

**Number of Successful Proposals for Super Science Fellowships to Commence in 2010
by FoR Division**

020000	Physical Sciences	
0201	ASTRONOMICAL AND SPACE SCIENCES	9
0205	OPTICAL PHYSICS	1
0299	OTHER PHYSICAL SCIENCES	1
020000	Physical Sciences	11
030000	Chemical Sciences	
0305	ORGANIC CHEMISTRY	1
030000	Chemical Sciences	1
040000	Earth Sciences	
0401	ATMOSPHERIC SCIENCES	2
0403	GEOLOGY	1
040000	Earth Sciences	3
050000	Environmental Sciences	
0501	ECOLOGICAL APPLICATIONS	1
0502	ENVIRONMENTAL SCIENCE AND MANAGEMENT	1
050000	Environmental Sciences	2
060000	Biological Sciences	
0602	ECOLOGY	1
0607	PLANT BIOLOGY	2
060000	Biological Sciences	3
070000	Agricultural and Veterinary Sciences	
0703	CROP AND PASTURE PRODUCTION	1
070000	Agricultural and Veterinary Sciences	1
080000	Information and Computing Sciences	
0801	ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING	1
080000	Information and Computing Sciences	1
090000	Engineering	
0903	BIOMEDICAL ENGINEERING	1
0909	GEOMATIC ENGINEERING	1
090000	Engineering	2
Total Number of Grants		24

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0201 ASTRONOMICAL AND SPACE SCIENCES

Anglo Australian Observatory

FS100100065 Prof Matthew Colless, A/Prof Andrew M Hopkins, Dr David H Jones, Prof Simon P Driver, Dr Christopher E Lidman

Approved Project Title **The Galaxy Genome Project 1**

2010	\$46,400.00
2011	\$92,800.00
2012	\$92,800.00
2013	\$46,400.00

Targeted Area Space Science And Astronomy

SSF 1

Administering Organisation Anglo Australian Observatory

Project Summary

The Galaxy Genome Project builds on the Anglo-Australian Observatory's (AAO) major investments and world-leading strengths in wide-field survey astronomy and multi-object spectrographs. Combining the AAO's ongoing and planned survey programs with data from other new Australian facilities, such as SkyMapper and Australian Square Kilometre Array Pathfinder, this project will increase the scientific productivity and impact of all of these major Australian investments and leverage access for Australian researchers in other leading international astronomical surveys and facilities. The project will also increase the international profile of Australian astronomy and enhance the prospects of Australian scientific and technical involvement in next-generation astronomical facilities such as Square Kilometre Array and Giant Magellan Telescope.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

FS100100038 Dr Robert Braun, Dr John D O'Sullivan, Prof Raymond P Norris, Dr Baerbel S Koribalski, Prof Lister G Staveley-Smith

Approved Project Title **Large-scale maps of the universe: Enabling wide-field science with the Australian Square Kilometre Array Pathfinder and the Square Kilometre Array**

2010	\$139,200.00
2011	\$278,400.00
2012	\$278,400.00
2013	\$139,200.00

Targeted Area Space Science And Astronomy

SSF 3

Administering Organisation Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Project Summary

Observational capabilities in astronomy continue to make great advances across the electromagnetic spectrum. The first truly global facility for radio astronomy will be the Square Kilometre Array (SKA), an international \$2.5 billion project scheduled for deployment between 2015 and 2020, for which the proposed Australian site has been short-listed. The Australian SKA Pathfinder (ASKAP) is a next generation radio telescope that is on the strategic pathway towards the staged development and deployment of the SKA. By refining the ASKAP technology and enabling its scientific success we address the national strategic goal of ensuring Australia's technological and scientific readiness for the SKA.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

Curtin University of Technology

FS100100016 Prof Steven J Tingay, Prof Lister G Staveley-Smith, Prof Franklin H Briggs, Prof Iver H Cairns
Approved Project Title **Supporting early science from the Murchison Widefield Array - a Square Kilometre Array (SKA) pathfinder telescope**

2010	\$92,800.00
2011	\$185,600.00
2012	\$185,600.00
2013	\$92,800.00

Targeted Area Space Science And Astronomy

SSF 2

Administering Organisation Curtin University of Technology

Project Summary

The Murchison Widefield Array (MWA) is likely to be the first operational pathfinder for the \$2.5 billion Square Kilometre Array (SKA) on one of the two candidate SKA sites - the Murchison Radioastronomy Observatory (MRO) in Western Australia. The MWA will therefore generate large volumes of scientific data before 2012, the expected date of the international decision that will determine whether Australia or South Africa is to host the SKA. The early science results from the MWA will showcase the excellence of the Australian site for radio astronomy and play a significant strategic role in Australia's bid to attract the SKA, as an international mega-science project to Australia, with its benefits to Australian science, industry and society.

