



**Clifford  
Craig**  
Medical  
Research Trust

# Priceless

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## 2016 Medical Research Grants Announced



2016 medical research grant recipients

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Clifford Craig Medical Research Trust

**Funding for a medical research project that aims to reduce spinal surgery and another that hopes to discover the best way to manage diabetes in acute care are among the newly announced projects to receive funding by the Clifford Craig Medical Research Trust in 2016.**

The Chairman of the Clifford Craig Medical Research Trust, Associate Professor Don McTaggart, recently announced the successful recipients of medical research grants for 2016 at a specially convened function at the Launceston General Hospital.

Seven new projects will be added to the Trust's research program in 2016 with the newly announced grants totalling \$178,000. Associate Professor McTaggart said the combination of the newly announced grants with the existing research program will see the Trust allocate \$600,000 for medical research in Northern Tasmania next year.

"This announcement sees the Clifford Craig Medical Research Trust building upon our reputation for facilitating an important clinical medical research program across Northern Tasmania which supports the medical professionals at our local hospitals, medical students at the clinical school and university researchers", he said.

Since 1992, the Clifford Craig Medical Research Trust has focused on facilitating a high quality medical research program that is based at the Launceston General Hospital, the referral hospital for Northern Tasmania, which provides ongoing improvement in the health related issues that are important to all Tasmanians. Most importantly, our research program enables research to be undertaken by local doctors, nurses, researchers and health related professionals. This philosophy provides the flow-on effect of encouraging talented and skilled medical professionals to work and reside in Tasmania, thus providing the community with greater access to specialist healthcare.

Associate Professor McTaggart, said the Trust has allocated approximately \$6 million for medical research funding during its 23 years, enabling 140 important medical research projects to be undertaken at a local level by our own local health professionals.

Keep reading for a detailed description of each of the seven newly announced projects to be funded by the Clifford Craig Medical Research Trust.



**Nutritional vitamin D (cholecalciferol) versus active vitamin D (calcitrol) in haemodialysis dependent chronic kidney disease patients**

**Dr Chau Ng**  
\$25,000

**Chronic kidney disease (CKD) affects 1 in 10 Australians aged 18 and above. Patients with CKD who progress to end stage kidney disease require renal replacement therapy such as haemodialysis to stay alive. There are currently over 20,000 people in Australia who are on renal replacement therapy.**

Vitamin D deficiency is common among patients with chronic kidney disease and is associated with much morbidity. Impaired calcium and phosphate homeostasis as a result of vitamin D deficiency increases the long term risk of diseases affecting bone, muscle, heart, immunity and other systems. Replacement of vitamin D is known to improve such morbidity. Common forms of vitamin D replacement include nutritional vitamin D (cholecalciferol) and active vitamin D (calcitrol). Both are different in terms of cost and side effect profiles.

This is a pilot study, a small scale randomized control trial conducted at the LGH Renal Centre and its satellite unit. It involves randomizing patients with stage 5 chronic kidney disease who are haemodialysis into two arms, where Arm A will receive nutritional vitamin D (cholecalciferol) while Arm B will receive active vitamin D (calcitrol) for vitamin D replacement. Plasma 25 – hydroxyvitamin D3 and plasma 1,25 – dihydroxyvitamin D3 will be measured at time of recruitment (baseline), 4 week, 8 week and 12 week periods to determine adequacy of replacement. The replacement effects on biomarkers such as calcium (Ca), phosphate (PO4), alkaline phosphatase (ALP), and intact parathyroid hormone (iPTH) will be investigated.



**Preliminary development of a probiotic to minimise respiratory infection with Haemophilus influenza**

**Dr Stephen Tristram**  
\$28,554

**Can we use "Good Bacteria" to minimise the incidence of respiratory infections?**

The objectives of this project are to perform the preliminary research into the feasibility of developing an oral/respiratory probiotic to reduce the burden of respiratory infections caused by non-capsulated Haemophilus influenza (NTHi).

The bacterium Haemophilus influenzae commonly colonises the upper airways of healthy people yet under certain predisposing conditions it is also able to cause various lower respiratory tract and ear infections. These infections cause significant disease in individuals, are a major burden on the healthcare system and are not well controlled by either antibiotic therapy or vaccination.

The practice of administering "good bacteria" (probiotics) to individuals, to maintain a healthy microbial balance in certain body sites and prevent disease is now well established, particularly for gastrointestinal infection. This project proposes to investigate the use of a non-disease causing bacterium that is very closely related to H. influenzae as a probiotic to minimise colonisation and subsequent infection with H. influenzae.

