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BASIL HETZEL INSTITUTE FOR  
TRANSLATIONAL HEALTH RESEARCH  
**2010 RESEARCH REPORT**



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**Front Cover:** Adapted from original photograph of  
Professor Basil Hetzel taken by Basil Popowycz TQEH.



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Prof Basil Hetzel has generously donated his self portrait, *The Remedy*, by Adelaide artist Avril Thomas, to The Institute.

The painting was entered in the 2010 Archibald Prize. Ms Thomas chose to paint the portrait of Professor Hetzel because he 'dedicated his life to research'.

The painting is now hung in the atrium of The Institute.

We gratefully acknowledge Avril Thomas' permission to reproduce *The Remedy* throughout this report.





**Guy Maddern**  
**Director of Research**  
 The Basil Hetzel Institute for  
 Translational Health Research,  
 The Queen Elizabeth Hospital

## DIRECTOR OF RESEARCH REPORT

After the initial excitement of the move into the new facility, stock is now being taken of the direction, utilization and use of the facilities. With The Hospital Research Foundation being able to fund major research groups on grants of up to \$2.8 million a year, this has led to further consolidation and development of the groups working within the Basil Hetzel Institute. An audit of space and use was conducted in the second half of 2010 and a number of groups have identified space that could be redeployed to new groups wishing to establish themselves within the Basil Hetzel Institute. As a result of this, a number of discussions are now taking place with active research groups unable to currently find sufficient facilities for them to expand and develop their activities. 2011 will probably see a substantial number of new groups beginning to take hold within the Institute.

Research Day in 2010 also saw the unveiling of a portrait of Professor Basil Hetzel. This interesting portrait done by Avril Thomas shows the effects of iodine deficiency on brain development-mental deficiency, paralysis of legs and dwarfism in subjects from China, Indonesia and New Guinea.

The message of the painting is that all these effects can be prevented by the use of iodized salt during pregnancy.

Dr Basil S Hetzel AC was Michell Reader and then Foundation Michell Professor of Medicine, University of Adelaide at The Queen Elizabeth Hospital (1959–1968). It was at this time that his TQEH team, in collaboration with the PNG Public Health Department, was able to show that brain damage due to iodine deficiency could be prevented by correction of the iodine deficiency before pregnancy. The work led to confirmation by Dr Hetzel's team at the CSIRO of the

effect of iodine deficiency on brain development in animals. This led to Hetzel's reconceptualisation of the problem of iodine deficiency from goitre (an enlarged thyroid gland) to all the effects on growth and development, the iodine deficiency disorders (IDD).

IDD is now recognised by the World Health Organization (WHO) as the most common preventable cause of brain damage in the world today with in excess of 2 billion at risk from 130 countries.

The enormous support provided to the Research Institute by Basil Hetzel cannot be underestimated and his continuing enthusiasm and interest in the research and the researchers working at The Queen Elizabeth Hospital has been greatly appreciated. We can only hope that his ability to continue to visit and participate in our activities will continue well into the future.

At the end of 2010 an announcement was made regarding the new Director for the South Australian Health and Medical Research Institute (SAHMRI). Professor Steve Wesselingh is an outstanding appointment and it is to be hoped that he will very quickly bring clarity to the research directions and themes to be taken on board by SAHMRI.

The Basil Hetzel Institute is focussing on translational research. This is also apparently the direction SAHMRI will take. The possibilities for synergies and close relationships with SAHMRI are enormous. However, the research community waits for further clarity about not only what activities will be occurring within the new Research Institute but also how its ongoing endeavours will be funded. These are important questions, the answers to which are still not entirely clear.

GUY MADDERN



2010 RESEARCH PUBLICATIONS IN THE SPOTLIGHT

**Horowitz JD, Chirkov YY. Perhexiline and hypertrophic cardiomyopathy: a new horizon for metabolic modulation. *Circulation*. 2010;Oct 19;122(16):1547-9.**

*Circulation*. Impact Factor = 14.82

This editorial in *Circulation* relates to the recent demonstration that perhexiline improves energetics and symptomatic status in patients with hypertrophic cardiomyopathy. The Cardiology Unit has been pivotal in establishing the clinical utility and safety of this drug, which is now increasingly used for difficult cases of angina pectoris or heart failure.

**Grover PK, Hardingham JE, Cummins AG. Stem cell marker olfactomedin 4: critical appraisal of its characteristics and role in tumorigenesis. *Cancer and Metastasis Review* 2010; 29:761-775.**

*Cancer and Metastasis Review* Impact Factor = 9.345

Olfactomedin 4 (OLFM4), a member of the olfactomedin domain-containing proteins, is a glycoprotein with molecular weight of approximately 64 kDa. The protein is a “robust marker” of Lgr5+ stem cells and has been localised to mitochondria, nuclei and cell membranes. The bulk of OLFM4 exists in a polymeric form which is held together by disulfide bonds and carbohydrate inter-actions. Earlier studies revealed that the protein binds to lectins and cadherins, and facilitates cell–cell adhesion. Recent data demonstrated that the protein possesses several hallmarks of carcinogenesis. OLFM4 has also been purported to be an inducible resistance factor to apoptotic stimuli such as radiation and anticancer drugs. Here, we review its synonyms and classification, gene structure, protein structure, intracellular and tissue distribution, adhesive and antiapoptotic; mitotic; migratory and cell cycle regulatory characteristics. We also critically evaluate recent advances in understanding of the transcriptional regulation of OLFM4 and its upstream signalling pathways with special emphasis on carcinogenesis and outline future perspectives in the field.

**Peeters M, Price TJ, Cervantes A, Sobrero AF, Ducreux M, Hotko Y, André T, Chan E, Lordick F, Punt CJ, Strickland AH, Wilson G, Ciuleanu TE, Roman L, Van Cutsem E, Tzekova V, Collins S, Oliner KS, Rong A, Gansert J. Randomised Phase III study of Panitumumab with Fluorouracil, Leucovorin and Irinotecan (FOLFIRI) compared with FOLFIRI alone as second-line treatment in patients with metastatic colorectal cancer. *Journal of Clinical Oncology*. 2010;Nov 1;28(31):4706-13.**

*Journal of Clinical Oncology*. Impact Factor = 17.8

This paper explored the role of an anti-epithelial growth factor receptor (EGFR) antagonist in patients with advanced colorectal cancer who had already failed initial chemotherapy. All patients received a standard chemotherapy protocol, but half were randomised to also receive panitumumab. Of note, it was the first trial to retrospectively assess the impact on outcome based on KRAS status for this patient group, noting that KRAS mutation signals resistance to this class of drug. One previous study had focused on the same patient population but without KRAS status being assessed. The trial showed that in the KRAS wild type group an anti-EGFR agent, in this instance panitumumab,

was able to delay cancer progression and there was a trend to improvement in survival, although the subsequent cross over to anti-EGFR therapy in third line treatment is likely to have diluted the benefit.

**Brito-Mutunayagam R, Appleton SL, Wilson DH, Ruffin RE, Adams RJ. Global Initiative for Chronic Obstructive Lung Disease stage 0 is associated with excess FEV(1) decline in a representative population sample. *Chest*. 2010 Sep;138(3):605-13.**

*Chest* Impact Factor 6.36

Global Initiative for Obstructive Lung Disease stage 0 (GOLD-0), denoting an at-risk group of those with normal lung function but with chronic cough and sputum, was removed from the chronic obstructive pulmonary disease (COPD) guideline in 2007 based upon one study showing GOLD-0 represents a resolving group with no clear risk of progression to COPD. However, evaluation is being hampered by methodological issues including variations in sample populations and interpretation of the symptom criteria. The North West Adelaide Health Study, a representative longitudinal study of 4060 adults was able to address these issues. GOLD-0 was common (17% of subjects), but wasn’t stable over time and persisted in only 40%, and progressed to higher GOLD stages (COPD) in 1%. Persistent GOLD-0 was associated with smoking, depressive symptoms, and also with high levels of lung function decline and the metabolic syndrome in men. Resolving GOLD-0 was associated with smoking cessation, lowest levels of lung function decline, normal weight, and younger age.

Our results suggest GOLD-0 may identify a group at risk to progress to COPD over time and that the identification of people with persistent respiratory symptoms is important as intervention opportunities exist to reduce the chronic disease burden.

**Manning JA, Lewis M, Koblar SA, Kumar S. An essential function for the centrosomal protein NEDD1 in zebrafish development. *Cell Death & Differentiation*. 2010 Aug;17(8):1302-14**

*Cell Death & Differentiation* Impact Factor = 8.240

This paper investigated the developmental role of a core constituent of the centrosome, a component inside every cell of our bodies that is involved in organising the interior of our cells and also in cell division. The centrosome is the primary microtubule organising centre of the cell. It is composed of many proteins, some of which make up the core of the centrosome, whereas others are used for specific functions. Although the cellular roles of many centrosomal proteins are well defined, much less is known about their functions and the role of the centrosome in development. In this study we investigated the function of NEDD1, a critical component of the centrosome essential for microtubule nucleation, in zebrafish (*Danio rerio*) development. The zebrafish homologue of NEDD1 (zNEDD1) was cloned and found to have a similar localisation and function to mammalian NEDD1. We show that zNEDD1 is essential for survival, as causing a high level of knockdown of the zNEDD1 gene product was lethal in the embryonic stage of development. Partial knockdown of zNEDD1 caused abnormalities including an increase in dividing and dying cells. It also caused pronounced

physical defects in the developing brain, with a lack of defined brain structures, incomplete neural tube formation and a disorganisation of neurons. In addition, we show that a reduction in zNEDD1 resulted in the loss of gamma-tubulin at the centrosome. Our data presented in this paper demonstrate that zNEDD1 is critical for the recruitment of gamma-tubulin to the centrosome, and is essential for the proper development of zebrafish.

**van Leeuwen MT, Webster AC, McCredie MR, Stewart JH, McDonald SP, Amin J, Kaldor JM, Chapman JR, Vajdic CM, Grulich AE. Effect of reduced immunosuppression after kidney transplant failure on risk of cancer: population based retrospective cohort study. *BMJ*. 2010 Feb 11;340.**

*BMJ*.Impact Factor = 13.7

To compare cancer incidence in kidney transplant recipients during periods of transplant function (and immunosuppression) and after transplant failure (when immunosuppression is ceased or reduced). All cases of Kaposi’s sarcoma occurred during transplant function. Standardised incidence ratios were significantly elevated during transplant function, but not during dialysis after transplant failure, for non-Hodgkin’s lymphoma, lip cancer, and melanoma. For each of these cancers, incidence was significantly lower during dialysis after transplant failure. In contrast, standardised incidence ratios during dialysis after transplant failure remained significantly elevated for leukaemia and lung cancer, and cancers related to end stage kidney disease (kidney, urinary tract, and thyroid cancers), with thyroid cancer incidence significantly higher during dialysis after transplant failure. We concluded that the effect of immunosuppression on cancer risk is rapidly reversible for some, but not all, cancer types. Risk reversal was mainly observed for cancers with a confirmed infectious cause. Risk of other cancers, especially those related to end stage kidney disease, remained significantly increased after reduction of immunosuppression.

**Carroll RP, Segundo DS, Hollowood K, Marafioti T, Clark TG, Harden PN, Wood KJ. Immune phenotype predicts risk for posttransplantation squamous cell carcinoma. *J Am Soc Nephrol*. 2010 Apr;21(4):713-22.**

*J Am Soc Nephrol* Impact Factor = 7.7

Cutaneous squamous cell cancer (SCC) affects up to 30% of kidney transplant recipients within 10 years of transplantation. There are no reliable clinical tests that predict those who will develop multiple skin cancers. High numbers of regulatory T cells are associated with poor prognosis for patients with cancer in the general population, suggesting their potential as a predictive marker of SCC in transplant recipients. We assessed several risk factors for incident SCC during a follow-up of 340 days. We found that greater than 35 peripheral FOXP3+CD4+CD127low regulatory T cells/ul, <100 natural killer cells/ul, and previous SCC each significantly associated with an increased risk for new SCC. In addition, the ratio of CD8/FOXP3 expression was significantly lower in SCC excised from transplant recipients compared with matched SCC from non-transplanted persons, and associated with development of new SCCs. In summary, monitoring of the immune system can predict development of SCC.

**Cobb BL, Fei Y, Jonsson R, Bolstad AI, Brun JG, Rischmueller M, Lester SE, Witte T, Illei G, Brennan M,**

**Bowman S, Moser KL, Harley JB, Sawalha AH (2010). Genetic association between methyl-CpG binding protein 2 (MECP2) and primary Sjogren’s syndrome. *Ann Rheum Dis*. 2010;69(9):1731-2.**

*Ann Rheum Dis*.Impact Factor = 8.111

Primary Sjögren’s syndrome (pSS) is a relatively common systemic autoimmune disease, affecting predominantly women. This study reports an association between a haplotype tagging SNP in the methyl-CpG binding protein 2 gene (MECP2, Xq28) and a large cohort of pSS patients. The implications of this finding are two-fold. Firstly, this same association has been previously reported, and replicated, in Systemic Lupus Erythematosus (SLE), another systemic autoimmune disease, affecting predominantly women. The strong clinical, serological and genetic overlap between these two diseases suggests some common pathogenic pathways. Secondly, MECP2 is critically involved in DNA methylation-induced transcriptional silencing, and this genetic association strongly implicates abnormal epigenetic modification/transcriptional regulation in the pathogenesis of systemic autoimmune disease.

**Hewett PJ, Frizelle FA. Does laparoscopic colectomy have a higher intraoperative complication rate than open colectomy? *Annals of Surgery* 2010; 251: 578.**

*Annals of Surgery* Impact Factor 7.9

This letter was drafted in response to the assertion that there was evidence of an increased rate of complications for laparoscopic colorectal surgery. It was suggested that this could have been caused by the initial design of atraumatic graspers or more likely that these findings are a function of study design. The study comparing outcomes of laparoscopic versus open colon resection for cancer relied on an independent observer recording events during the operative procedure. Minor episodes of haemorrhage or colonic serosal tears are more readily identified and recorded by the observer in the visually democratic theatre of laparoscopic assisted surgery than from the personal space that exists between a surgeon and a laparotomy incision, where correction of minor events can occur with such ease that they pass unnoticed by the observer. As there will be ongoing concerns by some about laparoscopic colorectal resections it is important that surgeons undertake and publish well run, objective, prospective audit of laparoscopic assisted colectomy including intraoperative complications which would continue to give contemporary information in a field which is technology dependent and the technology is still in evolution.

**Prow TW, Chen XF, Prow NA, Fernando GJP, Tan CSE, Raphael AP, Chang D, Ruutu MP, Jenkins DWK, Pyke A, Crichton ML, Raphaelli K, Goh LYH, Frazer IH, Roberts MS, Gardner J, Khromykh AA, Suhrbier A, Hall RA, Kendall MAF. Nanopatch-Targeted Skin Vaccination against West Nile Virus and Chikungunya Virus in Mice. *Small* 2010;6: 1776-1784.**

*Small* Impact Factor = 6.17.

This publication shows for the first time, the use of the Nanopatch for delivery of an experimental vaccine and a DNA vaccine. The results are significant because the Nanopatch enables the use of small quantities of vaccine. This resulted in protection from emerging pathogens by targeting the vaccine to Langerhan cells of the skin.

DEPARTMENT  
OF ANAESTHESIA



Dr Roelof van Wijk

Research Focus

- The effect of sevoflurane on Qtc interval in patients with type 2 diabetes undergoing laparoscopic surgery.
- A comparison of epidural vs TAP block for post operative pain relief in laparotomy.
- An internalised multicentre double blind placebo controlled trial on the effectiveness of SABER-bupivacaine in laparoscopic assisted colectomy. (A collaborative study with the Department of Surgery.)

OVERVIEW

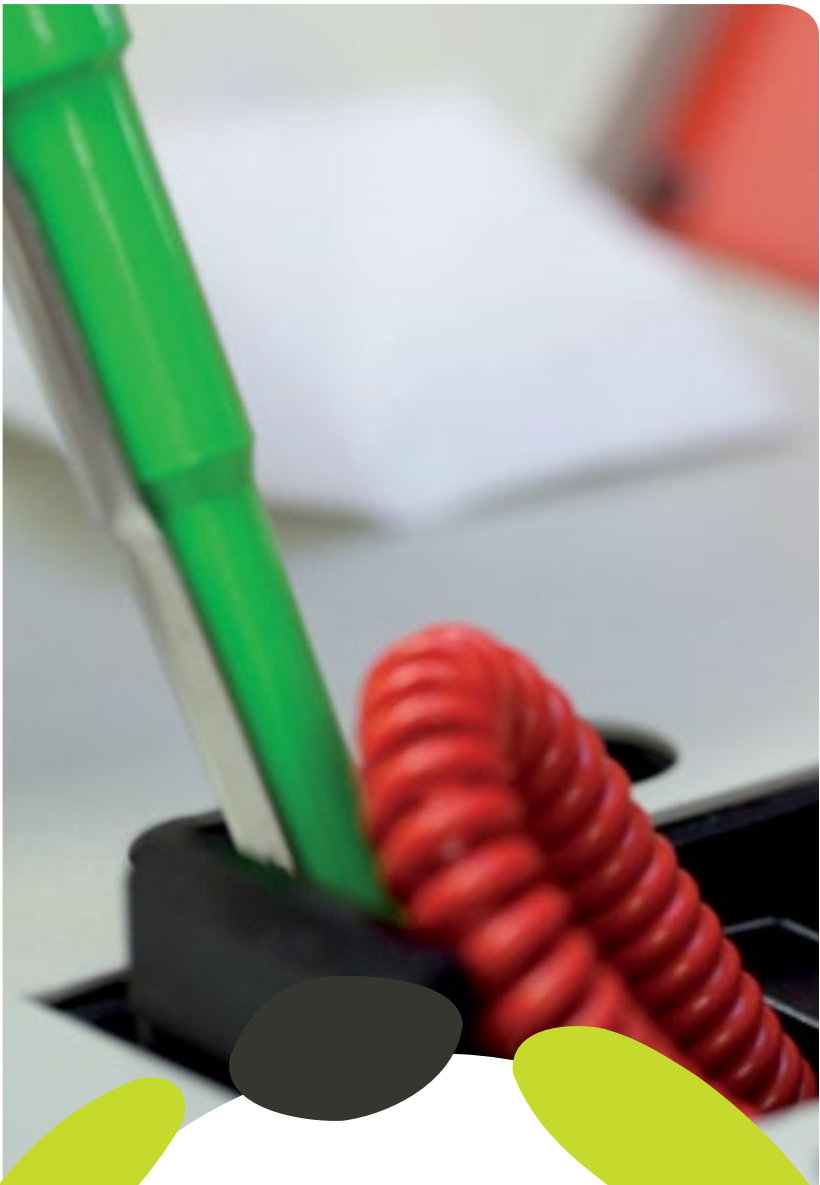
The research activities in the Department of Anaesthesia, The Queen Elizabeth Hospital, are focused on new techniques to provide safe and effective post operative pain relief: A new slow release local anaesthetic gel instilled into wounds and effective for 72 hours is showing great promise. Similarly, a simple and safe abdominal nerve block procedure is being compared to a standard epidural technique.

