



Examples of new *Linkage Projects* in 2010

Biological Sciences and Biotechnology

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

In situ microbial conversion of coal to methane: Biotechnology development for clean use of Australian coal (LP100100128)

Summary: This project will develop a technique that uses native microorganisms to accelerate the underground conversion of coal to methane. Approximately 90 per cent of Australia's coal resources cannot be accessed economically using traditional mining technologies. A technology that converts coal to methane could generate an energy supply worth an estimated \$60 billion, foster the development of an energy industry now in its infancy, and generate numerous new employment opportunities. Environmentally, methane is a cleaner burning fuel than coal, uses much less water for processing and generates the same quantity of electricity with lower CO₂ emissions.

Chief Investigator: Dr Michael Manefield

ARC funding: \$1,237,600 over 4 years

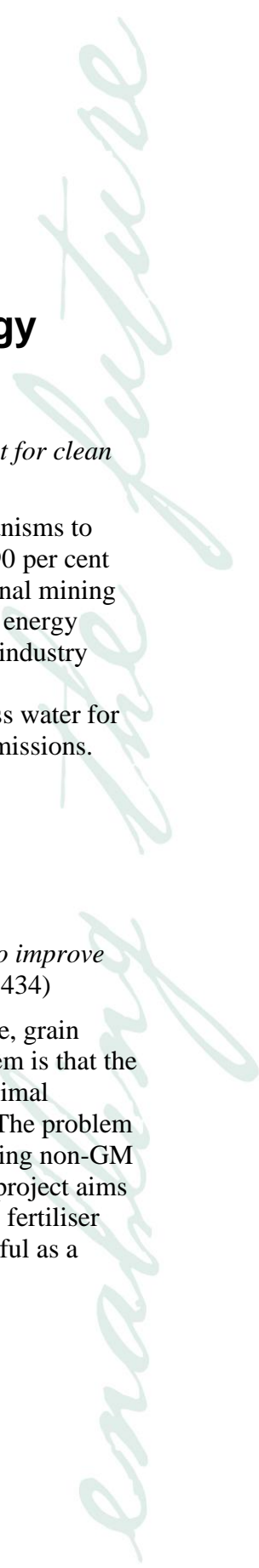
Monash University (Contact: 03 9903 4840)

Re-balancing global resources: Manipulating toxic prussic acid (dhurrin) to improve nitrogen use efficiency in forage sorghum in a changing climate (LP100100434)

Summary: Sorghum is grown widely in Australia and world-wide for forage, grain (mostly for animal feed) and biofuels. It grows well in dry areas. The problem is that the leaves contain a toxin that releases prussic acid (cyanide) that can reduce animal production or even kill stock feeding on it, especially when water stressed. The problem will get worse with climate change. Low-cyanide plants developed by us using non-GM methods grow fast, but accumulate nitrate instead which is also toxic. This project aims to develop plants that divert resources to growth instead of toxins, to reduce fertiliser use and help prepare for the future. The fast growing plants may also be useful as a biofuel crop.

Chief Investigator: Dr Roslyn Gleadow

ARC funding: \$270,000 over 3 years





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

Harnessing contact lens design to optimise optics and vision through corneal refractive reshaping (LP100100461)

Summary: Development of innovative lens designs to correct presbyopia and astigmatism, optimised for visual performance through manipulation of optical aberrations, will place Australian rigid contact lens manufacturing at the international forefront of lens production. Lens designs to control myopia progression will also strategically position Australian lens manufacturing to capitalise on the potential market in Asia, where myopia is prevalent. Significant intellectual property will be generated for Australia through greater understanding of innovative lens design manipulation to optimise visual outcomes.

Chief Investigator: Associate Professor Helen Swarbrick

ARC funding: \$532,000 over 3 years

University of Western Australia (Contact: 08 6488 2806)

Better bees for tomorrow: A proteomic and physiological characterization of male fertility in managed versus feral honeybees in Western Australia (LP100100438)

Summary: The importance of honeybees for food production is often undervalued even though they pollinate more than 80 crops of economic interest. Honeybee populations are on a worldwide decline and the beekeepers struggle to maintain an economically viable business. Australia's honey industry has so far been spared of major collapses but this seems merely a question of time. The work proposed in this project initiates a close collaboration between the only honeybee-breeding organisation in Western Australia and the University of Western Australia. Scientific research to ensure a future supply of managed and healthy honeybees will be initiated to understand honeybee reproduction, diseases and immunity in more detail. The results are expected to be of interest for the entire Australian honeybee industry.

Chief Investigator: Dr Boris Baer

ARC funding: \$640,000 over 4 years

University of Sydney (Contact: 02 9114 0748)

Surviving in a toad-colonised landscape: manipulating predator behaviour to reduce the impact of the cane toad invasion (LP100100740)

Summary: Invasive species pose a major threat to biodiversity and within Australia, cane toads are widely viewed as one of the biggest such problems. Vigorous attempts at toad control have failed to slow the invasion front, and toads are now entering the Kimberley region. If we can't stop the toads, are there other ways to reduce the numbers of native predators killed by eating these poisonous invaders? Predators given nausea-inducing chemicals with their first toad meal rapidly learn to avoid cane toads as prey, enabling them to survive even where toads are present. The study will develop those methods for several vulnerable native species, including techniques for deployment of aversion-inducing baits in advance of the toad invasion.

Chief Investigator: Professor Richard Shine

ARC funding: \$625,000 over 5 years