The initial outcome of this research study will be in vitro proof of concept and pilot data that could be used to develop a more complex study suitable for future National Health and Medical Research funding to translate the concept into a therapeutic. Since NTHi associated respiratory diseases place such a substantial burden on Australian Healthcare resources (currently estimated at more than \$1 billion annually), and traditional interventions such as antibiotic therapy and vaccination are proving inadequate, an alternative therapy would be an enormous advance.



**Epithelial mesenchymal transition (EMT) in chronic obstructive pulmonary disease (COPD): role in both airway fibrosis and lung cancer**

**Dr Sukhwinder Sohal**  
\$43,127

**Smoking related chronic obstructive pulmonary disease (COPD) imposes a huge cost on the Tasmanian community, where smoking rates are the highest in the country. The most**

**recently available data shows that between 2003 and 2007, an average of 568 Tasmanians died each year due to tobacco use.** We need better detailed understanding of COPD pathogenesis, in order to design better translational treatments. Tobacco smoke is a major etiological factor for COPD. However, only 25% of smokers will develop 'classic' COPD, in these vulnerable individuals the progression of airways disease to symptomatic COPD occurs over two or more decades. Detailed data on airway structural changes in COPD are especially sparse, and how these changes lead to airway fibrosis and lung cancer are poorly understood.

This project aims to build up a respiratory tissue bank for the first time in the north of the state by collecting samples from all COPD patients at the Launceston General Hospital. The aim is then to

assess the mechanisms driving highly plastic changes associated with airway cells (EMT) and effects of drugs on these changes. This will have huge therapeutic implications for both airway fibrosis and lung cancer which are very common in COPD.

There is a well-described link between COPD and lung cancer, a portion of which may in part relate to common exposure to tobacco smoke. However, for any level of tobacco exposure, patients with COPD have a 6 fold greater risk factor for lung cancer than smokers without COPD. Our finding that EMT expression increases in COPD current smokers may help to understand why lung cancer is so common in smokers, and indeed why it is so aggressive, invasive and fatal in over 85% of cases. This study will contribute significantly to understand key components of airway EMT in smokers and COPD, which may provide novel drug targets for lung cancer and airway fibrosis, as well as leading to better management and diagnosis of COPD itself.

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Tasmania 7250



### Epidural steroid injections in prevention of lumbar spine surgery. Randomised controlled trial

Dr David Edis  
\$36,850



Spinal canal stenosis or narrowing of the spinal canal is a common pathology in the elderly, and often is a result of degenerative age related changes to the spine. It could be a cause of significant patient disability and suffering due to neurogenic claudication described as pain and/or other neurological symptoms in lower limbs while standing and walking.

Lumbar spinal canal decompression is known to relieve patient symptoms. However, in elderly patients, spinal surgery carries increased risk of perioperative complications and even death. In addition, spinal surgery lists in the public sector are often long. During the waiting period, patients can experience further functional decline and continue to suffer from pain and poor quality of life.

Dr Edis and his team would like to reduce the number of spinal surgeries by using a steroid injection instead. The project will investigate if steroid injections can be used instead of spinal surgery. Often pain in the legs is the result of the narrowing of the spinal canal due to ageing. During surgery, the back wall of the spinal canal is removed which creates more space around the spinal nerves which helps reduce nerve pain. The steroid injection reduces swelling and also can make more space around the spinal nerves in the canal, which also helps to reduce nerve pain.

During the double blinded randomized controlled trial, patients who experience leg pain due to the narrowing of the spinal canal and offered surgery, will either be injected with steroids or a sterile solution without steroids (placebo). The two groups of patients will be observed after the injection for 2 years to see if the injection of steroids leads to an improvement in the patient's pain, eliminating the need to have surgery as opposed to an injection without steroids. They hope to see that steroid injections can be used instead of surgery or at least can help to manage pain while waiting for surgery.

### Exploring zinc to improve insulin sensitivity and glucose metabolism in human insulin resistant skeletal muscle

Dr Stephen Myers  
\$28,554



Insulin resistance (IR) is a condition in which tissues such as the liver and skeletal muscle fail to respond to insulin. As a consequence, IR is a major global concern as the disorder is characterised by the failure of cells in the body to respond to insulin and therefore use glucose efficiently as an energy source. Prolonged IR can lead to Type 2 diabetes (T2D), a devastating disease that is intensifying worldwide. T2D is associated with related diseases including heart disease, obesity, mental illness, and cancer. Although IR is well-researched, its molecular mechanisms are still unclear.