Macquarie University

FS100100019 Prof Quentin A Parker, Dr Simon J O'Toole, Dr Jonathan S Lawrence, A/Prof Orsola De Marco, Dr Daniel B Zucker

Approved Project Title **Space science and astronomy: New eyes on old stars: Decoding late-stage stellar evolution.**

2010	\$46,400.00
2011	\$92,800.00
2012	\$92,800.00
2013	\$46,400.00

Targeted Area Space Science And Astronomy

SSF 1

Administering Organisation Macquarie University

Project Summary

Planetary nebulae, the extended shrouds of dying stars, are a fascinating, brief period in the life of most stars. Our Sun will eventually go through this phase engulfing the earth. Planetary nebulae are unique celestial laboratories thanks to their rich emission line spectra. They are amongst the most beautiful and mysterious of objects, whose startling images act as a photogenic magnet for public interest. Behind their beauty hides the mystery of how stars return carbon, one of life's essential building blocks - to interstellar space. This project will constitute the next major breakthrough in understanding these processes and addresses several significant astrophysical problems in the field via unique Australian data and instrumentation.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

The University of Melbourne

FS100100009 Prof Stuart Wyithe, Prof Rachel L Webster, Prof Bryan M Gaensler, Prof Brian P Schmidt, Dr Randall B Wayth

Approved Project Title **Peering through the Dark Ages with the Murchison Widefield Array**

2010 \$46,400.00

2011 \$92,800.00

2012 \$92,800.00

2013 \$46,400.00

Targeted Area Space Science And Astronomy

SSF 1

Administering Organisation The University of Melbourne

Project Summary

There is one large gap in our understanding of the early evolution of the universe, namely, when did the first sources of light appear? Resolution of this puzzle requires new observational and technical strategies, both in terms of telescopes and the analysis of observations. The Murchison Widefield Array, a major new radio telescope in Western Australia, is an international initiative under construction to tackle the problem. This program will provide a significant Australian contribution at the forefront of modern cosmology.

The University of New South Wales

FS100100046 Prof Christopher G Tinney, A/Prof Jeremy A Bailey, Prof Victoria S Meadows, Prof Matthew Colless

Approved Project Title **A New Era for Australian Exoplanetary Science**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Space Science And Astronomy

SSF 2

Administering Organisation The University of New South Wales

Project Summary

There are few areas of learning that engage the public in cutting-edge science and technology more than astronomy – and few areas of astronomy that engage and fascinate as thoroughly as the study of planets and astrobiology. This research program will not only discover new rocky and gas giant planets orbiting other stars, but tell us about how those planets formed – allowing us to answer the key question for current exoplanetary research – “Are there other Earths in the Universe?”

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

The University of Sydney

FS100100033 Prof Elaine M Sadler, Prof Bryan M Gaensler, Dr Tara Murphy

Approved Project Title **New Dimensions in Radio Astronomy: Mining Sparse Datasets with the Australian Square Kilometre Array Pathfinder**

2010 \$139,200.00

2011 \$278,400.00

2012 \$278,400.00

2013 \$139,200.00

Targeted Area Space Science And Astronomy

SSF 3

Administering Organisation The University of Sydney

Project Summary

Radio astronomy is entering a new era, driven by technological advances that make rapid surveys of the sky possible. As leaders of three major surveys for the Australian Square Kilometre Array Pathfinder (ASKAP) telescope, we will explore three new dimensions of astronomy: searching for transient sources, detecting faint galaxies and investigating cosmic magnetism. The project will put Australian astronomers at the forefront of international research. In addition to novel scientific results we will produce data resources and software that will be critical for future Square Kilometre Array projects. These will be available online to amateur astronomers and the general public. We will train the next generation of astronomers with the skills required to make breakthrough discoveries.

