

**Number of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Division**

<b>010000</b>	<b>Mathematical Sciences</b>	
0102	APPLIED MATHEMATICS	4
0105	MATHEMATICAL PHYSICS	1
<b>010000</b>	<b>Mathematical Sciences</b>	<b>5</b>
<b>020000</b>	<b>Physical Sciences</b>	
0201	ASTRONOMICAL AND SPACE SCIENCES	10
0202	ATOMIC, MOLECULAR, NUCLEAR, PARTICLE AND PLASMA PHYSICS	2
0203	CLASSICAL PHYSICS	1
0205	OPTICAL PHYSICS	4
0206	QUANTUM PHYSICS	4
<b>020000</b>	<b>Physical Sciences</b>	<b>21</b>
<b>030000</b>	<b>Chemical Sciences</b>	
0302	INORGANIC CHEMISTRY	2
0303	MACROMOLECULAR AND MATERIALS CHEMISTRY	3
0304	MEDICINAL AND BIOMOLECULAR CHEMISTRY	1
0305	ORGANIC CHEMISTRY	1
0307	THEORETICAL AND COMPUTATIONAL CHEMISTRY	1
<b>030000</b>	<b>Chemical Sciences</b>	<b>8</b>
<b>040000</b>	<b>Earth Sciences</b>	
0402	GEOCHEMISTRY	2
0403	GEOLOGY	2
0404	GEOPHYSICS	1
0406	PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE	3
<b>040000</b>	<b>Earth Sciences</b>	<b>8</b>
<b>050000</b>	<b>Environmental Sciences</b>	
0501	ECOLOGICAL APPLICATIONS	1
0502	ENVIRONMENTAL SCIENCE AND MANAGEMENT	2
<b>050000</b>	<b>Environmental Sciences</b>	<b>3</b>
<b>060000</b>	<b>Biological Sciences</b>	
0601	BIOCHEMISTRY AND CELL BIOLOGY	5
0602	ECOLOGY	3
0603	EVOLUTIONARY BIOLOGY	1
0604	GENETICS	7
0605	MICROBIOLOGY	1
0606	PHYSIOLOGY	1
0607	PLANT BIOLOGY	4
0608	ZOOLOGY	2

**Number of Successful ARC Future Fellowships Proposals for Funding  
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0699	OTHER BIOLOGICAL SCIENCES	1
<b>060000</b>	<b>Biological Sciences</b>	<b>25</b>
<b>070000</b>	<b>Agricultural and Veterinary Sciences</b>	
0704	FISHERIES SCIENCES	1
0707	VETERINARY SCIENCES	1
<b>070000</b>	<b>Agricultural and Veterinary Sciences</b>	<b>2</b>
<b>080000</b>	<b>Information and Computing Sciences</b>	
0801	ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING	1
0802	COMPUTATION THEORY AND MATHEMATICS	1
0804	DATA FORMAT	2
0806	INFORMATION SYSTEMS	2
0807	LIBRARY AND INFORMATION STUDIES	1
<b>080000</b>	<b>Information and Computing Sciences</b>	<b>7</b>
<b>090000</b>	<b>Engineering</b>	
0903	BIOMEDICAL ENGINEERING	2
0904	CHEMICAL ENGINEERING	3
0905	CIVIL ENGINEERING	4
0906	ELECTRICAL AND ELECTRONIC ENGINEERING	1
0907	ENVIRONMENTAL ENGINEERING	2
0912	MATERIALS ENGINEERING	2
0914	RESOURCES ENGINEERING AND EXTRACTIVE METALLURGY	1
0915	INTERDISCIPLINARY ENGINEERING	1
<b>090000</b>	<b>Engineering</b>	<b>16</b>
<b>100000</b>	<b>Technology</b>	
1002	ENVIRONMENTAL BIOTECHNOLOGY	1
1007	NANOTECHNOLOGY	3
<b>100000</b>	<b>Technology</b>	<b>4</b>
<b>110000</b>	<b>Medical and Health Sciences</b>	
1109	NEUROSCIENCES	1
1115	PHARMACOLOGY AND PHARMACEUTICAL SCIENCES	1
1117	PUBLIC HEALTH AND HEALTH SERVICES	5
<b>110000</b>	<b>Medical and Health Sciences</b>	<b>7</b>
<b>120000</b>	<b>Built Environment and Design</b>	
1201	ARCHITECTURE	1
<b>120000</b>	<b>Built Environment and Design</b>	<b>1</b>

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<b>130000</b>	<b>Education</b>	
1302	CURRICULUM AND PEDAGOGY	1
1303	SPECIALIST STUDIES IN EDUCATION	2
<b>130000</b>	<b>Education</b>	<b>3</b>
<b>140000</b>	<b>Economics</b>	
1402	APPLIED ECONOMICS	1
1403	ECONOMETRICS	1
<b>140000</b>	<b>Economics</b>	<b>2</b>
<b>150000</b>	<b>Commerce, Management, Tourism and Services</b>	
1503	BUSINESS AND MANAGEMENT	1
<b>150000</b>	<b>Commerce, Management, Tourism and Services</b>	<b>1</b>
<b>160000</b>	<b>Studies in Human Society</b>	
1601	ANTHROPOLOGY	2
1602	CRIMINOLOGY	2
1603	DEMOGRAPHY	1
1604	HUMAN GEOGRAPHY	1
1605	POLICY AND ADMINISTRATION	1
1606	POLITICAL SCIENCE	2
1608	SOCIOLOGY	1
1699	OTHER STUDIES IN HUMAN SOCIETY	1
<b>160000</b>	<b>Studies in Human Society</b>	<b>11</b>
<b>170000</b>	<b>Psychology and Cognitive Sciences</b>	
1701	PSYCHOLOGY	6
1702	COGNITIVE SCIENCES	1
1799	OTHER PSYCHOLOGY AND COGNITIVE SCIENCES	1
<b>170000</b>	<b>Psychology and Cognitive Sciences</b>	<b>8</b>
<b>180000</b>	<b>Law and Legal Studies</b>	
1801	LAW	3
<b>180000</b>	<b>Law and Legal Studies</b>	<b>3</b>
<b>190000</b>	<b>Studies in Creative Arts and Writing</b>	
1901	ART THEORY AND CRITICISM	1
<b>190000</b>	<b>Studies in Creative Arts and Writing</b>	<b>1</b>
<b>200000</b>	<b>Language, Communication and Culture</b>	
2001	COMMUNICATION AND MEDIA STUDIES	1
2002	CULTURAL STUDIES	1
2003	LANGUAGE STUDIES	2

**Number of Successful ARC Future Fellowships Proposals for Funding  
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2005	LITERARY STUDIES	2
<b>200000</b>	<b>Language, Communication and Culture</b>	<b>6</b>
<b>210000</b>	<b>History and Archaeology</b>	
2101	ARCHAEOLOGY	2
2103	HISTORICAL STUDIES	4
<b>210000</b>	<b>History and Archaeology</b>	<b>6</b>
<b>220000</b>	<b>Philosophy and Religious Studies</b>	
2202	HISTORY AND PHILOSOPHY OF SPECIFIC FIELDS	1
2203	PHILOSOPHY	1
<b>220000</b>	<b>Philosophy and Religious Studies</b>	<b>2</b>
<b>Total Number of Grants</b>		<b>150</b>

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0102 APPLIED MATHEMATICS

#### Curtin University of Technology

FT140101112 Liu, Prof Lishan

2014 \$94,569.00

2015 \$184,138.00

2016 \$179,138.00

2017 \$179,138.00

2018 \$89,569.00

**Total \$726,552.00**

Primary FoR 0102 APPLIED MATHEMATICS

#### Funded Participants:

FT2 Prof Lishan Liu

**Administering Organisation** Curtin University of Technology

#### Project Summary

This project aims to develop innovative functional analysis theories and methods to study various complex nonlinear boundary value problems, with particular focus on singular and impulsive problems. The outcomes of this project aims to enhance Australia's capability of tackling complex nonlinear science and engineering problems using sophisticated mathematical methods. This project aims to also provide engineers and scientists with a theoretical base and simulation technique for the study and optimal control of impulsive systems and processes involving nonlinear singularity.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The Australian National University

FT140100604 Robins, Dr Vanessa

2014	\$84,768.00
2015	\$168,096.00
2016	\$168,096.00
2017	\$168,096.00
2018	\$83,328.00
<b>Total</b>	<b>\$672,384.00</b>

Primary FoR 0102 APPLIED MATHEMATICS

#### Funded Participants:

FT1 Dr Vanessa Robins

**Administering Organisation** The Australian National University

#### Project Summary

The way water flows through sandstone depends on the connectivity of its pores, the balance of forces in a grain silo on the contacts between individual grains, and the impact resistance of metal foam in a car door on the arrangement of its cells. These structural properties are described mathematically by topology. Advanced three-dimensional X-ray imaging can now reveal the internal detail of micro-structured materials. Recent developments in image analysis mean it is possible to compute accurate topological information from such images. This project aims to investigate how fundamental measures of shape influence the physical properties of complex materials and clarifies the mathematics that underpins these relationships.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Melbourne

FT140100527 Nair, A/Prof Girish N

2014	\$102,913.50
2015	\$204,098.00
2016	\$204,484.00
2017	\$207,019.00
2018	\$103,719.50
<b>Total</b>	<b>\$822,234.00</b>

Primary FoR 0102 APPLIED MATHEMATICS

#### Funded Participants:

FT2 A/Prof Girish N Nair

**Administering Organisation** The University of Melbourne

#### Project Summary

Feedback control is a crucial element of manufacturing, vehicular and energy systems, and is needed to guarantee hard performance bounds in safety- and mission-critical environments. When these control systems are implemented over communication networks, the amount of information flowing through them becomes a critical determinant of performance. However, the nonprobabilistic control objectives make standard information theory inapplicable. This project aims to develop a novel, nonstochastic theory of information in order to analyse and design networked dynamical systems that obey worst-case performance limits. This will yield robust, probability-free algorithms for distributed control, filtering and causality inference.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of New South Wales

FT140100398 Tanaka, A/Prof Mark M

2014	\$106,017.00
2015	\$208,141.00
2016	\$203,271.00
2017	\$195,939.00
2018	\$94,792.00
<b>Total</b>	<b>\$808,160.00</b>

Primary FoR 0102 APPLIED MATHEMATICS

#### Funded Participants:

FT2 A/Prof Mark M Tanaka

**Administering Organisation** The University of New South Wales

#### Project Summary

The fitness landscape, a key evolutionary concept, relates genes or traits to reproductive fitness. However, this has been challenged by organisms that distort the landscape by changing their environments. This project aims to develop a new mathematical model that restores the landscape concept by extending it to accommodate niche construction. This framework will be applied to microorganisms that alter their environments, for example, by provoking and subverting the host immune system, and by inducing behavioural change in hosts. These processes alter how natural selection operates on microbes and thus lead to important evolutionary feedback. The model will be used to examine antibiotic resistance, pathogen virulence and how microbiomes develop.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0105 MATHEMATICAL PHYSICS

#### University of Technology, Sydney

FT140100574 Hsieh, Dr Min-Hsiu

2014	\$85,612.50
2015	\$169,625.50
2016	\$169,625.50
2017	\$169,625.50
2018	\$84,013.00
<b>Total</b>	<b>\$678,502.00</b>

Primary FoR 0105 MATHEMATICAL PHYSICS

#### Funded Participants:

FT1 Dr Min-Hsiu Hsieh

**Administering Organisation** University of Technology, Sydney

#### Project Summary

Quantum cryptographic systems have the advantage of mathematically provable security and privacy, addressing security threats to communications as information and communications technologies proliferate. This project aims to quantify a quantum channel's capability for secure communications. This quantity provides the ultimate limit to benchmark practical quantum key distribution protocols for their performance. This will significantly advance the theory of quantum cryptography and knowledge of the fundamental resource of secret keys. It is expected to have immediate application for the classical security of existing (non-quantum) communication devices, and benefit security, military, government, industry, individuals, and the community.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Australian Astronomical Observatory

FT140101166 Brough, Dr Sarah

2014	\$93,373.00
2015	\$182,871.00
2016	\$180,171.00
2017	\$178,471.00
2018	\$87,798.00
<b>Total</b>	<b>\$722,684.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr Sarah Brough

**Administering Organisation** Australian Astronomical Observatory

#### Project Summary

Despite decades of observation, simulations and modelling, the growth and history of the most massive galaxies in the Universe still cannot be explained. This project aims to use massive galaxies identified in the latest generation of galaxy surveys, combined with the latest technology for measuring detailed galaxy properties, to resolve the question of how these galaxies have grown in mass over the last 3 billion years.

FT140100255 Owers, Dr Matthew S

2014	\$95,530.50
2015	\$185,951.00
2016	\$185,951.00
2017	\$185,951.00
2018	\$90,420.50
<b>Total</b>	<b>\$743,804.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr Matthew S Owers

**Administering Organisation** Australian Astronomical Observatory

#### Project Summary

This project aims to explain the fundamental differences observed in the star forming properties of galaxies in high and low density environments. This will be achieved by using innovative technology to observe the spatially resolved star forming properties of galaxies in clusters of galaxies, the densest and most extreme environments. These observations will be coupled with a new method for defining galaxy environments, which is based on physical properties. The combination of these techniques will be used to establish the degree to which the physical mechanisms acting in clusters impact the star forming properties of infalling galaxies. This will significantly advance understandings of the impact of environment on galaxy evolution.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### Curtin University of Technology

FT140101082 Miller-Jones, Dr James C

2014	\$85,035.50
2015	\$163,334.50
2016	\$160,123.50
2017	\$160,428.50
2018	\$78,604.00
<b>Total</b>	<b>\$647,526.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr James C Miller-Jones

**Administering Organisation** Curtin University of Technology

#### Project Summary

The overwhelming majority of black holes are found in an extremely faint quiescent state. This project aims to improve understandings of this large population of black holes, determining the geometry of the inflowing gas, the source of the faint X-ray emission, and the fraction of energy pumped outwards in fast-moving jets. Building on recent ground-breaking results, this project aims to conduct a survey to detect a new population of black holes in dense star clusters, providing new laboratories to explore accretion physics. It aims to measure the distances of the black holes and their motion through space, test evidence for the existence of event horizons, and provide new insights into how black holes form and how they affect their surroundings.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### Monash University

**FT140100794 Izzard, Dr Robert G**

2014	\$96,463.00
2015	\$179,996.00
2016	\$177,686.00
2017	\$178,606.00
2018	\$84,453.00
<b>Total</b>	<b>\$717,204.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr Robert G Izzard

**Administering Organisation** Monash University

#### Project Summary

The story of the origin of the elements fascinates mankind and touches many branches of science. This project combines new stellar population models of the oldest stars with new data from the Australian million-star GALactic Archaeology with HERMES (GALAH) survey to address basic astrophysical problems: mixing in stars, mass transfer in binary stars and measurement of the masses of the first stars. Knowing how these ancient stars behave is crucial to understanding element production in the early Universe, both in our Milky Way and distant galaxies. By statistically comparing new models to the GALAH data, this project aims to measure the masses of the oldest galactic stars directly impacting branches of astrophysics from planets to galaxies.

### Swinburne University of Technology

**FT140100933 Kacprzak, Dr Glenn**

2014	\$96,438.50
2015	\$191,287.00
2016	\$185,137.00
2017	\$182,527.50
2018	\$92,239.00
<b>Total</b>	<b>\$747,629.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr Glenn Kacprzak

**Administering Organisation** Swinburne University of Technology

#### Project Summary

The evolution of galaxies is intimately tied to their ecosystem - the cycle of gas accretion, star formation, stellar death and gas expulsion. This cycle occurs within the halos of galaxies, where galaxy interactions and intergalactic gas creates a complex ecosystem. Disentangling these processes has not been successful using observations alone; a complete understanding of galaxy evolution requires detailed simulations of galaxies and their gaseous halos. This project aims to exploit new, world-leading simulations to comprehensively track the gas cycle around galaxies.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The Australian National University

**FT140101202 Groves, Dr Brent**

2014	\$77,513.00
2015	\$155,026.00
2016	\$155,026.00
2017	\$155,026.00
2018	\$77,513.00
<b>Total</b>	<b>\$620,104.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr Brent Groves

**Administering Organisation** The Australian National University

#### Project Summary

Over the last 10 billion years the star formation rate in galaxies has been decreasing. Yet it is not known whether this is driven by a decline in the accretion of the gas that forms stars or stronger stellar feedback-driven gas outflows. The gradient in elemental abundances with galactic radius can constrain these two processes. The project aims to calibrate the measurement of this quantity using nearby galaxies, and measure the gradients in a low redshift sample of galaxies using Australian telescopes. These will be compared with theoretical models to determine the process that is driving the Universe to be more quiescent over cosmic time.

**FT140100554 Yong, Dr David**

2014	\$86,063.00
2015	\$170,126.00
2016	\$169,826.00
2017	\$167,076.00
2018	\$81,313.00
<b>Total</b>	<b>\$674,404.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1 Dr David Yong

**Administering Organisation** The Australian National University

#### Project Summary

How did the Milky Way Galaxy form? The answer to this fundamental question lies in the chemical compositions of stars. Enormous investments by the Australian and international community into state-of-the-art facilities and surveys will yield a 1 million star sample for chemical analysis. To fully harvest the information from those surveys requires stellar chemical composition measurements of the highest possible precision. This project aims to use recently pioneered analysis techniques that have led the field of chemical abundance measurements in stars to the unprecedented precision level of 2 per cent (a five-fold improvement) to chart the evolution of our Galaxy over cosmic time.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

**FT140101270**    **Bolejko, Dr Krzysztof**

2014	\$85,940.00
2015	\$166,083.00
2016	\$161,305.50
2017	\$161,305.50
2018	\$80,143.00
<b>Total</b>	<b>\$654,777.00</b>

Primary FoR    0201            ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1                Dr Krzysztof Bolejko

**Administering Organisation**    The University of Sydney

#### Project Summary

This project aims to be the first to develop new methods which will allow accurate study of light propagation effects. These methods remove the “noise” (light propagation effects) from observational data, resulting in unprecedented accuracy of the analyses and new insight into properties of dark energy. At the same time these methods use the “noise” as the actual signal to measure properties of the Universe, especially the mass distribution inside cosmic voids (places in the Universe avoided by galaxies), which will solve the problem of dark matter distribution inside cosmic voids. The project aims to use light propagation effects to test Einstein's theory of gravity at cosmological scales.

