensland
The University of Adelaide
The University of Sydney
Peter MacCallum Cancer Institute
Garvan Institute of Medical Research

Administering Institution The University of Queensland

Project Summary

The proposed facility will represent world-leading technology in functional genomics and provide Australian scientists with unique opportunities to identify genes involved in a broad range of biological processes. This will contribute to fundamental knowledge in mammalian biology, and equally importantly, is likely to identify genes involved in important health problems such as cancer, inflammatory disease, brain damage and diabetes. Such genes may in turn constitute targets against which new therapies may be developed. This endeavour will contribute to national research priorities in both the health and scientific/technological development arenas.

LE0668073 Prof JA Hay; A/Prof RA Fotheringham; A/Prof DJ Carter; Ms KM Kilner; Ms AH Horn; Prof BH Bennett; Prof PR Eggert; Mr JF Arnold; Prof EA Webby; Mr RH Coleman; Prof GR Worby; A/Prof W Ommundsen; Ms DM Bird; Prof DJ Haskell; Dr CM Taylor; Dr P Mead
Approved Project Title **AustLit - humanities research infrastructure development through knowledge-based dataset building, augmentation of key research elements and ICT developments.**
2006 : \$544,000
Primary RFCD 4202 LITERATURE STUDIES

Partner Organisation(s)

The University of Queensland
The University of New South Wales
Monash University
The University of Sydney
The Flinders University of South Australia
The University of Western Australia
Deakin University
James Cook University
University of Tasmania

Administering Institution The University of Queensland

Project Summary

The AustLit development and augmentation program 2006-2008 will enable researchers to gain a greater understanding of the breadth and scope of Australia's conversation with the world through its literature by providing new datasets and enhanced access to the pre-eminent resource to our literary culture. AustLit aims to deliver authoritative information and analysable data about all Australian writers and their writing and in 2006 will develop specialist datasets relating to Aboriginal and Torres Strait Islander writers; multicultural writers; and regional and colonial writing from Tasmania and Qld. ICT developments will provide other collaborative groups with an opportunity to use a highly successful middleware platform for new KM projects.

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LE0668526 A/Prof RJ Lewis; Dr JD Hooper; Dr DL Pountney; Prof JF Hancock; Prof RJ Capon; Prof Dr MJ Waters; Prof R Minchin; Dr BA Reynolds; Prof P Timms; Dr SE Bottle; Prof JA Clements; Prof NW Johnson

Approved Project Title **Biomolecular discovery and analysis facility**

2006 : \$542,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisation(s)

The University of Queensland
Queensland University of Technology
Griffith University

Administering Institution The University of Queensland

Project Summary

This facility will provide Australian researchers with unrivalled access to advanced cell visualisation and analysis tools, which until very recently were only available to the pharmaceutical industry and large US and European institutions. The facility will allow new approaches to identifying novel natural products and understanding cell signalling pathways. Knowledge of these pathways and the identification of molecules that can affect them are keys to understanding normal cellular physiology and identifying drug-like molecules able to inhibit malfunctioning pathways found in different disease such as cancer. The facility will accelerate drug discovery and basic research in cell biology and underpin National Research Priorities.

LE0668382 A/Prof JL Martin; A/Prof IR Gentle; A/Prof CJ Kepert; Dr P Turner; Dr JM Guss

Approved Project Title **e-Research Infrastructure for the Molecular and Materials Structure Sciences**

2006 : \$1000,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisation(s)

The University of Queensland
The University of Sydney

Administering Institution The University of Queensland

Project Summary

Understanding molecular and materials structure in atomic detail is vital to a knowledge-based economy and a healthy society. The development of smart materials, nanotechnological devices, hydrogen storage materials, molecular switches, magnets and sensors, for example, depends on knowledge of three-dimensional atomic structure. Cures for illnesses such as SARS, AIDS and Alzheimer's disease and understanding the aging process depends on knowledge of biomolecular structure. The deployment and development of automation-enhanced remote access to structural instruments through the web will greatly enhance Australian structure-based research, and make this science accessible to the public.

LE0668445 Prof BA Pailthorpe; Dr RA Gingold; Prof DA Abramson; A/Prof IM Atkinson; Prof S Crozier; Prof MA Ragan; Prof ML Heron; Dr A Khan; Dr PV Ridd; Dr NS Bordes; A/Prof MA Knackstedt; Prof RA Lewis

Approved Project Title **Data Grid Storage Infrastructure for e-Research**

2006 : \$800,000

Primary RFCD 2916 COMPUTER HARDWARE

Partner Organisation(s)

The University of Queensland
The Australian National University
Monash University
James Cook University
OTHER - QPSF Ltd

Administering Institution The University of Queensland

Project Summary

Vast increases in computing power and the arrival of new scientific instruments are contributing to the so-called data deluge of the 21st century. Archiving these data is essential to research. While the underlying computing and network requirements are well resourced, data storage capacity has been relatively neglected in Australia. A continuing problem in Australian research communities is the absence of coordinated digital storage resources. In many cases computational and experimental data are stored on ad-hoc resources, such as local university servers, PC disc drives, CDs, or DVDs, and are not generally accessible. The central goal of this proposal is to provide a long-term, integrated scientific data storage capacity for Australia.

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LE0668246 Dr LJ Richards; Dr GJ Goodhill; Prof PF Bartlett; Prof PA Koopman; Prof BJ Wainwright; Prof MT Smith;
Prof A Mackay-Sim; Prof T Kilpatrick

Approved Project Title **Advanced Cell Labelling and Imaging Facility**

2006 : \$400,000

Primary RFCD 3207 NEUROSCIENCES

Partner Organisation(s)

The University of Queensland

Griffith University

The University of Melbourne

Administering Institution The University of Queensland

Project Summary

Understanding the genetic regulation of cellular processes such as migration, differentiation and growth is an important frontier technology with significant biomedical potential. The Australian community is facing an increasing need to provide solutions for a variety of human diseases and disorders, including birth defects, nervous system injury and stroke, and ageing-related conditions. The proposed facility will allow researchers to test in vivo gene/pharmaceutical therapies as well as to better understand the genetic regulation of normal cellular processes.