In collaboration with the Department of Psychiatry we are also looking at predictors of pain after surgery, particularly the effect of catastrophizing (thinking the worst) and whether this can be modified with psycho-therapeutic support.

Patient safety is also the focus of our research. It was recently discovered in our department that volatile gaseous anaesthetics can change electrical conduction times within the heart – particularly in diabetic patients, so more detailed work has commenced in this area.

Plans for future research includes a study evaluating the accuracy of airway assessment and the predictability of difficult intubation in Australian Aborigines, a comparison of the Parker ET tube and standard portex tube using the Pentax video laryngoscope. In addition we also plan to be involved in POISE 2 international trial which will assess the impact of clonidine and acetyl-salicylic acid in patients having non-cardiac surgery.

With the advancing age and complexity of our surgical patients, the Department of Anaesthesia will continue to explore new and innovative ideas to improve their safety and wellbeing.



Research in the Department of Anaesthesia is focused on techniques to provide safe and effective pain relief for patients after surgery. Options for more effective pain relief being explored by the Department include a safe, simple abdominal nerve block procedure and a new local anaesthetic gel which can be instilled into wounds.

The department also focuses on patient safety research as a high priority. The departments’ recent discovery that gaseous anaesthetics can change electrical conduction times within the heart, often leading to rhythm abnormalities with sometimes serious consequences, has inspired further exploration of gaseous anaesthetics.

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## CARDIOLOGY UNIT



**Professor John Horowitz**

### Research Focus

- The Cardiology Unit, The Queen Elizabeth Hospital (TQEH) undertakes its research largely in association with other TQEH researchers in Clinical Pharmacology and Vascular Surgery, and researchers in the Physiology Department, University of Adelaide, within the TQEH Vascular Disease and Therapeutics Research Group.
- The overall research focus of the enlarged group is on development of new therapeutic modalities for cardiovascular diseases, utilising a translational, "bench to bedside" approach.

### OVERVIEW

#### Early Reperfusion Therapies for Acute Myocardial Infarction (Prof J Beltrame)

The emergency treatment of acute myocardial infarction has undergone a rapid evolution in the past 25 years with coronary artery angioplasty and stenting being considered the optimal therapy to re-establish coronary patency. Clinical studies being undertaken at TQEH are examining pharmacologic therapies which may further enhance these mechanical treatments.

The IVANA trial (Intravenous Verapamil and Nitrates in Acute Myocardial Infarction) is a multi-centre study supported by the National Heart Foundation and co-ordinated by TQEH. This novel study will establish if readily available vasodilator therapy (Verapamil and Nitroglycerin) promptly restores coronary artery patency in patients with ST elevation myocardial infarction. Patient recruitment was completed in December 2009 and data analysis is in progress for this potentially ground-breaking study.

The early use of N-acetylcysteine in acute myocardial infarction (NACIAM) study was initiated with the completion of the IVANA study. This study examines the cardio protective benefit of N-acetylcysteine in ST elevation myocardial infarction by ascertaining if it reduces infarct size.

#### Mechanisms and Therapeutics of Coronary Microvascular Disorders (Prof J Beltrame)

The coronary slow flow phenomenon is a coronary microvascular disorder that was initially characterised at TQEH. Our studies demonstrated that these patients frequently manifest as an acute coronary syndrome yet seldom experience an acute myocardial infarct. However they are considerably disabled, as many patients experience recurrent chest pain that responds poorly to conventional vasodilatory anti-anginal agents.

In isolated vessel studies, we have shown that microvessels respond differently to large vessels and thus we must re-examine the vascular pharmacology of these vessels if we are to develop new therapies for these microvascular disorders. Our basic vasomotor research program is exploring novel vasomotor therapies including the use of statins, endothelin blockers, rho-kinase inhibitors, and calcium T-channel blockers.

Reflecting the translational nature of our basic research studies into clinical outcomes, we have recently evaluated the clinical benefits of an endothelin blocker (bosentan) in preventing angina in patients with the coronary slow flow

phenomenon. The last of the required patients have been recruited into this important study and the results should be available early in the new year.

In addition to the above basic and clinical studies, our research has been evaluating the morbidity associated with microvascular disorders, specifically the impact on symptom status and quality of life. These original studies will provide important insights into the health burden of these microvascular disorders.

#### Impact of Coronary Heart Disease on Quality of Life (Prof J Beltrame)

The above quality of life studies have been extended to patients with obstructive coronary artery disease and have already provided significant insights into populations with angina. In particular, our observational studies at TQEH have corroborated a major clinical trial of angina therapies. A particular focus is that of the occurrence of myocardial infarction in women under 50 years of age.

#### The Clinical Utility of Coronary CT Angiography (Prof J Beltrame)

The non-invasive assessment of coronary artery stenoses by CT angiography has considerably advanced in recent years. How to optimally utilise this technology in routine clinical practice remains unclear. In close collaboration with TQEH Radiology Department, we are investigating the clinical utility of coronary CT as compared with conventional non-invasive imaging techniques in reducing the need for additional investigations such as invasive coronary angiography.

#### Depression in Patients with Coronary Heart Disease (Prof J Beltrame)

In collaboration with the University of Adelaide Department of Psychiatry at TQEH, studies are being undertaken to examine the impact of depression on patients with coronary heart disease. Therapeutic strategies to manage these patients are also being assessed.

Currently, in conjunction with the Department of Psychiatry and University of South Australia researchers, we are examining the anti-depressant effects of fish oils in patients with coronary artery disease.

#### Management of refractory angina pectoris (Prof J Beltrame)

These investigations address the impact of persistent angina pectoris on quality of life of medically treated patients, and evaluate new forms of pharmacotherapy, including the bradycardic agent Ivabradine and also endothelin receptor antagonist.

The Cardiology Unit is at the forefront of developing new treatments for heart disease which is the main cause of disability and death in Australia. The unit is undertaking research into the most common types of heart disease include angina pectoris, heart attacks, heart failure and atrial fibrillation.

The Unit has also focused on previously neglected problems such as angina caused by coronary artery spasm, hypertrophic cardiomyopathy, valvular heart disease and heart disease associated with polycystic ovaries.

Another interest is Tako Tsubo cardiomyopathy, or 'broken heart syndrome', which is a recently recognised type of cardiac emergency in older women.



**Pathogenesis of aortic stenosis (Prof J Horowitz, Assoc Prof J Kennedy, Dr O Akbar Ali, Dr Y Chirkov, Dr D Ngo, Dr A Sverdllov)**

Aortic stenosis (AS) is the most common cause of valvular heart disease in the Australian population. It affects individuals particularly as they age. We are trying to develop therapies to retard the progression of aortic stenosis and thus decrease the need for valve replacement. Components of the research in this regard include creation of a tissue culture model of aortic valve disease, development of aortic stenosis in rabbits treated with vitamin D supplements, and preparation of a human data base for patients with early stages of aortic stenosis ("aortic sclerosis").

We have recently reported that the ACE inhibitor Ramipril retards the progression of AS in the rabbit model, the first report of successful pharmacotherapy for AS. Studies in a cohort of ageing normal subjects have identified dysfunction in the aortic valve endothelial layer and of circulating platelets as potential target areas in such patients. A follow up study is being undertaken to identify patients at risk for rapid progression of disease. We have also identified the congenital condition of bicuspid aortic valve as a potential model of valve disease resulting from lack of nitric oxide effect. We are also evaluating the possible effects of a number of agents in improving outcomes in aortic stenosis. This includes a clinical study of the effects of perhexiline (the IMPASS investigation).

**Metabolic anti-ischaemic agents (Assoc Prof J Kennedy, Prof J Horowitz)**

Our recent research has shown that perhexiline, already known to be effective in relieving angina in patients who are unresponsive to other therapies, also improves left ventricular function in patients with heart failure. The relationship of this improvement to our recent demonstration that perhexiline markedly improves the efficiency of oxygen utilisation of the myocardium, as well as suppressing inflammatory changes in white blood cells, valvular cells and endothelial cells, is under investigation. The focus of current investigation is the finding that perhexiline improves cardiac function in patients with severe heart failure: We are examining potential links between the anti-inflammatory and metabolic modulating effects of the drug. We are also interested in evaluating the effects of perhexiline as an adjunct to reperfusion therapy in acute myocardial infarction. We have therefore developed a regimen for acute treatment of patients with evolving myocardial infarction with perhexiline.

**The Role of p53 in Heart Failure (Dr A Holmes)**

The transcription factor p53 has important roles in regulating gene expression of key cellular processes such as oxidative stress, mitochondrial respiration, glycolysis, and fibrosis. Studies being conducted at TQEH will examine if myocardial p53 function contributes to changes in these cellular processes in ageing and heart failure.

**Optimising the effects of Nitrates and Nitric Oxide in arteries and platelets (Prof J Horowitz, Dr Y Chirkov, Assoc Prof J Kennedy)**

The basis for this research is related to the following observations. Firstly, nitric oxide, which is released from the endothelial lining of blood vessels and prevents spasm and thrombosis of these vessels, becomes less effective in patients who are prone to the development of coronary events. This phenomenon, of nitric oxide resistance, has been shown by our group to be a major prognostic marker. The second related observation is that drugs used in the treatment of heart disease such as nitroglycerin, (a nitric oxide donor) become less effective with the passage of time, a phenomenon known as nitrate tolerance.

We are interested in developing strategies to circumvent both of these problems. We have demonstrated that a number of forms of therapy calculated at reducing redox stress improve tissue responsiveness to nitric oxide. Such therapeutics include ACE inhibitors, perhexiline, possibly cholesterol lowering, and certainly improved diabetic control in diabetics.

We are also investigating the potential role of the nitroxyl anion as a means of optimising vasodilator function. Since we have previously shown that responsiveness of tissues to nitric oxide may be attenuated in high risk groups of patients, we wish to examine potential means for circumventing this problem. Both novel donors of nitroxyl anion and "direct" activators of soluble guanylate cyclase are under investigation.

**Platelet and Endothelial Dysfunction in the Polycystic Ovary Syndrome (Prof J Horowitz)**

The polycystic ovary syndrome is a common cause of menstrual disturbances and impaired fertility. Many people with polycystic ovary syndrome are obese and there is an increased risk of diabetes. It has been suggested for some time that polycystic ovary syndrome may be a risk factor for the development of heart disease in women, but it has been felt that this occurs via the associated obesity, insulin

resistance and diabetes. We have shown that young women with polycystic ovary syndrome exhibit abnormalities of platelet and blood vessel function (but not of endothelial progenitor cell production) irrespective of body weight. These ongoing studies will seek to investigate the implications of therapy and the ageing process on cardiac risk profile in this group of individuals. In particular, we will evaluate associations between polycystic ovary syndrome, vascular and platelet function and endothelial progenitor cell counts in various subsets of patients.

**Non-pharmacological interventions in Heart Failure and atrial fibrillation (Prof S Stewart, Prof J Horowitz)**

We have previously shown that outcomes in patients with chronic heart failure can be improved by screening them for short term deterioration during the early period of time after discharge from hospital. The success of such interventions has led to the wide spread clinical utilisation of nurse lead outreach programs for patients with chronic heart disease. The nature of these programs varies somewhat, and it is important to delineate the optimal program for patient outcomes. We have demonstrated that the protocol developed at TQEH is associated with reduced admissions as well as improved survival over a 10-year period. An ongoing research program will compare this protocol with related forms of clinic-based intervention in patients with chronic heart failure.

We have also extended this approach to the management of patients admitted to hospital with atrial fibrillation. In this latter circumstance, we are attempting to determine whether biochemical markers of vascular dysfunction are predictive of risk of adverse events in atrial fibrillation.

**Pathogenesis of Tako-Tsubo Cardiomyopathy (TTC) – "Broken Heart Syndrome" (Prof J Horowitz, Prof J Beltrame, Dr S Unger, Assoc Prof J Kennedy, Dr Y Chirkov)**

Tako-Tsubo cardiomyopathy is an uncommon but interesting condition that mimics acute myocardial infarction although there is no evidence of coronary artery disease. The condition often occurs in women and is typically precipitated by severe emotional stress. While the condition maybe life threatening in its acute presentation, the long term prognosis is generally good. Utilising basic laboratory studies and clinical cardiac magnetic resonance imaging techniques, important advances have been made at TQEH in understanding the mechanisms responsible for this disorder.

A recently initiated, NHMRC-funded research project will set out to improve diagnostic methodology for such patients, evaluate the risk of peroxynitrite formation in the pathogenesis of the condition, and determine whether there is actually complete recovery from attacks. We have also identified the release of N-terminal pro-BNP as a prominent feature of acute attacks of TTC. Further studies are underway to refine diagnostic methodology for this condition.

**Role of Thioredoxin/TXnip system in human disease (Prof J Horowitz, Assoc Prof J Kennedy, Dr D Ngo)**

We have recently demonstrated that development of aortic stenosis in a rabbit model is associated with increased concentrations of the intracellular pro-oxidant thioredoxin-interacting protein (TXnip). We are now evaluating the potential role of TXnip in other models of aortic stenosis and in other cardiovascular disease states.

**Major Enabling Technologies:**

1. Assay of asymmetric dimethylarginine (ADMA). This assay, developed by Ms Tamila Heresztyn, provides a marker of the function of the vascular endothelium. We recently reviewed the importance of this assay for all cardiac studies examining both physiology and prognostic markers.
2. Magnetic Resonance Imaging (MRI) of the Heart. In collaboration with TQEH Radiology Department we have developed a considerable cardiovascular MRI program with over 1,000 studies performed. Increasingly this technology is being utilised for our clinical research studies to identify infarct size and perfusion abnormalities.
3. Echocardiographic Backscatter. This technique, initially utilised for the quantitation of early aortic stenosis in a study from TQEH, is a vital tool in enabling us to follow the progression of aortic valve disease in both animal models and in the general population.
4. Basic Vasomotor Studies. In collaboration with TQEH Vascular Surgery and the University of Adelaide Physiology Department, we have an extensive basic research program to evaluate human vascular structure and function. This includes identification of calcium channels, isolated vessel reactivity and vessel responses in a beating heart.
5. Clinical Vasomotor Studies. To complement these basic studies we have several clinical



methodologies including endothelial function testing, evaluation of coronary vasospastic responses, coronary Doppler wire and pressure wire studies.

6. Endothelial Progenitor Cell Function. In collaboration with the Renal Unit of TQEH, we are developing methods for quantitating the release from the bone marrow of endothelial progenitor cells, which play a major role in the ongoing repair of the vasculature. Disorders of endothelial progenitor cell function postulated in association with most forms of cardiac disease and an additional therapeutic objective should be optimisation of EPC release.

COLLABORATORS

- 1. Department of Physiology, University of Adelaide
- 2. Department of Medicine, St Vincent’s Hospital, Melbourne
- 3. Department of Epidemiology & Preventative Medicine, Monash University, Melbourne
- 4. Cardiology Department, Aberdeen University, UK
- 5. Department of Obstetrics and Gynaecology, University of Adelaide
- 6. Baker Research Institute, Melbourne
- 7. Department of Biochemistry, University of Hannover, Germany

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POSTGRADUATE STUDENTS

PhD CANDIDATES

A Chan MBBS FRACP	The polycystic ovary syndrome and coronary risk
S Copley BSc(Hons)	The Role of RHO Kinase Inhibitors and Statins in the Coronary Slow Flow Phenomenon
N Cutri BSc(Hons)	The Characteristics of Microspastic Angina
R Dreyer BSc(Hons)	Variation in Recovery: Role of Gender on Outcomes of Young Acute Myocardial infarction (AMI) – Patients. The VIRGO Study
N Ghaffari BSc(Hons)	The Modulation of Vasomotor Responses by Statin Therapy
N Hurst MBBS FRACP FRACP	The effect of the nitric oxide and prostacyclin pathways on platelet aggregation
L Jesuthasan MBBS FRACP	Coronary and myocardial perfusion studies of the coronary slow
V Kopetz BSc(Hons)	Biological determinants of the coronary slow flow phenomenon
G Mahadevan MBBS FRACP	The pathophysiology and potential therapeutics of diastolic heart failure
C Neil MBBS FRACP	Is the therapeutic induction of bradycardia beneficial in heart failure? Implications for cardiac contractility
K Rajopadhyaya BSc(Hons)	Molecular Physiology of Vascular Function
A Sverdlov MBBS FRACP	Pathogenesis of aortic sclerosis
R Tavella BSc(Hons)	Quality of life, depression and cardiac disease
N Procter BSc(Hons)	Molecular markers of thrombotic risk in atrial fibrillation
D Calvanese BSc(Hons) Class IIA Honours	The evaluation of cardiovascular health in chronic methamphetamine users
A Jaghoori BSc(Hons)	Comparison of selective and dual endothelin blockade on Simvastatin effect on endothelin vasoconstrictor response Class I Honours
A Amarasekare BPharm	Does vitamin D deficiency effect endothelial dysfunction of diabetic obese patients
Y Chan BSc(Hons)	ET-1 vasoconstriction involves IP3, voltage-gated and soc channels

MASTERS CANDIDATES

K Mishra MD FRACP	Pathogenesis of aortic valve calcification
NS Kangasingam MBBS	The role of oxidant stress in a cellular model of aortic stenosis



## GRANTS

SA Heart Foundation. Chronic refractory angina – defining its characteristics and exploring endothelin blockade as new potential therapy. (\$1,327,652) 2011-2014, Beltrame JF.