**FT140100481**    **Hamann, Dr Jan**

2014	\$83,675.00
2015	\$160,033.00
2016	\$153,624.50
2017	\$153,624.50
2018	\$76,358.00
<b>Total</b>	<b>\$627,315.00</b>

Primary FoR    0201            ASTRONOMICAL AND SPACE SCIENCES

#### Funded Participants:

FT1                Dr Jan Hamann

**Administering Organisation**    The University of Sydney

#### Project Summary

Using data from upcoming galaxy and weak gravitational lensing surveys, this project aims to address fundamental questions of cosmology: how massive are neutrinos? Are there exotic relativistic matter components? How exactly were the initial density fluctuations generated? Current theoretical predictions of the growth of cosmic structures are not able to match the expected precision of future measurements. This project aims to solve this problem and allow for the full harnessing of discovery potential of the observations. By combining numerical simulations of the Universe with a machine-learning algorithm, accurate and efficient estimation of cosmological parameters will be made possible.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

**FT140100147 Stello, Dr Dennis**

2014	\$96,327.00
2015	\$183,865.00
2016	\$173,030.00
2017	\$169,530.00
2018	\$84,038.00
<b>Total</b>	<b>\$706,790.00</b>

Primary FoR 0201 ASTRONOMICAL AND SPACE SCIENCES

### **Funded Participants:**

FT1 Dr Dennis Stello

**Administering Organisation** The University of Sydney

### **Project Summary**

This project aims to use a completely new approach to investigate how our Galaxy formed and evolved, by merging two fields within astrophysics – galactic archaeology and the study of stellar oscillations. This will dramatically improve understandings of the fundamental physics that governs the evolution of all cool stars, such as the Sun. This project aims to go beyond classical astronomy, which examines only the surface of stars. For the first time, the interior structure of thousands of stars across the Galaxy will be probed to reveal intricate details of its evolution from the imprint of each star's oscillations. This will be possible through access to data of extremely high precision from one European and two National Aeronautics and Space Administration (NASA) space telescopes.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
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**0202                    ATOMIC, MOLECULAR, NUCLEAR, PARTICLE AND PLASMA PHYSICS**

**The University of Adelaide**

**FT140100244    White, Dr Martin J**

2014	\$94,560.50
2015	\$187,573.50
2016	\$189,201.00
2017	\$191,201.00
2018	\$95,013.00
<b>Total</b>	<b>\$757,549.00</b>

Primary FoR    0202                    ATOMIC, MOLECULAR, NUCLEAR, PARTICLE AND PLASMA PHYSICS

**Funded Participants:**

FT1                    Dr Martin J White

**Administering Organisation**    The University of Adelaide

**Project Summary**

Following the recent discovery of the Higgs boson, the greatest outstanding mystery in physics, it is now time to identify the nature of the dark matter that fills much of our Universe. This project aims to invent new data mining techniques to test the viability of a wide class of theoretical dark matter models, using an extensive range of particle physics and astrophysics data. It will use these models to help design the next generation of dark matter searches in gamma ray and neutrino astronomy, using the Large Hadron Collider. This project aims to put Australia at the forefront of international particle astrophysics research and potential new discoveries will change the future direction of international particle research.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Melbourne

FT140100393    Petersen, Dr Brian A

2014	\$96,497.00
2015	\$191,807.50
2016	\$191,796.00
2017	\$192,441.00
2018	\$95,955.50
<b>Total</b>	<b>\$768,497.00</b>

Primary FoR    0202                    ATOMIC, MOLECULAR, NUCLEAR, PARTICLE AND PLASMA PHYSICS

#### Funded Participants:

FT1                    Dr Brian A Petersen

**Administering Organisation**    The University of Melbourne

#### Project Summary

The recent discovery of the Higgs boson confirmed the remaining element of the Standard Model of particle physics, yet many fundamental questions about the microscopic nature of the Universe remain. Observations have shown the Universe to predominantly consist of dark matter, which is not explained by the particles within the Standard Model. The Large Hadron Collider upgrades provide a huge opportunity to discover new physics processes by enabling direct searches for new particles at the high-energy frontier. This project aims to fully exploit the unique datasets anticipated, and develop key electronic components and new techniques. It will expand the reach of the ATLAS experiment at the Large Hadron Collider and cement Australia's role at the forefront of particle physics.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0203 CLASSICAL PHYSICS

#### The Australian National University

FT140100067 Xia, Dr Hua

2014	\$93,663.00
2015	\$181,426.00
2016	\$176,626.00
2017	\$174,626.00
2018	\$85,763.00
<b>Total</b>	<b>\$712,104.00</b>

Primary FoR 0203 CLASSICAL PHYSICS

#### Funded Participants:

FT1 Dr Hua Xia

**Administering Organisation** The Australian National University

#### Project Summary

Barriers to transport in complex fluid flows are ubiquitous in nature, yet mathematical and numerical approaches have so far been unable to solve this problem in the presence of turbulence. This project aims to undertake the first systematic laboratory study of transport barrier generation, control and interactions to reveal the role of turbulence in the stochastic transport in fluids. It will develop new methods of transport barrier modelling which will equip specialists dealing with Lagrangian transport with new tools for the transport barrier modelling and characterisation.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0205 OPTICAL PHYSICS

#### Swinburne University of Technology

FT140101104 Hicks, Dr Damien G

2014	\$125,573.50
2015	\$252,197.50
2016	\$242,248.00
2017	\$231,248.00
2018	\$115,624.00
<b>Total</b>	<b>\$966,891.00</b>

Primary FoR 0205 OPTICAL PHYSICS

#### Funded Participants:

FT3 Dr Damien G Hicks

**Administering Organisation** Swinburne University of Technology

#### Project Summary

The dynamics of molecular processes are too fast to observe with any microscope so science has instead relied on recording the static before and after states of these changes, inferring what happens in between. This project aims to combine the advantages of ultrafast photonic laser control and electron microscopy to allow the direct visualisation of dynamics at the nanoscale in physical and biological systems. By providing a view into how order emerges from the thermal chaos of molecular objects this project aims to help to reveal the physical basis for life.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The Australian National University

FT140101126    Bliokh, Dr Konstantin

2014                \$103,398.00

2015                \$200,382.00

2016                \$199,667.00

2017                \$199,667.00

2018                \$96,984.00

**Total                \$800,098.00**

Primary FoR    0205                OPTICAL PHYSICS

#### Funded Participants:

FT2                Dr Konstantin Bliokh

**Administering Organisation**    The Australian National University

#### Project Summary

This project aims to address frontier problems at the confluence of nano-optics, plasmonics, electron microscopy, quantum weak measurements, and relativistic wave fields. Miniaturisation of devices, and ever-increasing amounts of processed information, lead to the increasing complexity of classical and quantum waves considered in fundamental science and exploited in applications. This project aims to develop novel methods and concepts, and unveil intriguing phenomena in physics of wave systems with nontrivial structure and internal degrees of freedom. This will provide deep insight into properties of complex classical and quantum waves, and new avenues for fine control of diverse light, matter, and mixed light-matter systems.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Melbourne

FT140100577 Crozier, A/Prof Kenneth B

2014 \$126,624.00

2015 \$253,248.00

2016 \$253,248.00

2017 \$253,248.00

2018 \$126,624.00

**Total \$1,012,992.00**

Primary FoR 0205 OPTICAL PHYSICS

#### Funded Participants:

FT3 A/Prof Kenneth B Crozier

**Administering Organisation** The University of Melbourne

#### Project Summary

This project aims to harness light-matter interactions at the nanoscale for the development of new photonic devices for imaging and optical manipulation. Novel photodetectors that operate from visible to infrared wavelengths will be developed, enabled by sub-wavelength nanostructures. These could form the basis for digital cameras with multispectral imaging capabilities, for example, for biomedical imaging, food quality control and remote sensing. Nanostructures will be developed that concentrate light to nanoscale spots, enabling the trapping of single molecules and nanoparticles. This project aims to educate the next generation of Australian optical scientists and engineers, building the human infrastructure for future advances in this field.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100650 Bowen, A/Prof Warwick P

2014	\$111,539.00
2015	\$223,103.00
2016	\$223,063.00
2017	\$222,988.50
2018	\$111,489.50
<b>Total</b>	<b>\$892,183.00</b>

Primary FoR 0205 OPTICAL PHYSICS

#### Funded Participants:

FT2 A/Prof Warwick P Bowen

**Administering Organisation** The University of Queensland

#### Project Summary

This project aims to pioneer technologies to observe and control the microscopic world with unprecedented precision, and apply them to realise practical sensors with unrivalled performance. Nano- and micro-scale sensors will be developed that resolve motion smaller than an atomic nucleus, in a classical spin-off from international efforts to study quantum physics at the nanoscale. Record precision will be achieved in thermometry and magnetometry. New tools will be developed for lab-on-a-chip medical diagnosis and thermal imaging, that in future could allow femtolitre diagnosis of blood diseases such as malaria, on-chip genomic analysis, more efficient airport screening, and more precise satellite maps of global and atmospheric temperature.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0206 QUANTUM PHYSICS

#### Swinburne University of Technology

FT140100003 Liu, A/Prof Xia-Ji

2014	\$101,619.00
2015	\$201,038.00
2016	\$201,038.00
2017	\$201,038.00
2018	\$99,419.00
<b>Total</b>	<b>\$804,152.00</b>

Primary FoR 0206 QUANTUM PHYSICS

#### Funded Participants:

FT2 A/Prof Xia-Ji Liu

**Administering Organisation** Swinburne University of Technology

#### Project Summary

Majorana fermions – particles that are their own antiparticles – play a key role in future quantum technologies such as fault-tolerant quantum computers. Being considered only as a mathematical possibility over the past 75 years, they might be surprisingly materialised owing to recent rapid experimental advances. In collaboration with the world-leading cold-atom laboratories in Australia, China and the USA, this project aims to pave a new direction to create and manipulate Majorana fermions towards realistic atomtronic devices, by using the highly controllable setting of ultracold atomic Fermi gases. This research complements the search of Majorana fermions in solid-state devices.

### The University of Queensland

FT140100338 Fedorov, Dr Arkady

2014	\$96,188.00
2015	\$192,511.00
2016	\$192,323.50
2017	\$191,673.50
2018	\$95,673.00
<b>Total</b>	<b>\$768,369.00</b>

Primary FoR 0206 QUANTUM PHYSICS

#### Funded Participants:

FT1 Dr Arkady Fedorov

**Administering Organisation** The University of Queensland

#### Project Summary

At the heart of all communication is the need to establish strong correlations between remote sites. The non-local character of quantum correlations enables new communication protocols that are impossible with classical resources alone. This project aims to realise a novel class of superconducting devices capable of establishing quantum correlations between distant electronic chips through long-range irreversible interactions. The resulting technology will enable completely new approaches to quantum information processing in superconducting quantum circuits and provide a powerful platform to test the limits of the ability to engineer macroscopic quantum systems.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### FT140100625 McCulloch, Dr Ian P

2014	\$94,923.00
2015	\$191,137.00
2016	\$178,852.00
2017	\$168,276.00
2018	\$85,638.00
<b>Total</b>	<b>\$718,826.00</b>

Primary FoR 0206 QUANTUM PHYSICS

#### Funded Participants:

FT1 Dr Ian P McCulloch

**Administering Organisation** The University of Queensland

#### Project Summary

Quantum phenomena are ubiquitous and critical to the functioning of many modern technological devices, for example sensors and computer chips used in mobile phones. Although great strides have been made in recent decades in describing quantum phenomena theoretically, computational modelling is an essential ingredient to describe real experiments and devices. This project aims to develop the next generation of computational tools aimed at two major themes: characterising topological states of matter, and modelling non-equilibrium phenomena. These tools will be invaluable for the design and modelling of quantum devices and novel materials and will enable the development of the next generation of technological devices.

### FT140100952 Stace, Dr Thomas M

2014	\$96,513.00
2015	\$181,026.00
2016	\$174,576.00
2017	\$175,126.00
2018	\$85,063.00
<b>Total</b>	<b>\$712,304.00</b>

Primary FoR 0206 QUANTUM PHYSICS

#### Funded Participants:

FT1 Dr Thomas M Stace

**Administering Organisation** The University of Queensland

#### Project Summary

Modern physics has been very successful at developing incredibly precise theoretical descriptions of nature. Can exquisitely accurate models of the interaction between light and matter, to push sensing and measurement far beyond the current state-of-the art, be exploited? This project aims to address this question, focussing on three domains of measurement: temperature, time and power. Improving sensors and measurement has been the cornerstone of new physical discoveries, with applications from radio-astronomy to quantum information and navigation. This project aims to build the theoretical foundations for world-beating thermometers, clocks, and photon counters, and to guide experiments in Australia and abroad to bring them into reality.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0302 INORGANIC CHEMISTRY

#### The Australian National University

FT140100834 Cox, Dr Nicholas

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0302 INORGANIC CHEMISTRY

#### Funded Participants:

FT1 Dr Nicholas Cox

**Administering Organisation** The Australian National University

#### Project Summary

New classes of heterogeneous manganese-calcium water splitting catalysts analogous to the unique biological water splitting cofactor have recently emerged but with far lower catalytic rates than seen for the biological system. These new materials are promising targets for large-scale hydrogen fuel production with low cost, high efficiency and ease of manufacture. To achieve this, the performance gap between these materials and the homogenous biological catalyst must be bridged. Multi-dimensional site-selective spectroscopies, including magneto/optical resonance methods which are aimed to be developed in this project are expected to provide new, atomic level understanding of properties needed to achieve high catalytic efficiency, thus guiding rational catalyst design.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Adelaide

FT140100355    Bell, Dr Stephen G

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR    0302                    INORGANIC CHEMISTRY

#### Funded Participants:

FT1                    Dr Stephen G Bell

**Administering Organisation**    The University of Adelaide

#### Project Summary

Enzyme catalysed oxidation reactions are key players in the production of naturally occurring biologically active molecules. These processes are tightly regulated by their electron transfer partners. This project aims to characterise new electron transfer ferredoxin proteins from a metabolically diverse bacterium. These ferredoxins, important in many bacteria, contain different non-cysteine amino acids in their iron-sulfur cluster binding motifs and are poorly defined. The outcomes will advance understandings of electron transfer, a fundamental process. This will allow strategies to combat human and plant pathogens and unlock the potential of these systems as biocatalysts for the green chemical synthesis of complex and valuable chemicals.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0303 MACROMOLECULAR AND MATERIALS CHEMISTRY

#### Curtin University of Technology

FT140100191 Suarez-Martinez, Dr Irene

2014	\$82,663.00
2015	\$161,726.00
2016	\$158,076.00
2017	\$159,176.00
2018	\$80,163.00
<b>Total</b>	<b>\$641,804.00</b>

Primary FoR 0303 MACROMOLECULAR AND MATERIALS CHEMISTRY

#### Funded Participants:

FT1 Dr Irene Suarez-Martinez

**Administering Organisation** Curtin University of Technology

#### Project Summary

Black carbon is the second most important greenhouse forcing agent after carbon dioxide. The global atmospheric effect of black carbon predicted by current climate models is thought to be underestimated by at least 50 per cent, primarily due to uncertainties over the nature of black carbon and the absence of benchmarks. This project aims to use a computational chemistry approach to develop an atomistic model for black carbon. Using these models, the project will determine the relationship between nanostructure and properties such as optical absorption and melting point.

#### Queensland University of Technology

FT140100986 McMurtrie, Dr John

2014	\$96,513.00
2015	\$192,226.00
2016	\$190,726.00
2017	\$191,026.00
2018	\$96,013.00
<b>Total</b>	<b>\$766,504.00</b>

Primary FoR 0303 MACROMOLECULAR AND MATERIALS CHEMISTRY

#### Funded Participants:

FT1 Dr John McMurtrie

**Administering Organisation** Queensland University of Technology

#### Project Summary

This project aims to design, synthesise and characterise molecular and framework co-crystals in which the molecular components are arranged in permanent concentration gradients. Synthetic crystals of this type are unprecedented. The concentration gradient has significant implications for the physical properties of the crystals (for example, optical, magnetic and electronic) as these must also vary in concert with the changing local molecular composition. These co-crystals promise unique magnetic and optical properties that will influence design of new smart solid-state materials with potential for use in future high-technology applications.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100273 Clegg, Dr Jack K

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0303 MACROMOLECULAR AND MATERIALS CHEMISTRY

#### Funded Participants:

FT1 Dr Jack K Clegg

**Administering Organisation** The University of Queensland

#### Project Summary

Separating mixtures of molecules is one of the most enduring challenges in the chemical sciences and accounts for a significant cost burden in many industrial applications. This project aims to design and prepare new chiral self-assembled materials that contain cavities of predictable sizes and shapes. These materials, including molecular capsules, cages and network solids, will act to selectively bind different chemical substrates within their chiral encapsulated spaces, thus enabling the straight-forward separation of racemic mixtures of molecules. Small molecules with enantiomeric purity are a fundamental requirement as starting materials for drug development and a wide range of pharmaceutical applications.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0304 MEDICINAL AND BIOMOLECULAR CHEMISTRY

#### The University of Queensland

FT140100730 Gruber, Asst Prof Christian W

2014	\$96,412.50
2015	\$191,525.50
2016	\$191,475.50
2017	\$189,775.50
2018	\$93,413.00
<b>Total</b>	<b>\$762,602.00</b>

Primary FoR 0304 MEDICINAL AND BIOMOLECULAR CHEMISTRY

#### Funded Participants:

FT1 Asst Prof Christian W Gruber

**Administering Organisation** The University of Queensland

#### Project Summary

Naturally-occurring peptides are widely distributed in many plants, but their biological role is often unclear. Circular plant peptides (called cyclotides) that share similarities with the neuropeptide oxytocin, and acts on its receptor, have been previously isolated. This signalling system is important for reproduction, development, and behaviour as well as water homeostasis. To elucidate the natural function of cyclotides. This project aims to characterise the pharmacological properties and biological effects of invertebrate receptors and their modulation by cyclotides. The notion that plants produce molecules to target invertebrate receptors is extremely appealing and will enhance knowledge about fundamental biological processes of plant-animal ecology.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0305 ORGANIC CHEMISTRY

