

Summary of Discovery Projects Proposals for Funding to Commence in 2007

Tasmania

University of Tasmania

DP0771720 Prof AJ Canty

Approved Project Title **New Directions in Alkynylpalladium and Platinum Chemistry**

2007 : \$90,000

2008 : \$100,000

2009 : \$100,000

Primary RFCD 2599 OTHER CHEMICAL SCIENCES

Administering Organisation University of Tasmania

Project Summary

Reactions involving palladium or platinum compounds with organic reagents are important for the synthesis of new materials and organic molecules, including pharmaceuticals. This research program will provide a better understanding of applications involving these metals, together with advances in fundamental chemistry of wide general interest at an international level, and high quality research training in an area essential for the continued development of modern chemical and related industries in Australia.

DP0770157 Prof JM Dickey; Dr SP Ellingsen; Prof PM McCulloch

Approved Project Title **Radio Interferometer Studies of Compact Astronomical Sources**

2007 : \$139,271

2008 : \$117,313

2009 : \$99,708

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Administering Organisation University of Tasmania

Project Summary

The giant black holes in the centres of distant galaxies that are the topic of this study are used to set the reference frame for geodesy on the earth. Remote and exotic as they are, they have real-world applications such as improving the positions available from GPS receivers and measuring continental drift. The signal processing equipment being developed for this new telescope is based on FPGA (field programmable gate array) chips, that promise to revolutionize the data processing industry, from radar to cellular telephones to computer networks. The young scientists who are working on this project will go on to lead the commercial and industrial applications of this new technology.

DP0772348 Dr E Foo

Approved Project Title **The role of plant hormones in arbuscular mycorrhizal symbiosis**

2007 : \$90,000

2008 : \$88,000

2009 : \$90,000

Primary RFCD 2704 BOTANY

APD Dr E Foo

Administering Organisation University of Tasmania

Project Summary

The vast majority of plant species can form a beneficial symbiosis with specialised soil fungi, an association that can enhance the uptake of nutrients from the soil, improve tolerance to drought and disease and minimise soil erosion. An understanding of how plants establish and regulate this important symbiosis has the potential to contribute to the development of productive and sustainable farming systems by making efficient use of the limited water resources, reducing soil erosion, reducing reliance on pesticides and fertilisers and producing more nutritious fruits, vegetables and grains.

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DP0770910 A/Prof MA Hindell; Dr PN Trathan

Approved Project Title **Winter Foraging Locations Of Southern Ocean Predators In Relation To Stochastic Variation In Sea-Ice Extent**

2007 : \$90,000

2008 : \$88,000

2009 : \$85,000

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

Administering Organisation University of Tasmania

Project Summary

Antarctic marine communities are likely to be amongst the first anywhere to show changes due to climate change. A top national priority for Australia is to understand how Antarctic communities will be affected if climate change does occur. As predators reflect changes occurring lower in the food chain, these are an important group to study. This study will be the first to specifically link ice extent with the habitat use of predators, and quantify how this varies over time. Some work already indicates that there have been community level changes in some predators in the Antarctic due to changes in ice extent, so developing tools to predict the nature and magnitude of these changes are needed.

DP0772319 Dr MJ Hovenden; Dr PC Newton; Dr M Rillig; Dr E Pendall

Approved Project Title **Ecosystem level impacts of climate change on a temperate grassland**

2007 : \$90,000

2008 : \$88,000

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

Administering Organisation University of Tasmania

Project Summary

The sustainable use of temperate native pastures is important economically because of grazing and for biodiversity since they are home to many threatened plants. Native pasture sustainability depends on maintaining species diversity and vegetation productivity, both of which have been shown to change in response to climate change. The aims of this project are to elucidate what impact these changes have on the ecosystem properties of a native pasture. This is important, as it will allow likely problems caused by global climate change to be predicted by increasing the understanding of the underlying mechanisms as well as improving the management of grasslands in an environmentally sustainable way.

DP0770685 Dr A Johnston

Approved Project Title **A study of travel writing in Australian colonial history**

2007 : \$103,730

2008 : \$114,944

2009 : \$120,655

2010 : \$83,056

2011 : \$70,994

Primary RFCD 4203 CULTURAL STUDIES

QEII Dr A Johnston

Administering Organisation University of Tasmania

Project Summary

Travel writing is a key mechanism by which readers learn about other peoples and cultures, a genre that is crucial to the formation of identities, ideologies, and ideas. Australian travel writing provided foundational texts for those emigrating to the colony. This project positions Australian texts within an international comparative sphere. It will advance the understanding of colonial culture in Australia, and of the perceptions and values of those who settled colonial Australia. It will make available to Australian and international students and researchers a rich archive of texts that have not been previously mapped. Australians are keenly interested in travel and its literature, and this project brings colonial travel texts to public attention.