The Hospital Research Foundation. (Strategic Initiatives Funding Program grant) TQEH Vascular Disease and Therapeutics Research Group: towards improved outcomes for vascular disease. (\$250,000 2010) 2009-2011, Horowitz JD, Beltrame JF, Morris RG, Fitridge RA, Zeitz CJ, Wilson DP, Sallustio BC, Chirkov YY, Kennedy JA, Cowled PA.

National Heart Foundation/SA Department of Health (ID# CR 09A 4249). (South Australian Cardio Vascular Research Development Program Fellowship) Endothelin as a Therapeutic Target in Ischaemic Vascular Disorders. (\$150,000 2010) Beltrame JF.

NHMRC. (Project grant # 627245) Determinants of occurrence and progression of aortic stenosis in bicuspid and tricuspid valves. (\$178,962 2010) Horowitz JD.

BUPA Australia. The Clinical Utility of CT Coronary Angiography in the Assessment of Patients with Intermediate Probability of Coronary Artery Disease. (\$100,000 2010) 2008-2010, Beltrame JF, Sebben R.

Department of Health. (Strategic Health Research Program) Health, economic, psychological and social benefits of educating carers. (\$486,990 2009-2010) Phillips P, Jones T, Eckerman S, Worthley S, Beltrame JF, Chew D, Arstall MA, Cafarella P.

National Heart Foundation of Australia. The prevalence of heart failure in Aboriginal communities in Central Australia: The Heart for the Heart Study (Stage 1). (\$129,000 2010) 2008-2010, Brown A, Stewart S, Zeitz C, Krum H, Lee G, McGrady M, Carrington M.

National Heart Foundation of Australia. The Mevalonate and Rho kinase Pathways: Combination Therapy Targeted at the Treatment of Microvascular Dysfunction. (\$64,000 2010) 2009 – 2010, Wilson DP, Beltrame JF, Horowitz JD.

National Heart Foundation (South Australia). (Tom Simpson Trust Fund) Equipment funding to upgrade SphygmoCor system to measure arterial stiffness and endothelial function for Vitamin D and heart health research. (\$10,000) 2010 – 2011, Ngo DT.

NHMRC. (Project grant #472642) Novel cGMP-Based Therapies Prevent Left Ventricular Remodelling. (\$197,250 2010) 2008-2010, Ritchie RH, Horowitz JD, Kemp-Harper BH.

NHMRC. (Health Services Research Program # 418967) Which Heart failure Intervention is most Cost-effective and consumer friendly in reducing Hospital care: The WHICH? Study. (\$146,090 2010) 2008-2012, Stewart S, Scuffham P, Marwick T, Horowitz JD, Krum H, Davidson P, Peter M, Reid C.

NHMRC. (Project Grant) Tako-Tsubo cardiomyopathy: pathogenesis and natural history. (\$79,000 2010) 2009 – 2011, Horowitz JD, Beltrame JF, Selvanayagam J, Frenneaux M, Tsikas D.

Rebecca L Cooper Medical Foundation. (Project Grant) Vitamin D deficiency and endothelial dysfunction in people with diabetes. (\$16,000 2010) 2009-2010, Ngo DT.

## AWARDS

K Rajopadhyaya. Awarded the International Society for Heart Research Young Investigator prize at the Cardiac Society meeting in for her research focusing on Endothelin-1 signalling in vasculature.

R Dreyer. The Hospital Research Foundation Award, Clinical Higher Degrees and Registrars Category Presentation, The Queen Elizabeth Hospital Research Day, Adelaide October 2010.

## ACKNOWLEDGEMENTS

The Cardiology Unit wishes to thank the Anne-Marie Trimboli Trust, the NHF, NHMRC, The Hospital Research Foundation, Rebecca L Cooper Foundation, South Australian Department of Health and the University of Adelaide for their valuable project, research staff and student support.

## CLINICAL PHARMACOLOGY UNIT



**Professor Ray Morris**

## Research Focus

- Translating laboratory skills in therapeutic drug monitoring to the delivery of optimal testing for clinical care
- Perhexiline genetics and metabolism
- Studies involving the drugs used in organ transplantation to avert rejection
- Monitoring opportunities for cancer drugs
- Local anaesthetic drugs in post-operative pain management and fast-track surgery

## OVERVIEW

The Laboratory maintains 2 primary objectives:

(a) To provide routine drug assay services to hospital in-patients and out-patients, as well as a spectrum of other services in SA and beyond. We are very grateful for the continued strong support from the medical staff, particularly Renal Unit (RAH) and Cardiology (TQEH), who use our services.

(b) The medical research role inter-weaves with the diagnostic role as we undertake translational care projects that have positive impact on the care delivered to our patients. This includes both the drugs that we also assay for routine diagnostic purposes, as well as other drugs used clinically. These are discussed in more detail below.

Clinical Pharmacology research is aimed at improving the medical care of patients by increasing knowledge of medicines and their use. The department aims to deliver better outcomes for patients by increasing drug knowledge, enhancing the positive clinical benefits of drugs and reducing negative side-effects. In particular, the department aims to better understand the reasons why people respond differently to drugs and introduce ways to assist clinical care by making drug dosages tailored for the individual patient, rather than a 'one-size fits all' approach. Currently, this research is focused on the drugs used in organ transplantation, heart disease drugs, and pain management following intestinal surgery.





ANGINA TREATMENT

The department maintains an active research interest in the treatment of angina, particularly in patients receiving perhexiline, an older and very effective drug which can, however, cause serious liver and nerve toxicity if dosages are not individualised based on the testing provided in our lab. Our current research aims to better understand the mechanisms of action and fate of perhexiline in the body in order to translate this understanding into safer clinical use, and to develop new therapies for the treatment of heart diseases such as angina. The project is currently supported by a PhD student, Mr John Licari, whose work is investigating the development of new drugs for the treatment of angina, based on our growing knowledge of how perhexiline works. In addition, the project is now attracting international collaborators, with Mr Nigel Drury, Cardiothoracic surgeon, from the Queen Elizabeth Hospital, Birmingham conducting part of his PhD studies in our laboratory, investigating the potential clinical use of perhexiline during heart surgery.

TRANSPLANTATION THERAPY

Our laboratory is part of a SA/NT team involved in a long-term strategy to provide pancreatic islet cell transplantation for the treatment of type-1 diabetes. Specifically, our role is to provide the national drug monitoring service in the national consortium. We acknowledge the hard work of the Juvenile Diabetes Research Foundation (JDRF) in making this funding available.

Clinical Pharmacology received major funding for 2009-2011 from the National Health and Medical Research Council to support a research scientist, Mr Ben Noll, who is assisting in a wide-ranging project investigating

overall genetic factors that may influence the efficacy of immunosuppressant drugs and, hence, the incidence of rejection or organ toxicity. The recruitment of 200 kidney transplant recipients and their donors is now almost complete, and the clinical, biochemical and genetic data we collect will be used to establish whether it may be possible to further reduce rejection and loss of the transplanted organ by individualising each patient’s immunosuppressant medication based on their genetics and the genetics of the transplanted organ. Part of this work now also involves an international collaboration with Erasmus University Medical Centre, Rotterdam, Netherlands.

Our work in this field has been greatly enhanced by the very significant purchase of a new Mass Spectrometer for this research, largely funded by the generous support of The Hospital Research Foundation. We are greatly indebted to The Foundation team for their work that supports many aspects of our work, including this equipment.

CANCER DRUGS

A relatively new area of research for the department is the dose individualisation of chemotherapeutic agents, in particular the drug Docetaxel used in the treatment of breast and prostate cancer. Dr Westley has joined with a group of scientists and clinicians from the states Universities and Hospitals to form a Therapeutic Drug Monitoring – Oncology Research group. The studies are investigating how current the “one dose fits all” policy of chemotherapeutic agents compares to a targeted concentration approach with the ultimate aim to reduce the adverse side effects associated with this drug whilst maintaining its actions.

LOCAL ANAESTHESIA AND ‘FAST-TRACK’ SURGERY

This PhD project is directed at reducing or eliminating the use of narcotic analgesics for pain relief following either laparoscopic or open abdominal surgery. A commercial device called PainBuster® is used to slowly trickle local anaesthetic into muscle layers near to the surgical incision site for 4 days following surgery. We have studied 80 patients undergoing abdominal surgery for cancer resection. Through this year laboratory work and statistical analysis has been undertaken to further understand the handling of the infused local anaesthetic drug. This project also forms part of a ‘fast-track surgery’ protocol that is aimed at a win-win for the patient and health-care system by assisting with early recovery post-surgery, earlier discharge and reducing length of hospitalisation. This work is exciting in that our research can translate directly into patient benefits.



POSTGRADUATE STUDENTS

PhD CANDIDATES	
J Licari BHSc(Hons)	Investigation of the pharmacological effect of (-)- and (+)-perhexiline
S Krishnan BHSc(Hons)	The clinical evaluation of fast-track surgery including extended local anaesthetic infusion for post-operative pain

GRANTS

Juvenile Diabetes Research Foundation. (Program grant) South Australian and Northern Territory Pancreatic Islet Isolation Program (\$377,084 2009-2010) 2006 – 2010, Russ GR, Coates PTH, Morris RG, Sallustio BC, and all other members of SANTIP.

NHMRC. (Project grant) Pharmacogenomics of Renal Transplantation (\$114,750 2010) 2009-2011, Sallustio BC, Collier JK, Morris RG, Somogyi AA.

The Hospital Research Foundation. (Strategic Initiatives Program grant) South Australian Translational Centre for Renal Research (\$250,000 2010) 2009-2011, Russ GR, PT Coates, S McDonald, Sallustio BC, Morris RG.

The Hospital Research Foundation. (Strategic Initiatives Program grant) Vascular Diseases and Therapeutics Research Group: Towards improved outcomes for Vascular Disease (\$250,000 2010) 2009-2011, Beltrame JF, Morris RG, Fitridge RA, Zeitz CJ, Wilson DP, Sallustio BC, Chirkov YY, Kennedy JA, Cowled PA.

The Hospital Research Foundation/University of Adelaide Faculty of Health Sciences Divisional Postgraduate Scholarships (\$27,236 2010) 2007-2010 Licari J, Krishnan S.

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DERMATOLOGY UNIT



Dr Warren Weightman

Research Focus

- Clinical trials of new treatments to reduce actinic keratoses and skin cancers in renal transplant patients

The Dermatology Unit has a special interest in the treatment of skin cancers both in normal and transplant patients. The Unit has undertaken clinical trials in the treatment of Actinic Keratoses (pre-malignant lesions) and Basal Cell Cancers (non-melanoma skin cancers) using Photodynamic Therapy, a treatment where red light activates a drug applied to the skin, and Aldara cream. Both of these treatments have subsequently been approved for treatment of these disorders in the Australian population.

In 2010, the Unit undertook a significant study in renal transplant patients showing that the retinoid (Vitamin A derivative) Acitretin reduces the number of Squamous Cell Cancers (non-melanoma skin cancers). This drug is now used widely around the world for this purpose. It has also looked at the benefit of Sirolimus, a transplant rejection drug, in reducing Squamous Cell Cancers in renal transplant patients in a multicenter international trial.

The Unit is currently doing a trial to assess a new treatment to prevent Squamous Cell Cancers in renal transplant patients.

The Unit has also been involved in trials for new treatments for psoriasis and eczema.

OVERVIEW

The Dermatology Unit assesses and treats skin disorders at The Queen Elizabeth Hospital (TQEH) in both outpatients and inpatients and teaches medical students, dermatology registrars, general practitioners and other doctors employed at TQEH. The unit is also involved in clinical research with an emphasis on different methods of treatment and prevention of sun damage and skin cancer. Dr Warren Weightman is a board member of the Australian Society of Dermatological Research.

The Dermatology Unit have been involved in four studies during 2010.

The first study is also in association with the Renal Unit of TQEH. This is a 12 month open-label, randomized, multi-centre, sequential cohort, dose finding study to evaluate the efficacy, safety and tolerability of oral AEB071 versus Neoral in combination with Certican, Simulect and corticosteroids in de novo adult renal transplant recipients. The Dermatology Unit is doing the safety skin assessments.

The second study is in association with the Department of Neurology with the dermatology unit doing safety skin assessments.

The trial is a 24 month, double-blind, randomized, multi-centre, placebo-controlled, parallel-group study comparing efficacy and safety of FTY720 1.25mg and 0.5mg administered orally once daily versus placebo in patients with relapsing-remitting multiple sclerosis.

The third study is a multicenter, randomized, double-blind, placebo-controlled, phase II Study to evaluate the safety and efficacy of subcutaneous bioresorbable implants of CUV1647 for the prophylactic treatment of pre-cancerous skin lesions of the head, forearms and hands in immune compromised, organ transplant patients.

The fourth study is a clinical trial looking at the efficacy and safety of 5% 5-fluorouracil cream in renal transplant patients for the treatment of actinic keratoses.

The unit is looking at doing further clinical trials in the future.

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ENDOCRINOLOGY UNIT

Research Focus

- Health care delivery for diabetes patients
- Development of efficient strategies to diagnose and monitor diabetes and osteoporosis

OVERVIEW

Translational research is our major research focus. Our work has been concentrated on the health care delivery and the development of efficient management strategies for diabetes patients and patients with osteoporosis; with the emphasis on directly dealing with complicated patient issues and improving the level of local general practitioners (GPs) and other health care professionals in regular chronic diseases management.

On the clinical front we continually conduct research based on the diabetes patient dataset established since 1998, including patients who attended the unit’s Diabetes Assessment Clinic (DAC). This clinic provides patients a detailed assessment which includes checking risk factors for complications, the complications themselves and current management status and therapy. The research is to identify the achievement of important diabetes management targets, the uptake of treatment guidelines by GPs, the development of diabetes complications and effective strategies for improving care and reducing complications.

In 2010 we continued the North West Adelaide Health Study in collaboration with other departments in The Queen Elizabeth Hospital, the Unit of Population Research & Outcome Studies of the Department of Health, the University of Adelaide and the University of South Australia. The study population is a representative sample of residents recruited in North West Adelaide who went through clinical assessment, and answered a questionnaire to evaluate the risk factors and early indicators of chronic health problems, including diabetes and cardiovascular diseases. The cohort was first established in 2000 and has been reassessed three times with an interval of about 3 years to collect longitudinal information on the change of health status. We have used this dataset to assess the diabetes incidence, the factors associating with the development of diabetes, self care and health system based management and changes of diabetes incidence/management, and finally the risk factors associated with long term complications.

A study is also underway to compare diabetes patients in this population cohort and diabetes patients who underwent diabetes assessment in the Queen Elizabeth Hospital. The objective is to establish a patient base for studying the continuum of diabetes patient progress from early diagnosis to the late stage with full development of complications requiring hospital care. The psychological data of DAC patients is also assessed to be compared with the similar data in the population sample to explore the mental status of diabetes patients at different stage.

Osteoporosis and associated fractures are a major cause of preventable disability and dependence for South Australians and a major cost to the community. Our good links with the community organisation Osteoporosis Australia, the Royal Australian College of General Practitioners and the Divisions of General Practice enable us to review the management of osteoporosis in the community. There are now osteoporosis education and awareness programmes in the western and northern metropolitan areas targeting those with osteoporosis, their health professionals and the general community.

We now have two dual X-ray absorptiometer (DXA) scanners (the Lyell McEwin Hospital and the Queen Elizabeth Hospital), meeting the needs of the northern and western suburbs of Adelaide and associated country areas. Our combined services now see about 5,500 patients per year and we have a database containing records for over 26,000 individuals. A large proportion of these are being monitored for changes in bone density over time. This important source of clinical data provides the opportunity of investigating many aspects of the overall bone health of the communities that we service, and of long term trends and changes. In 2010, we have analysed this dataset for a hospital grand round talk by the senior hospital scientist in charge of bone densitometry service.

The main findings are as follows:

1. Nearly two thirds patients are >60 years old and over 40% are >70 years old;
2. Two thirds of our patients are overweight or obese (BMI >25) and 80% patients are females;
3. There is a linear decrease in the proportion of subjects with Osteoporosis (T-score less than -2.5) vs. weight: 68% in underweight group (BMI < 18.5) dropping to 32% in the obese group (BMI > 30)
4. In all age groups and particularly the older age groups (>60), a higher proportion (85%) of Asians have Osteoporosis than Caucasians (60%);
5. There is a linear increase in the proportion of subjects with Osteoporosis vs age: 16% in the fourth decade rising to 78% in the eighth decade.
6. In the older age groups (>60 yrs), a greater proportion of women have Osteoporosis than men while in the younger age groups, a greater proportion of men have Osteoporosis than women;

We are working with Osteoporosis Australia to make osteoporosis a State health priority and to develop a strategic plan to reduce its impact in South Australia.