#### Queensland University of Technology

FT140100746 Fairfull-Smith, Dr Kathryn E

2014	\$96,363.00
2015	\$192,776.00
2016	\$192,726.00
2017	\$192,726.00
2018	\$96,413.00
<b>Total</b>	<b>\$771,004.00</b>

Primary FoR 0305 ORGANIC CHEMISTRY

#### Funded Participants:

FT1 Dr Kathryn E Fairfull-Smith

**Administering Organisation** Queensland University of Technology

#### Project Summary

Bacterial biofilms are a major problem in a number of environmental, industrial and medical applications. They cause significant risks to human health and present an enormous economic burden to society. This project aims to develop smart polymeric coatings that will discourage bacterial attachment and ensure greater long term control over biofilm growth. These coatings represent a breakthrough in the field and will have a profound impact in many areas, including reducing infections related to medical implants and improving the efficiency of marine engineering systems.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0307 THEORETICAL AND COMPUTATIONAL CHEMISTRY

#### The University of Sydney

FT140101061 Widmer-Cooper, Dr Asaph N

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0307 THEORETICAL AND COMPUTATIONAL CHEMISTRY

#### Funded Participants:

FT1 Dr Asaph N Widmer-Cooper

**Administering Organisation** The University of Sydney

#### Project Summary

This project aims to apply new computational methods developed by the applicant to characterise the interactions between colloidal nanorods and their self-assembly in the presence of interfaces and directional interactions. While nanoparticles can currently be made in a staggering array of shapes, patterns and materials, organising such objects into extended structures that could revolutionise technology remains a challenge. The expected outcome is a robust strategy for making monolayer films of rods aligned perpendicular to a variety of interfaces for the fabrication of solar cells, microfiltration membranes and biosensors.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0402 GEOCHEMISTRY

#### Curtin University of Technology

FT140100826 Wang, Dr Xuan-Ce

2014	\$96,463.00
2015	\$192,926.00
2016	\$192,826.00
2017	\$187,476.00
2018	\$91,113.00
<b>Total</b>	<b>\$760,804.00</b>

Primary FoR 0402 GEOCHEMISTRY

#### Funded Participants:

FT1 Dr Xuan-Ce Wang

**Administering Organisation** Curtin University of Technology

#### Project Summary

This project aims to test a provocative and potentially ground-breaking hypothesis that fluid released from subducted oceanic slabs and stored in the mantle transition zone, may trigger or control some major intra-plate geotectonic phenomena. It aims to provide a self-consistent model that links geological processes occurring at plate boundaries with those far-field effects well away from plate boundaries via deep-Earth fluid cycling. The outcomes of this project aim to help to better understand links between plume and plate tectonic processes in the first-order dynamic system of Earth, and identify ways to improve success in future mineral exploration.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The Australian National University

FT140101062    Nebel, Dr Oliver

2014                \$96,318.00

2015                \$191,886.00

2016                \$191,886.00

2017                \$191,886.00

2018                \$95,568.00

**Total                \$767,544.00**

Primary FoR    0402                GEOCHEMISTRY

#### Funded Participants:

FT1                Dr Oliver Nebel

**Administering Organisation**    The Australian National University

#### Project Summary

This project aims to focus on modes and timescales of melting associated with deep mantle plumes. These melts form massive magmatic bodies and volcanic flood basalt provinces throughout Earth's history and record the secular chemical evolution of the Earth's mantle. Selective igneous bodies contain high-grade noble metal deposits and coincide with global mass extinction linked to anoxic ocean events in response to atmospheric volcanic pollution. This project aims to provide knowledge of planetary surface evolution in response to mantle dynamics, place constraints on enrichment processes of metals in ore quality in plume-derived melts, and may help understandings of the relation between massive volcanic eruptions and climate variability.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0403 GEOLOGY

#### The University of Western Australia

FT140100321 Wacey, Dr David

2014	\$95,788.00
2015	\$191,766.00
2016	\$191,956.00
2017	\$191,956.00
2018	\$95,978.00
<b>Total</b>	<b>\$767,444.00</b>

Primary FoR 0403 GEOLOGY

#### Funded Participants:

FT1 Dr David Wacey

**Administering Organisation** The University of Western Australia

#### Project Summary

This project aims to provide new insights into the origin of life on Earth, life's diversification through the Precambrian, and the co-evolution of life and early Earth environments. It will be discipline-leading in that it will take the study of early life to the sub-micrometre and hence sub-cellular level. This will facilitate new opportunities for identifying the types of life present during early Earth history, their metabolisms, cellular chemistry and interactions with their environment. This project aims to also provide new search engines and more robust assessment criteria for life on other planets, and help to resolve specific scientific controversies, for example, the validity of claims for cellular life from 3.5 billion-year-old rocks.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Wollongong

<b>FT140100384</b>	<b>Li, Dr Bo</b>	
2014	\$96,503.00	
2015	\$192,976.00	
2016	\$192,946.00	
2017	\$192,776.00	
2018	\$96,303.00	
<b>Total</b>	<b>\$771,504.00</b>	

Primary FoR      0403              GEOLOGY

#### Funded Participants:

FT1                  Dr Bo Li

**Administering Organisation**      University of Wollongong

#### Project Summary

Chronology is a critical component of geological and archaeological studies. To reconstruct the evolutionary histories of Homo sapiens and other hominin species in their environmental context, we must establish reliable age estimates for key archaeological sites and Quaternary deposits. This project aims to develop new-generation sediment dating techniques using the non-fading infrared stimulated luminescence (IRSL) signal from potassium feldspars. These improved methods will be able to be applied to sites in Africa, Europe and Asia that contain important human fossils and artefacts, including the unique type localities of 'Denisovans' and 'Hobbits', to answer fundamental questions about the timing of key turning points in human evolution and dispersal.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0404 GEOPHYSICS

#### The Australian National University

FT140101262 Davies, Dr Rhodri

2014 \$95,512.00

2015 \$173,475.00

2016 \$170,825.00

2017 \$168,375.00

2018 \$75,513.00

**Total \$683,700.00**

Primary FoR 0404 GEOPHYSICS

#### Funded Participants:

FT1 Dr Rhodri Davies

**Administering Organisation** The Australian National University

#### Project Summary

Mantle plumes are buoyant upwellings that bring hot material from Earth's deep-mantle to the surface, forming volcanic hotspots, like Hawaii. Although extensively studied, the geochemical variations recorded in hotspot lavas have, so far, proved difficult to understand, particularly how they relate to their heterogeneous deep-mantle source. This project aims to use state-of-the-art geodynamical models to determine how deep-mantle heterogeneities are transported into a plume and how such heterogeneities are mixed during plume ascent. This will facilitate the linking, for the first time, of geochemical variations at volcanic hotspots to the deep-mantle's thermo-chemical structure, under an Earth-like, fluid-dynamical framework.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0406 PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE

#### The Australian National University

FT140100286    McGregor, Dr Helen V

2014	\$96,476.00
2015	\$192,859.00
2016	\$192,821.00
2017	\$192,821.00
2018	\$96,383.00
<b>Total</b>	<b>\$771,360.00</b>

Primary FoR    0406                    PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE

#### Funded Participants:

FT1                    Dr Helen V McGregor

**Administering Organisation**    The Australian National University

#### Project Summary

El Niño and La Niña events have a profound influence on Australian drought conditions and rainfall. Forecasting is hampered by short climate records, which do not capture the full range of El Niño dynamics. This project aims to generate records of unprecedented length and spatial coverage from key sites across the western and central equatorial Pacific. Five hundred years of continuous, monthly-resolution climate data will be integrated with output from state-of-the-art climate model simulations to distil the key processes that cause El Niño to vary. This project aims to provide major advances in determining the full range of El Niño and La Niña behaviour, leading to improved forecasts of future changes, with consequences for Australia's water security.

FT140100993    Yu, Dr Jimin

2014	\$94,840.50
2015	\$189,681.00
2016	\$189,681.00
2017	\$189,681.00
2018	\$94,840.50
<b>Total</b>	<b>\$758,724.00</b>

Primary FoR    0406                    PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE

#### Funded Participants:

FT1                    Dr Jimin Yu

**Administering Organisation**    The Australian National University

#### Project Summary

The causes for past atmospheric carbon dioxide (CO<sub>2</sub>) changes and their mechanistic links to the histories of climate and ocean carbonate chemistry remain elusive, but may hold future-relevant information. This project aims to use novel methods to quantify deep ocean carbonate ion concentrations, a critical but poorly constrained parameter of the global carbon cycle, at 10 key locations spanning the global ocean during the last 350 000 years. By feeding new data into a model, this project aims to gain critical insights into mechanisms controlling past deep-sea carbonate cycles and atmospheric CO<sub>2</sub> changes, thereby leading to improved understandings of the climate system.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100977    McIntyre, Prof Neil

2014	\$113,939.00
2015	\$224,403.00
2016	\$224,403.00
2017	\$224,403.00
2018	\$110,464.00
<b>Total</b>	<b>\$897,612.00</b>

Primary FoR    0406                    PHYSICAL GEOGRAPHY AND ENVIRONMENTAL GEOSCIENCE

#### Funded Participants:

FT3                    Prof Neil McIntyre

**Administering Organisation**    The University of Queensland

#### Project Summary

The project aims to provide tools that can identify how mining projects, including associated land use and infrastructure, can play a positive role in sustainable water management. This will be based on new knowledge about mine-land-water relationships, novel approaches to modelling mine site hydrology within regional models and greater emphasis on risk evaluation. This work is essential if resource-rich regions in Australia and beyond are to be developed with sustainability as a goal, and for mining to live comfortably alongside other strategically important water and land users. The main outcome aims to be the development of new tools for predicting and optimising the regional water management opportunities provided by mining.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0501 ECOLOGICAL APPLICATIONS

#### University of Tasmania

FT140100596 Pecl, Dr Gretta T

2014	\$96,485.00
2015	\$192,740.00
2016	\$192,700.50
2017	\$189,188.50
2018	\$92,743.00
<b>Total</b>	<b>\$763,857.00</b>

Primary FoR 0501 ECOLOGICAL APPLICATIONS

#### Funded Participants:

FT1 Dr Gretta T Pecl

**Administering Organisation** University of Tasmania

#### Project Summary

Global redistribution of Earth's species is widely recognised as a fingerprint of climate change. However, the physiological and ecological processes that underpin such shifts in the distribution of marine species are poorly understood. Even less is known about why species respond at different rates, and how such widespread changes will impact the structure and function of Australia's marine ecosystems. This research will address critical knowledge gaps of why and how species respond in vastly different ways to environmental change. Research outcomes will improve the capacity to predict responses of marine species and ecosystems to climate change and provide advice relevant to strategic management of valuable natural resources.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

#### The University of Adelaide

FT140100670 Koh, Asst Prof Lian Pin

2014	\$110,849.00
2015	\$219,418.00
2016	\$220,138.00
2017	\$220,138.00
2018	\$108,569.00
<b>Total</b>	<b>\$879,112.00</b>

Primary FoR 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

#### Funded Participants:

FT2 Asst Prof Lian Pin Koh

**Administering Organisation** The University of Adelaide

#### Project Summary

Growing global demands for water, food and energy will continue to intensify land-use conflicts, contribute to carbon emissions, and exacerbate threats to biodiversity. Consumption needs to be balanced with environmental protection. This project aims to frame the issues of food security, rural development, carbon emissions and biodiversity loss from the perspective of ecological and economic theory. It will use cutting-edge analyses to assess the implications and trade-offs of alternative land-use and development scenarios that reflect key socioeconomic and environmental priorities in Indonesia. Based on these analyses, decision-support tools will be developed to help Indonesian policymakers reconcile these objectives to achieve more sustainable development.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100516 Maron, Dr Martine

2014	\$95,279.50
2015	\$186,237.50
2016	\$183,366.00
2017	\$165,506.00
2018	\$73,098.00
<b>Total</b>	<b>\$703,487.00</b>

Primary FoR 0502 ENVIRONMENTAL SCIENCE AND MANAGEMENT

#### Funded Participants:

FT1 Dr Martine Maron

**Administering Organisation** The University of Queensland

#### Project Summary

Attempts to reduce conflict between development and conservation are increasingly reliant upon environmental offsetting: generating an environmental benefit to compensate for environmental damage elsewhere. However, whether different offset approaches can achieve their goal of 'no net loss' of biodiversity is unknown. By building simulations of the long-term biodiversity consequences (both intended and unintended) of current offset approaches, This project aims to test how each approach and associated sources of uncertainty influence the long-term persistence of biodiversity. It will identify limitations of biodiversity offsetting, shed new light on the most effective approaches, and help develop global standards for offsetting biodiversity loss.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0601 BIOCHEMISTRY AND CELL BIOLOGY

#### The Australian National University

FT140101059 Jackson, Dr Colin J

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0601 BIOCHEMISTRY AND CELL BIOLOGY

#### Funded Participants:

FT1 Dr Colin J Jackson

**Administering Organisation** The Australian National University

#### Project Summary

Synthetic insecticides have resulted in an explosion in food production through effective insect control. However, insects have begun to evolve resistance against one of the most widely used classes of insecticides (organophosphates) via mutations in carboxylesterases (CBEs). To address this problem, the ability to anticipate further evolution, combat it and exploit it for our own benefit is needed. This project aims to anticipate evolution by simulating it in the laboratory, allowing for the best preparation for change. New pesticides will be designed to combat insecticide resistance based upon the molecular structure of an insect CBE. This project aims to exploit these newly evolved enzymes to create biosensors and decontamination agents.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Melbourne

**FT140100544**     **Griffin, Dr Michael D**

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR     0601                    BIOCHEMISTRY AND CELL BIOLOGY

#### Funded Participants:

FT1                    Dr Michael D Griffin

**Administering Organisation**     The University of Melbourne

#### Project Summary

The interaction between proteins and lipids is a fundamental aspect of cellular processes in all organisms. Lipid binding proteins must be structurally dynamic to perform their function, which predisposes them to misfolding and aggregation. This project aims to assess the structural mechanisms of lipid binding by apolipoproteins, and how these proteins balance this function with their propensity to misfold. It will focus on apolipoprotein (apo)A-I as a model serum apolipoprotein that binds lipids and mediates lipid transport in circulation. This project also aims to provide an important new understanding of protein-lipid interactions, the structural mechanisms of apolipoproteins, and the process of misfolding in a diverse range of proteins.

**FT140100047**     **Pebay, Dr Alice**

2014	\$111,369.00
2015	\$222,638.00
2016	\$222,638.00
2017	\$222,638.00
2018	\$111,269.00
<b>Total</b>	<b>\$890,552.00</b>

Primary FoR     0601                    BIOCHEMISTRY AND CELL BIOLOGY

#### Funded Participants:

FT2                    Dr Alice Pebay

**Administering Organisation**     The University of Melbourne

#### Project Summary

This project aims to dissect the roles of lipids in cell fate. The study of lipids, or lipidomics, is an emerging and exciting area of biological science. The fundamental roles of lipids in development remain vastly understudied. This project will look at reprogramming of somatic cells into stem cells, their pluripotency and differentiation. This will be complemented with studies in the zebrafish, which permits the direct study of cell fate in vivo. This approach is a powerful way to unlock major events involved in development and to unmask the roles of lipids in these fundamental mechanisms.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

**FT140100278 Uldrich, Dr Adam P**

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0601 BIOCHEMISTRY AND CELL BIOLOGY

### Funded Participants:

FT1 Dr Adam P Uldrich

**Administering Organisation** The University of Melbourne

### Project Summary

T cells are a critical component of the immune system, protecting against a range of pathogens by detecting and responding to foreign molecules. Despite their importance, there is still much to learn about how T cells function. New types of T cells that respond to bacteria-derived lipid molecules, have recently been identified. This project aims to undertake a molecular and functional investigation into lipid-reactive T cells. This will provide basic fundamental insight into a poorly understood, but crucial, component of the immune system as well as an opportunity to ultimately develop novel lipid-based vaccines.

