



Examples of new *Discovery Projects* in 2010

New South Wales

The University of New South Wales (Contact: 02 9385 2864)

Can parents teach their children to drink alcohol responsibly? Or is one drop a drop too many? (DP1096668)

Summary: Parents typically supply alcohol to their children believing it is the best way to teach responsible drinking. Whether parents should provide alcohol is controversial and the evidence to inform this decision is unclear. This research will provide an in-depth understanding of the consequences of parents providing alcohol to their children and when, where and how this can be done to minimise harm. This is a national priority as alcohol abuse is a leading cause of injury and death among young Australians and developing the knowledge for preventive health care is essential. This research will provide parents with information they need to give their children a healthier start to life.

Chief Investigator: Professor Richard Mattick

ARC funding: \$760,000 over 5 years

University of Technology, Sydney (Contact: 02 9514 1616)

Bacterial filamentation as a survival strategy: a goldmine for the discovery of new cell division regulators (DP1093634)

Summary: Medical advances (organ transplants, chemotherapy), increases in diabetes, and an aging population increase the risk of infections caused by bacteria that are now resistant to most available antibiotics. New classes of antibiotics are urgently needed to treat these infections. This project uses a novel approach to identify the mechanisms bacterial cells use to control their growth and avoid attack by our immune system. The research will identify potential targets for the development of new, effective antibiotics to kill multi-resistant bacteria, and ensure Australia's position at the forefront of infection control.

Chief Investigator: Associate Professor Elizabeth Harry

ARC funding: \$300,000 over 3 years

Macquarie University (Contact: 02 9850 7456)

Natural Language Generation for Aboriginal Languages (DP1095443)

Summary: Australian Aboriginal languages have a number of interesting characteristics that make them a challenge for language technology applications; as yet, there are none, unlike for the indigenous Inuit peoples of Canada and Maori of New Zealand. In this project a large-scale computational linguistic investigation will be undertaken of an Aboriginal language to create a data-to-text natural language generation system. This study of computational linguistics will have further national benefits through engagement of the owners of the language in the language survey, as well as generating articles that will encourage literacy and language maintenance.

Chief Investigator: Dr Mark Dras

ARC funding: \$425,000 over 3 years



The University of Sydney (Contact: 02 9114 0748)

Integrated Ocean Drilling Program (IODP) drilling in the Great Barrier Reef: unlocking the causes, rates and consequences of abrupt sea level and climate change (DP1094001)

Summary: The Great Barrier Reef (GBR) and how it will respond to future global climate changes is of fundamental importance to the nation. The project will address this challenge by investigating the submerged fossil coral reefs in the GBR. This will lead to a better understanding of the natural rates, range and forcing mechanisms that control global sea-level and climate variability (ie. paleo-ENSO), and geo-biological changes affecting the GBR over the last 20,000 years. This project will provide unique insights into the response of the GBR to past environmental stress and improve predictions about the vulnerability of GBR to future global climate changes.

Chief Investigator: Dr Jody Webster

ARC funding: \$372,000 over 3 years

University of Wollongong (Contact: 02 4221 5942)

Laboratory and Theoretical Investigation of Soft Clay Behaviour under Cyclic Loading Stabilised by Prefabricated Vertical Drains (DP1092483)

Summary: Coastal Australia is under increasing pressure from rapid population growth that requires continual capital investment in civil infrastructure such as road and rail links, ports and buildings. Many regions have soft compressible clays that present challenges for infrastructure design and construction. The use of prefabricated vertical drains (PVDs) in stabilising soil can reduce construction and maintenance costs, and increased soil strength will enhance the performance of infrastructure. In this project, the soil behaviour under cyclic loads stabilised by PVDs will be thoroughly investigated. Extensive laboratory testing will result in more efficient design and construction on soft soils.

Chief Investigator: Professor Buddhima Indraratna

ARC funding: \$366,000 over 3 years

The University of New South Wales (Contact: 02 9385 2864)

Redefining conceptions of child and adolescent emotional responses to music using time-series analysis (DP1094998)

Summary: The National Review of Music Education recognises the need to understand more fully how musical experiences impact on children's emotional and general development. Australian researchers are leaders in the field of continuous response to emotion in music. Our international leadership on this critically important issue will result in new ways of understanding music and teaching music to children through to adults because our explanations of affective aspects of music will be framed within a scientific perspective which moves beyond learning the purely technical and subjective aspects of music appreciation.

Chief Investigator: Dr Emery Schubert

ARC funding: \$285,000 over 4 years