Recently, studies involving zinc and the proteins that transport zinc in cells have been highlighted for their role in regulating genes and proteins involved in disease. Specifically, one zinc transporter designated as Zip7 is involved in regulating zinc in cells and thus preserving cell function. Accordingly, this project aims to understand the molecular mechanisms of Zip7 and how it can be used to reverse IR and could therefore be amendable to treatment options for T2D.

The direct benefits of this project will be a significant advancement in the knowledge contributing to the emerging concept and paradigm that zinc transporters are important components of maintaining physiological processes and cellular homeostasis and that dysfunctional zinc signalling contributes to IR and T2D progression. The project outcomes will also provide an innovative approach to understanding IR in humal skeletal muscle cells that could be amendable to clinically relevant novel therapies targeting IR and TD2.



### Optimising hyperglycaemia management in the Acute Medical Unit (AMU)

Fiona Swinton  
\$17,480

It is very common for people with diabetes to require admission to hospital, sometimes for reasons

that are unrelated to diabetes. In the Acute Medical Unit at the Launceston General Hospital, over 50% of the patients admitted have diabetes. There is evidence that people with diabetes admitted to hospital for most illnesses are more prone to develop complications and take significantly longer to recover. This is thought to be related to their blood glucose levels being higher than normal: being unwell, eating different foods, changes to medications, stress, pain and having reduced physical activity can all result in high blood glucose levels.

Managing diabetes in these circumstances can be difficult, and many doctors, especially junior medical staff, do not have enough experience in prescribing insulin to be able to keep the patient's blood glucose levels under good control. We plan to introduce tools into the Acute Medical Unit that will improve the way patients with diabetes are currently managed. These tools consist of a specialised chart for prescribing insulin (currently in use in NSW) and specific education on how to control glucose levels in acutely ill patients. We will measure the effect of this intervention by collecting information on blood glucose levels in patients in the Acute Medical Unit before and after the new tools are introduced, as well as surveying patients for their opinions on their diabetes care at both time points. We will also determine if our intervention has changed the attitudes of doctors to managing diabetes in their acutely ill patients. Our objective in carrying out this project is to improve outcomes for patients with diabetes who are admitted to the Acute Medical Unit. We anticipate that our intervention can achieve this, with significant benefits to the patients themselves and also potentially to hospital healthcare costs.



### CKD identification and management in northern Tasmanian General Practice, a pilot study of an audit based education intervention involving northern Tasmania's renal physicians

Dr Jan Radford  
\$46,625

Chronic Kidney disease (CKD) is expected to affect more and more Northern Tasmanians due to an increase in many of the same risk factors related to heart disease and diabetes. They are often related to an ageing population. Most people with chronic kidney disease do not know why they have the condition until it's at an advanced stage and, once lost, kidney function does not come back. Such a loss of kidney function leads to a poorer quality of life, an increased chance of death and the possibility of needing costly and time consuming treatments such as dialysis.

Preventing progression of chronic kidney disease from milder to advanced stages is best undertaken in General Practice. General Practitioners (GPs) may screen their at-risk patients, act on issues like controlling high blood pressure and avoid prescribing medicines that can harm the kidney. This study aims to find out how GPs understand and deal with chronic kidney disease by asking questions such as "Do they screen their patients for kidney disease, how do they manage the disease to minimise its progression to more severe disease, and how do they discuss the problem with their patients?" Understanding the answers to these questions will assist in future efforts to work with health care professionals to better prevent and manage CKD in our community.

The project team includes Dr Radford, and LGH nephrologists Dr Rajesh Raj, Dr Duncan Cooke and Dr Mathew Mathew.

# A Special Way to Give

Remembering the Clifford Craig Medical Research Trust in your Will is a special act of generosity.

By leaving a bequest, no matter how large or small, your gift helps us to continue our work to find new treatments, discover new cures, save lives and improve the health of the Tasmanian community long into the future.

If you have already left a gift to the Clifford Craig Medical Research Trust, please consider letting us know because we like to show our appreciation through the John Morris Society, a special group of people who have remembered the Trust in their Will.

For a confidential discussion about how you can support the Clifford Craig Medical Research Trust in this very special way, or if you are considering leaving a gift in your Will, contact Peter Milne, Chief Executive Officer on 6777 6010 or email [pmilne@cliffordcraig.org.au](mailto:pmilne@cliffordcraig.org.au)

### Tasmanians with Type 2 Diabetes Projections