## The University of Newcastle

**FT140101368 Nixon, A/Prof Brett**

2014	\$110,779.00
2015	\$220,558.00
2016	\$220,558.00
2017	\$220,558.00
2018	\$109,779.00
<b>Total</b>	<b>\$882,232.00</b>

Primary FoR 0601 BIOCHEMISTRY AND CELL BIOLOGY

### Funded Participants:

FT2 A/Prof Brett Nixon

**Administering Organisation** The University of Newcastle

### Project Summary

Through work with national and international collaborators, this project aims to provide unprecedented insights into how spermatozoa recognise and bind to an oocyte. The approach is based on strong preliminary data indicating that molecular chaperones play a key role in the functional remodelling of the spermatozoon by promoting the assembly of multimeric oocyte receptor complexes. Through the use of state-of-the-art cell biology and proteomic technologies, the project aims to investigate how molecular chaperones orchestrate these changes and in doing so, improve understanding of the fertilisation cascade and open up new contraceptive strategies.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0602 ECOLOGY

#### Deakin University

FT140100131 Buchanan, A/Prof Katherine L

2014 \$102,064.00

2015 \$198,883.00

2016 \$191,558.00

2017 \$185,728.00

2018 \$90,989.00

**Total \$769,222.00**

Primary FoR 0602 ECOLOGY

#### Funded Participants:

FT2 A/Prof Katherine L Buchanan

**Administering Organisation** Deakin University

#### Project Summary

The impact of anthropogenic change on Australia's biodiversity is of grave concern. It is therefore vital to understand the capacity of Australian fauna to adapt and change, despite environmental challenges. This project aims to quantify the potential for birds to respond to environmental challenges, by programming offspring with adaptive developmental profiles. By quantifying the effects of maternal stress over two generations, this project aims to determine whether mothers have the ability to alter rates of evolutionary change by employing epigenetic mechanisms. Combining lab trials with field data it will determine the biological relevance of these effects to a common, but declining bird, with relevance across Australian avifauna.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of New South Wales

FT140100322    Gribben, Dr Paul E

2014                \$95,351.50

2015                \$190,703.00

2016                \$190,703.00

2017                \$190,703.00

2018                \$95,351.50

**Total**             **\$762,812.00**

Primary FoR    0602                ECOLOGY

#### Funded Participants:

FT1                Dr Paul E Gribben

**Administering Organisation**    The University of New South Wales

#### Project Summary

Worldwide, management of invasive species is limited by the understandings of processes that allow invasive species to establish and proliferate in a new environment. It is believed that marine microbes play a critical, but untested, role in the establishment of invasive marine macrophytes. This project aims to test the theory by integrating cutting edge microbial ecology with eukaryote ecology, two largely disparate research areas. Invasive species are a serious threat to biodiversity globally and cost more than \$4 billion annually. This project aims to create new knowledge essential for safeguarding Australia's marine ecosystems from invasive pests, and will place Australia at the forefront of invasion ecology.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100498    Mayfield, Dr Margaret M

2014	\$96,450.50
2015	\$192,768.50
2016	\$192,778.50
2017	\$192,503.00
2018	\$96,042.50
<b>Total</b>	<b>\$770,543.00</b>

Primary FoR    0602            ECOLOGY

#### Funded Participants:

FT1              Dr Margaret M Mayfield

**Administering Organisation**    The University of Queensland

#### Project Summary

Environmental change is driving the creation of novel communities, stable mixes of native and exotic species. These communities are inevitable outcomes of human-induced environmental changes, yet why and how they form is still poorly understood. As these communities maintain high levels of native biodiversity, they are of great conservation value. Using Western Australia wildflower communities, This project aims to provide the first experimental tests of which environmental and biotic factors drive novel community formation, native species persistence and resilience to invasion. This will be important for developing realistic conservation plans in many ecosystems globally, and more specifically in Western Australia's biodiversity hotspot.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0603 EVOLUTIONARY BIOLOGY

#### The University of New South Wales

FT140100115 Kasumovic, Dr Michael M

2014	\$96,502.00
2015	\$192,968.00
2016	\$192,871.00
2017	\$190,656.50
2018	\$94,251.50
<b>Total</b>	<b>\$767,249.00</b>

Primary FoR 0603 EVOLUTIONARY BIOLOGY

#### Funded Participants:

FT1 Dr Michael M Kasumovic

**Administering Organisation** The University of New South Wales

#### Project Summary

How organisms grow, behave and perform is a result of environmentally triggered molecular, physiological and biochemical reactions. Little is known about how these different levels of organisation interact to create the infinite morphological and behavioural complexities seen in adults. This project aims to integrate the fields of developmental, physiological and evolutionary biology to elucidate how the environment moderates cell and tissue development through gene expression. This will highlight how early developmental decisions affect lifetime energetic trade-offs and efficiency, and how underlying biology manifests into emergent phenomena such as performance, behaviour, ageing and lifespan.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0604 GENETICS

#### Macquarie University

FT140100843 Lanfear, Dr Robert

2014	\$96,490.50
2015	\$191,523.50
2016	\$191,446.00
2017	\$192,826.00
2018	\$96,413.00
<b>Total</b>	<b>\$768,699.00</b>

Primary FoR 0604 GENETICS

#### Funded Participants:

FT1 Dr Robert Lanfear

Administering Organisation Macquarie University

#### Project Summary

Somatic mutations accumulate as plants grow, affecting everything from short-term ecological interactions to long-term evolutionary dynamics. These mutations have important consequences for plant industry and conservation, but because they are so hard to measure almost nothing is known about them. This project aims to develop new methods and software to detect, analyse, and compare the genome-wide history of somatic mutation in individual plants, providing an unprecedented level of detail into an important but understudied source of biological variation. By applying these methods to an iconic experimental population, This project aims to provide the first insights into the genome-wide causes and consequences of somatic mutation in plants.

#### Monash University

FT140100594 Gantier, Dr Michael P

2014	\$95,063.00
2015	\$188,351.00
2016	\$186,776.00
2017	\$187,376.00
2018	\$93,888.00
<b>Total</b>	<b>\$751,454.00</b>

Primary FoR 0604 GENETICS

#### Funded Participants:

FT1 Dr Michael P Gantier

Administering Organisation Monash University

#### Project Summary

MicroRNAs (miRNAs) constitute a novel mechanism used by cells to regulate gene expression, however, very little is known about the mechanisms affecting miRNA accumulation. Characterisation of the kinetics of miRNA turnover is of paramount importance to establish the reliability of miRNAs as novel biomarkers. This project aims to characterise miRNA stability in mammalian cells, investigate mechanisms of turnover and establish their importance on the regulatory function of miRNAs. Such information is critical in the future development of targeted therapeutics.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### FT140101029    Hobbs, Dr Robin M

2014	\$96,484.00
2015	\$192,972.00
2016	\$192,892.00
2017	\$192,878.00
2018	\$96,474.00
<b>Total</b>	<b>\$771,700.00</b>

Primary FoR    0604            GENETICS

#### Funded Participants:

FT1                Dr Robin M Hobbs

**Administering Organisation**    Monash University

#### Project Summary

Tissue maintenance in adults is dependent on resident stem cells, defined by self-renewal and differentiation capabilities. It is apparent that stem cell populations are heterogeneous, being composed of subpopulations with distinct properties. The functional significance of these subsets and mechanisms that control their divergent characteristics are unclear. Using germline stem cells from mice as a model, stem cell subsets have been identified based on differential expression of the pluripotency gene Pou5f1. This project aims to define functional characteristics of these subpopulations and to dissect transcription factor networks controlling their development. This promises important insights into understandings of adult stem cell regulation.

### FT140100128    Wong, Dr Lee H

2014	\$91,513.00
2015	\$176,026.00
2016	\$171,026.00
2017	\$171,026.00
2018	\$84,513.00
<b>Total</b>	<b>\$694,104.00</b>

Primary FoR    0604            GENETICS

#### Funded Participants:

FT1                Dr Lee H Wong

**Administering Organisation**    Monash University

#### Project Summary

Epigenetics is a system that turns genes on and off without sequence alterations in the DNA. This process works by attaching chemical tags, known as epigenetic marks, to DNA. Centromeres and telomeres are chromosomal DNA domains essential for faithful chromosome segregation and genome stability. Their function and structural integrity are tightly regulated by specific epigenetic marks. This project aims to assess the functions of key epigenetic factors including chromatin remodelers, histone variants and non-coding RNA in controlling centromere and telomere activity. The data should describe novel pathways that maintain the identity, transcription silencing, DNA replication fidelity and structural stability at these domains.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Adelaide

**FT140101303**     **Baxter, Dr Simon W**

2014	\$96,489.00
2015	\$192,449.50
2016	\$192,055.50
2017	\$192,314.00
2018	\$96,219.00
<b>Total</b>	<b>\$769,527.00</b>

Primary FoR     0604             GENETICS

#### Funded Participants:

FT1                     Dr Simon W Baxter

**Administering Organisation**     The University of Adelaide

#### Project Summary

Sustaining crop yield and maintaining food security is a significant worldwide concern. This project aims to strengthen insect pest control strategies and improve bio-insecticide use in agriculture through better understanding of the mode of action of *Bacillus thuringiensis* (Bt) insecticides. It aims to improve their efficacy and evaluate opportunities to develop bio-insecticides based on plant saponins. This will assist in determining the risk of insecticide resistant moths migrating to Australia, and within our borders. This project aims to provide opportunities to improve transgenic Bt-crops and Bt-sprays, provide commercial development of new bio-insecticides, and develop optimal control strategies for major Australian migratory pests.

### The University of Melbourne

**FT140100964**     **Pask, A/Prof Andrew J**

2014	\$111,079.00
2015	\$221,648.00
2016	\$221,238.00
2017	\$221,438.00
2018	\$110,769.00
<b>Total</b>	<b>\$886,172.00</b>

Primary FoR     0604             GENETICS

#### Funded Participants:

FT2                     A/Prof Andrew J Pask

**Administering Organisation**     The University of Melbourne

#### Project Summary

Environmental endocrine disrupting chemicals (EEDs) from introduced plants, pesticides and wastewater are dramatically increasing in the Australian environment. EEDs have been shown to cause dramatic reproductive and developmental abnormalities in vertebrates ranging from fish to humans. This project plans to investigate the impact that these chemicals might have on marsupial development. Marsupials have a unique reproductive strategy and how this might affect their ability to respond to EEDs is unknown. This project aims to define the effects of three of the predominant EED risks for marsupials in the Australian environment; estradiol, genistein and atrazine.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100907 Engelstaedter, Dr Jan

2014	\$85,038.00
2015	\$171,520.00
2016	\$175,262.00
2017	\$171,765.00
2018	\$82,985.00
<b>Total</b>	<b>\$686,570.00</b>

Primary FoR 0604 GENETICS

#### Funded Participants:

FT1 Dr Jan Engelstaedter

**Administering Organisation** The University of Queensland

#### Project Summary

Bacteria can rapidly adapt to changing environments, often with devastating consequences for humans. However, this adaptive evolution is often limited by strong reductions in population size, in particular during transmission from one host to another. This project aims to investigate whether recombination in bacteria can overcome the limits that such bottlenecks impose on the rate of adaptation. To this end, it will construct mathematical models and complement them with evolution experiments in bacterial populations. Results from this research aim to generate fundamental insights into the role of recombination in bacterial evolution and will provide guidance for developing management strategies for bacterial pathogens.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0605 MICROBIOLOGY

#### The University of New South Wales

FT140100197 Thomas, A/Prof Torsten

2014	\$111,494.00
2015	\$223,063.00
2016	\$223,138.00
2017	\$223,138.00
2018	\$111,569.00
<b>Total</b>	<b>\$892,402.00</b>

Primary FoR 0605 MICROBIOLOGY

#### Funded Participants:

FT2 A/Prof Torsten Thomas

**Administering Organisation** The University of New South Wales

#### Project Summary

The genetic exchange between populations is a prerequisite for the long-term evolution of bacteria, however its short-term dynamics are largely unexplored. This project aims to define the temporal dynamics of gene transfer and how it shapes the genetic composition of entire bacterial communities. Using innovative DNA sequencing technologies and bioinformatics, This project aims to offer a significant new understanding of the short-term diversification of communities and how different evolutionary forces shape bacterial function. It will show how bacterial systems can adapt to new environmental conditions and the effect on essential ecosystem functions.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**0606                    PHYSIOLOGY**

**The University of Queensland**

**FT140101309    Launikonis, Dr Bradley S**

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR    0606                    PHYSIOLOGY

**Funded Participants:**

FT1                    Dr Bradley S Launikonis

**Administering Organisation**    The University of Queensland

**Project Summary**

The skeletal muscle fibre is a highly specialised cell for the rapid delivery of calcium to elicit contraction, required for posture, movement and thus one's independence. Calcium is also a signal for other purposes, such as triggering other processes within the muscle for its own maintenance. These calcium signals are poorly understood. This project aims to determine when the calcium signals are turned on during normal muscle activity and what the end result of the signals is for the muscle.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0607 PLANT BIOLOGY

#### The Australian National University

FT140100645 Tcherkez, Prof Dr Guillaume G

2014 \$107,874.00

2015 \$216,698.00

2016 \$216,898.00

2017 \$216,148.00

2018 \$108,074.00

**Total \$865,692.00**

Primary FoR 0607 PLANT BIOLOGY

#### Funded Participants:

FT3 Prof Dr Guillaume G Tcherkez

**Administering Organisation** The Australian National University

#### Project Summary

Leaf respiration-related metabolism in terrestrial vegetation liberates considerable amounts of carbon dioxide, ammonia and hydrogen sulphide into the atmosphere. Such gaseous losses are detrimental to biomass production but respiration also sustains nutrient assimilation and biosyntheses. This project aims to describe flux patterns in respiratory metabolism and disentangle interactions with other pathways such as photorespiration and nitrogen assimilation. It will exploit stable isotopes to quantify metabolic partitioning and show coordination between major processes. It will establish key mechanisms by which respiration dictates plant carbon balance and contributes to identifying metabolic bottle-necks in plant primary production.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Adelaide

FT140100780 Tucker, Dr Matthew R

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0607 PLANT BIOLOGY

#### Funded Participants:

FT1 Dr Matthew R Tucker

**Administering Organisation** The University of Adelaide

#### Project Summary

Unlike animals, individual somatic cells in plants have the remarkable ability to regenerate into new plants, depending on the signals they perceive. This developmental plasticity is particularly important during normal plant growth, when mature cells adopt new identities within multicellular environments. Tissue complexity is critical for the utilisation of plants in society as food, fuel and fibre, but how and why plant cells adopt or change identity has been difficult to determine. This project aims to employ next-generation molecular methods to identify pathways driving differentiation of specific ovule and seed cell-types, which directly impact crop quality, yield and end-use.

### The University of Western Australia

FT140100103 Ryan, A/Prof Megan H

2014	\$111,459.00
2015	\$222,998.00
2016	\$221,903.00
2017	\$220,743.00
2018	\$110,379.00
<b>Total</b>	<b>\$887,482.00</b>

Primary FoR 0607 PLANT BIOLOGY

#### Funded Participants:

FT2 A/Prof Megan H Ryan

**Administering Organisation** The University of Western Australia

#### Project Summary

Phosphorus is commonly used on farmland to ensure high yields. However, rock phosphate reserves are declining and leaching of phosphorus from farmlands into native vegetation and water bodies causes significant environmental degradation. As a result, more phosphorus-efficient farming systems are urgently required. Many Australian native plants have adapted to low phosphorus soils and fast fluctuations in phosphorus availability. This project aims to investigate plant adaptations to phosphorus fluctuations and the potential for storing phosphorus when it is abundant for later use. This should aid development of crops with improved phosphorus fertiliser-use efficiency in anticipation of a phosphorus-scarce future.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Tasmania

**FT140100770**    **Foo, Dr Eloise**

2014                    \$96,066.50

2015                    \$190,473.00

2016                    \$188,890.00

2017                    \$183,446.50

2018                    \$88,963.00

**Total**                    **\$747,839.00**

Primary FoR    0607                    PLANT BIOLOGY

### Funded Participants:

FT1                    Dr Eloise Foo

**Administering Organisation**    University of Tasmania

### Project Summary

Plants form intimate relationships with soil microbes that give plants access to previously unavailable but essential nutrients. Legumes are major Australian crops for fodder, grain and nutrients, and are unique in forming symbioses with both nitrogen-fixing bacteria and with mycorrhizal fungi that supply nutrients such as phosphate. This project aims to determine the role of plant hormones (small, mobile, potent growth regulators) in the formation of these relationships. In particular, the role of interactions between hormones and other novel plant signals will be determined. An insight into the common and divergent roles of hormones in these symbioses is essential to provide new tools to maximise nutrient acquisition.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

**0608                      ZOOLOGY**

### **Macquarie University**

**FT140100452      Barron, Dr Andrew B**

2014                      \$85,913.00

2015                      \$171,826.00

2016                      \$173,276.00

2017                      \$173,276.00

2018                      \$85,913.00

**Total                      \$690,204.00**

Primary FoR      0608                      ZOOLOGY

### **Funded Participants:**

FT1                      Dr Andrew B Barron

**Administering Organisation      Macquarie University**

### **Project Summary**

Truly understanding how the brain operates is a grand challenge of 21st century neuroscience. Progress toward this goal can be made through studying small-brained animals, like the honey bee. This project aims to use microscopy and pharmacology to analyse the neural mechanisms by which bees learn and classify complex things. This will enable the construction of a computational model of decision making in the bee brain. Analysing this model will test what is understood about the operation of the animal brain, and what simulates it. This project aims to reveal how neural circuits make complex decisions; establish key principles and foundational studies for comprehending larger more complex brains, and yield new approaches to machine learning.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The Australian National University

FT140100221    Narendra, Dr Ajay

2014                \$96,465.50

2015                \$192,590.50

2016                \$192,626.50

2017                \$192,663.00

2018                \$96,161.50

**Total                \$770,507.00**

Primary FoR    0608                ZOOLOGY

#### Funded Participants:

FT1                Dr Ajay Narendra

**Administering Organisation**    The Australian National University

#### Project Summary

Ensuring optimal information processing at the limits of size and ambient light is a challenge for technical systems, but has been elegantly solved by animals. The challenge of navigation is similar for animals of all sizes and in both day and night. This project aims to conduct a comparative analysis to identify the consequence of size and light on the information processing capacities for visual navigation. Outcomes of this project will reveal the behavioural and physiological adaptations needed and the costs associated with navigating in the dimmest of habitats and at the smallest of sizes. Identifying such optimal biological solutions for robust navigation will be relevant for image processing, computer vision and robotics.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0699 OTHER BIOLOGICAL SCIENCES

#### The University of Adelaide

FT140101192 Fordham, Dr Damien A

2014	\$96,503.00
2015	\$192,956.00
2016	\$192,966.00
2017	\$192,386.00
2018	\$95,873.00
<b>Total</b>	<b>\$770,684.00</b>

Primary FoR 0699 OTHER BIOLOGICAL SCIENCES

#### Funded Participants:

FT1 Dr Damien A Fordham

**Administering Organisation** The University of Adelaide

#### Project Summary

Current forecasts indicate that human-driven climate change will likely cause widespread biodiversity loss. However, climatic shifts during the Quaternary (2.6 million years ago to present), similar in magnitude to those projected for the 21st century, did not apparently cause extensive extinctions (with the exception of the megafauna). This project aims to use models linked to past responses imprinted in species' genes to resolve whether the disparity between observed and predicted extinction rates comes from models over-predicting species loss due to climate change. It will use this genetic-demographic approach to improve predictions of biodiversity responses to global change by establishing the biological and environmental determinants of extinction.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0704 FISHERIES SCIENCES

#### The University of Melbourne

FT140100383 Dempster, Dr Timothy D

2014	\$95,763.00
2015	\$191,426.00
2016	\$191,626.00
2017	\$188,591.00
2018	\$92,628.00
<b>Total</b>	<b>\$760,034.00</b>

Primary FoR 0704 FISHERIES SCIENCES

#### Funded Participants:

FT1 Dr Timothy D Dempster

**Administering Organisation** The University of Melbourne

#### Project Summary

In modern fish aquaculture, parasite infections threaten efficient production. Ecological problems also arise when fish farms amplify parasite populations and cause outbreaks in surrounding wild fish populations. Present control methods rarely integrate the behaviour of the host fish. This project aims to assess the behaviours of hosts and the mechanisms that lead to parasite outbreaks. It will develop behavioural approaches that separate host and parasite, reduce infection, and altering host behaviour to improve the effectiveness of treatments and minimise their environmental impacts. This project aims to create novel methods to control parasites in ways that limit their ability to evolve resistance.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**0707                    VETERINARY SCIENCES**

**The University of Melbourne**

**FT140101287    Devlin, Dr Joanne M**

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR    0707                    VETERINARY SCIENCES

