

Western Australia

The University of Western Australia

FT0991289 Dr K Bekki

Approved Project Title **Simulating the Magellanic system using new special-purpose computers for gravitational dynamics**

2009 : \$ 98,600
2010 : \$ 197,200
2011 : \$ 197,200
2012 : \$ 197,200
2013 : \$ 98,600

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Administering Organisation The University of Western Australia

Project Summary

Australia is renowned for its significant contribution to great progress in observational studies of the Large and the Small Magellanic Clouds. The proposed state-of-the-art computer simulations will provide new and better understanding of the Magellanic Clouds and thus stimulate public interest, in particular, the next generation of Australian scientists. The extensive comparison between results from fastest computers and world-class telescopes will make important breakthroughs in the areas of computational astrophysics and extragalactic astronomy and thus inspire many scientists and engineers in other fields.

FT0990301 Prof MJ Cassidy

Approved Project Title **Engineering solutions for the next generation of offshore oil and gas infrastructure**

2009 : \$ 111,400
2010 : \$ 222,800
2011 : \$ 222,800
2012 : \$ 222,800
2013 : \$ 111,400

Primary RFCD 2908 CIVIL ENGINEERING

Administering Organisation The University of Western Australia

Project Summary

Offshore extraction of oil and gas reserves is a key industry for Australia, annually contributing A\$21 billion to the economy, and underpinning much of our prosperity. With reserves close to shore being exhausted and A\$1 trillion of gas reserves (four times that already developed) known to be 'stranded' in deep and remote locations, the outcomes of the proposed research programme will help scientifically underpin the reliable design of the next generation of Australia's exploration and development infrastructure. It continues Australia's leadership in the field of offshore geotechnics and engineering, fostering tomorrow's engineering leaders and ensuring the future competitiveness of Australia's offshore oil and gas industry.

FT0991008 Dr A Filipovska

Approved Project Title **Targeting mitochondrial dysfunction in disease**

2009 : \$ 85,800
2010 : \$ 171,600
2011 : \$ 171,600
2012 : \$ 171,600
2013 : \$ 85,800

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Administering Organisation The University of Western Australia

Project Summary

Defects in mitochondria, the energy producing compartments within cells, lead to severe neurodegenerative diseases and contribute to the development of cancer. Treatment for such diseases caused by mutations in mitochondrial DNA remains unsatisfactory and mostly confined to supportive measures. The identification of proteins that regulate gene expression within mitochondria provides an unexplored resource of potential disease modulators and drug targets. This research will lead to new strategies in the design of improved anticancer drugs, which is an important Australian research priority that will promote and maintain good health, and provide potential commercial outcomes.

Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

FT0991458 Prof C Gibson

Approved Project Title **Increasing the effectiveness of remote and cross-cultural collaborations in organisations**

2009 : \$ 111,400
2010 : \$ 222,800
2011 : \$ 222,800
2012 : \$ 222,800
2013 : \$ 111,400

Primary RFCD 3801 PSYCHOLOGY

Administering Organisation The University of Western Australia

Project Summary

Minerals, oil and gas exports dominate the Australian economy, and the effective organisation and management of collaborative work spanning remote, dispersed, environmentally fragile and culturally sensitive locations in this industry is a key challenge. Findings will provide insight into the systems, processes, and skills that are required to collaborate in these domains, improving international competitiveness and global impact. Extensive efforts to interpret, synthesize and disseminate findings for scholars and non-scientists will also help inform educational agendas within industry and higher education to better prepare future collaborators.

FT0991249 Prof MA Griffin

Approved Project Title **A multilevel approach to leadership and dynamic capabilities in organisations**

2009 : \$ 111,400
2010 : \$ 222,800
2011 : \$ 222,800
2012 : \$ 222,800
2013 : \$ 111,400

Primary RFCD 3502 BUSINESS AND MANAGEMENT

Administering Organisation The University of Western Australia

Project Summary

The quality of leadership in Australian organisations has an impact on business productivity, international competitiveness, and employee health and well-being. This research will support the development of leadership skills at different organisational levels. For senior leaders, these skills include developing strategy, allocating resources, and supporting innovation. For team leaders, skills include team coordination, employee support, and creating flexibility. By supporting interventions that build adaptivity and flexibility in organisations, the research will provide resources to support dynamic organisations to be better equipped to compete in demanding international markets.