The University of Western Australia

FS100100048 Prof Lister G Staveley-Smith, A/Prof Martin J Meyer, Prof Peter J Quinn, Prof Hans-Gerhardt R Meurer, Dr Baerbel S Koribalski

Approved Project Title **Neutral Hydrogen in the Universe**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Space Science And Astronomy

SSF 2

Administering Organisation The University of Western Australia

Project Summary

This proposal will improve our understanding of the origin and continuing evolution of galaxies like our own Milky Way. It will do so by using powerful new telescopes such as the Australian Square Kilometre Array Pathfinder (ASKAP), being constructed by CSIRO in Western Australia, and new supercomputers to be provided by the new Pawsey High Performance Computing Centre for Square Kilometre Array (SKA) Science in Perth. Combined with expertise in areas of astrophysics and information technology, the research outlined in this proposal will further advance the case for Australia's bid to host the SKA by establishing a strong community of scientists capable of developing the science and Information and Communication Technologies components for one of the SKA's most important goals.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

University of Tasmania

FS100100037 Prof John M Dickey, Dr James E Lovell, Dr Christopher S Watson, Dr Simon P Ellingsen
Approved Project Title **Geophysical, Galactic, and Extra-Galactic Science with the AuScope and Australian Pathfinder Arrays**

2010	\$92,800.00
2011	\$185,600.00
2012	\$185,600.00
2013	\$92,800.00

Targeted Area Space Science And Astronomy

SSF 2

Administering Organisation University of Tasmania

Project Summary

Two new radio telescope arrays are under construction in Australia. One is the Australian Square Kilometre Array Pathfinder, near Geraldton. The other is a very long baseline array with antennae near Hobart, Katherine, and Yarragadee. These three antennae work together to observe radio sources far away across the universe. Their observations are used to establish a very accurate coordinate system or reference frame on the earth, to which the global positioning system is aligned. This program will use these new radio telescope arrays to study the Milky Way and other galaxies, and to study continental drift and sea-level rise on the Earth.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0205 OPTICAL PHYSICS

The University of Adelaide

FS100100039 Prof Tanya M Monro, Dr Christopher J Sumby, A/Prof Heike Ebendorff-Heidepriem, Dr Peter Hoffmann, Prof Andrew D Abell

Approved Project Title **Disruptive approaches to biological sensing**

2010 \$139,200.00

2011 \$278,400.00

2012 \$278,400.00

2013 \$139,200.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 3

Administering Organisation The University of Adelaide

Project Summary

Optical fibre-based biosensors have the potential to transform our ability to monitor our environment, protect our nation's assets and safeguard our citizens, and to offer improved clinical diagnostics and food quality control by creating tools that can detect biomolecules in real-time within complex samples. To fulfil this mission, we propose to develop new fibre-based sensing architectures for sensing biomolecules that have the potential to be sensitive, selective, fast and compact.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0299 OTHER PHYSICAL SCIENCES

La Trobe University

FS100100050 A/Prof Andrew G Peele, Prof Leann Tilley

Approved Project Title Nanoimaging the cellular architecture of the malaria parasite, Plasmodium falciparum

2010 \$46,400.00

2011 \$92,800.00

2012 \$92,800.00

2013 \$46,400.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 1

Administering Organisation La Trobe University

Project Summary

The immediate benefit of this work will be in the understanding and treatment of malaria - a disease that kills approximately 1 million children annually. The ability to image the three-dimensional structure of cells at high resolution will allow us to ask fundamental questions about the cellular architecture of the malaria parasite and to design novel antimalarial strategies. By developing new methods for correlating structure and elemental location, the work in this proposal will offer a new paradigm for the study of cellular function and disease. This represents an important advance in the suite of investigative tools available to the biotechnology sector and will see a corresponding improvement in our understanding of a wide range of disease states.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0305 ORGANIC CHEMISTRY

University of Wollongong

FS100100023 Prof Gordon G Wallace, Dr Simon E Moulton, A/Prof Robert M Kapsa, Prof David L Officer, Prof Hua Kun Liu

Approved Project Title **Three dimensional polymer structures for bionic applications**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 2