We have been working with the Florey Adelaide Male Aging Study in relation to measuring bone density and body composition in a cohort of men selected from the northern and western regions of Adelaide. This is a longitudinal study and is now in its seventh year. Participants are followed up every five years. This study offers the opportunity to assess and analyse changes in both bone density and regional body composition as men age and we are currently accumulating data for future analysis. During 2009, a further cohort of follow up participants has been assessed and added to the database. We will review this database during 2010 and assess the results for potential publication.



The Endocrinology Unit is currently undertaking research into the management and treatment of Type 2 Diabetes and Osteoporosis.

Using data collected from type 2 diabetes patients at The Queen Elizabeth Hospital, research has been conducted to identify the gap between recommendations given to patients by their GP’s on how to manage their diabetes compared to the actual management undertaken by patients. This will help determine the differences in management between common groups of patients such as the Asian population in the North West suburbs of Adelaide. Researchers are looking at patients’ age of diagnosis, treatment type and uptake of management recommendations.

The Endocrinology Unit is also working with Osteoporosis Australia to make osteoporosis a State health priority. It is also involved in the Florey Adelaide Male Aging Study to measure bone density and body composition in a group of men selected from the northern and western regions of Adelaide.





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GASTROENTEROLOGY  
AND HEPATOLOGY UNIT



Professor Ian  
Roberts-Thomson

Research Focus

- Intestinal growth and intestinal stem cells
- Coeliac disease
- Pathogenesis of bowel inflammation

OVERVIEW

Over the past year, we have made important progress in dissecting the regulation of proliferation of cells in the small and large bowel. A particular focus has been on factors that control the proliferation of a small group of cells called intestinal stem cells. One pathway is the Wnt/beta catenin pathway. This work has been undertaken by Dr Rino Donato who has shown that changes in the expression of particular Wnt proteins are associated with changes in cell proliferation. In other studies, Ms Jane Fauser has shown that intestinal growth can be blocked by a Wnt inhibitor called dickkopf. Another pathway called Notch has been investigated by Mr Joshua Woenig. He has shown that blockade of the Notch pathway also retards intestinal growth. These observations suggest that cell proliferation is under tight control by a variety of different pathways. However, thus far, there is only limited evidence that inherited or acquired defects in these pathways have an important role in the development of cancer. In future studies, we are planning to investigate cell proliferation in a pig model and also to investigate proliferation pathways in human infants. The latter work will be conducted in collaboration with Dr David Moore at the Women's and Children's Hospital.

Research in the Department of Gastroenterology and Hepatology is focused on two major areas.

The first is an understanding of how cells in the bowel are continuously replenished and how this changes in patients with bowel inflammation.

The team is also looking at the role stem cells play in the development of cancer, particularly in the bowel.

The second area of research is an understanding of bowel inflammation that applies to disorders such as coeliac disease, Crohn's disease and ulcerative colitis. One aspect is the role of small molecules called cytokines that promote bowel inflammation while another aspect is the study of new ways to restrain over-activity in the immune system. Advances in these areas have the potential to result in new and improved forms of therapy for a variety of bowel disorders.



In a second related study, Dr Phulwinder Grover is attempting to determine whether cancer stem cells can be detected in blood in patients with colon cancer. Previous work by Dr Jenny Hardingham has shown that at least some patients have circulating cancer cells but it is uncertain whether any or many of these cells are stem cells. This may be important as it is possible that only cancer stem cells can result in the formation of metastases in the liver or other organs. In preliminary work, Dr Grover has shown that some cancer cells express markers of stem cells and studies are in progress to determine whether these markers can be used to detect cancer stem cells in blood.

A particular interest of Assoc Professor Adrian Cummins is the pathogenesis and treatment of an inflammatory disorder of the small bowel called coeliac disease. Two articles have been published in the past 12 months. One was a study of the prevalence of coeliac disease in the Asia-Pacific region while the other was a histological study that quantitated changes in villi and crypts in coeliac disease and the response of these changes to a gluten-free diet. The former study showed that the prevalence of coeliac disease in particular countries is largely related to exposure to gluten as well as the prevalence of particular genetic (HLA) types that predispose to the disease. The latter study described quantitative histological data that has been accumulated by Dr Cummins over the past 20 years. Additional studies performed in collaboration with Dr Ilmars Lidums are exploring the possibility that capsule endoscopy can be used to diagnose the extent and severity of coeliac disease. The first of these studies has been published in the past 12 months.

Another aspect of bowel inflammation is the pathogenesis of ulcerative colitis and Crohn's disease. In a new project with Dr James Fon and Ms Wendy Uylaki, we are looking at the concentration and expression of particular cytokines in the presence of bowel inflammation. We have now collected bowel biopsies from several patients both before and after therapy and data from this project should be available early next year. The importance of inflammatory cytokines has been highlighted by the use of anti-cytokine monoclonal antibodies in at least some patients with severe inflammatory bowel disease. However, there is only limited information on differences in cytokine profiles in different diseases and changes in cytokine profiles with therapy. We are also participating in a trial of mesenchymal stromal cells in the treatment of unresponsive Crohn's disease. This project is being coordinated by Assoc Professor Geoff Forbes and Professor Richard Herrmann at the Royal Perth Hospital.

GRANTS

NHMRC. (Project grant) The role of intestinal epithelium in gliadin peptide influx in celiac disease. (\$174,250 2010) 2008-1010, Sander G.

NHMRC. (Project grant) Regulation of intestinal stem cells and intestinal growth. (\$142,396 2010) 2008-1010, Cummins AG, Penttila I.

NHMRC. (Complimentary Medicine Project grant). Novel probiotics and naturally sourced extracts as treatment strategies for chemotherapy-induced intestinal mucositis. (\$107,000 2010) 2008-2010, Howarth G, Butler R, Cummins AG.

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A/Prof G Howarth, School of Animal Sciences, University of Adelaide;

A/Prof I Penttila, Women's and Children's Research Institute, WCH;

A/Prof T Price, Department of Haematology and Oncology, TQEH.

GYNAECOLOGY,  
Department of



Dr Chris Barry

Research Focus

- Aetiology of female pelvic organ prolapse and pelvic floor dysfunction

The Department of Gynaecology undertakes research into a variety of general gynaecological investigations and procedures.

In 2010, the department undertook a study comparing hysterectomy with conserving the uterus for uterine prolapse surgery.

The team is also using technologies such as MRI scans and the latest 4D ultrasound technology to assess surgery done to reconstruct pelvic defects to see why some women need further surgery some years later. This is an exciting program and will be part of further collaborative research into female bladder and pelvic disorders. The department also conducts research into new permanent contraception possibilities as well as bowel function after surgery.

OVERVIEW

The Gynaecology department provides a comprehensive range of general gynaecological and subspecialist investigations and procedures with an emphasis on minimally invasive surgery, colposcopy, pelvic organ prolapse and urinary incontinence (urogynaecology), gynaecological oncology and management of severe endometriosis including close collaboration with our colorectal colleagues for severe pelvic disease. All consultants in our department have an active role in clinical research activities and are supportive of our trainees undertaking suitable projects while working in our unit. In 2010 the department continued to build personnel and funds to support future large trials particularly in the area of pelvic organ prolapse and related minimally invasive surgical treatments, including mesh vaginal repair; Essure sterilisation and gynaecological oncology. However, Dr Chris Barry continues to promote a more diverse interest in pelvic floor disorders with interest in natural remedies and molecular mechanisms related to bladder inflammatory disorders.

Research interests include the use of graft materials in vaginal repair surgery; new approaches to imaging pelvic organ prolapse and novel treatments for interstitial cystitis. More recently work has commenced using a grant from the AGES committee to identify aetiological factors in the recurrence of pelvic floor prolapse surgery. This incorporates the use of rapid sequence MRI scanning and 4D ultrasonography before and after surgery.

Dr Barry is the co-author and co-principal of the steering committee to set up international guidelines for the use of vaginal pessary support devices for female pelvic organ prolapse. This is expected to be completed early next year with workshops in May of next year.

Dr John Miller, Senior Visiting Gynaecological Oncologist, has involved our department in multicentre investigations with the University of Adelaide into the psychological aspects of recurrent cancer and the development of patient decision aids as well as continuing to recruit patients for chemotherapy and surgical trials centred at the Royal Adelaide Hospital.

Drs Barry and Munday were co-authors in the multi-centre prospective randomised trial of vaginal mesh repair for the correction of cystocele (MAP study). Dr Paul Duggan at the Royal Adelaide Hospital is the principal investigator. This was presented at the International Urogynaecological Meeting in Toronto this year.



Dr Monika Juneja, recently appointed as VMS in Gynaecology, has investigated the role of hysterectomy in prolapse repair with a seeding grant from the Australian Gynaecological Endoscopy Society (AGES) Research Committee. Her term supervisors were Drs Barry and Munday. This study, now completed, was presented at the AGES international pelvic floor meeting in Melbourne in May 2010.

The POPPY study is an international collaborative multi centre randomised study to investigate the use of pelvic floor muscle strengthening for female pelvic organ prolapse. Dr Barry is TQEH's researcher in this study and the study has now finished recruiting and is in the long term follow up stage. Dr Barry is also trialling the use of herbal preparation R1962 for the reduction in recurrence of urinary tract infections in women.

Dr Munday and Dr Zhakia Sharif have completed a study comparing various imaging techniques following the Essure female sterilisation procedure.

**STAFF  
DIRECTOR**

R Watson MBBS FRANZCOG FRCOG  
Senior Visiting Gynaecologist with specialist interest in pre malignant disease, Tutor and Assessor for the RANZCOG Chair of RANZCOG Asia Pacific Committee and DRANZCOG Education and Assessment Committee.

**ACTING DIRECTOR  
(MARCH 2010– FEBRUARY 2011)**

C Barry MB BS MRCOG FRANZCOG

**SENIOR CONSULTANTS**

C Barry MB BS MRCOG FRANZCOG  
Staff Specialist and Senior Gynaecologist with a special interest in Urogynaecology. President of the SA Continence Foundation of Australia.

D Munday MB BS FRANZCOG  
Senior Visiting Gynaecologist with special interests in minimal access surgery/ endometriosis/pelvic floor repair/Essure sterilisation. Deputy Chair of the Australian Gynaecological Endoscopy Society Research Committee.

J Miller MB BS FRANZCOG CGO  
Senior Visiting Gynaecologist and certified sub-specialist in Gynaecology Oncology.

A Singla MB BS FRANZCOG  
Senior Staff Specialist, Senior Obstetrician and Gynaecologist with special interest in Pelvic Floor repair, menopause, Colposcopy and vulval disorders.

M Juneja MB BS FRANZCOG  
Visiting Medical Specialist in Gynaecology.

**GYNAECOLOGY CLINICAL PRACTICE  
CONSULTANT**  
S O'Toole

**GYNAECOLOGY CLINICAL PRACTICE  
CONSULTANTS (2009)**  
A Matthew

**HAEMATOLOGY AND  
MEDICAL ONCOLOGY**  
The combined  
Departments of




**Associate Professor  
Peter Bardy**

**Research Focus**

- Identification, development and clinical trial of new therapeutic agents for the treatment of cancer
- Further understanding of the mechanisms underlying solid cancers and haematological disease, particularly colorectal cancer, myeloproliferative disorders and leukaemia
- Development of new cancer biomarkers and diagnostic assays

**OVERVIEW  
CLINICAL RESEARCH**

The clinical trial program involves Phase I, II and III trials of new therapeutics. Ongoing studies are investigating chemotherapeutic agents, new supportive therapies (cytokines, erythropoietic agents), novel molecular targeted agents (EGFR, VEGF, mTOR, BRAF and PARP inhibitors) and antithrombotic agents. Currently there are over thirty active clinical trials available to patients within the unit, including investigator driven, cooperative group and pharmaceutical driven studies. The unit consists of Medical Oncologists, Haematologists, Clinical Trials Co-ordinators and a dedicated Clinical Research Fellow. Trial results from our Unit have been presented by our team at this years American Society of Clinical Oncology and ESMO meetings and include results of biomarker studies correlating mutations in the EGFR pathway with prognosis and response to anti-VEGF therapy as part of the large multicentre AGITG MAX study. We have also obtained industry sponsorship for an investigator led phase Ib/II study of the combination of panitumumab, irinotecan and everolimus in advanced bowel cancer, which will include laboratory biomarker studies which will be correlated with clinical outcomes to predict response to therapy.



Research in the Department of Haematology and Oncology is focused on the identification, development and clinical trial of new cancer treatments, linked to laboratory studies aimed at improving the understanding of how cancers of both solid organs (such as the breast and bowel) and the blood and bone marrow develop. Currently there are over 30 active clinical trials available to patients within the unit. These include investigation of chemotherapeutic agents, new supportive therapies, more specific drugs with less toxic effects, and anti-clotting agents. Specifically in Haematology research, the department is studying Acute Myeloid Leukaemia (AML) and myeloproliferative disease. Both of these diseases are characterised by over-production of blood cells and the team is working to develop new strategies for diagnosis and treatment of these diseases.



The unit also has a special interest in non-malignant haematology including thrombosis and haemostasis (Dr Simon McRae) with a focus on new anticoagulants. There is also a clinical focus on transfusion, anaemia, iron deficiency and blood conservation (Dr Kathryn Robinson, Dr Uwe Hahn & A/Prof Peter Bardy). The appointment of Dr Cindy Lee has seen an increase in clinical studies available for patients with Multiple Myeloma.

## LABORATORY BASED RESEARCH

### Project 1: MAX Translational Sub-study:

#### Determination of biomarkers to predict resistance or sensitivity to anti-angiogenic monoclonal antibody therapy in colorectal cancer (Molecular Oncology Group:

**Dr J Hardingham, Mr J Wrin, Mr A Shivasami, Ms A Chua, A/Prof T Price, Dr A Townsend)**

Metastatic colorectal cancer (CRC) is a leading cause of cancer death in Australia. Recent developments in the use of novel targeted therapies, such as monoclonal antibodies inhibiting the epidermal growth factor receptor (EGFR) or vascular endothelial growth factor (VEGF), offer promise in improving patient outcomes. It is well recognised that patients with KRAS or BRAF mutations show resistance to anti-EGFR therapy, but the situation is less clear with anti-VEGF therapy. Tumours may become refractory to the inhibition of VEGF-induced angiogenesis via compensatory upregulation of alternative angiogenic factors. The identification of biomarkers that predict which patients will benefit from these therapies can significantly aid in tailoring treatment for each patient to improve efficacy and reduce the toxicity and cost of treatment. Activation of the EGFR-AKT-mTOR pathway in CRC results in the production of multiple angiogenic factors including VEGF, interleukin 8 (IL-8), signal transducer and activator of transcription 3 (STAT3), nuclear factor-kB (NF kB) and cyclooxygenase-2 (COX-2) and several downstream molecules. The effect of these factors on response to anti-VEGF therapy is uncertain. Loss of the PTEN tumour suppressor further activates the AKT-mTOR pathway, enhancing expression of angiogenic factors. We completed an analysis of of KRAS and BRAF mutation using high resolution melt PCR in a large study of patients with advanced CRC (MAX study; 314 patients). Statistical analysis showed that neither KRAS nor BRAF mutation status was predictive of outcome on anti-VEGF therapy. We are currently developing assays to measure levels of angiogenic factors in cell lysates and copy number for the PTEN gene.

### Project 2: Identification and validation of new markers for circulating tumour cells in early stage colorectal cancer (Dr J Hardingham, Ms G Arentz, Ms I Kanter, Dr T Chataway, Prof PJ Hewett, A/Prof T Price, Dr K Grover, A/Prof A Cummins)

Patients diagnosed with early stage colorectal cancer (CRC) (TNM stage I or II) undergo surgical tumour resection with curative intent, yet up to 30% of these patients suffer recurrent or metastatic disease within five years of surgery. We have reported previously that circulating tumour cells (CTC) detected by immunobead capture and RT-PCR at diagnosis predict later relapse. However, not all patients with CTC relapse which makes any decision to treat with cytotoxic chemotherapy and/or biological agent difficult. To improve this approach we have studied 5 new biomarkers identified from a proteomics screen of laser micro-dissected colon tumours, and from the literature. Blood and abdominal lavage samples from 66 colon cancer patients and 12 controls have been analysed with detection of CTC found in 22/66 cancer patients, including in 15/40 early stage patients. Patient follow-up is on-going and results from this study will enable identification of patients at risk of systemic disease based on CTC level after surgery.

We proposed that it was the cancer stem cells within the circulating tumour cell pool that are responsible for development of metastatic disease post-curative resection. Therefore we assessed stem cell-specific markers. Differential expression of *LGR5*, *OLFM4*, *BMI-1*, *ASCL2* and *DCAMKL1* was determined in tumour tissue and matched normal mucosa by real-time qRT-PCR relative to other established markers of colonic tumour cells such as CEA. We observed tumour over-expression of stem cell markers by <sup>3</sup> 2-fold in a high proportion of tumours and this analysis of stem cell markers for CTC detection is an ongoing collaboration with Dr K Grover and A/Prof A Cummins, TQEH Gastroenterology Department.

These approaches will allow adjuvant chemotherapy to be targeted to patients more likely to gain from such therapy, reducing the risk of toxicity to those patients at minimal risk of systemic relapse.

### Project 3: Molecular-genetic approaches to identify lesions in myeloproliferative neoplasms (A/Prof R D'Andrea, A/Prof P Bardy, Dr P Neufing, Ms C Butcher, Ms S Bray, Ms Z Kortzen)

MPN are a group of a hematological diseases in which the bone marrow produces increased numbers of several haemopoietic cell types (red blood cells,

white blood cells and platelets). This disease is of particular interest to us as the multilineage effects are associated with a dysregulation of haemopoietic stem cell growth and normal blood cell growth factor responses. An acquired mutation that affects the activity of the intracellular signaling molecule JAK2 which plays a critical role in normal growth factor responses is present in a high percentage of MPN patients. Whilst this mutation is clearly important, several studies indicate additional genetic events are involved in the initiation and progression of disease. We are using several approaches to identify other genes important in MPN. In collaboration with Dr Hamish Scott (Div Molecular Medicine, SA Pathology), we have conducted a NimbleGen sequence capture of a total of 657 candidate genes in 15 MPN patients followed by SOLID sequencing to identify gene coding changes associated with MPN disease. We are currently prioritizing gene changes and validating the data using Sanger sequencing of matched disease and germline samples from these patients to develop a candidate gene list. To determine disease frequency and specificity we are screening our cohorts of MPN and normal individuals, which will be followed by retroviral gene expression using in vitro in cell lines and primary cells to assess effects on genomic stability, cellular growth and differentiation.

