Examples of *Linkage Projects* commencing in 2014

Queensland

Queensland (QLD) research organisations will receive more than $17.6 million through the Australian Research Council *Linkage Projects* scheme for 49 new research projects commencing in 2014.

Some examples of the QLD projects are provided below.

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

**The University of Queensland**

*Lead Chief Investigator:* Associate Professor Jacqueline Batley (LP140100537)

*Summary:* Gene content varies between individual varieties. The project aims to apply novel genomic tools to identify and characterise the fixed and variable gene content in the important crop canola and use this to understand genome evolution as well as develop tools to accelerate canola breeding. The project team have developed and used a high-resolution genotyping approach to demonstrate that gene conversions, short recombination events which lead to the non-reciprocal exchange of genomic regions during meiosis, are abundant in crop genomes. The project aims to develop methods and resources to characterise gene conversion in canola and establish a basis for gene conversion based crop improvement.

*Partner Organisation:* Bayer BioScience

*ARC funding:* $630 000 over three years

**Central Queensland University**

*Lead Chief Investigator:* Professor Brijesh Verma (LP140100939)

*Summary:* This project proposes a novel approach for identifying roadside fire risks using pattern recognition and computational intelligence techniques. The video data is collected over every state road in Queensland annually, and has the potential to provide a range of value-added products for safer roads. This project aims to develop new techniques for identification of roadside objects so that the data can be automatically analysed allowing the estimation of fire risk factors. The final outcome intends to be techniques for segmentation and classification of roadside objects and estimation of fire risk factors.

*Partner Organisation:* Queensland Department of Transport and Main Roads

*ARC funding:* $232 132 over three years

**James Cook University**

*Lead Chief Investigator:* Dr Kyall Zenger (LP140101001)

*Summary:* The primary impediment to achieving rapid genetic progress in aquaculture is an inability to accurately and rapidly identify high-performance animals for selection as parents in animal breeding programs. This project aims to develop an innovative genomic selection breeding system for the silver-lipped pearl oyster to overcome current limitations associated with traditional animal improvement methods. The use of genomic selection will not only transform the Australian pearl oyster industry, but it will also showcase the potential of genomic selection in aquaculture globally. Furthermore, knowledge gained from this project can also be applied to a variety of other Australian aquaculture species to accelerate the uptake of this technology.

*Partner Organisation:* Atlas Pearls and Perfumes Ltd

*ARC funding:* $541 032 over three years
Griffith University

Lead Chief Investigator: Associate Professor Rodney Stewart (LP140100118)

Summary: The provision of water and energy supplies to remote Aboriginal and Torres Strait Islander (ATSI) communities is a critical challenge for service providers. This project uses a novel unobtrusive smart metering system, aligned with culturally appropriate consultation with ATSI communities, to reveal patterns of household water and water related-energy consumption. Significantly, the research aims to identify effective behavioural and technological water and energy efficiency strategies in three remote ATSI communities in Queensland, Northern Territory and Western Australia. A key outcome is to provide an adaptive evidence-based and community-driven handbook to facilitate the secure long-term supply and efficient use of energy and water resources in remote ATSI communities.

Partner Organisations: NT Power and Water Corporation, Water Corporation of WA, Ergon Energy, Centre for Appropriate Technology

ARC funding: $241 366 over three years

Queensland University of Technology

Lead Chief Investigator: Professor Barry Watson (LP140100409)

Summary: Australian young drivers are 13 per cent of the population but account for nearly a quarter of road deaths. This project aims to develop a research informed, theory-driven education intervention that includes a simulator component to improve their driving skills and attitudes. A process and outcome evaluation aims to assess the effectiveness of the training including the impact on how individuals learn to drive, changes in skill and attitudes as well as the influence on crashes and offences. It is intended that a second parallel study will adapt the intervention for Indigenous Australians and examine the effectiveness of this adaptation.

Partner Organisations: Roadcraft Driver Education, Queensland Department of Transport and Main Roads

ARC funding: $203 000 over three years

The University of Queensland

Lead Chief Investigator: Professor Ian Hayes (LP140100700)

Summary: Java is a programming language and platform running on three billion devices. While Java provides a sandbox-based security architecture within the Java Class Library to protect systems from untrusted code downloaded from Internet, it cannot defend against implementation bugs that occur in the Java Class Library. The goal of this project is to provide a formal model of the Java security architecture, which can be used by program analysers to identify faulty or insufficient security checks in the Java Class Library that may lead to the sandbox being bypassed.

Partner Organisation: Oracle Corporation Australia Pty Limited

ARC funding: $380 000 over three years