FT0991631 A/Prof AN Luiten

Approved Project Title **The Quest for Ultimate Measurement Precision**

2009 : \$ 98,600
2010 : \$ 197,200
2011 : \$ 197,200
2012 : \$ 197,200
2013 : \$ 98,600

Primary RFCD 2404 OPTICAL PHYSICS

Administering Organisation The University of Western Australia

Project Summary

Precision measurement is the foundation upon which modern technological society is built. The highest quality measurement devices rely on stable clocks for their operation. The group's existing research has been aimed at developing some of the world's most precise measurement tools based on clocks and lasers. In parallel with this, other scientists have developed the means for exquisite control of light on the microscopic scale. By combining these two technologies, both of which lie at the extreme limit of precision, the group will develop a new generation of technology for fundamental science objectives as well as for industrial needs.

Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

FT0992120 Dr CS Peacock

Approved Project Title **Genomic and molecular characterisation of a novel Australian leishmania pathogen.**

2009 : \$ 98,600

2010 : \$ 197,200

2011 : \$ 197,200

2012 : \$ 197,200

2013 : \$ 98,600

Primary RFCD 2702 GENETICS

Administering Organisation The University of Western Australia

Project Summary

Leishmaniasis is the second most serious protozoal disease after malaria. This project will help characterise the first Leishmania species identified in Australia providing molecular tools to monitor the pathogen and a detailed assessment of any potential risk to human health. Comparative analysis with more pathogenic species will help identify genes and mechanisms that determine the progression of human disease leading to the potential identification of new drug and vaccine targets. The methodologies and expertise developed will be used will be available to other research groups working on infectious diseases.

FT0991113 Dr O Rackham

Approved Project Title **Engineering synthetic genetic codes**

2009 : \$ 85,800

2010 : \$ 171,600

2011 : \$ 171,600

2012 : \$ 171,600

2013 : \$ 85,800

Primary RFCD 2702 GENETICS

Administering Organisation The University of Western Australia

Project Summary

Large, high quality libraries of new drugs are absolutely essential resources to find new medicines. However, their use is restricted to a few pharmaceutical giants. We will engineer cells to make a wide variety of drug-like polymers, providing a drug discovery resource accessible to almost any scientific laboratory. As each cell could make a different polymer, billions of different potential drugs could be produced in a single tube. This technology provides an opportunity to put the future of drug discovery in the hands of the wider scientific community and new tools for Australian industries.

FT0991617 Dr L Wen

Approved Project Title **Real-Time Searches for Gravitational Waves and Identification of Their Radio and Optical Counterparts**

2009 : \$ 85,800

2010 : \$ 171,600

2011 : \$ 171,600

2012 : \$ 171,600

2013 : \$ 85,800

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation The University of Western Australia

Project Summary

The proposed project will directly address the national research priority in development of frontier technologies, directly involve Australians in frontier work in gravitational wave astronomy that will result in break-through sciences and improve the chance of the international Square-Kilometer-Array project being sited at Australia. In addition, it will foster a close collaboration of top international researchers with an Australian team. The research at The University of Western Australia will attract students from around the world and serve to educate and inspire young people in Australia.

Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

FT0991816 Prof DJ White

Approved Project Title Seabed engineering to unlock Australia's deepwater oil and gas resources

2009 : \$ 98,600
2010 : \$ 197,200
2011 : \$ 197,200
2012 : \$ 197,200
2013 : \$ 98,600

Primary RFCD 2908 CIVIL ENGINEERING

Administering Organisation The University of Western Australia

Project Summary

The development of offshore petroleum contributes \$25 billion annually to the Australian economy. The majority of our \$1 trillion of reserves are currently untapped, being in deep water, remote from shore. This Fellowship will generate a scientific understanding of the mechanics of seabed sediments when disturbed by infrastructure and ocean storms, and lead to procedures for designing the seabed pipelines and facilities needed to unlock Australia's isolated deep water petroleum reserves. These procedures will provide economic solutions for safely transmitting the hydrocarbons to shore. The resulting expertise will enhance Australia's global reputation in offshore geotechnics and engineering and raise the competitiveness of our petroleum industry.