Administering Organisation University of Wollongong

Project Summary

The polymer based three dimensional (3D) structures targeted for production in this project will bring unique capabilities to the field of bionics research. A multi-modal 3D scaffold capable of delivering biofactors, supporting cell growth and providing power for stimulation will significantly advance the efforts being made in bionic research. This will have profound effects on the quality of life for those suffering from a range of medical conditions, from spinal cord injury through to epilepsy. Here we will demonstrate the capabilities of these novel polymer structures both in-vitro and in-vivo.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0401 ATMOSPHERIC SCIENCES

Monash University

FS100100081 Prof Michael J Reeder, Prof Neville Nicholls, Prof Amanda H Lynch, Prof Christian Jakob

Approved Project Title **The dynamics of subtropical anticyclones and the connection to drought, heatwaves and bushfires in southern Australia**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Marine And Climate Science

SSF 2

Administering Organisation Monash University

Project Summary

The aim of the project is to understand the dynamics of anticyclones (high pressure systems) in the region of southern Australia. The study of anticyclones in the region is important because of their very strong connection to rainfall in the winter, and heatwaves and bushfires in the summer, and because so little work has been done on understanding what is the defining feature of the climate of southern Australia. Understanding what controls the location and strength of these features will go a long way to explaining how the climate of southern Australia will change in a warmer world.

The University of New South Wales

FS100100054 Prof Matthew H England, Prof Andrew J Pitman, Prof Steven C Sherwood, Dr Jason P Evans, Prof Andy Baker

Approved Project Title **Precipitation-groundwater interactions over eastern Australia: climate change impacts at multiple scales**

2010 \$139,200.00

2011 \$278,400.00

2012 \$278,400.00

2013 \$139,200.00

Targeted Area Marine And Climate Science

SSF 3

Administering Organisation The University of New South Wales

Project Summary

Most surface water in the Murray-Darling Basin is used for agricultural activity, and groundwater extraction is accelerating. We cannot yet predict how these water resources will be affected by climate change, partly because Australian climate models do not represent key interactions between small and large scale rainfall changes, and interactions between ground water, the land surface and the atmosphere. This project will produce the first climate simulations that explicitly include these interactions. This will allow a better understanding of future changes to groundwater resources. This understanding will help us plan ahead, and enable new research to help Australia maintain food security in an uncertain future.

**Summary of Successful Super Science Fellowships Proposals for Funding to
Commence in 2010 by FoR group**

0403 GEOLOGY

The Australian National University

FS100100076 Prof Leslie K Fifield, Prof Patrick De Deckker, Dr Michael J Ellwood, Dr Stewart J Fallon, Prof Andrew P Roberts

Approved Project Title **Novel dating methods for marine sediments of relevance to determining past climate changes**

2010	\$92,800.00
2011	\$185,600.00
2012	\$185,600.00
2013	\$92,800.00

Targeted Area Marine And Climate Science

SSF 2

Administering Organisation The Australian National University

Project Summary

Future climate change is a subject of enormous contemporary interest with economic and social implications for much of humanity. Accurate knowledge of past climates is, however, crucial to understanding how the global climate will evolve into the future. This proposal aims to develop novel methods for dating marine sediments using cosmogenic isotopes, in order to extract the palaeoclimatic signals that are locked into these sediments. We will concentrate on the Southern Ocean which plays a crucial role in the world's climate. This proposal will also contribute to Australia's international obligation to conduct research in this critical area.

**Summary of Successful Super Science Fellowships Proposals for Funding to
Commence in 2010 by FoR group**

0501 ECOLOGICAL APPLICATIONS

The University of Queensland

FS100100024 Prof Ove Hoegh-Guldberg, Prof Peter J Mumby, Prof Stuart R Phinn, Asst Prof Catherine E Lovelock,
Prof Colin D Woodroffe

Approved Project Title **Treading water in a changing climate: The vulnerability of Australia's tropical islands to sea level rise.**

2010	\$92,800.00
2011	\$185,600.00
2012	\$185,600.00
2013	\$92,800.00

Targeted Area Marine And Climate Science

SSF 2

Administering Organisation The University of Queensland

Project Summary

This project will directly benefit the people and businesses associated with 1,174 tropical islands found in Great Barrier Reef and Torres Strait waters. By bringing together a multi-disciplinary team and training young Australian researchers, this project will establish an integrated research program that will outline the challenges, and develop the solutions, that will be needed for Australians to cope with rising sea levels. While the initial focus is the highly exposed tropical islands, the results of this integrated research program will have a wide applicability across Australia in terms of the geomorphological, natural and human challenges associated with rapid pathogenic sea level rise.