**Funded Participants:**

FT1                    Dr Joanne M Devlin

**Administering Organisation**    The University of Melbourne

**Project Summary**

Attenuated alphaherpesvirus vaccines are used widely in production and companion animals to help control disease. These vaccines help to prevent clinical signs of disease following challenge with virulent viruses. There is also the potential to use these vaccines to help prevent latent herpesvirus infections, and to limit the opportunities for herpesvirus recombination to occur. This would enhance the ability to control disease in animal populations. This project aims to systematically study how vaccines may be used to limit latency and recombination events by studying avian infectious laryngotracheitis virus in the natural host leading to new insights into how vaccines may be used more efficaciously.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

#### Queensland University of Technology

FT140101229 Milford, Dr Michael J

2014	\$96,425.50
2015	\$178,679.00
2016	\$161,933.00
2017	\$159,408.00
2018	\$79,728.50
<b>Total</b>	<b>\$676,174.00</b>

Primary FoR 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

#### Funded Participants:

FT1 Dr Michael J Milford

**Administering Organisation** Queensland University of Technology

#### Project Summary

Current robotic and personal navigation systems leave much to be desired; GPS only works in open outdoor areas, lasers are expensive and cameras are highly sensitive to changing environmental conditions. In contrast, nature has evolved superb navigation systems. This project aims to solve the challenging problem of place recognition, a key component of navigation, by modelling the visual recognition skills of humans and the rodent spatial memory system. This project looks to combine the best understood and most capable components of place recognition in nature to create a whole more capable than its parts, produce advances in robotic and personal navigation technology and lead to breakthroughs in understandings of the brain.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**0802                    COMPUTATION THEORY AND MATHEMATICS**

**The University of New South Wales**

**FT140100048    Gaspers, Dr Serge**

2014	\$90,532.00
2015	\$182,558.50
2016	\$180,299.50
2017	\$173,186.00
2018	\$84,913.00
<b>Total</b>	<b>\$711,489.00</b>

Primary FoR    0802                    COMPUTATION THEORY AND MATHEMATICS

**Funded Participants:**

FT1                    Dr Serge Gaspers

**Administering Organisation**    The University of New South Wales

**Project Summary**

When solving computational problems, algorithms usually access only the data that is absolutely necessary to define the problem. However, much more data is often readily available. Especially for important or slowly evolving data, such as road networks, social graphs, company rankings, or molecules, more and more auxiliary data becomes available through computational processes, sensors, and simple user entries. This auxiliary data can greatly speed up an algorithm and improve its accuracy. This project aims to design improved algorithms that harness auxiliary data to solve selected high-impact NP-hard graph problems, and will build a new empowering theory to discern when auxiliary data can be used to improve algorithms.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0804 DATA FORMAT

#### Queensland University of Technology

FT140101145 Boyen, A/Prof Xavier

2014 \$100,069.00

2015 \$199,138.00

2016 \$199,138.00

2017 \$199,138.00

2018 \$99,069.00

**Total \$796,552.00**

Primary FoR 0804 DATA FORMAT

#### Funded Participants:

FT2 A/Prof Xavier Boyen

**Administering Organisation** Queensland University of Technology

#### Project Summary

Cryptography offers wonderful tools for unbreakable data security, but only between computer nodes, leaving their human owners helpless. Encrypted tunnels terminate not at humans but at mobile phones and personal computers, exposing users' secrets to spyware from search-engine keyloggers to full-bore malware planted by crooks, hackers, and foreign spy agencies. This project aims to create a simple and strong cryptography, so that humans can, for the first time, take front seat in real security protocols. The technical challenge is to build public-key ciphers, operable manually from a mental key in seconds, and from there remake human-powered versions of many useful information security protocols.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Newcastle

FT140100219 Ong, Dr Lawrence

2014	\$84,506.50
2015	\$165,517.00
2016	\$164,438.00
2017	\$162,966.50
2018	\$79,539.00
<b>Total</b>	<b>\$656,967.00</b>

Primary FoR 0804 DATA FORMAT

### Funded Participants:

FT1 Dr Lawrence Ong

**Administering Organisation** The University of Newcastle

### Project Summary

This project aims to prepare wireless networks for future communications systems, by improving the data transmission rates of wireless networks, through developing new coding schemes based on the synergy of noisy-channel coding and index coding. This will allow wireless networks, used in conjunction with the fibre-optic National Broadband Network, to support future high-data-rate and ubiquitous communication services. This project aims to produce new theoretical results in the field of communication theory, and efficient practical coding schemes for wireless communications.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0806 INFORMATION SYSTEMS

#### The University of Adelaide

FT140101247 Sheng, A/Prof Michael Q

2014	\$93,819.00
2015	\$189,788.00
2016	\$190,988.00
2017	\$188,938.00
2018	\$93,919.00
<b>Total</b>	<b>\$757,452.00</b>

Primary FoR 0806 INFORMATION SYSTEMS

#### Funded Participants:

FT2 A/Prof Michael Q Sheng

**Administering Organisation** The University of Adelaide

#### Project Summary

The future World Wide Web will connect billions of physical objects, which will offer exciting capabilities to change the world and improve the quality of human lives, just as what the Web has done in the past 20 years. Effectively and efficiently managing things is one inevitable challenge in this new era and is much more complicated than managing traditional Web documents. This project aims to focus on this key problem and develop novel techniques for linking resource-constrained things to the Web, searching them using a new search engine, as well as discovering latent relationships among things for advanced management tasks such as things recommendation and composition.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

FT140100824 Calvo, A/Prof Rafael A

2014	\$89,044.00
2015	\$175,863.00
2016	\$174,613.00
2017	\$174,363.00
2018	\$86,569.00
<b>Total</b>	<b>\$700,452.00</b>

Primary FoR 0806 INFORMATION SYSTEMS

#### Funded Participants:

FT2 A/Prof Rafael A Calvo

**Administering Organisation** The University of Sydney

#### Project Summary

Designing future technology to foster psychological wellbeing has the potential to affect population-wide positive change. The design of software like apps or social media, can impact things like cyber-bullying, depression, or even foster resilience. This project aims to connect experts across multiple disciplines (psychology, technology and policy) to develop pioneering methods, knowledge, and strategies that will allow future technologies to play an active role in improving health, performance, and quality of life for all Australians, through research-based design for wellbeing. In doing so, Australia will lead the way on the technological front in a growing global initiative to improve the wellbeing of nations.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0807 LIBRARY AND INFORMATION STUDIES

#### Monash University

FT140100073 Evans, Dr Joanne E

2014	\$96,359.00
2015	\$191,583.00
2016	\$190,610.00
2017	\$191,415.00
2018	\$96,029.00
<b>Total</b>	<b>\$765,996.00</b>

Primary FoR 0807 LIBRARY AND INFORMATION STUDIES

#### Funded Participants:

FT1 Dr Joanne E Evans

**Administering Organisation** Monash University

#### Project Summary

Archives and records are the memory banks of healthy organisations, governments, communities and societies. This project aims to address systemic failings of current systems to meet identity, memory and accountability needs of individuals and communities in crisis. It will pioneer a new participatory methodology for archival design to deliver sustainable, dynamic, and integrated archival and recordkeeping systems. It will be developed through the co-design of an integrated archival access network for reconstructing identity and a life story archive system for children currently in care. This project aims to transform evidence and memory management into information infrastructure that better protects and respects human rights.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0903 BIOMEDICAL ENGINEERING

#### Queensland University of Technology

FT140101152 Li, Prof Zhi-Yong

2014	\$96,436.00
2015	\$192,199.00
2016	\$192,274.00
2017	\$192,749.00
2018	\$96,238.00
<b>Total</b>	<b>\$769,896.00</b>

Primary FoR 0903 BIOMEDICAL ENGINEERING

#### Funded Participants:

FT1 Prof Zhi-Yong Li

**Administering Organisation** Queensland University of Technology

#### Project Summary

This project aims to combine computational modelling, magnetic resonance imaging (MRI), mechanical measurement and pathological analysis to investigate carotid plaque progression, and quantify the critical blood flow and plaque stress/strain conditions under which plaque rupture is likely to occur. MRI-based 3D computational models with multi-component plaque structures and their interaction with blood flow will be developed and solved numerically to identify suitable plaque rupture risk indicators. Mechanical properties of plaque components will be measured ex-vivo and fibre orientation-based constitutive rules will be developed. This project aims to lead to quantitative understandings of plaque progression and rupture.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Melbourne

FT140100873 Cavalieri, Dr Francesca

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR 0903 BIOMEDICAL ENGINEERING

#### Funded Participants:

FT1 Dr Francesca Cavalieri

**Administering Organisation** The University of Melbourne

#### Project Summary

This project aims to develop new microRNA polymer nanoassemblies with enhanced bioresponsive properties. Nanoengineered functional RNA-polymer materials can exploit both the recognition properties of RNA and the responsiveness of the polymer to tailor the structural and physicochemical properties of such systems. Further, targeting ligands (antibody, aptamers) tethered to the RNA-polymer nanoassembly could augment cellular uptake and delivery. The development of imaging and tracking methodology to accurately measure intracellular miRNA payload and localisation in a 3D tissue mimicking matrix is also planned.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0904 CHEMICAL ENGINEERING

#### Monash University

FT140101256 Selomulya, A/Prof Cordelia

2014	\$111,519.00
2015	\$223,038.00
2016	\$223,038.00
2017	\$223,038.00
2018	\$111,519.00
<b>Total</b>	<b>\$892,152.00</b>

Primary FoR 0904 CHEMICAL ENGINEERING

#### Funded Participants:

FT2 A/Prof Cordelia Selomulya

Administering Organisation Monash University

#### Project Summary

This project aims to scale-up microfluidic spray drying and demonstrate the method as a viable option to manufacture monodisperse microparticles as bioactive carriers or microencapsulates, with better functional properties and uniformity. It aims to transform the manufacturing of high-value products for pharmaceuticals, functional foods and biotechnology applications and lift productivity by managing innovation for Australia's industries.

#### The University of Adelaide

FT140100757 Wang, Prof Dr Haihui

2014	\$111,569.00
2015	\$223,138.00
2016	\$223,138.00
2017	\$223,138.00
2018	\$111,569.00
<b>Total</b>	<b>\$892,552.00</b>

Primary FoR 0904 CHEMICAL ENGINEERING

#### Funded Participants:

FT2 Prof Dr Haihui Wang

Administering Organisation The University of Adelaide

#### Project Summary

Industrial carbon dioxide (CO<sub>2</sub>) emission is considered the main contribution to global warming. This project aims to develop a new class of oxygen transporting membrane (OTM) for CO<sub>2</sub> capture and utilisation. To achieve this objective, the formation process and the unique characteristic of the membrane, as well as the oxygen transportation mechanism through the membrane will be investigated, experimentally and theoretically. This will advance the membrane technology in economically viable and efficient, clean energy applications.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100726 Zhao, Dr Chun-Xia

2014	\$96,431.50
2015	\$192,805.50
2016	\$192,753.50
2017	\$192,755.00
2018	\$96,375.50
<b>Total</b>	<b>\$771,121.00</b>

Primary FoR 0904 CHEMICAL ENGINEERING

#### Funded Participants:

FT1 Dr Chun-Xia Zhao

**Administering Organisation** The University of Queensland

#### Project Summary

Smart targeted nanocarriers offer new opportunities for drug delivery. This project aims to develop new platforms for reproducibly producing and screening targeted nanocarriers. The platform technologies developed in this project aim to revolutionise current strategies for designing and evaluating drug delivery systems, and will accelerate the clinical translation of targeted drug delivery. This will include a novel one-step microfluidic platform technology for reproducibly producing targeted polymer nanocarriers having systematically varied properties, a dual-templating method for making targeted silica nanocapsules and new design of in vivo-mimicking 'Tissue Chips' for screening and evaluating the nanocarriers.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0905 CIVIL ENGINEERING

#### The University of Melbourne

FT140100227 Narsilio, Dr Guillermo A

2014	\$96,513.00
2015	\$192,786.00
2016	\$181,936.00
2017	\$167,191.00
2018	\$81,528.00
<b>Total</b>	<b>\$719,954.00</b>

Primary FoR 0905 CIVIL ENGINEERING

#### Funded Participants:

FT1 Dr Guillermo A Narsilio

**Administering Organisation** The University of Melbourne

#### Project Summary

To mitigate the impacts of climate change, the demand for renewable energy technologies with low greenhouse gas (GHG) emissions is rapidly becoming a global priority. Direct geothermal systems use shallow ground as a heat source and sink for heating and cooling buildings, using ground heat exchangers (GHEs) and heat pumps. Substituting common heating and cooling systems with geothermal ones can reduce energy consumption by up to 75 per cent and thus greenhouse gas emissions, since 91 per cent of electricity comes from fossil fuels in Australia. This project aims to develop new full scale physical and numerical models which will allow studying the effects of GHE configuration and intermittent use on efficiency and which will lead towards improving the poor and scarce existing design techniques.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of New South Wales

FT140100837 O'Carroll, A/Prof Denis M

2014	\$111,561.50
2015	\$222,978.00
2016	\$222,943.00
2017	\$222,653.00
2018	\$111,126.50
<b>Total</b>	<b>\$891,262.00</b>

Primary FoR 0905 CIVIL ENGINEERING

#### Funded Participants:

FT2 A/Prof Denis M O'Carroll

**Administering Organisation** The University of New South Wales

#### Project Summary

Engineered nanoparticles (ENPs) have generated significant public and scientific excitement due to their unique properties. This has led to their application in a wide variety of industries (for example, in composite materials and drug delivery). However, there is concern that some ENPs can have detrimental environmental impacts. This project aims to quantify, for the first time, the fate of ENPs that have leached out of commercial products in groundwater systems. This information is expected to assist regulators in developing appropriate legislation to balance the tremendous benefits and potential risks of nanotechnology.

### The University of Newcastle

FT140100019 Wang, Dr Shanyong

2014	\$95,250.50
2015	\$189,713.50
2016	\$189,176.00
2017	\$191,076.00
2018	\$96,363.00
<b>Total</b>	<b>\$761,579.00</b>

Primary FoR 0905 CIVIL ENGINEERING

#### Funded Participants:

FT1 Dr Shanyong Wang

**Administering Organisation** The University of Newcastle

#### Project Summary

This project aims to investigate the fundamentals of fracture-controlled compensation grouting in various types of soil, so as to optimise the compensation efficiency and to minimise the risk of collapse of nearby structures. This will result in the minimisation of ground movements induced by underground excavations, which pose a major threat to existing infrastructure and communities worldwide. Small-scale laboratory experiments, centrifuge tests and numerical analyses will be conducted to develop an effective and economical grouting method that will provide a valuable design tool for engineers.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

FT140100130     Ranzi, A/Prof Gianluca

2014	\$103,969.00
2015	\$207,788.00
2016	\$206,038.00
2017	\$206,538.00
2018	\$104,319.00
<b>Total</b>	<b>\$828,652.00</b>

Primary FoR     0905                    CIVIL ENGINEERING

#### Funded Participants:

FT2                    A/Prof Gianluca Ranzi

**Administering Organisation**     The University of Sydney

#### Project Summary

This project aims to develop adaptive structural systems for high-performance buildings. A new theoretical platform will be instrumental in the development of building technologies such as adaptive shading and ventilation components. In a reversal of the conventional design avoidance of structural phenomena such as lateral and flexural-torsional buckling, these phenomena will be exploited to achieve functional forms for shading components. Thin-metal ventilation ducts will be embedded within structural components to produce optimised ventilation strategies and to increase thermal mass, while accounting for their structural contribution.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**0906                    ELECTRICAL AND ELECTRONIC ENGINEERING**

**The University of Western Australia**

**FT140100849    Munro, Dr Peter R**

2014	\$96,513.00
2015	\$193,026.00
2016	\$193,026.00
2017	\$193,026.00
2018	\$96,513.00
<b>Total</b>	<b>\$772,104.00</b>

Primary FoR    0906                    ELECTRICAL AND ELECTRONIC ENGINEERING

**Funded Participants:**

FT1                    Dr Peter R Munro

**Administering Organisation**    The University of Western Australia

**Project Summary**

This project aims to enable 3D optical microscopy to image deeper within tissue, ultimately aiding research fields such as neurobiology. This will be achieved by a foundational approach called computed cicroscopy that combines novel numerical methods, high performance computing and optical microscopy. This project aims to develop a 3D quantitative imaging method that will provide unprecedented insight into the structure of tissue with sub-cellular detail. This information can then be used to computationally reverse light scattering within the sample, allowing fluorescence microscopy at unprecedented depths within tissue.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0907 ENVIRONMENTAL ENGINEERING

#### The University of Newcastle

FT140100610 Saco, Dr Patricia M

2014	\$111,333.00
2015	\$221,022.00
2016	\$218,628.00
2017	\$206,708.00
2018	\$97,769.00
<b>Total</b>	<b>\$855,460.00</b>

Primary FoR 0907 ENVIRONMENTAL ENGINEERING

#### Funded Participants:

FT2 Dr Patricia M Saco

**Administering Organisation** The University of Newcastle

#### Project Summary

This project aims to develop a modelling framework to study the impacts of past and future human and climatic stresses on temperate humid environments. It will combine knowledge and modelling tools for hydrological, geomorphological, biochemical and vegetation processes. It is expected to will provide indicators to assess systems resilience to climate and human stress and to identify and prevent soil degradation and erosion at the catchment scale, for application for adaptive landscape and water resources management programs.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Technology, Sydney

FT140101208    Shon, Dr Ho K

2014	\$78,763.00
2015	\$156,776.00
2016	\$156,026.00
2017	\$153,526.00
2018	\$75,513.00
<b>Total</b>	<b>\$620,604.00</b>

Primary FoR    0907                    ENVIRONMENTAL ENGINEERING

#### Funded Participants:

FT1                    Dr Ho K Shon

**Administering Organisation**    University of Technology, Sydney

#### Project Summary

Seawater desalination plants have been built in Australia in response to increasing pressure on water supplies. The sustainability of these plants is challenged by their significantly high energy cost and concentrated brine output. By exploiting the high residual hydraulic energy contained in the concentrated brine and using it in a membrane-based hybrid system with renewable osmotic energy, this project aims to provide solutions for overcoming these challenges. Renewable osmotic energy will be generated from the salinity differences between concentrate and fresh seawater (or other water sources) by pressure retarded osmosis. This will be enabled by the development of highly efficient composite membranes using an electrospinning technique.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0912 MATERIALS ENGINEERING

