Examples of *Future Fellowships* projects commencing in 2014

**Victoria**

Victorian (VIC) research organisations will receive more than $30.1 million through the Australian Research Council *Future Fellowships* scheme for 38 new research projects commencing in 2014.

Some examples of the VIC projects are provided below.

To view the summaries of all successful projects, visit the [ARC announcements page](#).

**RMIT University**

*Future Fellow*: Associate Professor Vipul Bansal (FT140101285)

*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 nanobiosensors. 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.

**ARC funding**: $886 019 over four years

**The University of Melbourne**

*Future Fellow*: Dr Nicholas Thieberger (FT140100214)

*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.

**ARC funding**: $756 404 over four years

**Deakin University**

*Future Fellow*: Professor Ester Cerin (FT140100085)

*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.

**ARC funding**: $922 114 over four years
Monash University

**Future Fellow: Dr Robert Izzard (FT140100794)**

**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.

**ARC funding:** $717,204 over four years

The University of Melbourne

**Future Fellow: Associate Professor Andrew Pask (FT140100964)**

**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.

**ARC funding:** $886,172 over four years

Swinburne University of Technology

**Future Fellow: Dr Glenn Kacprzak (FT140100933)**

**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.

**ARC funding:** $747,629 over four years