



Examples of new *Discovery Projects* in 2010

Biological Sciences and Biotechnology

La Trobe University (Contact: 03 9479 5246)

Creation of a non-venomous honey bee (DP1092501)

Summary: On average, two Australians die from bee stings each year. Our goal is produce honey bees that do not have a dangerous sting. The methods developed could have significant impact on honey bee research and breeding.

Chief Investigator: Professor David Vaux

ARC funding: \$220,000 over 3 years

The University of Sydney (Contact: 02 9114 0748)

New insights into mammalian gene transcription: the role of parafibromin
(DP1093195)

Summary: Increasing our knowledge of fundamental gene and protein interactions is imperative as we move into an era of targeted molecular therapies to treat disease. Cancer is at the forefront of these diseases with hope of improved treatments firmly based in understanding the basic cell biology of tumours. This proposal describes research into a protein called parafibromin. We propose that parafibromin acts in major pathways responsible for how a cell manages stress by regulating levels of proteins involved in the cellular stress response. Discoveries made during the course of this research will provide knowledge of gene and protein interactions that will be important in the future to develop anti-cancer therapies.

Chief Investigator: Associate Professor Deborah Marsh

ARC funding: \$345,000 over 3 years

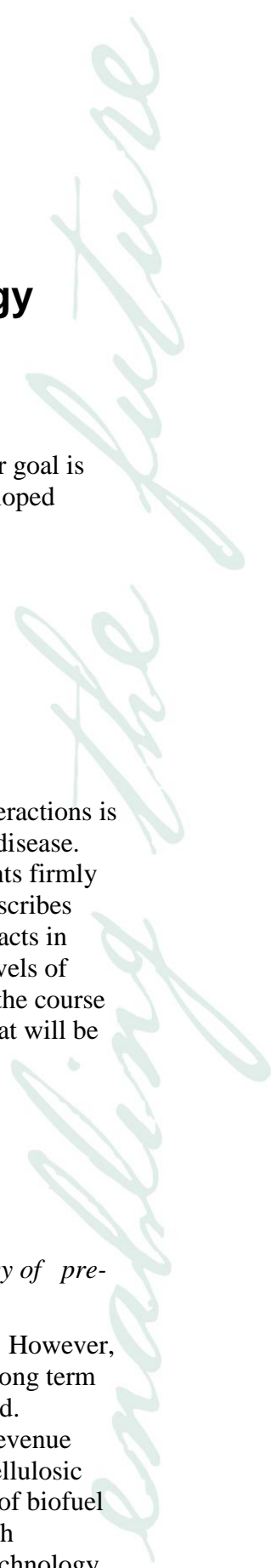
Queensland University of Technology (Contact: 07 3138 2361)

Modification of lignin biosynthesis in sugarcane for the improved efficiency of pre-treatment in ethanol production (DP1093236)

Summary: Sugarcane is one of Australia's most important rural industries. However, as a single product industry, declining sugar prices threaten the industry's long term economic sustainability unless alternative markets for sugarcane are created. Utilising the sugarcane waste for cellulosic ethanol would provide a new revenue stream, injecting life into the Australian sugarcane industry. In addition, cellulosic ethanol from sugarcane has the potential to substantially decrease the cost of biofuel production and significantly reduce greenhouse gas emissions. The research proposed here will advance our ability to improve sugarcane through biotechnology.

Chief Investigator: Dr Heather Coleman

ARC funding: \$280,000 over 3 years





Monash University (Contact: 03 9903 4840)

Early life overfeeding: mechanisms for programming obesity and long-term immune dysfunction (DP1093398)

Summary: Early life overfeeding can lead to obesity and related changes in adulthood. With this study we will examine how overfeeding may permanently alter an animal's development so that its body weight and immune functions are dysregulated. The outcomes will contribute to more efficient feeding protocols for meat production in agriculture and identify targets for risk management and for preventing and ameliorating early life overfeeding effects in humans. This investigation therefore has clear benefits to the social, economic, and health aspects of obesity and to basic science and agriculture.

Chief Investigator: Dr Sarah Spencer

ARC funding: \$311,000 over 3 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: The increasing emergence of untreatable bacterial infections is a serious threat to the health of Australians. 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

The University of Queensland (Contact: 07 3365 1120)

Molecular, genetic and cellular analysis of melanisation in human pigmentation (DP1094964)

Summary: This investigation examines variations in the genes that determine human skin pigmentation and are likely to be associated with skin cancer risk. Our research program will form the basis of future diagnostics based on major genes that determine a person's skin type. Current skin cancer prevention strategies rely predominantly on broad spectrum campaigns that are aimed at increasing the general community awareness of the damaging effects of ultraviolet (UV) radiation. A better understanding of the genetic basis of UV-sensitive skin types will greatly enhance the targeting of skin cancer-prevention campaigns, provide an understanding of changes that occur in skin pathology, and the mechanisms of sun-induced tanning.

Chief Investigator: Associate Professor Richard Sturm

ARC funding: \$429,000 over 3 years