### Project 4: Identification of Key Target Proteins Affected By Translational De-Regulation In Diamond Blackfan Anaemia (DBA) (A/Prof R D'Andrea, Ms S Bray, Ms C Butcher)

Diamond Blackfan Anaemia (DBA) is a rare inherited bone marrow failure disorder that usually presents in infancy and is characterised by erythroid failure, congenital malformations and cancer pre-disposition due to impaired proliferation and differentiation of red blood cell progenitors in the bone marrow. Haploinsufficiency for a number of ribosomal proteins are associated with the specific red cell and skeletal defects however the mechanism of tissue specificity in this disease remains unclear. We aim to understand how loss of these ribosomal proteins translates to defective erythropoiesis, causing a distinct erythroid phenotype. To achieve this we aim to identify key proteins that are produced at reduced levels in erythroid progenitors with an induced defect in ribosomal proteins. For this we will make use of proteomic technologies which allow us to compare the complement of proteins produced in cells with and without the ribosomal protein defect. These proteins will subsequently be tested in established experimental models to assess their contribution to the defective erythropoiesis.

## POSTGRADUATE STUDENTS

### AWARDED THESES

G Arentz BSc(Hons) PhD awarded June 2010. Thesis entitled: "Proteomic and molecular analysis in colorectal cancer: validation of biomarkers."

C Kok BSc(Hons) PhD awarded PhD Nov 2010. Thesis entitled: "Identification and functional analysis of gene expression changes in acute myeloid leukaemia."

### PHD CANDIDATE

N Rao BSc(Hons) PhD candidate. Project entitled: "Molecular characterisation of Polycythemia Vera".

### HONOURS CANDIDATES

H Kakavand BSc Supervisor J Hardingham. Awarded 1st class Honours, School of Medical Sciences, University of Adelaide, November 2010.

### 3RD YEAR LAB PLACEMENT

J Hardingham hosted 4 students from Physiology, University of Adelaide; A Deng, J Holmes, S Pasupathy, J Brown: Project entitled: "Development of a copy number assay for the PTEN tumour suppressor gene in colorectal tumours".

### COLLABORATORS

Internal (TQEH): A/Prof A Cummins, Gastroenterology and Hepatology Unit, TQEH; Prof P Hewett, Colorectal Surgical Unit, Department of Surgery, The Royal Adelaide and Queen Elizabeth Hospitals, Adelaide; Mr N Rieger, Colorectal Surgical Unit, Department of Surgery, The Royal Adelaide and Queen Elizabeth Hospitals, Adelaide; Mr D Walsh, Breast/Endocrine Unit, Department of Surgery, The Queen Elizabeth Hospital, Adelaide.

### OTHER LOCAL AND NATIONAL:

A/Prof S Barry, Department of Paediatrics, University of Adelaide, Adelaide; Prof P Klinken, Western Australian Institute for Medical Research (WAIMR); Dr G Suthers, Familial Cancer Unit, Adelaide Women's and Children's Hospital; Dr T Chataway, Flinders Proteomic Facility, Flinders University, Adelaide; Prof LB To, Department of Haematology, SA Pathology, Adelaide; Mr J Terlett, Adelaide Microscopy; A/Prof. Niall Tebbutt, Austin Health; Prof AF Lopez, Division of Human Immunology, SA Pathology, Adelaide; A/Prof A Dobrovic, Molecular Pathology Research,



Department of Pathology, Peter MacCallum Cancer Centre, Melbourne;  
Dr I Lewis, Department of Haematology, SA Pathology, Adelaide;  
Prof T Gonda, Diamantina Institute, for Cancer, Immunology and Metabolic Medicine, University of Queensland, Brisbane;  
Dr H Scott, Division of Molecular Medicine, SA Pathology, Adelaide;  
Dr P Hoffmann, Adelaide Proteomics, University of Adelaide;  
Dr D Ross, Department of Haematology, Flinders Medical Centre, Bedford Park.

**INTERNATIONAL:**  
Dr C Mullighan, St. Jude Children’s Research Hospital, Memphis, Tennessee, USA

Anthony Green, Department of Haematology, Cambridge Institute for Medical Research, Cambridge, United Kingdom.

**GRANTS**  
Amgen. Phase II study of second line therapy with Irinotecan, Panitumumab and Everolimus in metastatic colorectal cancer with KRAS wild type (\$100,000 2010) 2009-2010, Townsend A, Hardingham J, Price T.

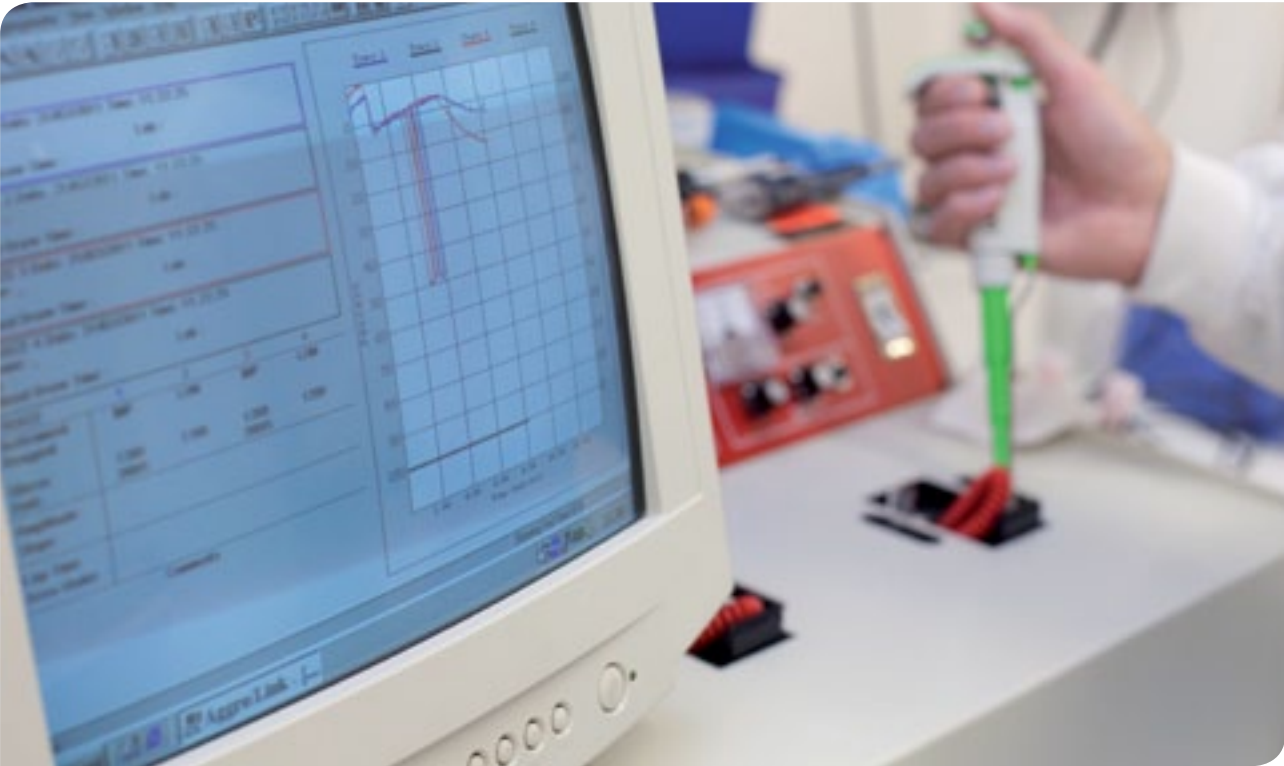
NHMRC. (Project Grant) The Molecular Biology of Polycythemia Vera (\$210, 916 2010) 2008-2010, D’Andrea R, Scott H, Bardy P, Melo J.

The Hospital Research Foundation Small Grant (\$18,000 2009-2010) Identification of mutations in molecules which package DNA in leukemia and pre-leukemic disease. D’Andrea R, Neufing P, Butcher C.

**NEW GRANTS AWARDED FOR 2011**  
The Hospital Research Foundation. (Small Grant 2010-11) Identification of key target proteins affected by translational de-regulation in Diamond Blackfan Anaemia. (\$20,000 2011) Bray S, D’Andrea R, Butcher C, Perugini M, To LB.

NHMRC. (Project Grant) Defining the leukaemogenic mechanism for GATA2 T354M, a new predisposing mutation in familial MDS/AML. Scott H, Hahn C, Melo J, D’Andrea R. 2011-2013, (\$203,358 in 2011).

**ACKNOWLEDGEMENTS**  
The Department of Haematology & Oncology would like to thank The Hospital Research Foundation, the National Health and Medical Research Council, The Cancer Council of South Australia, The Captain Courageous Research Fund, AIB Labs, the Australian Red Cross Blood Service, The Familial Cancer Unit – Children, Youth & Women’s Health Service, Flinders University of South Australia and the University of Adelaide for their generous support of this research.



**STAFF**  
**CHAIR OF THE COMBINED DEPARTMENTS OF HAEMATOLOGY AND MEDICAL ONCOLOGY**  
TJ Price MBBS FRACP

**HEAD OF CLINICAL HAEMATOLOGY**  
PG Bardy MBBS FRACP FRCPA

**HEAD OF CLINICAL ONCOLOGY**  
KB Pittman MBBS MD FRACP

**HEAD OF CLINICAL RESEARCH**  
TJ Price MBBS FRACP

**STAFF SPECIALISTS/CLINICAL TRIALS**  
RM Green MBBS FRACP FRCPA  
U Hahn MD FRCPA  
S McRae MBBS FRACP FRCPA  
JE Norman MBBS FRACP

WK Patterson MBBS FRACP  
K Robinson MBBS FRCPA FRACP  
C Lee MBBS FRCPA FRACP

**CHIEF MEDICAL SCIENTIST AND LABORATORY HEAD**  
RJ D’Andrea PhD

**PRINCIPAL MEDICAL SCIENTIST AND GROUP LEADER**  
JE Hardingham BSc (Hons) PhD

**GRANT FUNDED SCIENTISTS**  
M Raynor PhD  
J Wrin BSc(Hons)  
A Shivasami MMedSc(Biotechnol)  
G Arentz PhD  
I Kanter BSc(Hons)  
A Chua BSc(Hons)  
C Butcher MMedSc  
P Neufing PhD  
S Bray BSc(Hons)  
Z Korten BSc(Hons)

**CLINICAL TRIAL MANAGER**  
S Yeend EN

**CLINICAL TRIAL STUDY COORDINATORS**  
P Cooper BSc  
A Griffiths (based at Lyell McEwin Hospital)  
A Jager BMed & Pharm Biotech (Hons)  
S Papacharissiou BBiomedSc (Hons)  
A. Phay BMedSc  
L Pirc B Biotech (Hons) MMedSc  
J Rowe BSc (Hons) PhD  
J Williams BSc Genetics (Hons) MMedSc

**CLINICAL TRIAL ADMINISTRATION**  
A Barr





## INTENSIVE CARE UNIT



**Associate Professor Sandra Peake**

### Research Focus

- Improving patient safety and outcomes
- Answering pragmatic, relevant clinical questions that are important to the clinicians who provide patient care
- Advancements in the delivery of more efficient and effective treatments in the ICU that will not only benefit patients but also decrease costs, preserve resources and increase access to scarce critical care beds
- Statistical analysis of short and long-term outcomes relating to Intensive Care; survival analysis of chronically-ill patients and meta-analysis using the Bayesian paradigm

Research conducted within the Department of Intensive Care is focused on improving patient safety and how to deliver more efficient and effective treatments to patients in the Intensive Care Unit. These treatments will not only benefit patients but also decrease costs, preserve resources and increase access to limited critical care beds.

### OVERVIEW

The research activities of the Department of Intensive Care Medicine at The Queen Elizabeth Hospital are world recognized, published in leading journals and have received prizes at national and international meetings.

Research conducted within the department includes a combination of company sponsored clinical trials, Investigator – initiated studies conducted under the auspices of the Australian and New Zealand Intensive Care Society-Clinical Trials Group and local investigator-initiated studies, including those by advanced trainees as part of the course requirements of the College of Intensive Care Medicine and motivated nursing staff.

### SEPSIS STUDIES

#### **Australasian Resuscitation In Sepsis Evaluation (ARISE)**

ARISE is a phase III, multi-centre, ANZICS CTG-endorsed, randomised, controlled study evaluating early goal-directed therapy in 1600 patients presenting to the Emergency Department with severe sepsis in 35 Australian, New Zealand and Hong Kong hospitals. The study has been awarded \$2.4 million by the NHMRC and is being conducted over 2.5 years through the Australian and New Zealand Intensive Care Centre Research Centre, Department of Epidemiology and Preventive Medicine, Monash University. Associate Professor Sandra Peake is the Chair of the ARISE Management Committee and Patricia Williams is the Research Coordinator representative on the ARISE Management Committee. The study commenced at TQEH in October 2008 and is collaboration between the Emergency Department and the Intensive Care Unit. The Queen Elizabeth hospital is currently the highest recruiting site.

#### **An economic evaluation of resuscitation in sepsis**

An economic evaluation of the multi-centre, ARISE randomised controlled trial of early goal-directed therapy in patients presenting to the Emergency Department with severe sepsis will be conducted in a cohort of patients randomised to the ARISE RCT. Cost per quality life year gained will be evaluated. The study was awarded a \$100,000 grant from the Intensive Care Foundation in November 2008 and commenced in 2009.

#### **STATInS: Study of atorvastatin therapy in sepsis**

A phase II randomised controlled trial of atorvastatin therapy in intensive care patients with severe sepsis. The study is NHMRC-funded and is being performed under the auspices of the ANZICS CTG. The purpose of

this study is to assess the effects of atorvastatin on the biological and clinical outcomes of adult intensive care patients with severe sepsis. The study will establish whether a definitive phase III trial in Australia and New Zealand is feasible and justifiable, and will provide essential information on the cost and likely sample size for such a trial. Recruitment commenced November 2007 and completed August 2010.

#### **A controlled comparison of eritoran tetrasodium and placebo in patients with severe sepsis**

A multi-centre, international, industry-sponsored randomised, double-blind, placebo-controlled study. The purpose of this research study is to assess the safety and efficacy of an experimental drug called eritoran tetrasodium (eritoran) in patients with severe sepsis. Eritoran belongs to a group of drugs called Lipid A antagonists. Previous studies have indicated that eritoran works by blocking the effect of toxic products and by reducing the production of inflammatory chemicals that can contribute during an infection to the symptoms of sepsis. The study will also measure how health care costs are affected by its use. The study commenced in May 2007 and recruitment completed September 2010.

#### **Efficacy and safety of Drotrecogin Alfa (Activated) in adult patients with septic shock**

A randomized, double-blind, placebo-controlled, multicenter, Phase 3 study of drotrecogin alfa (activated) administered as a continuous 96-hour infusion to adult patients with septic shock commenced in 2008. The purpose of this placebo-controlled study is to determine if drotrecogin alfa (activated) treatment provides significant mortality reduction and organ function improvement in patients with septic shock compared with placebo treatment in patients receiving the current standard of care for septic shock. This study will also assess the effectiveness of drotrecogin alfa (activated) in reducing 28-day mortality in patients with septic shock and concomitant severe protein C deficiency at baseline. Recruitment commenced August 2008 and ceased at TQEH in 2010.

#### **Tissue penetration of vancomycin in critically ill patients with sepsis**

Planning is underway to conduct an investigation of the tissue penetration of vancomycin in critically ill patients with sepsis using microdialysis. The aim of this study is to use a validated technique called in vivo microdialysis to compare subcutaneous tissue concentrations of vancomycin with plasma concentrations and determine the appropriateness of present dosing approaches for optimising use of

this important antibiotic in critically ill patients. This study will be conducted in collaboration with The Queen Elizabeth Hospital Department of Intensive Care Medicine, The Basil Hetzel Institute Therapeutics Research Centre & University of South Australia Pharmacy and The University of Queensland.

#### **CytoFab in severe sepsis and /or septic shock**

Planning is underway to participate in a Multicentre, Randomised, Double-Blind, Placebo-controlled Phase IIb Study to Compare the Efficacy and Safety of Two Dosing Regimens of Intravenous Infusions of CytoFab™ (AZD9773) in Adult Patients With Severe Sepsis and/or Septic Shock. The study will randomise approximately 300 patients (100 patients per treatment arm) from approximately 100 centres. The primary objective is to evaluate the effect of two different doses of AZD9773 (CytoFab™) versus placebo on ventilator-free days (VFDs) over 28 days in patients with severe sepsis and/or septic shock, who are receiving appropriate standard of care.

#### **Procalcitonin Guided Antibiotic Rational Decision Making In ICU Patients (ProGUARD-ICU)**

This study is a multi-centre, prospective, single-blinded, randomised, controlled, interventional trial; comparing Procalcitonin (PCT) guided antibiotic therapy to conventional guided antibiotic therapy in intensive care unit patients. Associate Professor Sandra Peake is a member of the study Management Committee. This study is being performed under the auspices of the ANZICS CTG and is due to commence in 2011.