#### The University of New South Wales

FT140100032 Chu, Dr Dewei

2014	\$91,893.00
2015	\$183,786.00
2016	\$183,786.00
2017	\$183,786.00
2018	\$91,893.00
<b>Total</b>	<b>\$735,144.00</b>

Primary FoR 0912 MATERIALS ENGINEERING

#### Funded Participants:

FT1 Dr Dewei Chu

**Administering Organisation** The University of New South Wales

#### Project Summary

Transistors are the fundamental building blocks of modern electronic devices, which continue to diminish in size to achieve higher speeds. However, the development of this technology has been impeded by low carrier density in the gate dielectric materials. Therefore, increasing the attainable carrier density has become critically important for both scientific research and industrial applications. This project aims at experimental and theoretical development of advanced ionic conductive oxide superlattices with colloidal nanocubes for novel solid state electric double layer transistors, which possess ultrahigh carrier density and mobility, to surmount the fundamental limit of current silicon semiconductor technologies.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Wollongong

FT140100698 Zhang, A/Prof Shujun

2014 \$111,249.00

2015 \$222,323.00

2016 \$221,893.00

2017 \$221,763.00

2018 \$110,944.00

**Total \$888,172.00**

Primary FoR 0912 MATERIALS ENGINEERING

#### Funded Participants:

FT2 A/Prof Shujun Zhang

**Administering Organisation** University of Wollongong

#### Project Summary

Electrical energy generation from renewable sources, such as solar, wind and geothermal, provide enormous potential for meeting future energy demands. However, the ability to store and control this energy for miniaturisation and modularisation in applications requiring a wide temperature usage range is a limiting factor that needs to be addressed. This project aims to develop new bismuth-based lead-free dielectric materials for improving the storage density of high temperature multilayer ceramic capacitors for sustainable applications in the energy and vehicle industries, where high temperature stability and high volumetric efficiency are crucial.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**0914                    RESOURCES ENGINEERING AND EXTRACTIVE METALLURGY**

**The University of Adelaide**

**FT140100408    Nguyen, Dr Giang D**

2014	\$78,720.50
2015	\$152,393.50
2016	\$149,626.00
2017	\$151,251.00
2018	\$75,298.00
<b>Total</b>	<b>\$607,289.00</b>

Primary FoR    0914                    RESOURCES ENGINEERING AND EXTRACTIVE METALLURGY

**Funded Participants:**

FT1                    Dr Giang D Nguyen

**Administering Organisation**    The University of Adelaide

**Project Summary**

Failure at large scale such as slopes, embankments, and underground mining is fatal in terms of human lives and property loss. This project aims to develop a new methodology to connect micro-mechanisms that trigger and govern failure with the behaviour at much larger scales. In particular it will allow building constitutive models directly from micro-scale mechanisms, while possessing the capability to span the spatial scales. It will also transform the understanding of material property scaling into a predictive tool for engineering analysis, helping to obtain more cost effective designs with greater confidence in safety.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 0915 INTERDISCIPLINARY ENGINEERING

#### The Australian National University

FT140101213 Lipinski, A/Prof Wojciech S

2014	\$98,611.50
2015	\$210,085.50
2016	\$212,908.00
2017	\$196,725.50
2018	\$95,291.50
<b>Total</b>	<b>\$813,622.00</b>

Primary FoR 0915 INTERDISCIPLINARY ENGINEERING

#### Funded Participants:

FT2 A/Prof Wojciech S Lipinski

**Administering Organisation** The Australian National University

#### Project Summary

This project aims to demonstrate the utility of the thermal transport by design approach to develop functionally graded reactive materials that allow for fast and efficient solar thermo-chemical fuel production. Prediction capabilities will be developed to optimise multi-scale radiative and gas transport coupled with non-stoichiometric redox reactions. Synthesis gas production will be demonstrated using the new structures in a prototype solar thermochemical reactor under high-flux irradiation. This project aims to advance the fields of thermal sciences and high-temperature solar thermochemical processing and expand the engineering knowledge base to pave the way to sustainable transportation with the existing infrastructure.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1002 ENVIRONMENTAL BIOTECHNOLOGY

#### RMIT University

FT140101285 Bansal, A/Prof Vipul

2014 \$111,378.00

2015 \$222,474.00

2016 \$221,609.00

2017 \$220,535.50

2018 \$110,022.50

**Total \$886,019.00**

Primary FoR 1002 ENVIRONMENTAL BIOTECHNOLOGY

#### Funded Participants:

FT2 A/Prof Vipul Bansal

**Administering Organisation** RMIT University

#### Project Summary

This project aims to integrate advanced materials chemistry, molecular biology, bio-electrochemical and synchrotron imaging approaches to understand the role of silver resistance machinery of bacteria in their ability to form silver nanoparticles. This aims to enable discovery of new metal-specific reductase enzymes. The fundamental biomolecular understanding of bacterial silver resistance will allow the use of a silver-binding protein to develop a series of next-generation nano-biosensors. These biosensing platforms will provide high-throughput, cost-effective, selective, sensitive and continuous monitoring of heavy metal ions in effluents from mining and mineral processing industries in a real-time fashion.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1007 NANOTECHNOLOGY

#### Commonwealth Scientific and Industrial Research Organisation

FT140100514 Gomez, Dr Daniel E

2014	\$94,678.00
2015	\$185,071.00
2016	\$184,061.00
2017	\$188,036.00
2018	\$94,368.00
<b>Total</b>	<b>\$746,214.00</b>

Primary FoR 1007 NANOTECHNOLOGY

#### Funded Participants:

FT1 Dr Daniel E Gomez

**Administering Organisation** Commonwealth Scientific and Industrial Research Organisation

#### Project Summary

Harvesting energy from light sources, including our sun, can provide a significant fraction of the world's energy need over the next century. In order to meet this critical demand, it is crucial to devise ways to transform light energy into chemical fuels. This project aims to create novel nanostructures that directly couple light energy into chemical reactions. This will be achieved by the creation of metallic nanoparticles that can transform light energy into hot electrons: entities that can efficiently drive the production of chemical fuels in a process similar to that of photosynthesis.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of New South Wales

FT140100135 Cazorla, Dr Claudio

2014 \$80,748.00

2015 \$157,961.00

2016 \$153,576.00

2017 \$152,726.00

2018 \$76,363.00

**Total \$621,374.00**

Primary FoR 1007 NANOTECHNOLOGY

#### Funded Participants:

FT1 Dr Claudio Cazorla

**Administering Organisation** The University of New South Wales

#### Project Summary

Multiferroics are a class of fundamentally complex materials in which several ferroic orders (for example, ferroelectric and ferromagnetic) coexist. The coupling between their electric and magnetic degrees of freedom is controllable via stress and external fields, thus opening the possibility for breakthrough technological developments. By working at the frontier of complex nanostructured oxide materials, this project aims to establish the rational basis for systematic design of novel artificially layered multiferroics, develop accurate and computationally affordable methods to simulate these materials under finite-temperature conditions, and exploit this knowledge to devise likely revolutionary photovoltaic, nanoelectronic and energy conversion applications.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

FT140100295 Wang, Dr Yanbo

2014 \$95,813.00

2015 \$192,126.00

2016 \$192,626.00

2017 \$192,626.00

2018 \$96,313.00

**Total \$769,504.00**

Primary FoR 1007 NANOTECHNOLOGY

#### Funded Participants:

FT1 Dr Yanbo Wang

**Administering Organisation** The University of Sydney

#### Project Summary

Boron nitride nanotubes are an emerging class of inorganic nanotubes with insulating property, exceptional thermal stability, high thermal conductivity, and superior mechanical properties including ultrahigh strength and elastic modulus which are not possible in conventional materials. This project aims to apply state-of-the-art in-situ transmission electron microscopy techniques to explore the dependence of mechanical properties on size, morphology and structure of boron nitride nanotubes and the effect of mechanical strain on electrical properties, which will provide opportunities for composite materials reinforcement via nanotubes, and tune the electronic and optoelectronic properties of nanotubes via strain engineering.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1109 NEUROSCIENCES

#### The University of Melbourne

FT140101327 Nithianantharajah, Dr Jess

2014	\$93,288.00
2015	\$188,126.00
2016	\$186,226.00
2017	\$184,326.00
2018	\$92,938.00
<b>Total</b>	<b>\$744,904.00</b>

Primary FoR 1109 NEUROSCIENCES

#### Funded Participants:

FT1 Dr Jess Nithianantharajah

**Administering Organisation** The University of Melbourne

#### Project Summary

This project is anchored in the fundamental understanding of complex vertebrate behaviours, namely cognition. Little is known about the molecular and neural substrates underpinning complex higher order information processing. This project aims to dissect the functional role of synaptic genes that are essential for organising neuronal connections, in distinct cognitive processes and how these functions may be regulated by other genes, drugs or environmental factors. This project aims to employ state-of-the-art technologies to address the evolutionary biology of complex cognitive behaviours, towards further understandings how brain function evolved and the mechanisms that have enabled humans to perform highly complex and intricate tasks.



**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**1115                    PHARMACOLOGY AND PHARMACEUTICAL SCIENCES**

**Monash University**

**FT140100114    Valant, Dr Celine**

2014	\$96,013.00
2015	\$192,501.00
2016	\$193,001.00
2017	\$192,526.00
2018	\$96,013.00
<b>Total</b>	<b>\$770,054.00</b>

Primary FoR    1115                    PHARMACOLOGY AND PHARMACEUTICAL SCIENCES

**Funded Participants:**

FT1                    Dr Celine Valant

**Administering Organisation**    Monash University

**Project Summary**

Major life science challenges include how chemicals outside cells signal to proteins inside, how this results in physiological responses, and how dysfunction of these processes leads to pathophysiology. Despite the critical importance of G protein-coupled receptors (GPCRs), much remains to be learned about their regulation by endogenous and synthetic molecules. This project aims to address this gap, by building on recent ground-breaking studies that have been performed, by focusing on alternative binding sites of GPCRs called allosteric sites. The major hypothesis is that these allosteric sites are widespread across GPCRs because the body produces endogenous allosteric ligands that remain largely unidentified, but which can play vital roles in biology.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1117 PUBLIC HEALTH AND HEALTH SERVICES

#### Deakin University

FT140100085 Cerin, Prof Ester

2014 \$113,039.00

2015 \$233,034.00

2016 \$231,834.00

2017 \$228,023.00

2018 \$116,184.00

**Total \$922,114.00**

Primary FoR 1117 PUBLIC HEALTH AND HEALTH SERVICES

#### Funded Participants:

FT3 Prof Ester Cerin

**Administering Organisation** Deakin University

#### Project Summary

The proportion of older adults in urban areas is rapidly growing, leading to increases in health-care costs that are associated with chronic diseases. This can be offset by creating urban environments that support an active lifestyle across mid-to-late adulthood. How urban community designs shape the physical activity of this understudied age group is unclear. Using a suite of national and international epidemiological studies, This project aims to identify the optimal mix and spatial distribution of destinations (facilities and places to visit) for active ageing, while taking into account factors that define one's ability and willingness to visit these destinations. This will inform public policy and activity-friendly community design.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### Queensland University of Technology

FT140101216    Hu, Dr Wenbiao

2014	\$82,788.00
2015	\$162,326.00
2016	\$159,076.00
2017	\$158,576.00
2018	\$79,038.00
<b>Total</b>	<b>\$641,804.00</b>

Primary FoR    1117                    PUBLIC HEALTH AND HEALTH SERVICES

#### Funded Participants:

FT1                    Dr Wenbiao Hu

**Administering Organisation**    Queensland University of Technology

#### Project Summary

This project aims to examine the potential social and environmental predictors of seasonal influenza outbreaks across temperate and tropical climates. It will develop a spatiotemporal model to identify where, when and who is most susceptible to changes of risk in influenza epidemic-prone regions of Queensland, Australia and Gansu province and Shanghai City, China. A spatiotemporal predictive model for influenza will be useful for the early identification of impending epidemics, which will lead to a more rapid and efficiently targeted response than is possible with the current system, thereby reducing the magnitude and health and economic impact of epidemics.

### The Australian National University

FT140101260    Smith, Dr Julie P

2014	\$89,177.00
2015	\$178,425.00
2016	\$176,450.00
2017	\$172,762.50
2018	\$85,560.50
<b>Total</b>	<b>\$702,375.00</b>

Primary FoR    1117                    PUBLIC HEALTH AND HEALTH SERVICES

#### Funded Participants:

FT1                    Dr Julie P Smith

**Administering Organisation**    The Australian National University

#### Project Summary

Innovation affecting human milk supply challenges current regulation of infant food, but new markets in human milk assist the economic valuation of breastfeeding. Mothers are finding new ways to share their milk, and milk banking and human milk-based products are emerging as alternatives to commercial infant formula. This project builds on previous world-leading Australian research into the economics of breastfeeding. It aims to increase understanding of markets in milk for infants and inform regulation of milk markets and milk exchange. It will investigate key features of these markets, how milk is priced, and how to access data on market prices which might improve the social and economic valuation of breastfeeding.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Technology, Sydney

**FT140100195 Adams, Prof Jonathan**

2014	\$122,984.00
2015	\$240,153.00
2016	\$243,303.00
2017	\$236,168.00
2018	\$110,034.00
<b>Total</b>	<b>\$952,642.00</b>

Primary FoR 1117 PUBLIC HEALTH AND HEALTH SERVICES

#### Funded Participants:

FT3 Prof Jonathan Adams

**Administering Organisation** University of Technology, Sydney

#### Project Summary

This project aims to provide the first in-depth coordinated critical public health examination of an unregulated and 'covert' area of health and treatment seeking behaviour - complementary self-medication (CAM SM) use in later life. It will focus on healthy ageing and living with chronic illness and draw upon fieldwork with Indigenous, non-Indigenous and culturally and linguistically diverse (CALD) communities. This project aims to identify the challenges of, and possibilities for, 'covert' CAM SM use in later life. It will provide an evidence-base to inform safe, effective care and policy for older Australians and generate novel analyses to provide significant advances and new directions for public health scholarship with regards to chronic illness and community health in later life.

### University of Wollongong

**FT140100992 Flood, Dr Michael G**

2014	\$86,531.50
2015	\$168,465.50
2016	\$162,093.00
2017	\$151,672.00
2018	\$71,513.00
<b>Total</b>	<b>\$640,275.00</b>

Primary FoR 1117 PUBLIC HEALTH AND HEALTH SERVICES

#### Funded Participants:

FT1 Dr Michael G Flood

**Administering Organisation** University of Wollongong

#### Project Summary

Violence against women is a significant issue of policy effort and community concern. In the past decade, there has been an increasing emphasis on the need to engage men and boys in preventing and reducing men's violence against women, both nationally and internationally. However, little is known about what works and does not work. Using robust evaluations of key strategies and interventions, this project aims to produce a systematic framework for effective practice in engaging men and boys in preventing violence against women. It aims to produce both significant scholarly insights regarding gender and violence prevention and practical directions for policy and programming.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1201 ARCHITECTURE

#### The University of Melbourne

FT140100190 Pieris, Dr Anoma D

2014	\$94,042.50
2015	\$199,370.00
2016	\$211,428.00
2017	\$209,590.50
2018	\$103,490.00
<b>Total</b>	<b>\$817,921.00</b>

Primary FoR 1201 ARCHITECTURE

#### Funded Participants:

FT2 Dr Anoma D Pieris

**Administering Organisation** The University of Melbourne

#### Project Summary

The expedient design, assembly and erection of Second World War internment facilities, and their subsequent transformation for post-war detention and commemoration has produced a legacy of camp environments associated with citizenship. These intense experimental sites expose racial differences, human displacements and national hostilities occurring during the Pacific War. Through comparative case studies in Australia, Singapore and the United States, this project aims to examine how expertise in architecture and related fields were mobilised in their production. Resultant discourses of citizenship, community and commemoration will be studied. Their significance for understanding political, racially-inscribed and temporal environments will be explored.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1302 CURRICULUM AND PEDAGOGY

#### The University of Newcastle

FT140100399 Lubans, A/Prof David R

2014	\$106,348.50
2015	\$202,919.50
2016	\$192,427.50
2017	\$197,220.50
2018	\$101,364.00
<b>Total</b>	<b>\$800,280.00</b>

Primary FoR 1302 CURRICULUM AND PEDAGOGY

#### Funded Participants:

FT2 A/Prof David R Lubans

**Administering Organisation** The University of Newcastle

#### Project Summary

Lack of physical activity and the time that young people spend sedentary and alone staring into television and computer screens, are major public health issues. This project aims to explore how changes in physical activity and sedentary behaviour might influence health and wellbeing in young Australians. It will also involve the evaluation of an innovative school-based intervention targeting these outcomes. This project has the potential to bring physical and mental health benefits to current and future Australians.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1303 SPECIALIST STUDIES IN EDUCATION

#### The University of Sydney

FT140100415 Proctor, Dr Helen L

2014	\$81,860.00
2015	\$172,948.50
2016	\$174,392.50
2017	\$165,240.50
2018	\$81,936.50
<b>Total</b>	<b>\$676,378.00</b>

Primary FoR 1303 SPECIALIST STUDIES IN EDUCATION

#### Funded Participants:

FT1 Dr Helen L Proctor

**Administering Organisation** The University of Sydney

#### Project Summary

This project undertakes the first national history of parent-school-community relations in Australia. Examining public, Catholic and independent school sectors, it combines a cultural history of transformations in school parenting with a policy history of school-community engagement, over a period characterised by contestations between schools and parents about whose expertise and authority prevails. By documenting the history of the “good” educational parent and the “good” community-aware school and tracking historical and contemporary shifts and variations in the meanings of ‘community’ and ‘parent’, this project aims to inform current policy and practice in parent involvement, community engagement and public school devolution.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Tasmania

FT140101351 Beswick, A/Prof Kim C

2014	\$98,131.50
2015	\$187,908.00
2016	\$178,444.00
2017	\$178,836.50
2018	\$90,169.00
<b>Total</b>	<b>\$733,489.00</b>

Primary FoR 1303 SPECIALIST STUDIES IN EDUCATION

### Funded Participants:

FT2 A/Prof Kim C Beswick

**Administering Organisation** University of Tasmania

### Project Summary

Mathematics teachers need to know their subject and how to teach it and need passion for the discipline and for inspiring their students to love it. They must believe that their students can learn mathematics and set high academic expectations for all of them. Knowledge and beliefs must be addressed in order to improve teaching, but exactly how can this be done? This project aims to build on existing work to develop theoretical insights that will lead to innovative approaches towards teacher change based on the integration of teacher knowledge and affect.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1402 APPLIED ECONOMICS