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DP0770352 Prof JE Malpas
Approved Project Title **Ethos and Topos: A Philosophical Investigation of the Ethics and Politics of Place**
2007 : \$97,030
2008 : \$95,595
2009 : \$102,030
2010 : \$93,030
2011 : \$93,030
Primary RFCD 4401 PHILOSOPHY
APF Prof JE Malpas
Administering Organisation University of Tasmania

Project Summary

This project will contribute to the public and academic understanding of the way our sense of place relates to our sense of who we are, and the ethical implications of that relation. The outcomes of the project will have an application to a wide range of applied and policy areas in which questions of identity and belonging are at issue. It will connect directly with ongoing public discussion about a number of critical contemporary issues relating to ideas of nationhood and community, our connection to land and environment, and our sense of identity and belonging.

DP0771033 Dr HJ Maxwell-Stewart; Dr R Kippen; Prof JS McCalman; Mr GJ McCarthy; Dr R Shlomowitz; A/Prof AJ Venn; A/Prof DG Meredith; Dr SC Dharmage
Approved Project Title **Founders and survivors: Australian lifecourses in historical context**
2007 : \$200,000
2008 : \$200,000
2009 : \$250,000
2010 : \$50,000
2011 : \$100,000
Primary RFCD 3705 DEMOGRAPHY
Administering Organisation University of Tasmania

Project Summary

This project will create one of the world's outstanding longitudinal studies of human health and resilience. It will contribute to the historical understanding of European migration, settler colonialism, forced labour and human health under stress, long-run family formation and falling fertility, household economy, and the social determinants of health. It will contribute to debate both nationally and internationally on the long-run effects of social and biomedical interventions and of investment in human capital. It will tell the grassroots history of the Australian penal and colonial experiments and it will form a scholarly coalition with the great community of family historians.

DP0773686 A/Prof BM Potts; Dr JM O'Reilly-Wapstra; Prof T Whitham
Approved Project Title **Impacts of Eucalypt genetics at the community and ecosystem levels**
2007 : \$130,000
2008 : \$125,000
2009 : \$120,000
Primary RFCD 2707 ECOLOGY AND EVOLUTION
Administering Organisation University of Tasmania

Project Summary

The genetics of a dominant tree species has recently been shown to have far reaching effects on associated biodiversity and ecosystem processes. If this finding proves to be general and is shown to be the case for Australia's iconic eucalypts then understanding their genetics will provide significant insights into the drivers of biological organisation and ecological processes in Australia's native forests and woodlands. This will also have major implications for the rapidly expanding environmental and forestry plantings across Australia where choice of seed source may have far reaching consequences.

Summary of Discovery Projects Proposals for Funding to Commence in 2007

DP0773489 Prof R Ray

Approved Project Title **Modelling Food Expenditure, Analysing Nutrient Security, Measuring Hunger and Calculating Purchasing Power Parity: Methodological Advances with Policy Applications**

2007 : \$91,000
2008 : \$77,000
2009 : \$94,000

Primary RFCD 3402 APPLIED ECONOMICS

Administering Organisation University of Tasmania

Project Summary

The analysis of consumption changes in selected Asian countries will throw light on Australia's trade potential, especially with one of the fastest growing countries.

More informed debate on the role of trade and aid in reducing hunger and poverty. Following the 2000 Millennium summit and the step up of Australian developmental aid, the subject has returned to the centre stage in policy discussions.

The systematic use of unit value information available elsewhere, but currently lacking in ABS data, will help the latter in improving its HES.

Contribute to "understanding our region and the world" (Key Priority Goal in Research Priority 4 of ARC).

Provide data sets for use in Australian RHD dissertations .

DP0770478 Prof JB Reid; Dr JL Weller

Approved Project Title **Genetic regulation of photomorphogenesis in legume crops to meet changing agronomic needs**

2007 : \$150,000
2008 : \$147,000
2009 : \$138,000

Primary RFCD 2704 BOTANY

Administering Organisation University of Tasmania

Project Summary

Legumes are widely grown as forage and grain crops and make a substantial contribution to the Australian economy. Light is an important determinant of plant architecture and productivity and we need to know more about how development is regulated by light in this important plant group. The natural light environment faced by plants is complex and varies with crop density, season and time of day. Understanding the interaction of photoreceptors and plant hormones in the control of growth is vital for manipulating crops to meet changing agronomic requirements.

Training of students in state-of-the art techniques and the generation of new germplasm for use by other researchers and plant breeders will be other significant outcomes of the project.

DP0771893 Dr RA Shellie

Approved Project Title **New separation technologies for profiling metabolites in biological samples**

2007 : \$70,000
2008 : \$50,000
2009 : \$30,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Administering Organisation University of Tasmania

Project Summary

Metabolomics is an important new field of science that is contributing to the understanding of life processes at the molecular level. But a widely acknowledged major limitation of current metabolomics technologies is the inability to accurately identify high numbers of detected metabolites in the biological extracts being studied. This project will develop cutting-edge separation science approaches to address this existing problem in metabolomics analysis. In doing so it will provide enormous benefit to Australian biotechnology and biomedical research and play a major role in transferring capabilities to laboratories and research institutes that are involved in research aimed at elucidating biological pathways and networks.