**Summary of Successful Super Science Fellowships Proposals for Funding to
Commence in 2010 by FoR group**

0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

James Cook University

FS100100088 Prof Terence P Hughes, Prof Robert L Pressey, Prof Helene D Marsh, Prof Sean R Connolly, Prof Geoffrey P Jones

Approved Project Title **Resilience of Coral Reef Ecosystems to Climate Change**

2010	\$92,800.00
2011	\$185,600.00
2012	\$185,600.00
2013	\$92,800.00

Targeted Area Marine And Climate Science

SSF 2

Administering Organisation James Cook University

Project Summary

Science-based management of coral reefs provides enormous environmental, social and economic benefit to Australia and other tropical maritime nations. The proposed research will provide scientific knowledge and research training that underpins the management and long-term sustainability of Australian reef resources. Climate change research is vital for supporting the sustainable use of the ecosystem goods and services provided by reef ecosystems (e.g. to tourism and fishing industries, recreational users and indigenous Australians). This research will place Australia in the forefront of understanding and responding to the regional-scale impacts of climate change on tropical societies and economies.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0602 ECOLOGY

Australian Institute of Marine Science

FS100100074 Dr Janice M Lough, Dr Kenneth R Anthony, Dr Bronte D Tilbrook, Prof Michael I Bird, Prof Ove Hoegh-Guldberg

Approved Project Title **A changing climate for calcification on the Great Barrier Reef: past, present and future**

2010	\$139,200.00
2011	\$278,400.00
2012	\$278,400.00
2013	\$139,200.00

Targeted Area Marine And Climate Science

SSF 3

Administering Organisation Australian Institute of Marine Science

Project Summary

The Great Barrier Reef (GBR) is a national and international icon, recognised through its inscription as a World Heritage Area and economic and social value to Australians. Maintenance of the GBR as we know it is now compromised by a rapidly changing climate. Ocean acidification, warming water temperatures and increased freshwater will progressively be detrimental to the fundamental reef-building process of calcification. Informed policy and management strategies in a rapidly changing physical environment require determination, for short and long time frames, of the regional consequences and impacts of changing reef-building capacity.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0607 PLANT BIOLOGY

The Australian National University

FS100100085 Prof Murray R Badger, Prof Susanne Von Caemmerer, A/Prof Graeme D Price, Prof Christopher C Goodnow, Prof Barry J Pogson

Approved Project Title **Improving plant productivity and human health using next generation biotechnology approaches**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 2

Administering Organisation The Australian National University

Project Summary

Both medical and plant sciences face similar technological problems in harnessing the power of modern DNA sequencing for accelerating the pace of beneficial gene function discovery. Plant and animal researchers will collaborate in this program to meet this common challenge. The research outcomes envisaged in this proposal will benefit human health by enabling more rapid discovery of genes related to obesity, immunity, fertility, neurological function and cancer. In the plant sphere, the outcomes will shed new light on plant functions related to plant energy metabolism, vitamin biosynthesis drought tolerance and water use by crops. The research will benefit both human health and agricultural food production and quality.

The University of Western Australia

FS100100022 Prof James M Whelan, Prof Andrew H Millar, Prof Ian D Small, Prof Stephen D Tyerman

Approved Project Title **Developing biotechnology solutions for improving phosphate acquisition in plants using functional genomics in rice**

2010 \$139,200.00

2011 \$278,400.00

2012 \$278,400.00

2013 \$139,200.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 3

Administering Organisation The University of Western Australia

Project Summary

Global supplies of the most currently used phosphate fertilisers are predicted to be exhausted in less than a century. These fertilisers are non-renewable resources based on phosphate rock deposits and their use are key drivers of both plant production costs and environmental damage in Australia and internationally. Using the power of genetic and functional genomics analyses in rice, this project will reveal key controllers of phosphate acquisition in plants. Hence, novel biotechnology based solutions can be implemented in a variety of cereal crops to aid reduced use of phosphate fertiliser in agriculture and unlock the large phosphate pool not used by plants in soil.