#### University of South Australia

FT140100773 Wheeler, Dr Sarah A

2014	\$96,513.00
2015	\$192,886.00
2016	\$192,466.00
2017	\$175,391.00
2018	\$79,298.00
<b>Total</b>	<b>\$736,554.00</b>

Primary FoR 1402 APPLIED ECONOMICS

#### Funded Participants:

FT1 Dr Sarah A Wheeler

**Administering Organisation** University of South Australia

#### Project Summary

Given the future risk of water scarcity, farmers will need to plan for greater farm-level adaptation. Drought and policy reform have inflicted significant economic, social and personal stress upon Murray-Darling Basin rural communities. This project aims to aid water managers and policy makers with a greater understanding of transformational farmer adaptation in order to plan for the economic, social and health impacts of future water scarcity from climate change and water reform-related policies. The focus will be on the Murray-Darling Basin, as well as undertaking a comparative analysis with water stressed basins in the United States.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1403 ECONOMETRICS

#### The University of Melbourne

FT140101266 Wood, A/Prof Sally A

2014	\$95,455.00
2015	\$190,910.00
2016	\$190,910.00
2017	\$190,910.00
2018	\$95,455.00
<b>Total</b>	<b>\$763,640.00</b>

Primary FoR 1403 ECONOMETRICS

#### Funded Participants:

FT2 A/Prof Sally A Wood

**Administering Organisation** The University of Melbourne

#### Project Summary

The availability of increasingly large data sets offers the potential to improve understandings of many phenomena. However, without models for these phenomenon and methods to analyse the data generated by them, information contained in such data cannot be extracted. This project aims to advance statistical methods and models for analysing data that are collected on a large number of individuals at many time points. In particular, data collected from mobile phone applications will be used to understand the effect that training regimes have on cognitive functioning and how these effects vary with individual characteristics.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1503 BUSINESS AND MANAGEMENT

#### The University of Melbourne

FT140100629 Zyphur, A/Prof Michael J

2014	\$86,569.00
2015	\$173,138.00
2016	\$173,138.00
2017	\$173,138.00
2018	\$86,569.00
<b>Total</b>	<b>\$692,552.00</b>

Primary FoR 1503 BUSINESS AND MANAGEMENT

#### Funded Participants:

FT2 A/Prof Michael J Zyphur

**Administering Organisation** The University of Melbourne

#### Project Summary

Social science research on the effects of income on wellbeing is substantial, however, this research has largely missed five crucial factors. These factors include: the work people do to generate income; how they use income; effects on physical and social wellbeing; effects at the household level; and causal effects at multiple levels. This project aims to address all of these factors with a new model of wellbeing, the Work-Income-Spending-Effects (WISE) model, and utilises the Household, Income and Labour Dynamics in Australia database. This project also aims to demonstrate trade-offs among work, income, spending, and multiple types of wellbeing within a new paradigm for engaging the Australian public, organisations, and policy makers.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1601 ANTHROPOLOGY

#### The University of Adelaide

FT140100825 Warin, A/Prof Megan J

2014	\$104,184.50
2015	\$204,196.00
2016	\$198,720.00
2017	\$190,668.50
2018	\$91,960.00
<b>Total</b>	<b>\$789,729.00</b>

Primary FoR 1601 ANTHROPOLOGY

#### Funded Participants:

FT2 A/Prof Megan J Warin

**Administering Organisation** The University of Adelaide

#### Project Summary

There is growing recognition of the need for new ways to tackle the obesity problem, and for forms of intervention that move beyond the limitations of individual behavioural changes. This project provides a paradigm for re-orientating how we have come to know obesity by investigating the cultural and institutional processes that shape everyday food and activity practices. Understanding and intervening in these dynamics of social practice are central to the challenges of reversing trends in the prevalence of obesity.

#### The University of Melbourne

FT140100299 Alexeyeff, Dr Kalissa

2014	\$84,542.50
2015	\$169,793.00
2016	\$167,819.50
2017	\$160,858.50
2018	\$78,289.50
<b>Total</b>	<b>\$661,303.00</b>

Primary FoR 1601 ANTHROPOLOGY

#### Funded Participants:

FT1 Dr Kalissa Alexeyeff

**Administering Organisation** The University of Melbourne

#### Project Summary

This project aims to produce vital knowledge about transforming Pacific and Pacific Islander migration. Pacific mobility is being shaped by new patterns of international trade, investment and aid adopted by key regional players—China, United States, Australia and New Zealand especially—the effects of which are not yet well understood. Using a multi-sited analysis of regional labour circuits focusing on the Cook Islands, Australia and New Zealand, this project aims to connect these broad geopolitical shifts to the movement of individuals and families, and to their gendered and culturally embedded economic practices.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1602 CRIMINOLOGY

#### Monash University

FT140101044 Weber, Dr Leanne

2014	\$109,770.50
2015	\$221,300.00
2016	\$215,137.00
2017	\$206,373.50
2018	\$102,766.00
<b>Total</b>	<b>\$855,347.00</b>

Primary FoR 1602 CRIMINOLOGY

#### Funded Participants:

FT2 Dr Leanne Weber

**Administering Organisation** Monash University

#### Project Summary

This project aims to examine processes of social inclusion and exclusion under conditions of globalisation. It investigates the enforcement of immigration law and related policies that divide populations according to hierarchies of effective citizenship. The aim is to identify more inclusive approaches to governance suitable for a globally connected world. The project aims to identify and promulgate positive examples of community and organisational practices that maximise social inclusiveness.

#### University of Wollongong

FT140100313 Marchetti, Prof Elena M

2014	\$115,948.50
2015	\$232,272.00
2016	\$227,750.50
2017	\$230,496.50
2018	\$119,069.50
<b>Total</b>	<b>\$925,537.00</b>

Primary FoR 1602 CRIMINOLOGY

#### Funded Participants:

FT3 Prof Elena M Marchetti

**Administering Organisation** University of Wollongong

#### Project Summary

Research on Indigenous-focused crime and justice programs often finds little or no impact on outcomes such as reductions in re-offending. This project aims to determine whether such findings are an accurate reflection of program ineffectiveness or are a consequence of how the research was carried out. With an analysis of three case studies of crime and justice programs, this project aims to show why findings that show no difference in re-offending outcomes may occur, and offer a more Indigenous-centric methodology to assess program effectiveness. Comparisons will be made with indigenous methodologies used in New Zealand and Canada.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1603 DEMOGRAPHY

#### The University of Queensland

FT140100861 Hewitt, Dr Belinda A

2014	\$80,435.00
2015	\$166,121.50
2016	\$171,628.00
2017	\$171,746.50
2018	\$85,805.00
<b>Total</b>	<b>\$675,736.00</b>

Primary FoR 1603 DEMOGRAPHY

#### Funded Participants:

FT1 Dr Belinda A Hewitt

**Administering Organisation** The University of Queensland

#### Project Summary

This project aims to investigate the impact of family life transitions, such as relationship formation and dissolution or births, on wellbeing over the life course. It will do this by analysing data following people over time and will provide information about the negative and positive effects of family transitions for wellbeing, track changes in wellbeing before, during and after transitions, and highlight the intersections of the family life course with gender, age and socioeconomic status. This will considerably enhance understandings of wellbeing over the family life course, providing insights for targeted policies and interventions to improve health and wellbeing.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1604 HUMAN GEOGRAPHY

#### The University of Adelaide

FT140100872 Baker, Dr Emma

2014	\$84,788.00
2015	\$168,586.00
2016	\$168,646.00
2017	\$162,121.00
2018	\$77,273.00
<b>Total</b>	<b>\$661,414.00</b>

Primary FoR 1604 HUMAN GEOGRAPHY

#### Funded Participants:

FT1 Dr Emma Baker

**Administering Organisation** The University of Adelaide

#### Project Summary

Australia is currently in a housing crisis, with many escalating problems, including poor affordability, chronic undersupply, homelessness, insecurity in the private rental market and a shrinking public housing sector. While some Australians are unaffected, increasing numbers of already vulnerable people experience multiple housing problems. This project aims to develop a new theoretical framework for focusing on Australians who experience multiple housing problems. It aims to identify who will be affected, how this will play out on individual health and wellbeing, and how governments can best respond. It will provide essential evidence and intervention tools for understanding and improving the lives of the most vulnerable.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1605 POLICY AND ADMINISTRATION

#### The University of Queensland

FT140100018 Hardy, Dr Ian J

2014	\$96,503.00
2015	\$193,016.00
2016	\$193,014.00
2017	\$193,006.50
2018	\$96,505.50
<b>Total</b>	<b>\$772,045.00</b>

Primary FoR 1605 POLICY AND ADMINISTRATION

#### Funded Participants:

FT1 Dr Ian J Hardy

**Administering Organisation** The University of Queensland

#### Project Summary

This project aims to show how teachers learn to engage with the new curriculum in the context of increasingly standardised national and international educational reforms. This is significant for determining whether the 'Australian Curriculum' will result in its projected benefits. This project aims to reveal how policy support for the new curriculum influences teacher learning in diverse schooling settings in a broadly neoliberal, global context.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1606 POLITICAL SCIENCE

#### Monash University

FT140101201 True, Prof Jacqui

2014 \$126,582.00

2015 \$253,182.00

2016 \$243,693.00

2017 \$227,640.00

2018 \$110,547.00

**Total \$961,644.00**

Primary FoR 1606 POLITICAL SCIENCE

#### Funded Participants:

FT3 Prof Jacqui True

**Administering Organisation** Monash University

#### Project Summary

Post-conflict and political transitions are major opportunities for advancing women's rights and participation. Yet an apparent spike in sexual- and gender-based violence against women hinders these opportunities once armed conflict is stabilised or regime change is achieved. This project aims to explain the causes of that violence and its consequences for women's economic and political participation in different environments. It will compare post-conflict, political transition and non-conflict countries across two regions, Asia-Pacific and the Middle East and North Africa, examining the gender inequalities, regional patterns, and global forces that appear to heighten violence against women and hinder women's participation.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

FT140100763 Goldsmith, A/Prof Benjamin E

2014	\$121,493.50
2015	\$244,788.00
2016	\$247,816.00
2017	\$236,823.50
2018	\$112,302.00
<b>Total</b>	<b>\$963,223.00</b>

Primary FoR 1606 POLITICAL SCIENCE

#### Funded Participants:

FT3 A/Prof Benjamin E Goldsmith

**Administering Organisation** The University of Sydney

#### Project Summary

When challenges emerge that demand international cooperation, what is the facilitating or constraining role of public opinion in states' ability for joint action? Which factors, under what conditions, influence citizens' attitudes? Can governments or issue activists meaningfully change public opinion about crucial issues? Human society faces a number of major challenges to its environmental, economic, and political wellbeing that are not contained by international borders and may require international cooperation for effective action. Developing and testing new theory, this project aims to address these under-explored issues of the role of opinion in multinational cooperation, and the degree to which opinion is an independent agenda setter.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1608 SOCIOLOGY

#### University of Tasmania

FT140100646 Lovell, Dr Heather C

2014 \$110,380.50

2015 \$215,651.00

2016 \$207,229.00

2017 \$194,552.00

2018 \$92,593.50

**Total \$820,406.00**

Primary FoR 1608 SOCIOLOGY

#### Funded Participants:

FT2 Dr Heather C Lovell

**Administering Organisation** University of Tasmania

#### Project Summary

New information technologies allow utility infrastructures to operate as smart grids, with the promise of multiple economic and environmental benefits. Utility infrastructures are largely unaltered since first installed 100 years ago, and smart grids have the potential to catalyse significant innovation. This project aims to investigate the societal drivers for, and implications of, smart grids and assess how these grid implementations vary from place to place. It will assess the implications of this for theory and practices of innovation and learning. This project also aims to provide new insights into the messy, complex societal reaction to smart grids in Australia; a country at the forefront of smart grid implementation.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1699 OTHER STUDIES IN HUMAN SOCIETY

#### Monash University

FT140100818 Millie, Dr Julian P

2014	\$88,948.00
2015	\$184,402.50
2016	\$170,556.50
2017	\$153,152.50
2018	\$78,050.50
<b>Total</b>	<b>\$675,110.00</b>

Primary FoR 1699 OTHER STUDIES IN HUMAN SOCIETY

#### Funded Participants:

FT1 Dr Julian P Millie

**Administering Organisation** Monash University

#### Project Summary

New Islamic public spheres are emerging around the world, raising questions about their capacity to facilitate democratic outcomes. This project aims to establish whether and to what extent Indonesia's Islamic public spheres facilitate deliberation. Recognising that most of Indonesia's 210 million Muslims engage with Islam by listening rather than reading, it will study the forms in which preachers perceive Islamic publics from the pulpit. It will also compare the ways in which print media and oratory provide coverage of ongoing ethical and moral contests in Indonesian society. The project aims to establish how pious listening facilitates deliberation, and will create knowledge about democratic futures in Islamic Indonesia.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1701 PSYCHOLOGY

#### The University of Melbourne

FT140100807 Carter, Dr Olivia L

2014	\$95,513.00
2015	\$191,576.00
2016	\$192,576.00
2017	\$192,026.00
2018	\$95,513.00
<b>Total</b>	<b>\$767,204.00</b>

Primary FoR 1701 PSYCHOLOGY

#### Funded Participants:

FT1 Dr Olivia L Carter

**Administering Organisation** The University of Melbourne

#### Project Summary

This project aims to use a multi-disciplinary approach to investigate the factors influencing human perception and cognition - from the level of basic neuroscience, through to the wider impact felt by individuals and society when these functions are either impaired or enhanced. This will inform the basic research question of how the brain generates a conscious experience, identify the relationship between altered visual cognitive function and clinical symptoms of psychosis, and determine the current prevalence and neuroethical issues associated with the non-medical use of drugs to enhance cognitive or perceptual function within Australia.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of New South Wales

**FT140100291**     **Denson, A/Prof Thomas F**

2014	\$111,551.50
2015	\$223,120.50
2016	\$223,133.00
2017	\$223,133.00
2018	\$111,569.00
<b>Total</b>	<b>\$892,507.00</b>

Primary FoR     1701             PSYCHOLOGY

#### Funded Participants:

FT2             A/Prof Thomas F Denson

**Administering Organisation**     The University of New South Wales

#### Project Summary

One universal human desire is the urge to hurt another person when angry. This project aims to identify the psychological and neural mechanisms that will reduce the likelihood that people will experience the desire to hurt others when angered. Recent advances in self-regulation, have produced models sophisticated enough to develop and test predictions about how to stop harmful desires from arising.

**FT140100207**     **Grisham, Dr Jessica R**

2014	\$93,458.00
2015	\$173,506.00
2016	\$164,151.00
2017	\$167,481.00
2018	\$83,378.00
<b>Total</b>	<b>\$681,974.00</b>

Primary FoR     1701             PSYCHOLOGY

#### Funded Participants:

FT1             Dr Jessica R Grisham

**Administering Organisation**     The University of New South Wales

#### Project Summary

This project aims to evaluate a theoretical model regarding the causal and maintaining role that cognitive biases play in obsessional thought. Obsessions are common in the general population and negatively impact health and daily functioning. Individuals struggle with their obsessions but are unable to disengage from them. A pressing question is: what makes an obsession so "sticky"? To answer this question, this project aims to employ a novel, computerised experimental methodology to directly manipulate cognitive processes proposed to underpin obsessions. This methodology will be used to alter key biases proposed to drive obsessional thinking, thus shedding light on core psychological mechanisms.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

FT140100865 Barth, A/Prof Markus

2014	\$109,569.00
2015	\$221,138.00
2016	\$219,138.00
2017	\$214,138.00
2018	\$106,569.00
<b>Total</b>	<b>\$870,552.00</b>

Primary FoR 1701 PSYCHOLOGY

#### Funded Participants:

FT2 A/Prof Markus Barth

**Administering Organisation** The University of Queensland

#### Project Summary

Using advanced MRI methods at ultra-high field, this project aims to enable the decoding and reconstruction of visual stimuli, as well as imagined ones from small functional units (layers and columns) in the human brain in vivo. This will be made possible by the use of a new functional MRI method, concurrent high temporal and spatial resolution and whole brain coverage as well as high sensitivity and specificity. Additionally, it will advance the development of functional connectomics and the aid the parcellation of the human cortex.

### The University of Sydney

FT140100535 Kim, Dr Juno

2014	\$79,888.00
2015	\$159,776.00
2016	\$159,776.00
2017	\$159,776.00
2018	\$79,888.00
<b>Total</b>	<b>\$639,104.00</b>

Primary FoR 1701 PSYCHOLOGY

#### Funded Participants:

FT1 Dr Juno Kim

**Administering Organisation** The University of Sydney

#### Project Summary

Humans visually perceive objects that vary in 3D shape, colour, sheen, and opacity, but understanding how this information is recovered from the images seen remains a mystery. The brain must exploit constraints on the way images are formed through the interaction of light with different surface properties. This project aims to identify image constraints that the brain measures to infer this material diversity. This will advance understandings of computational processes underlying material perception. It will create efficient innovations in image-based pattern recognition algorithms used for commercial and everyday applications, such as quality sorting of fresh produce, and monitoring driver performance in wet weather to reduce errors.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### University of Western Sydney

FT140101162 Keller, A/Prof Peter E

2014 \$102,443.00

2015 \$213,887.00

2016 \$222,888.00

2017 \$219,238.00

2018 \$107,794.00

**Total \$866,250.00**

Primary FoR 1701 PSYCHOLOGY

#### Funded Participants:

FT2 A/Prof Peter E Keller

**Administering Organisation** University of Western Sydney

#### Project Summary

Human interaction in musical groups is a culturally widespread activity that showcases the remarkable capacity for precision and creativity in interpersonal coordination. Although such activity has beneficial effects, including the facilitation of prosociality and positive therapeutic outcomes, the psychological and neurophysiological mechanisms that underpin an individual's ability to coordinate with others remain poorly understood. This project aims to investigate these mechanisms by examining relationships between behaviour, social factors, and brain structure and function in naturalistic and laboratory settings. This will inform the assessment and treatment of clinical conditions that affect movement timing and social interaction.