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DP0772055 Prof JS Sigafoos; Dr VA Green
Approved Project Title **Increasing Behavioural Flexibility in Children with Autism**
2007 : \$85,000
2008 : \$90,000
2009 : \$80,000
Primary RFCD 3301 EDUCATION STUDIES
Administering Organisation University of Tasmania

Project Summary

Autism is a developmental disorder associated with social and language deficits and an abnormal resistance to change. The number of children diagnosed with autism is increasing, as are the social and economic costs to Australia. While programs exist for teaching social and language skills, effective strategies for teaching the child how to cope with change are lacking. This project aims to discover educational procedures for increasing the child's tolerance for and ability to cope with change. By doing so, the project will benefit Australian families and teachers who need effective, research-based procedures for managing this core feature of autism.

DP0774621 Dr MR Stamm; Dr P Hacker
Approved Project Title **Methods of Topology: Boundary, Surface and the Inner/Outer in Kant and Wittgenstein**
2007 : \$36,701
2008 : \$48,845
2009 : \$50,235
Primary RFCD 4401 PHILOSOPHY
Administering Organisation University of Tasmania

Project Summary

Ways of 'inclusion' vs. 'exclusion' are of basic and pivotal significance in social and political scenarios, e.g. of establishing identities and conducting intra- and transnational discourses. At the root of these discourses lies a vague and implicit 'metaphysics' of the nature of the 'internal', of distinction and discrimination, fostered by intuitions of alleged privileged access to the 'inner'. The project has direct impact on the de-mystification of these socially central notions, its institutional misapprehensions and cultural implications. The project is a paradigm case of how thorough philosophical analysis can yield concrete results, contributing to an understanding of personal, social and political boundaries and demarcations.

DP0770568 Prof JJ Summers
Approved Project Title **Facilitatory and inhibitory mechanisms during interlimb coordination in young and older adults**
2007 : \$79,000
2008 : \$65,000
2009 : \$92,000
2010 : \$89,000
2011 : \$95,000
Primary RFCD 3801 PSYCHOLOGY
Administering Organisation University of Tasmania

Project Summary

The project seeks to understand how people coordinate their limbs and the factors which limit and enhance this capacity. This is of critical importance because coordination is a dominant deficit in aging and in patients suffering brain insult and neurodegenerative diseases. Disruption of this capacity compromises individual work productivity, mobility and independence. Proficient motor functioning is an important lifestyle factor as humans age and deficits in coordinated muscle activity will increase the risk of falls which are the leading cause of injury in elderly adults. Identification of changes in brain processes involved in interlimb coordination will allow for the development of strategies to improve motor functions in the aged.

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DP0770506 A/Prof RE Vaillancourt; Dr VF Hecht; Dr AA Myburg; Dr A Kilian

Approved Project Title **Ultra-high-throughput genotyping of Eucalyptus trees: Development and application of diversity array technology for genomic studies**

2007 : \$90,000

2008 : \$88,000

2009 : \$85,000

Primary RFCD 2702 GENETICS

Administering Organisation University of Tasmania

Project Summary

A major international eucalypt genomic project is underway. Australia needs to take part because the Australian public would expect Australia to be at the forefront of research on one of its national symbols. Eucalypts are critically important to biodiversity and commercial forestry. The development of the proposed generic eucalypt DARt chip will help keep Australia at the forefront of genetic and genomic research in eucalypts and help develop our biotechnology industry. Such research is essential for future forest tree breeding. Furthermore, eucalypt forests are one of our most important natural assets and their continual preservation requires that we develop better knowledge of their natural genetic variation and development.

DP0774623 Prof Dr JP Young; Dr MR Stamm; Prof G Zoeller

Approved Project Title **A Philosophical Investigation into Conditions of Conceptual Creativity**

2007 : \$51,147

2008 : \$44,147

2009 : \$46,147

Primary RFCD 4401 PHILOSOPHY

Administering Organisation University of Tasmania

Project Summary

Australia as a young and striving society depends heavily on innovation and the integration of creative forces. Yet creativity can only be understood through a close analysis of its conditions. This philosophical project can contribute directly by investigating paradigm cases of successful groupings of individuals around specific clusters of related problems. It aims at exploring the nature of such structures and conditions that determine the emergence and flourishing of conceptual creativity. Understanding the nexus between creativity, innovation and these groupings is of central importance to the promotion and maintenance of modern societies. It is central to the dynamics of societal processes and enhances creative responses in the realm of e. g. conflict solving.