### OBSERVATIONAL STUDIES

#### **STATInS TIME (Time-In-Motion Evaluation) Study**

A time and motion evaluation study of a phase II randomised controlled trial of atorvastatin therapy in intensive care patients with severe sepsis (STudy of Atorvastatin Therapy In Sepsis). This sub-study is a prospective, observational, time-in-motion evaluation study using a real-time daily management log to document the time required by Research coordinators to perform all aspects of the STATInS study. The findings from this study will assist with the understanding of the time required to perform the coordination of a research project. This knowledge may be used at a local level for sites to project and justify operating costs of local personnel and to assess the economic feasibility of a study. This information will also be used to inform the planning and design of future studies and to provide more accurate staff cost estimates for future grant applications.



### **TAME: An Audit of the Time and Financial Costs involved in the Review Process of Multi Centre Clinical Trials in Australia and New Zealand**

The TAME (Time And Money Evaluation) project is an observational study of important aspects of the scientific and ethical review of multi-centre medical research in intensive care across Australia and New Zealand. This study aims to compare between existing systems of local committees versus centralized authorities the overall duration of the scientific and ethics approval process for one or more clinical trials seeking contemporaneous approval in Australia and New Zealand. Also to be compared between local and centralised approval systems are the fees charged for the approval process, and an estimate of the direct time required preparing and supporting the review process by local research staff at each participating site. It is planned that the TAME study will examine two projects seeking approval, these being firstly an investigator-initiated study and secondly a commercially-sponsored study. This study is endorsed by the ANZICS CTG and received funding from the Intensive Care Foundation. Mrs Patricia Williams (TQEH ICU Research Coordinator) is a member of the study Management Committee.

### **Prolonged QT interval in the ICU-incidence, risk factors and outcome, a prospective multi-centre observational study**

This study is being undertaken to determine the incidence of prolonged QTc interval and QTc dispersion in critically ill patients admitted to the ICU. The study aims to identify associated risk factors, compare cardiac and non-cardiac complications, mortality, length of ICU and hospital stay in patients with prolonged QTc interval and QTc dispersion. This study was done in collaboration with the Royal Adelaide Hospital Intensive Care Department. Preparation is underway to submit the results of this study for publication.

### **The epidemiology of radiocontrast exposure in critically ill Australian adults: a prospective, multi-centre, observational study**

A study to determine the incidence of intravascular radiocontrast (contrast) nephropathy following exposure to contrast among adults admitted to Intensive Care Unit's (ICU) in Australia is completed. This study is in collaboration with the Royal Prince Alfred Hospital Intensive Care Unit. Preparation is underway to submit the results of this study for publication.

### **Point Prevalence Program**

The Point Prevalence Program, performed under the auspices of the ANZICS CTG, aims to provide the structure for individual researchers to conduct basic observational Point Prevalence Studies to inform future research, while minimising the workload on participating ICUs by combining studies using a common and standardised Case Report Form, on predictable dates. This program is funded by the Intensive Care Foundation.

### **A comparison of point of care capillary and arterial lactate measurements in the critically ill patient**

Preparations have been underway to conduct a single centre, prospective, observational study conducted in a 14 bed tertiary, university-affiliated, mixed medical-surgical ICU. The aim of this study is to compare the measurement of paired capillary and arterial blood samples and to ascertain whether there is significant agreement between the samples, using arterial blood sampling as the "gold standard". The secondary aim of this study will be to compare the time and cost-effectiveness of measuring capillary blood lactate when compared to arterial blood lactate. This study will commence in 2011.

### **NUTRITION STUDIES**

#### **Early total parenteral nutrition**

A multi-centre, level 1 randomised, controlled trial comparing early total parenteral nutrition to standard nutritional support in the critically ill patient was commenced in December 2006. The study is NHMRC-funded and is being performed under the auspices of the ANZICS CTG. Associate Professor Peake is an associate investigator and member of the study Management Committee. Recruitment is due to complete in 2011.

#### **The Augmented vs. Reduced Goals for Energy delivery Trial (TARGET): A feasibility trial**

Preparations have been underway to conduct a randomised, controlled, double-blind, feasibility study to be conducted in 3 – 5 adult intensive care units (ICU) nationally. This study is being undertaken to provide baseline data to allow for the planning and funding of a larger multicentre trial to determine if the delivery of additional energy to critically ill adults over the first 10 days of their ICU stay affects clinically important outcomes. This study will commence this study early 2011.

### **PATIENT SAFETY**

#### **Assessing the safety of a continuous potassium chloride infusion in critical care: A randomised controlled trial**

This prospective non-blinded, randomised, controlled trial aims to ascertain whether administration of potassium chloride is safer by intermittent or continuous infusion. Recruitment completed in September 2009 and preparation is underway to submit the results for this study for publication. Funding was received from the Hospital Research Foundation to assist with this study.

#### **Comparison of haemodynamic effects of paracetamol in the critically ill**

A randomised, controlled trial assessing the safety and haemodynamic effects of intravenous paracetamol (versus enteral paracetamol) in intensive care patients was commenced in 2010 and continues. The study is funded by a \$15,000 grant from the Intensive Care Foundation.

### **OUTCOME STUDIES**

#### **Radiocontrast-induced nephropathy in ICU patients**

A retrospective study examining the incidence of, and risk factors for, radiocontrast-induced nephropathy in ICU patients has been completed. Preparation is underway to submit the results of this study for publication.

#### **Gentamicin-computer derived dosing and clearance in ICU**

In conjunction with Dr Terry Jones (Pharmacy) this study is examining the benefits of using a computer derived dosing schedule and creatinine clearance estimates for all patients prescribed gentamicin in the Intensive Care Unit. This study is continuing.

#### **The application of advanced statistical techniques in the analysis of outcome data**

A number of studies are ongoing defining the role of advanced statistical analysis in outcomes research and meta-analysis.

#### **The correlation between waist circumference and outcomes in critically ill patients**

The study is a prospective, single centre, epidemiological study to be conducted over a 12 month period involving patients who are admitted to the intensive care unit for more than 24 hours. The study aims to determine whether there is a correlation between waist circumference and morbidity, ICU mortality, 28 day mortality, hospital mortality and 6 monthly mortality in critically ill patients. Recruitment was completed in July 2010. Data collection is in progress.

### **Discharge and Readmission Evaluation study (DARE)**

A multi-centre prospective observational study (audit) of consecutive patients discharged from the ICUs of hospitals in Australia and New Zealand and is being performed under the auspices of the ANZICS CTG. The study aims to enrol 10,000 patients over a 2-3 month period utilising information specific to patients and to institutions to assess the relative impact of factors on patient survival to hospital discharge. The DARE Study aims to identify the patient and system factors that increase preventable morbidity and mortality in patients who are discharged alive from ICU. Recruitment ceased in March 2010.

### **INFINITE**

An inception-cohort study conducted in all Australian and New Zealand intensive care units (ICUs) during the winter of 2009. This project involved the establishment of a real-time registry and the collection of clinical health information in patients with influenza A infection (including patients with novel H1N1 2009) admitted to the Intensive Care Unit. This study will assist planning for the treatment of infection with the 2009 pandemic influenza A (H1N1) virus through health care systems in developed countries during winter in the Northern Hemisphere. A/ Professor Sandra Peake is a member of the study Management Committee. The results of the study thus far were published in the New England Journal of Medicine in October 2009. The study continued in 2010.

### **Statistical methods for the analysis of critical care data, with application to the Australian and New Zealand Intensive Care Database**

An Australian Research Council Grant (\$310,000 over 3 years) to research "Statistical methods for the analysis of critical care data, with application to the Australian and New Zealand Intensive Care Database" has been awarded to Professor Patty Solomon, University of Adelaide and Dr JL Moran (TQEH Principal Investigator).

The study will address modelling of longitudinal data to capture fully patient and provider variability, developing global quantitative indices of process-of-care, unravelling the "volume-outcome" controversy and developing statistical methods for comparing multiple providers.



The use of Bayesian methods in addressing current problems of meta-analysis

This ongoing study will investigate the role of Bayesian methodology in problematic areas of meta-analysis: prediction of future responses; the impact of underlying risk on meta-analytic outcomes, correlated outcomes, and sparse data.

Studies have also been undertaken in collaboration with Dr Terry Jones, TQEH Pharmacy, Dr Tobias Otto, TQEH Emergency Department and the Royal Adelaide Hospital and Royal Prince Alfred Intensive Care Units.

GRANTS

Australian Research Council. "Statistical methods for the analysis of critical care data, with application to the Australian and New Zealand Intensive Care Database" (\$310,000 over 3 years) P Solomon, JL Moran.



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MEDICINE, University of Adelaide Discipline of



Professor John Beltrame

Research Focus

- From genes and cells to population health
- Basic research studies of the physiology of zinc in the respiratory system
- Patient safety and quality improvement
- Nutritional problems affecting older people
- Health literacy population research
- Molecular genetics
- Cardiovascular research
- Undergraduate and postgraduate assessment

OVERVIEW

The Department of Medicine has major involvement in Undergraduate and Postgraduate teaching and training; undergraduate and postgraduate curriculum development and undergraduate postgraduate assessment, basic and applied research; clinical service and management. Members of the department are involved in basic science research, clinical research, and epidemiological research across the disciplines of Neurology, (see Neurology Report), Ageing, Cardiology (see Cardiology report), chronic diseases and risk factors; and population health.

Professor John Beltrame has assumed the role of Head of Discipline of Medicine at The Queen Elizabeth Hospital. Professor Beltrame is a world renowned cardiologist with research interests in epidemiology, clinical studies and basic laboratory research. Prof Beltrame was in 2010 awarded the South Australian Cardiovascular Research Development Program Fellowship, along with a program grant to start in 2011. He has prominent international collaborations with Japan, United States as the European Society of Cardiology all focussing vascular dysfunction.

The University of Adelaide, Discipline of Medicine at The Queen Elizabeth Hospital undertakes both medical research and training within the Hospital in areas including ageing, stroke, cardiology, respiratory, gastroenterology, chronic diseases, population health and more. Some projects include health literacy population research, basic research studies of how zinc plays a role in the respiratory system, patient safety and improving the quality of care, genetics and cardiovascular research. In addition to this, the Discipline is responsible for training many research students including those undertaking Honours and PhD degrees. Many of these students have the unique opportunity to participate in patient-focused research studies within the hospital.



Professor Bob Adams is Director of the Health Observatory, a member of the Discipline of Medicine at The University of Adelaide, and a chief investigator in the North West Adelaide Health Cohort Study (NWAHS). He is a respiratory physician and epidemiologist with a strong interest in quality in health care and health literacy. He has played a significant part in the NWAHS and published widely from this database on a number of chronic disease issues including respiratory diseases, obesity, the metabolic syndrome and a number of nutrition related issues. Professor Adams is the inaugural Chair of the SA Health Literacy Alliance, a diverse group of 60 members from university, health, education, and research and clinical and community sectors, formed to provide leadership and support for developing and applying the concept of health literacy as a means of equitably improving health and wellbeing.

Assoc Professor Renuka Visvanathan has been the Director of the Aged and Extended Care Services at The Queen Elizabeth Hospital (TQEH) since 2005 and is a current member of the SA Health Older People Clinical Network Steering Committee. She is also a Chief Investigator with the Health Observatory. In 2010, she has completed the Graduate Certificate in Education (Higher Education) and the SA Health LEADS program. She has also been invited to be part of the Nestle Nutrition – ‘Malnutrition in the Elderly Advisory Board’ and also the RDNS SA ‘Clinical Governance Advisory Committee’ this year. She continues as a Project Advisor to the SA & NT Dementia Training Centre. 2010 has seen continued success in terms of research grant funding with \$209,000 being awarded by the Belnaves Foundation to further research work in nutritional frailty in collaboration with Meals On Wheels SA. She is involved in the supervision of Ms Elsa Dent (PhD Candidate) who is studying the effects of hospitalization on body composition in the frail elderly and the research activities of the Aged & Extended Care Services are reported here. There has been a focus on building research capacity within the service and clinicians have been encouraged to develop research strengths. In keeping with this, Dr Solomon Yu is continuing his PhD candidature in Nutritional Frailty and Dr Shailaja Nair (MPhil Candidate) is commencing research in the area of post-prandial hypotension. Dr Anupam Gupta (Rehabilitation Specialist) is making research progress in his field of interest, gait and rehabilitation under the guidance of Professors Adams and Wilson.

Professor Richard Ruffin is involved in studies on asthma and COPD epidemiology, and continuing a

population health study examining chronic diseases (diabetes, obesity, asthma, COPD, cardiac risk factors, renal disease) within the North Western Adelaide population. This work is defining incidence, severity, undiagnosed disease prevalence, and the burden of disease in the population. Professor Ruffin has retired from full time work in 2010 but continues to play an instrumental role in the mentoring of junior doctors and undergraduate medical students.

Dr Peter Zalewski continued his studies on the role of zinc in regulation of apoptosis in the respiratory system and in asthma funded by an NHMRC project grant with Professor Richard Ruffin and Dr Chiara Murgia (a visiting research fellow from the Institute for Food and Nutrition in Rome). Contributing to this work are Research Officer Rhys Hamon (looking at the effects of intracellular Zn on expression of a major inhibitor of apoptosis XIAP) and third year PhD student Eugene Roscioli whose thesis concerns the role of XIAP in airway biology and asthma. The grant focuses on the role of Zn ions in regulation of the family of Zn-rich Inhibitor of Apoptosis Proteins (IAPs). A number of new techniques have been established in the laboratory, including Western blotting and mammalian cell gene expression techniques to enable the experiments to be performed. Dr Zalewski is also chief Investigator A (CIA) on an NHMRC project grant looking at the role of zinc in phagocytosis in collaboration with A/Prof Sandy Hodge and A/Prof Hubertus Jersmann (Hanson Institute and Discipline of Medicine, RAH. PhD student Lata Jayaram was awarded a PhD and a paper on the zinc-related aspects of this study is in press. Dr Zalewski is a co-supervisor of another PhD student Razinah Sharif who is working on aspects relating to measurement of zinc levels and deficiency in human buccal cells, in collaboration with scientists at CSIRO, WCH and the Waite Institute. Dr Zalewski is also a member of Centre for Inflammatory Diseases Research (CIDR), a cross-discipline collaboration between scientists and clinicians at TQEH, focusing on chronic inflammation and especially the role of the inflammasome.

Professor David Wilson is Associate Director of the Health Observatory. He is primarily an epidemiologist with a major interest in chronic diseases and population surveillance, who has contributed significantly to the development of health surveillance activities in Australia. He is responsible for the development of the South Australian Health Omnibus Survey which is one of Australia’s most notable health research vehicles. He also established the South Australian computer assisted telephone (CATI)

monitoring system which is an Australian model in population health surveillance. He is acknowledged internationally as a health surveillance expert and has published nationally and internationally on population health research and chronic disease problems at a population level.

Dr Carol Lang, NHMRC Peter Doherty Research Fellow, conducts research into the role of zinc and airway inflammation in chronic respiratory diseases such as asthma and chronic obstructive pulmonary disease. Dr Carol Lang is on maternity leave in 2011.

Dr Sarah Appleton was a foundation research officer in the Observatory. She has completed her doctoral studies investigating the complexity of the relationship between obesity and respiratory disease, utilising data from the North West Adelaide Health Study. She has published extensively on chronic disease issues in national and international journals and has extended her research interests into areas such as diabetes, the metabolic syndrome, obesity, epidemiological methods and extending working life.

Dr Cynthia Piantadosi is currently working with Professor Ian Chapman and Associate Professor Renuka Visvanathan on a national multicentre study “The effect of testosterone and a nutritional supplement in under-nourished, older people” (NHMRC grant number 627178).

Cynthia joins us from the Centre of Clinical Research Excellence in Nutritional Physiology, Interventions and Outcomes and the Cardiovascular Research Centre.

Professor John Horowitz, Professor John Beltrame and Assoc Professor Chris Zeitz have their further research interests detailed in the Cardiology section of this report.

Assoc Professor Simon Koblar has his research interests detailed in the Neurology section of this report.

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J Sowden  
L Gallina

**DISCIPLINE SECRETARY**

A Brown



POSTGRADUATE STUDENTS

COMPLETED THESES

S Appleton	An epidemiological investigation of the role of phenotype in the association of obesity and asthma PhD awarded 2010
L Jayaram	Airway Inflammation, Diagnosis, Perception of Asthma, and Sputum Zinc Levels in a Community Cohort PhD awarded 2010
M Dodd	Intertemporal discounting as a risk factor for obesity – An economic approach PhD awarded 2010

CONTINUING CANDIDATES

S Yu	CASA cytokines, adioposity, sarcopenia and ageing: a pilot study
E Roscioli	The role of ZIP 1 in regulating apoptosis in cells in the respiratory epithelium
G Tucker	Refinements in health status measurement
E Dent	Investigation and Management of Nutritional Frailty in Older People
S Nair	Post-prandial hypotension in the elderly

ACKNOWLEDGEMENTS

Prof Richard Ruffin retired from full time work and as Head of the Discipline of Medicine, TQEH in 2010. His contribution to the Discipline is immeasurable. The quality of leadership, teaching, research and clinical skills are truly exceptional and his continual support of the Discipline is profoundly appreciated.

GRANTS

ARC. (Project Grant #LP 0990065) Australian baby boomer generation, obesity and work – patterns, causes and implications. (\$471,290 2010) 2009-2011, Hugo G, Wittert G, Adams RJ, Cobiach L, Daniel N, Findley CC, Taylor AW, Wilson DH, Winefield HR, Woollacott AL, Ruffin RE.

Belnaves Foundation. (Project Grant) Nutritional Frailty: a hidden problem that needs urgent attention (\$209,000 2010) Luscombe N, Visvanathan R, Chapman I.

The Hospital Research Foundation (Strategic Initiatives Funding Program Grant) The Health Observatory. (\$250,000 2010) 2009-2013, Adams RJ, Wilson D, Hill C, Visvanathan R, Wittert G, Ruffin R.