**Summary of Successful Super Science Fellowships Proposals for Funding to
Commence in 2010 by FoR group**

0703 CROP AND PASTURE PRODUCTION

Queensland University of Technology

FS100100083 Prof James L Dale, Prof Peter M Waterhouse, A/Prof Robert M Harding, Dr Heather D Coleman, Dr Benjamin Dugdale

Approved Project Title **Extreme expression: building a platform for industrial plant biotechnology**

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 2

Administering Organisation Queensland University of Technology

Project Summary

Plants have remarkable potential as bioreactors for the production of usually non-plant compounds such as medical proteins, industrial proteins including enzymes and polymers. However, to realise this potential, there needs to be very significant advances in the amount of target compounds produced in the bioreactor plants and to develop other plant species as bioreactors. The aim of this project is to develop technologies that provide the platform to produce large quantities of target novel compounds in plants and extend the range of plant species that can be used as bioreactors. These technologies will provide the basis of a dynamic biofarming industry in Australia.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

The University of Sydney

FS100100043 Dr Stefan B Williams, Prof Maria Byrne, Dr Neville Barrett, Dr Will F Figueira

Approved Project Title **Machine Assisted, Multi-scale Spatial and Temporal Observation and Modeling of Marine Benthic Habitats**

2010 \$46,400.00

2011 \$92,800.00

2012 \$92,800.00

2013 \$46,400.00

Targeted Area Marine And Climate Science

SSF 1

Administering Organisation The University of Sydney

Project Summary

The Integrated Marine Observing System (IMOS) science plans include sampling campaigns reliant on Autonomous Underwater Vehicle (AUV) Facility data and designed to address the issues of marine biodiversity quantification and assurance. The proposed research will directly enhance the effectiveness of these programs by speeding labour-intensive analyses, aggregating the results, and searching for ecological patterns on a national scale that would be difficult to identify using traditional approaches tuned to process-scale studies. Australian society stands to benefit by virtue of improved large-scale models of ecosystem function and reduced cost for conducting marine ecosystem investigations.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0903 BIOMEDICAL ENGINEERING

Monash University

FS100100073 Prof James C Whisstock, Prof Chris J Porter, Prof James R Friend, Prof Kerry Hourigan, Prof Ian W Boyd

Approved Project Title **Engineering Pore Forming Proteins as machines for the delivery of proteins and nanoparticles into cells**

2010 \$139,200.00

2011 \$278,400.00

2012 \$278,400.00

2013 \$139,200.00

Targeted Area Future Industries Research
Biotechnology And Nanotechnology

SSF 3

Administering Organisation Monash University

Project Summary

This cross disciplinary project will revolutionise our ability to build pore forming nano-machines that specifically deliver complex macromolecules to the cell cytoplasm. The ability to efficiently deliver molecules such as antibodies and nanoparticles to the correct cell population will have enormous therapeutic application. Further, such delivery devices will have revolutionary technological potential as commercially relevant research tools.

Summary of Successful Super Science Fellowships Proposals for Funding to Commence in 2010 by FoR group

0909 GEOMATIC ENGINEERING

The University of Melbourne

FS100100040 A/Prof Jeffrey P Walker, Prof Kim E Lowell, Prof Anthony K Milne, A/Prof Linlin Ge, A/Prof Jorg M Hacker

Approved Project Title Towards operational monitoring of key climate parameters from synthetic aperture radar

2010 \$92,800.00

2011 \$185,600.00

2012 \$185,600.00

2013 \$92,800.00

Targeted Area Marine And Climate Science

SSF 2

Administering Organisation The University of Melbourne

Project Summary

Agricultural productivity is a major contributor to the Australian economy, but is experiencing significant stress in response to climate change. Moreover, soil moisture controls vegetation dynamics that contribute to carbon storage, atmospheric processes leading to severe weather, and runoff generation processes leading to floods and runoff yield from urban water storage catchments. Consequently, high resolution time-series information on soil moisture and vegetation status from space represents a powerful tool for understanding climate change impacts on Australia. It is therefore imperative that products be developed specifically for the Australian environment to take full advantage of radar data from satellites.