**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**1702                    COGNITIVE SCIENCES**

**The University of Newcastle**

**FT140100686    Morey, Dr Candice C**

2014	\$91,003.00
2015	\$178,761.00
2016	\$175,516.00
2017	\$169,956.00
2018	\$82,198.00
<b>Total</b>	<b>\$697,434.00</b>

Primary FoR    1702                    COGNITIVE SCIENCES

**Funded Participants:**

FT1                    Dr Candice C Morey

**Administering Organisation**    The University of Newcastle

**Project Summary**

Researchers disagree about whether verbal and visual working memory (WM) storage occurs in separate modules. Recent evidence suggests that only verbal memoranda have access to a specialised module, while visual memories make use of more general resources. This project aims to re-examine interference between verbal and visual memoranda using statistical methods specialised for assessing whether multiple latent factors underlie performance on recognition memory tasks, examining adult and child populations. This is expected to influence applications of WM theory in many everyday settings, resulting in improvements in educational practices, workplace procedures, and clinical treatments that depend on theoretical understandings of limits in cognition.

**Summary of Successful ARC Future Fellowships Proposals for Funding  
Commencing in 2014 by Primary FoR Group**

**1799                    OTHER PSYCHOLOGY AND COGNITIVE SCIENCES**

**University of the Sunshine Coast**

**FT140100681      Salmon, A/Prof Paul M**

2014	\$105,804.50
2015	\$216,126.00
2016	\$214,393.00
2017	\$208,809.50
2018	\$104,738.00
<b>Total</b>	<b>\$849,871.00</b>

Primary FoR      1799                    OTHER PSYCHOLOGY AND COGNITIVE SCIENCES

**Funded Participants:**

FT2                    A/Prof Paul M Salmon

**Administering Organisation**      University of the Sunshine Coast

**Project Summary**

By 2030 road trauma is expected to be the fifth leading cause of global deaths. The current road user centric road safety approach has failed to control the global health epidemic of road trauma. Although systems thinking is widely accepted to be the most effective approach for understanding and enhancing safety in complex systems, it has not yet been adopted in road safety efforts. This project aims to apply a novel, integrated framework of systems analysis and design methods to the so called 'fatal five' causes of road trauma to create new knowledge on their causes and to develop and test new interventions that will enable the achievement of currently unreachable road safety targets.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

**1801                    LAW**

### **The Australian National University**

**FT140100084    Harris Rimmer, Dr Susan G**

2014	\$79,023.00
2015	\$166,211.00
2016	\$170,603.00
2017	\$160,785.50
2018	\$77,370.50
<b>Total</b>	<b>\$653,993.00</b>

Primary FoR    1801                    LAW

#### **Funded Participants:**

FT1                    Dr Susan G Harris Rimmer

**Administering Organisation**    The Australian National University

#### **Project Summary**

This project aims to examine the link between diplomatic negotiations and their impact on the shifting status of women during times of deep political change. It will assess three key areas of international diplomatic negotiations around peace agreements, aid, and security sector reform and assess how these negotiations affected women's status on the ground. It will seek to design approaches to diplomatic interventions that may be more cognisant of gendered impacts and aim to benefit women.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Queensland

**FT140100796     Douglas, Prof Heather A**

2014	\$125,210.50
2015	\$243,108.00
2016	\$240,702.00
2017	\$229,065.50
2018	\$106,261.00
<b>Total</b>	<b>\$944,347.00</b>

Primary FoR     1801             LAW

#### Funded Participants:

FT3                     Prof Heather A Douglas

**Administering Organisation**     The University of Queensland

#### Project Summary

Domestic violence severely damages communities across the globe and law is recognised as a key mechanism for prevention and redress. This project aims to undertake a longitudinal study examining how women of diverse backgrounds use law to help them live a life free of violence. It will investigate what influences women's decisions to choose particular legal interventions but not others, and will identify any unintended consequences flowing from legal engagement. This project aims to highlight what contributes to women's satisfaction and sense of safety resulting from legal interventions over time, to make an important contribution to community education, policy implementation and law reform, both within Australia and internationally.

### The University of Sydney

**FT140100822     Stephens, A/Prof Timothy D**

2014	\$87,581.00
2015	\$176,735.00
2016	\$179,373.00
2017	\$179,262.50
2018	\$89,043.50
<b>Total</b>	<b>\$711,995.00</b>

Primary FoR     1801             LAW

#### Funded Participants:

FT2                     A/Prof Timothy D Stephens

**Administering Organisation**     The University of Sydney

#### Project Summary

This project aims to examine how international law deals with environmental systems in the Anthropocene: the current geological epoch defined by human interference with Earth's biophysical systems. It will assess whether and how international law takes a systemic approach in controlling human impacts upon key environmental spheres (in particular the atmosphere, cryosphere, biosphere and hydrosphere). The project also aims to assess whether environmental regimes are capable of further development to ensure the continued existence of a safe operating space for humanity.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 1901 ART THEORY AND CRITICISM

#### The University of Melbourne

FT140100743 Roberts, Dr Claire M

2014 \$100,467.50

2015 \$203,777.50

2016 \$203,903.50

2017 \$194,084.50

2018 \$93,491.00

**Total \$795,724.00**

Primary FoR 1901 ART THEORY AND CRITICISM

#### Funded Participants:

FT2 Dr Claire M Roberts

**Administering Organisation** The University of Melbourne

#### Project Summary

This research project will use modern and contemporary Chinese art to understand intercultural communication in the 21st century. It will do this by recovering forgotten histories and perspectives on modern and contemporary Chinese art in a global context. It will map the complexities of understanding Chinese art and charts the misunderstandings that have arisen in engaging with China.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2001 COMMUNICATION AND MEDIA STUDIES

#### University of Wollongong

FT140100515 Dreher, Dr Tanja I

2014	\$80,267.00
2015	\$166,051.00
2016	\$172,234.00
2017	\$167,614.00
2018	\$81,164.00
<b>Total</b>	<b>\$667,330.00</b>

Primary FoR 2001 COMMUNICATION AND MEDIA STUDIES

#### Funded Participants:

FT1 Dr Tanja I Dreher

**Administering Organisation** University of Wollongong

#### Project Summary

New media forms and the community media sector in Australia provide increasing opportunities for diverse communities to speak up, share stories and find a voice. This project analyses the political listening practices necessary to support the potential for voice in this changing media environment. The project aims to contribute to community wellbeing by asking to what extent community media is heard in key mainstream institutions. Case studies examine the ways in which policymakers and journalists listen in to media produced by Indigenous, Muslim and Sudanese Australians.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2002 CULTURAL STUDIES

#### The University of Melbourne

FT140100222 Martin, Dr Francesca A

2014 \$111,393.50

2015 \$218,922.50

2016 \$211,493.50

2017 \$204,922.50

2018 \$100,958.00

**Total \$847,690.00**

Primary FoR 2002 CULTURAL STUDIES

#### Funded Participants:

FT2 Dr Francesca A Martin

**Administering Organisation** The University of Melbourne

#### Project Summary

This longitudinal study of female Chinese students in Australian universities is the first to trace in detail these students' subjective experience of their journeys from China to Australia and their post-graduation destinations. Through in-depth ethnographic research, it will reveal how these young women's time in Australia impacts on their gendered and national-cultural sense of identity. This project aims to deepen knowledge in areas directly linked to Australian education export, and enhance Australia's engagement with its region.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2003 LANGUAGE STUDIES

#### The University of Melbourne

FT140100214 Thieberger, Dr Nicholas A

2014 \$94,863.00

2015 \$189,226.00

2016 \$188,976.00

2017 \$188,976.00

2018 \$94,363.00

**Total \$756,404.00**

Primary FoR 2003 LANGUAGE STUDIES

#### Funded Participants:

FT1 Dr Nicholas A Thieberger

**Administering Organisation** The University of Melbourne

#### Project Summary

Fragile records of the world's Indigenous languages are at risk of being lost. Better research methods that can benefit not only academics but also the general public aim to be developed in this project and used to train new researchers and community members in creating better records. Collaborating across Australia and the Pacific in building tools that will result in better research practices, it will increase knowledge of what research has been done, and will target areas for future focus. Modelling new fieldwork methods, building reusable datasets, and curating long-term collections of language records will all be part of this project, as will outreach to support similar work both in linguistics and in the broader community.



## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Sydney

FT140100783 Turpin, Dr Myfany M

2014	\$94,276.50
2015	\$190,755.50
2016	\$192,970.00
2017	\$192,931.00
2018	\$96,440.00
<b>Total</b>	<b>\$767,373.00</b>

Primary FoR 2003 LANGUAGE STUDIES

#### Funded Participants:

FT1 Dr Myfany M Turpin

**Administering Organisation** The University of Sydney

#### Project Summary

Indigenous ceremonies are a fundamental aspect of Indigenous identity and they play a role in Indigenous health and wellbeing. This project aims to develop a typology of Australian Aboriginal ceremonies by classifying them according to their structural features. By mapping their distribution and comparing these with linguistic and anthropological evidence it seeks to provide insights into Indigenous prehistory and cultural diffusion across arid Australia. This project aims to lead to a greater understanding of the ecological knowledge contained in songs and increased Indigenous knowledge of, and engagement in, ceremonial life.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2005 LITERARY STUDIES

#### The University of Melbourne

FT140100456 Clemens, Dr Justin

2014	\$87,693.00
2015	\$174,262.00
2016	\$173,138.00
2017	\$173,138.00
2018	\$86,569.00
<b>Total</b>	<b>\$694,800.00</b>

Primary FoR 2005 LITERARY STUDIES

#### Funded Participants:

FT2 Dr Justin Clemens

**Administering Organisation** The University of Melbourne

#### Project Summary

This project surveys the field of contemporary Australian poetry, its products, personnel, institutions, and processes. Through interviews with poets, publishers, booksellers, academics, editors and managers, as well as extensive archival research, it will provide the first major synoptic research into the state of Australian poetry today. This project aims to establish possible future directions for Australian poetry and its importance for Australian culture more generally.

#### The University of Sydney

FT140101308 Anlezark, A/Prof Daniel C

2014	\$95,016.00
2015	\$189,456.50
2016	\$183,529.00
2017	\$179,210.00
2018	\$90,121.50
<b>Total</b>	<b>\$737,333.00</b>

Primary FoR 2005 LITERARY STUDIES

#### Funded Participants:

FT2 A/Prof Daniel C Anlezark

**Administering Organisation** The University of Sydney

#### Project Summary

This project aims to investigate the interplay between early medieval science and the literary imagination. The project focuses on Anglo-Saxon England, which provides a fully developed and well-preserved vernacular literary record, beside a learned Latin literary culture. It aims to investigate an important reciprocal relationship at a transitional moment in Western culture: the ways scientific learning influenced the early medieval literary imagination, and how the literary imagination influenced early medieval science. Study of the relationship between science and literature provides an insight into how people have understood the world around them and their relationship with it, interpreted in the light of inherited knowledge and the imagination.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2101                    ARCHAEOLOGY

#### University of Wollongong

**FT140100101    Marwick, Asst Prof Benjamin**

2014	\$79,313.00
2015	\$159,438.50
2016	\$163,251.00
2017	\$167,638.50
2018	\$84,513.00
<b>Total</b>	<b>\$654,154.00</b>

Primary FoR    2101                    ARCHAEOLOGY

#### Funded Participants:

FT1                    Asst Prof Benjamin Marwick

**Administering Organisation**    University of Wollongong

#### Project Summary

At a crossroads between India, Australia and the Pacific, this project recognises western mainland Southeast Asia as critical to understanding the human history of the region over the past 50 000 years. Thailand and Myanmar are strategically positioned to test competing models of initial modern human expansion, and subsequent trajectories of cultural change and interaction. This project aims to produce multiple data sets for reconstructing palaeoclimate. This data will assist in testing projections for future climate, making a significant contribution in responding to climate change and variability.

**FT140100504    Szabo, Dr Katherine**

2014	\$102,379.50
2015	\$211,950.00
2016	\$210,319.50
2017	\$194,533.00
2018	\$93,784.00
<b>Total</b>	<b>\$812,966.00</b>

Primary FoR    2101                    ARCHAEOLOGY

#### Funded Participants:

FT2                    Dr Katherine Szabo

**Administering Organisation**    University of Wollongong

#### Project Summary

Shell valuables are fundamentally important in many Melanesian societies, linking people to each other, the land and their ancestors. Although shell artefacts are frequent in Melanesian archaeological sites, presently it is not possible to discriminate between types and levels of value. Through ethnoarchaeological enquiry in the Solomon Islands and intensive studies of museum ethnographic collections, this project aims to develop tools to allow archaeologists to better interpret the nature of different shell artefacts and the social contexts of their production, use and discard. In doing so, it will enhance understandings of Melanesian societies and their transformations through time.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2103 HISTORICAL STUDIES

#### Australian Catholic University

FT140100226 Neil, Dr Bronwen J

2014	\$105,624.00
2015	\$211,673.00
2016	\$212,573.00
2017	\$209,898.00
2018	\$103,374.00
<b>Total</b>	<b>\$843,142.00</b>

Primary FoR 2103 HISTORICAL STUDIES

#### Funded Participants:

FT3 Dr Bronwen J Neil

**Administering Organisation** Australian Catholic University

#### Project Summary

In Classical Greco-Roman society dreams or visions were sometimes understood as vehicles of divine revelation. Early Christians and Muslims developed the religious interpretation of dreams, using it to bolster the religious authority of their leaders, who laid claim to the Jewish tradition of prophets who brought messages from God. This project aims to uncover the development of dream interpretation from Classical Antiquity through early Christianity to early Islam and give an understanding of how dreams and visions were used as tools of religious control and as justification of violence against other religions.

#### The University of Melbourne

FT140100266 Rizzi, Dr Andrea

2014	\$95,643.50
2015	\$180,521.50
2016	\$162,964.50
2017	\$149,599.50
2018	\$71,513.00
<b>Total</b>	<b>\$660,242.00</b>

Primary FoR 2103 HISTORICAL STUDIES

#### Funded Participants:

FT1 Dr Andrea Rizzi

**Administering Organisation** The University of Melbourne

#### Project Summary

Translators are crucial agents of cultural exchange. Understanding how translators construct and perform their role is vital to comprehend societies' conceptions of language and culture. This project aims to produce a new history of cultural change and enhance understanding of the translator's agency in global communication. This will be achieved by studying the voices of translators as they emerge from manuscripts, prints, and archival documents of the Renaissance, one of the richest periods of cultural interaction between Latin, Greek, and local languages.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### The University of Western Australia

FT140101100 Edele, Prof Mark

2014	\$122,013.00
2015	\$246,458.50
2016	\$244,527.00
2017	\$234,084.00
2018	\$114,002.50
<b>Total</b>	<b>\$961,085.00</b>

Primary FoR 2103 HISTORICAL STUDIES

#### Funded Participants:

FT3 Prof Mark Edele

**Administering Organisation** The University of Western Australia

#### Project Summary

This project aims to write a history of Soviet war experiences and chart the varieties of wartime experiences on Soviet held territories between the outbreak of the Second World War in Asia in 1937 and the end of the counter-insurgency in the western borderlands by 1950. Rather than extract one, allegedly 'typical' experience, this project aims to focus on the range, variety, and complexity of wartime experiences of ordinary (and some extraordinary) people living, fighting, surviving, dying, or passing through the lands controlled, sometimes more, sometimes less, by Stalin and his political apparatus during the years of war in the 1930s and 1940s.

### University of Technology, Sydney

FT140100081 Clark, Dr Anna H

2014	\$81,436.50
2015	\$159,161.50
2016	\$154,235.50
2017	\$150,487.50
2018	\$73,977.00
<b>Total</b>	<b>\$619,298.00</b>

Primary FoR 2103 HISTORICAL STUDIES

#### Funded Participants:

FT1 Dr Anna H Clark

**Administering Organisation** University of Technology, Sydney

#### Project Summary

Australian history has been revised and reinterpreted by successive generations of historians, writers, governments and public commentators. However, there has been no systematic attempt to trace Australian historiography from its earliest origins to the contests dominating public historical discussion today. This project responds to this critical gap in Australian historical research and proposes a bold and expansive history that examines the changing and contested project of Australia's national story for the first time and aims to make a significant contribution to Australian historical scholarship and understandings of the practice of history itself.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2202 HISTORY AND PHILOSOPHY OF SPECIFIC FIELDS

#### Macquarie University

FT140100422 Klein, Dr Colin

2014 \$74,388.00

2015 \$152,340.50

2016 \$156,906.50

2017 \$152,269.50

2018 \$73,315.50

**Total \$609,220.00**

Primary FoR 2202 HISTORY AND PHILOSOPHY OF SPECIFIC FIELDS

#### Funded Participants:

FT1 Dr Colin Klein

**Administering Organisation** Macquarie University

#### Project Summary

Functional neuroimaging provides a tremendous amount of information about the brain, but what it shows about the mind is less clear. Addressing this fundamental philosophical question requires developing a detailed account of theory-testing in cognitive neuroscience. This project aims to connect neuroimaging to theories of explanation that focus on the way one variable can make a difference to another. By linking neuroimaging to facts about manipulable relationships between the brain and the mind, it will also provide a bridge between neuroimaging and complementary technologies for directly intervening on the brain. This, in turn, will provide a platform from which to explore the theoretical and ethical consequences of direct brain manipulation.

## Summary of Successful ARC Future Fellowships Proposals for Funding Commencing in 2014 by Primary FoR Group

### 2203 PHILOSOPHY

#### University of Western Sydney

FT140101020 Kelly, Dr Mark G

2014 \$82,587.00

2015 \$163,191.50

2016 \$163,344.50

2017 \$163,477.50

2018 \$80,737.50

**Total \$653,338.00**

Primary FoR 2203 PHILOSOPHY

#### Funded Participants:

FT1 Dr Mark G Kelly

**Administering Organisation** University of Western Sydney

#### Project Summary

This project aims to produce a new account of the emergence and role of the concept of norms. While norms have been the subject of significant academic attention, their history has never been recorded. This project aims to study the development of the conceptual vocabulary of norms, normality and normativity in the key areas of the life sciences, legal discourse, and ethics. Showing how these discourses link up to one another and to social institutions, it will produce new insights into the 'normalising' society. Its purpose is thus to understand how individuals and public policy can successfully navigate the proliferation of norms in various fields today, in a situation of increasing diversity of rules and cultural codes.