NHMRC (Project Grant #519206). Airway epithelial IAPs and their interaction with Zn ions. (\$88,500 2010) 2008-2010, Zalewski PD, Ruffin RE, Murgia C.

NHMRC. (Australian Biomedical (Peter Doherty) Research Fellowship) The role of zinc in the respiratory system and in chronic obstructive pulmonary disease. (\$67,500 2010) 2006-2010, Lang CJ.

NHMRC. (Project Grant # 627178) The effects of testosterone and a nutritional supplement on hospital

admissions in under-nourished, older people. [TQEH Led multicentre RCT] (\$339,479 2010) 2010-2012, Chapman I, Visvanathan R, Naganathan V, Hunter P, Karnon J, Horowitz M, Lange K, Cameron I.

NHMRC. (Project Grant #627189) Gastric, small intestinal and cardiovascular mechanisms of postprandial hypotension. (\$225,500 2010) 2010-2012, Jones KL, Gentilcore D, Visvanathan R, Chapman I, Rayner C, Horowitz M.

NHMRC. (Project Grant #627227) Effect of sex steroids, inflammation, environmental and biopsychosocial factors on cardiometabolic disease risk in men. (\$587,671 2010) 2010-2012, Wittert G, Wilson D, Travison T, Adams R, Taylor A, McKinley J, Jenkins A, Milne, R, Hugo G, Atlantis E.

NHMRC. (Project grant # 627223) Alveolar macrophage zinc and zinc transporters and their role in phagocytosis. (\$92,917 2010) 2010-2012, Zalewski P, Hodge S, Jersmann H.

NEW GRANTS AWARDED FOR 2011

SA Heart Foundation. Chronic refractory angina – defining its characteristics and exploring endothelin blockade as a new potential therapy. \$1,327,652 2011 – 2014, Beltrame J.

The Hospital Research Foundation. (Small Grant) Role of zinc transporter 8 in islet anti-oxidative roles (\$20,000 2010-2011) Zalewski P.

The Hospital Research Foundation. (Small grant). A pilot study of a mobile telephone “asthma application” for asthma management. (\$15,600 2010-2011) Appleton S.

NEUROLOGY UNIT



Dr Martin Robinson

Research Focus

- Investigating environmental, genetic and proteomic risks for stroke
- Investigation of the therapeutic application of adult stem cells to repair the brain following stroke
- Investigation of inflammatory pathways in stroke and other diseases
- Primary health stroke prevention research
- Statistical parametric mapping analysis of regional cerebral blood flow (Nuclear Medicine collaboration)
- Epilepsy Research (clinical trials of new anti-epileptic medication)
- Dementia Research (clinical trials of new Alzheimer’s Disease medications)
- Multiple Sclerosis (clinical trials of new RRMS treatments)

OVERVIEW

The Neurology Department has two main research arms:

1. **STROKE RELATED RESEARCH** involving genetic and proteomic investigations into risk for stroke, stem cell therapy to repair the brain following stroke, and inflammatory pathways involved in stroke, as well as primary health stroke prevention research.
2. **CLINICAL TRIALS** sponsored to investigate the benefit to our patient populations of new therapeutics in dementia, epilepsy and multiple sclerosis.

STROKE RESEARCH PROGRAMME (SRP)

The SRP is a research collaboration between the School of Medicine & School of Molecular Biomedical Science, University of Adelaide and Department of Neurology, The Basil Hetzel Institute for Translational Health Research, The Queen Elizabeth Hospital. The study of endothelial function and genetic polymorphisms in cerebral small vessel disease (CSVD) with Ms Ada Lam has been completed and Ms Lam has been awarded a PhD. Collaborators include Dr E Win Khoo and Dr Sandy Patel (MRI and CSVD) from the Department of Radiology, and Ms Skye McLennan and A/Prof Jane Mathias (Cognition and CSVD) from the School of Psychology at the University of Adelaide. Ms McLennan has been awarded a PhD as well and has a publication arising from the collaborative work with the SRP in press with the International Journal of Stroke. Further laboratory collaboration with Ms Natalie Cutri, Ms Rosanna Tavella and Professor John Beltrame from the Department of Cardiology is occurring investigating the coronary slow flow phenomenon and genetic polymorphisms.

The Neurology Department has interest in a number of neurological conditions including epilepsy, dementia, multiple sclerosis and stroke. Laboratory based stroke research has been particularly looking at the role stem cells play during brain repair once it has been damaged as a result of a stroke. A study of how many strokes are occurring in South Australia is currently being undertaken and improving treatments for patients who come to the Acute Stroke Unit at TQEH is a high priority. The department has been very active in clinical trials of new drug therapies for epilepsy, the dementias and multiple sclerosis, allowing patients access to new developments in drug therapies sometimes years before they become available to the general public.



The SRP also collaborated with Dr Celia Chen from the Department of Ophthalmology, Flinders Medical Centre, in a study to determine if measurement of retinal nerve fibre layer (RNFL) thickness with optical coherence topography is an effective non-invasive marker of brain volume changes in patients with clinical or sub-clinical leukoaraiosis. This work was presented at the 18th International Neuro-Ophthalmology Society in Lyon, France in June.

Our paper on the association of the phosphodiesterase 4D (PDE4D) gene and cardioembolic stroke in an Australian cohort has also been accepted for publication by the International Journal of Stroke.

The SRP is participating in the Australian Stroke Genetics Collaboration (ASGC), a multi-state, multi-centre Australian study to gain a better understanding of the genes involved in stroke. Sample numbers will be increased by further patient collections, thereby increasing the power of the study. The data is now being analysed by Dr Martin Lewis. Mr Michael Djukic has continued enrolling patients from the Community Based rapid Access Clinic (COMBAT) and the Rapid Access Clinic (RAC), as well as controls, in his research on proteomic biomarker discovery in patients diagnosed with transient ischaemic attack (TIA), and will complete differential in gel electrophoresis (DIGE) analysis early next year.

Ms Wai Khay Leong is in the second year of her PhD and continues to investigate the functional use and underlying mechanisms of using Dental Pulp Stem Cells (DPSC) in a rat stroke model.

At the BHI, SRP team members also collaborate within the Centre for Inflammatory Diseases Research (CIDR). Four teams in the BHI, ENT, Neurology, Respiratory and Rheumatology, joined to form CIDR in 2008 and are now in the second year of a three year Hospital Research Foundation Program grant. CIDR collaborators have expertise in many of the main chronic diseases, e.g., asthma and emphysema, sinusitis, arthritis and stroke. Research into NLRP3 inflammasome activation in a murine model of allergic airway inflammation by Dr Martin Lewis and Dr Hai Tran has proceeded well, with a publication in preparation.

Dr Elaine Leung's PhD project on defining characteristics of TIA assessment and management and determining if a community-based rapid access TIA clinic improves patient stroke outcome has

continued to enrol patients. Dr Leung published in Australian Family Physician (AFP) in November on TIA assessment and management and has just had a response letter accepted by AFP. Her research includes collaboration with Dr Jim Jannes, Dr James Leyden, Ms Lizzie Dodd and Ms Peta Toner from the Stroke Unit and RAC at TQEH, as well as with Dr Cleo Cheng and Dr Mee Yoke Ling who also worked with COMBAT. The project also aims to characterise the role and impact of General Practitioners with a Special Interest (GPwSI) in TIA care and stroke prevention, as well as develop and test an educational module on TIA assessment and management for general practice. Dr Leung has been awarded \$20,000 pa for 2 years by Sturt Fleurieu, to develop a GP Education Module on Fits, Faints and Funny Turns.

Dr Hamilton-Bruce continued a collaboration with Ms Rosie King and Dr John R Moss in the Department of Public Health at the University of Adelaide, investigating the impact that a hospital admission can have on the continuing ability of Home and Community Care (HACC) clients (older people and people with disability) to remain living in their home. Ms King has been awarded a PhD and is now writing up the research for journal publication.

Team members have continued to present at community meetings to raise awareness about our research and funding needs, to support our research. Once again, the SRP was a recipient of donations throughout the year. A \$20,000 donation, pledged last year by a grateful former stroke patient, has been used this year to support SRP research, and a further \$20,000 has been pledged for 2011. SRP team members and Stroke Unit staff also participated in National Stroke Week activities to raise public awareness of stroke symptoms. The Hospital Research Foundation promoted a series of public lectures given by A/Prof Koblar, Dr James Leyden and Dr Jim Jannes at the Basil Hetzel Research Institute.

## STROKE

The Servier PERFORM study – an international, randomized, double-blind, two parallel group study comparing Terutroban 30mg o.d. versus Aspirin 100mg o.d. administered orally for a 3-year mean duration. Protocol No: CL3-18886-012-AUS. Recent analysis of interim data revealed no significant advantage of Terutroban versus Aspirin and therefore the trial sponsor decided to prematurely terminate the trial, importantly there were no safety concerns with active trial therapy.

## STROKE EPIDEMIOLOGY

1. Stroke Thrombolysis Audit: An audit of every patient thrombolysed for suspected stroke in South Australia has been completed and accepted by the Medical Journal of Australia for publication. The findings were presented at the the Stroke Society of Australasia meeting in Melbourne. Geographical disparities in stroke treatment in South Australia are described.
2. A large stroke in the young study has been undertaken by the neurology registrar. Approximately 400 first ever ischaemic stroke patients have been identified over a five year period. This is the largest series of young stroke patients to ever be reported in Australia. Results from this study will be published in 2011.
3. The Stroke Epidemiology Study "SEARCH" has concluded the urban arm and will shortly publish the most accurate population data on stroke incidence in Australia in 10 years.
4. The rural arm of the SEARCH study continues coordinated by Sally Castle with the guidance of Professor Craig Anderson and Professor Jonathan Newbury. The annual budget from NHMRC funding is around \$200,000 per year and employs a number of part time nurses in the rural sector where strokes are being monitored.

## EPILEPSY

Seven trials of new anti-epileptic drugs were undertaken throughout this year, with only one of those remaining active: UCB NO1199 – Brivaracetam adjunctive for partial seizures, all others have been, or are in the process of being, closed out.

Two new studies will commence recruitment in the New Year. USL P09-004 will investigate Slow Release Topiramate as adjunctive therapy for refractory partial onset seizures with or without secondary generalisation; SP0993 and the extension SP0994 study are monotherapy controlled trials of Lacosamide 200 to 600 mg day, versus Controlled Release Carbamazepine (400 to 1200 mg day) versus placebo. These trials will allow access to new anti-epileptic drugs that may not become available to the general public until Pharmaceutical Benefits Scheme (PBS) listing and allows development of valuable clinical experience in the utilisation of these drugs.

## DEMENTIA

The Memory Clinic and Clinical Cognitive Research Unit's continue to participate in many International

studies. Dr Karyn Boundy is the Chairperson of the Australasian Consortium of Centres for Clinical Cognitive Research (AC4R) to facilitate clinical trials in memory conditions in Australasia. She is also the South Australian and AC4R representative for Neurosciences Trials Australia – a clinical trials platform with "nodes" in each neurological subspecialty area to facilitate both investigator driven and to also to attract pharmaceutical company early stage phase I – III research to Australia. Dr Boundy has spoken at local General Practitioner (GP) division, national and international meetings about aspects of dementia management and diagnosis of less common dementias e.g., frontal lobe and tauopathies.

Various international publications have arisen from participation in the Prospective Research in Memory Clinics (PRIME), a database that studies all types of dementia patients attending Australian Memory Clinics.

## ALZHEIMER SYMPTOMATIC TRIALS

Eleven trials have been commenced, completed or are in extension phase. E2020-G00-328 (Aricept 23mg SR) was completed and shown to be efficacious for Moderate to Severe Alzheimer's disease with a similar adverse effect profile to donepezil 10 mg, and has been marketed overseas.

GSK compound SB-742457 an oral selective 5HT6 receptor antagonist that was added to existing donepezil (Aricept) treatment for mild to moderate Alzheimer's disease proved safe but ineffectual resulting in the trial ceasing prematurely. Lundbeck compound Lu AE58054, a selective serotonin receptor 6 (5-HT6 receptor) antagonist continues recruitment for patients with moderate Alzheimer's disease.

Roche compound RO5313534, added to donepezil for mild to moderate Alzheimer's Disease has completed this year as did Servier's CL2-38093-005 protocol for compound S 38093, we are waiting on the results to be released.

## DISEASE MODIFYING TRIALS IN ALZHEIMER'S DISEASE

Recruitment for the -3000/1-WW APOE-4 non-carriers trial has closed recruitment while the 3133K1APOE-4 carriers trial is still seeking participants. Both protocols are testing a humanised anti amyloid-beta peptide monoclonal antibody (AAB001). These are eighteen month studies with multiple doses of intravenously administer bapineuzumab in subjects with mild

to moderate Alzheimer’s Disease participants may be taking concomitant cholinesterase inhibitor and/or Memantine.

The Pfizer Phase 2 study of Multiple Doses of PF-04360365 in Patients with mild to moderate Alzheimer’s Disease is progressing. PF-04360365 is a humanized monoclonal antibody directed against an epitope encompassing the C-terminal amino acids of the (Amyloid Beta)  $A\beta_{1-40}$  peptide derived from the Amyloid Precursor Protein (APP). The compound is postulated to decrease Ab in the brain, whether present as soluble monomers or oligomers or in plaques.

The Medivation/Pfizer sponsored DIM18 (Dimebon) Phase III study for mild to moderate Alzheimer’s Disease closed recruitment in November 2010. A Phase III mono-therapy Dimebon study showed no difference to placebo in a six-month study, the research world eagerly waits Australia’s results with add on therapy to donepezil.

Roche is studying the effects of RO4919832 on Cognition and Function in Prodromal Alzheimer’s Disease for two years. This study is being conducted due to gantenerumab having a preclinical profile consistent with reduction effect, additionally in the multiple ascending dose (MAD) study conducted in AD patients, gantenerumab appeared to inhibit and reduce the accumulation of brain  $A\beta$  observed on positron emission tomography (PET) brain scans.

Sanofi-Aventis are researching the effect on cognitive performance, safety, and tolerability of SAR110894D at the doses of 0.5 mg, 2 mg, and 5 mg/day for 24 weeks in patients with mild to moderate Alzheimer’s disease on stable donepezil therapy.

**MULTIPLE SCLEROSIS**

Many new exciting disease modifying products are being tested. Clinical trials in the area of Relapsing Remitting Multiple Sclerosis (RRMS) continues with an extension to the CFTY720D2301 protocol, an oral compound (FTY720, Fingolimod) that reversibly traps a proportion of lymphocytes in the lymph nodes thereby reducing neuro-inflammation in RRMS. The core study finished last year and the results have been reported in the New England Journal of Medicine earlier this year. The drug has recently been approved for use in the US and is being considered by the TGA in Australia.

A 4 month long study (FTY720D2316) looking at a more in-depth assessment of the cardiac, ophthalmic

and dermatological effects of Fingolimod is on-going. This involves 24 hours holter monitoring of the cardiac rhythm before and during Fingolimod treatment, optical coherence tomography (OCT) and dermatological examinations.

Another diverse treatment is Fingolimod1 (GSK-SB-683699) (also oral) an antagonist of  $\alpha4\beta1/\alpha4\beta7$  integrin mediated cell adhesion. These integrins have been shown to play an important role in the initiation and perpetuation of localised inflammation. Fingolimod has a similar selectivity and pharmacodynamic activity to natalizumab, a monoclonal antibody shown to be effective for treatment of multiple sclerosis. The study concluded in early 2010 with mixed results – improvement in MRI-detected brain lesions but not number of relapses.

The CAMMS323 and CAMMS324 protocols trial Alemtuzumab, a monoclonal antibody which is approved for the treatment of B-cell chronic lymphocytic leukaemia in many countries under the names CAMPATH or MabCAMPATH. In a phase II study conducted in patients with RRMS, Alemtuzumab produced a significant reduction in sustained accumulation of disability as well as reductions in relapse rates and lesion formation. CAMMS323 is for treatment-naïve patients and CAMMS324 is for patients who have been on MS treatment. CAMMS323 is at an end with results pending and CAMMS324 is still ongoing. An extension study is in place to monitor the longer term effects of Alemtuzumab.

In the ATAMS Protocol 28063, Atacicept is used for RRMS in a double-blind, placebo-controlled trial, with Rebif as a rescue treatment. Atacicept is a recombinant fusion protein which acts as an antagonist to B-lymphocyte stimulator (BLyS) and A Proliferation-inducing ligand (APRIL) which are important regulators of B cells. The treatment has been terminated due to poor efficacy and patients are on an extended follow-up period, which is expected to finish by the end of 2010.

Protocol EFC105031 trials an oral compound (Teriflunomide) which inhibits T-cell proliferation for the next 2 years. The Phase II study has shown significant reduction of disease activity on MRI scans and a trend towards lower annualised relapse rates and disability. The current Phase III study will compare 2 different doses of Teriflunomide against placebo over two years. This study is ongoing.

Daclizumab (Zenepax) is an anti-CD25 antibody & is the first humanised monoclonal antibody approved

by the FDA for acute renal transplantation rejection. It reduces survival of activated T cells, possibly by NK cells. It has been tested in a phase II study of patients who have clinically failed to respond to Interferons. Patients received seven doses each, the first two doses were given fortnightly and then every 4 weeks. Overall the drug was well tolerated. Daclizumab resulted in a 78% reduction in new contrast-enhancing lesion formation, occurring over 2 months. An 80% reduction in exacerbation rate was also seen. The phase III study (DECIDE Study) has just commenced at this site, comparing the efficacy of Daclizumab against Avonex over 2 years.

Neuromyelitis optica (NMO) has been recognised as a distinct clinical and pathological variant of multiple sclerosis (MS). Clinically, the disease is confined to the optic nerves and spinal cord where severe relapses of inflammatory demyelination result in accumulation of significant morbidity. Pathologically, demyelination is often accompanied by neuronal and astrocyte loss, a distinction from MS. The recent discovery of an antibody to the water channel, aquaporin-4 (located on astrocyte endfeet) in cases of clinical NMO appears consistent with this idea. A study on a prevalence survey of cases of NMO identified by neurologists in Australia and NZ in 2010 and an incidence survey from 2010 to 2013 is in progress. This project has three main objectives. First, to establish the prevalence and incidence of neuromyelitis optica in Australia and New Zealand using clinical criteria. Second, to estimate the sensitivity and specificity of NMO IgG serum testing for the diagnosis of NMO in this population. Third, by comparison with existing cohorts of classical MS, highlight the demographic and clinical features of Antipodean NMO.

An observational study (COPERNICUS) on disability, quality of life and cognition whilst on currently approved MS treatment is also on-going.

**STAFF**

**SENIOR CONSULTANT NEUROLOGIST**  
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**SENIOR VISITING NEUROLOGIST**  
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KL Boundy MBBS FRACP  
H Waddy BMBS FRACP

**SENIOR CONSULTANT NEUROLOGIST / DIRECTOR OF STROKE UNIT / CHAIR, STATEWIDE STROKE CLINICAL NETWORK (SA HEALTH)**  
J Jannes BMBS FRACP PhD

**CLINICAL ACADEMIC NEUROLOGIST / DIRECTOR OF STROKE RESEARCH PROGRAMME**  
SA Koblar BMBS FRACP PhD

**CHIEF CLINICAL NEUROPSYCHOLOGIST**  
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J Leyden BMBS FRACP  
A Tan BMBS FRACP

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CSci FIBMS

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**CHIEF EEG TECHNOLOGIST**  
J Pruszkowski Diploma in Medical Analysis

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K Goldsmith

**NEUROLOGY SECRETARY**  
JA D’ordoy Cert IV Bus Admin

**ADMINISTRATIVE ASSISTANT**  
K Greet

**ADMINISTRATIVE ASSISTANT (PART-TIME)**  
R Richards

**MEMORY UNIT SECRETARY**  
G Searle



CLINICAL NURSE MANAGER

KJ Webb RN BN

COMPREHENSIVE EPILEPSY PROGRAM CPC

S Horn CPC ENP

STROKE NURSE

L Dodd RN BN

TRANSIENT ISCHAEMIC ATTACK (TIA) NURSE

P Toner RN BN

STROKE RESEARCH NURSE

S Castle RN BN

J Cranefield RN BN MHLthSc (HlthServMgmt)

CLINICAL RESEARCH TRIALS

JA Deimel MNsgSc(Nurse Prac) BN RN

PCK Cheung RN

P Steventon RN

S Casey RN BN

F Whaley RN BN

J Cranefield RN BN MHLthSc (HlthServMgmt)

SENIOR RESEARCH SCIENTIST  
FOR THE SRP AND CIDR

MD Lewis BSc(Hons) PhD

SENIOR MEDICAL SCIENTIST FOR SRP

AG Milton BSc(Hons) Dip Comp Sci

GRANTS

The Hospital Research Foundation. Honours Research Scholarship, (\$4,000 2010) Rich J. (CIDR Collaborative)

The Hospital Research Foundation. Postgraduate Top-Up Scholarship, (\$5,000 2010) Djukic M.

The Hospital Research Foundation. (Strategic Initiatives Funding Program Grant) Inflammatory Mechanisms and Therapies in Chronic Disease, Asthma, COPD, Stroke, Cerebrovascular Disease, Rheumatology Diseases and Chronic Rhinosinusitis (\$250,000 2010) 2009-2011, Rischmueller M, Wormald PJ, Koblar SA, Lang C, Lester S, Tan LW, Zalewski P.

Janssen Cilag. Prime Database Survey (\$80,000 2010 – ongoing) Boundy KL.

National Stroke Foundation. (Project Grant) TIA Management and Diagnosis – COMBAT and Biomarker Discovery (\$20,000 2010), Leung ES.

NHMRC. (Australian Stroke Genetics Collaborative) Genome-wide association study in Ischaemic Stroke (\$1,100,000 2010) 2009 – 2011, Levi C, Sturm J, Attia J, Scott R, Koblar SA, Lincz L.

NHMRC. (Project Grant) The Role of Eph/ephrin Interactions in Mediating Mesenchymal Stem Cell Commitment, Migration and Bone Fracture Repair (\$185,500 2010) 2009-2011, Gronthos S, Koblar SA, Matsuo K.

Rebecca L Cooper Medical Research Foundation for Brain Sciences. (Equipment Grant) (\$15,000 2010) Koblar S, Hamilton-Bruce A, Lewis M, Milton AG, Djukic M, Leong WK.

Sturt Fleurieu. COMBAT Community based Research for the management of TIA (\$40,000 2010) E Leung, S Koblar.

University of Adelaide. Australian Postgraduate Award (\$22,500 2010) Djukic M.

University of Adelaide. Australian Postgraduate Award (\$22,500 pa leave for 7 months, then half time.) Leung E.

University of Adelaide. (Entrepreneurship, Commercialisation and Innovation Centre Commercialisation Training Scheme Scholarship) – Tuition fees for Graduate Certificate in Science and Technology Commercialisation, and \$3,000 on successful completion of each of the programs 4 courses. Djukic M.

University of Adelaide. Adelaide Scholarships International (\$22,500 2010) Leong WK.

University of South Australia, An Australian case study of a Translational Research Team in the Biomedical Sciences: The Intersections Communities of Practice and Group Work within a Medical Research Institute (\$1,800 2010 for development of journal paper), Krawczyk V, Co-authors: Crichton J, Hamilton-Bruce A, Koblar SA.

NEW GRANTS COMMENCING IN 2011

NHMRC. (Project Grant) Brain repair following stroke: the role of NPas4, a neural-specific transcription factor (\$590,048 2011 – 2013) Koblar SA.

NHMRC (Project Grant) Role of Tenascin-C and TLR-4 in carotid atherosclerosis related stroke, (\$297,524 2011-2013) Clancy P, Koblar SA.

ONGOING RESEARCH

Chaudry OA, Sebben R, Khoo E, Dawes A (Department of Radiology), Hamilton-Bruce MA, Koblar SA. Collateral circulation to the ischemic area influences the potential recuperation ratio.

Phillips MCL. Retrospective Analysis on Stroke in Young People in South Australia Over the Last 5 Years.

Phillips MCL. Case Report: Calcific Aortic Embolus in a 38 Year Old Man.

Rosser A, Phillips M, Hamilton-Bruce M, Jannes J, Chrysosidis S, Sebben R, Koblar SA. Use of the Penumbra System (PS) in Octogenarians.

STROKE RESEARCH PROGRAM COLLABORATIONS

1. Neuroplasticity – experiments and collaborations made in regard to determining the mechanism of action of DPSC improving stroke outcome have been undertaken at Cambridge with Prof James Fawcett, Cambridge Centre for Brain Repair, University of Cambridge and with Prof Jean-Claude Baron, Lewin Stroke & Rehabilitation Unit, Addenbrookes Hospital, Cambridge.
2. Inflammation and stroke – collaborations set-up with Prof Stefano Pluchino from Cambridge Centre for Brain Repair (formerly University of San Raffael, Milan, Italy).
3. TIA – collaborations begun with Drs Peter Martin and Liz Warburton, TIA services, Lewin Stroke & Rehabilitation Unit, Addenbrookes Hospital, Cambridge.

POSTGRADUATE STUDENTS (FOR SRP AND OTHER)

COMPLETED THESES

AK Lam BPharm(Hons)	Endothelial Function and genetic polymorphisms in Cerebral Small Vessel Disease (SVD) PhD awarded by University of Adelaide 2010
J Deimel BN RN	Master of Nursing Science (Nurse Practitioner) awarded by University of South Australia 2010
J Rich BSc	Murine Dental Pulp Derived Mesenchymal Progenitor Cells Attenuate Lipopolysaccharide Stimulated Macrophage Inflammatory Response in vitro (CIDR Collaborative) University of Adelaide First Class Honours 2010

PHD CANDIDATES

M Djukic BHSc(Hons) GradCertBus(Acc)	Proteomic and genomic investigations in transient ischaemic attack
VJ Krawczyk BSocSc(Human Services) HBArts	Animal-human intercorporeality: exploring interactions and organisational processes within a neo-liberal context
WK Leong BSc(Biotech)(Hons)	Mechanisms of neuroregeneration post-ischaemic stroke – stem cell and molecular studies
ES Leung MBBS BSc(Med) DCH FRACGP	That a community-based approach to Transient Ischaemic Attack (TIA) care is effective

4. Tele-neurology – collaborations begun with Lewin Stroke & Rehabilitation Unit, Addenbrookes Hospital, Cambridge, which is the regional centre for East Anglia stroke and TIAs servicing 6 million people.

## AWARDS

Horn S. Anne Crouch Award for Post Graduation Education. 2009 (awarded in 2010)

Koblar SA. Leopold Dintenfass Award (\$5,500) for the most interesting or innovative research application made to the Rebecca L Cooper Foundation.

Leong WK. 1st Prize in the 5th Annual Science Images Competition, Open Science Category Award at the School Molecular Biomedical Science, University of Adelaide (camera – \$200 value)

Leong WK. Poster Prize. 4th Mt Lofty Workshop on Frontier Technologies for Nervous System Function and Repair, Adelaide, December 2010. Human Dental Pulp Stem Cells survive, migrate and differentiate following transplantation in the ischaemic rat brain. Leung WK, Henshall T, Helps S, Vink R, Lewis M, Gronthos S, Koblar S (\$100).

## PATENTS

Mutation associated with strokes (TPA):

- Registered in the name of The Queen Elizabeth Hospital Research Foundation and Adelaide Research and Innovation Pty Ltd (ARI). Licensed to Atherogen Biotechnology Pty Ltd.
- Inventors: Jannes J, Koblar SA, Hamilton-Bruce MA.
- PCT/AU2004/000905 and issued patents derived there from including US Patent 7,455,970 and Australian Patent 2003903412. Title: "Mutation associated with strokes." Inventors: Hamilton-Bruce MA, Jannes J, Koblar SA.

Brain Repair Following Stroke – Stem Cell Ikaros Assay: Patent: An assay for determining neuroplasticity effect of stem cells PCT/AU02/01759.

- Applicant: ARI, University of Adelaide and Medvet Science Pty Ltd.
- Inventors: Koblar SA, Gronthos S, Arthur A.
- Australian Provisional Patent Applic. No.2007904700 filed 30/8/07.

## NUCLEAR MEDICINE UNIT



Dr Steve Unger

## Research Focus

- Statistical parametric mapping of regional cerebral blood flow and MRI
- Development of new image processing techniques in brain and lung imaging
- Evaluation of ischaemia and cardiac denervation in heart failure

## OVERVIEW

Our Department's research continues to focus on the major areas of cardiac and neurological nuclear medicine. Dr Thanh Nguyen is continuing her investigation into the association between cardiac sympathetic denervation (as assessed by myocardial I-123 MIBG imaging), myocardial ischaemia (assessed with stress Tc-99m Sestamibi imaging) and outcomes, particularly ventricular arrhythmias, in patients with heart failure.

Neuroimaging research and development in 2010 built on the image processing expertise of the medical physicists in the department. Assessment of an advanced SPECT reconstruction algorithm using an existing dataset of brain SPECT normal controls was performed by Physics registrar Dr Daniel Badger. Medical physicist Ben Crouch combined brain SPECT and grey and white matter maps derived from 3D brain MRI to measure the ratio of brain perfusion in grey and white matter. He also developed improvements in brain SPECT spatial normalization using companion MRI to detect new brain associations in Fibromyalgia.

Funding was obtained to allow Ben Crouch to continue analysis of brain MRI images in Chronic Fatigue Syndrome (CFS) under the supervision of Dr Barnden and to commence two new CFS imaging projects. Our application of SPM for quantitative analysis of T1 and T2-weighted MRI is a world first. We discovered involvement of brainstem and prefrontal white matter structures not yet reported in the CFS literature. This work was presented at an international conference and has been submitted for publication. The technical aspects of this work have been further developed and presented at international and national conferences by Dr Barnden.

The Nuclear Medicine Department often works closely with a number of other departments including Cardiology, Neurology and Oncology and specialises in functional imaging of various organ systems in the body. This crucially assists with confirming or ruling out a number of conditions that are difficult to diagnose in patients.

The department's work with the Cardiology Unit includes a study in which the nervous system of the heart in patients with heart failure is imaged, looking for abnormalities which may lead to fatal rhythm disturbances. The team is also involved in measuring the amount of heart muscle is "salvaged" during various treatments for heart attacks. The department is also analysing changes in blood flow in the brain in a number of conditions such as dementia, chronic fatigue and fibromyalgia to help diagnose these conditions in patients.





STAFF  
DIRECTOR

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VISITING MEDICAL SPECIALISTS

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R Casse MBBS FRACP  
A Warner MBBS FRACP PhD  
G Cehic MBBS FRACP  
K Tan MBBS FRACP  
M Nottage MBBS FRACP

MEDICAL SCIENTISTS

L Barnden BSc(Hons)PhD  
D Badger BSc(Hons) PhD  
B Crouch BSc(Hons)

HIGHER DEGREE STUDENTS  
PHD CANDIDATE

TH Nguyen

MSc IN MEDIAL PHYSICS

D Badger  
B Crouch

REGISTRAR

P Averbuj MBBS

TECHNOLOGISTS

P Ong  
G Pandos  
T Smith  
P Sotiropoulos  
N Farnham  
K Eberhard  
E Langeluddecke  
J Lawrie  
R Edwards  
D Maglica

GRANTS

The Mason Foundation. Investigation of the progression of brain abnormalities in Chronic Fatigue Syndrome (CFS) using MRI in a longitudinal study of post-viral fatigue subjects. (\$100,000 2010) 2010-2011, Barnden L, Kwiatek R.

John T Reid Charitable Trusts. Investigation of the progression of brain abnormalities in CFS using MRI in a longitudinal study of post-viral fatigue subjects. (\$51,000 2010) 2009-10, Barnden L, Kwiatek R.

NURSING RESEARCH

Research Focus

- Infection Control
- Staff Retention Patient flow and discharge by 11.00am
- Diabetes Education
- VTE prophylaxes
- Teaching
- Systems of care delivery
- Vascular Nursing Care
- Quality Improvement in patient care delivery
- Deteriorating patient response

OVERVIEW:

Another challenging and dynamic year of change has provided the Nursing Service with opportunities to focus on patient care standards through the implementation of the “Fundamentals of Care” Standards. Emphasis is placed on establishing whole of hospital standards for assessment, risk identification particularly around reducing falls and medication errors, ensuring VTE prophylaxis is in place and reduction of pressure areas developing while patients are in hospital. Procedures relating to nursing standards of care and practice have been reviewed and modified based on the results of quality improvement auditing and best practice evidence from Australia and overseas.

Nursing staff have continued to work collaboratively on developing systems to improve patient flow from the Emergency Department, to reduce barriers to discharge and to improve the recognition of deterioration in patients to affect an early rapid response from the home unit and avoid preventable critical events occurring. Many nurses have attended national and international conferences and participated in presenting within their units. Progress has been made with the endorsement of six Nurse Practitioners by AHPRA who will hopefully commence their new scope of practice at TQEH in 2011.

The Department of Nursing is undertaking research to continually improve and enhance patient care while promoting self management wherever possible for patients with chronic diseases. The departments’ primary research focus is risk reduction including falls reduction and management, early recognition of patients who may be deteriorating, ensuring early intervention and clinical handover of a patient’s care from one area to another, and the prevention of infection through effective hand hygiene and vaccination.

## OTOLARYNGOLOGY, HEAD AND NECK SURGERY, Department of



**Professor PJ Wormald**

In 2010 the ENT Department, The Queen Elizabeth Hospital (TQEH) continued to expand its research capabilities and research team. We now have seven full time PhD students and a Master's student as well as four full time scientists. This group in combination with the supervising clinical staff has developed a very vibrant critical research mass which generates ideas and is consequently able to stay at the very cutting edge of rhinological research worldwide. This has led to our department being recognized internationally as one of the leading rhinological research institutions in the world. At the recent (2010) American Rhinological Society meeting in Boston USA our department was awarded the Maurice Cottle Award for the best scientific paper for the third year in a row – a unique achievement in the history of the Society. In addition, three of our current PhD students won prizes at the 2010 TQEH Research Day.

Due to the ongoing and generous support from The Hospital Research Foundation for capital equipment purchases, we have been able to increase the interrogative capacity of three overlapping PhD student projects. Where previously the experimental scope of these projects were dependent on the availability of patient tissue, the purchases of the Bioplex Multi Arrayer (Biorad, USA) and ImmunoCAP (Phadia, Sweden) have allowed us to measure expression levels of up to seven cytokines markers from a single sample of 100 mg of tissue. In addition, it has allowed us to detect immunoglobulin levels the patient produces in response to specific bacterial and fungal antigens that we suspect are key in exacerbating the chronic inflammatory state seen in Chronic Rhinosinusitis.

We are early adopters of new technological advancements in the field of molecular biology such as the development of the recent Super Array assay system where we can now determine the transcriptional expression for up to 88 related genes involved in the recognition of pathogens and the complex signaling pathways related to the production of nitric oxide in response to bacteria, all in a single experiment.

Our active participation in the Centre for Chronic Inflammation and Disease Research (CIDR) by providing extensive datasets has resulted in the generation of the publication "NLRP3 inflammasome

activation in a murine model of allergic airway inflammation" (in preparation). The Centre is a strategic collaborative alliance of groups within the Basil Hetzel Institute, and is funded by a Hospital Research Foundation Program Grant.

Ms Dijana Miljkovic joined the laboratory as a Research Assistant in mid 2010, working on a 3 year Garnett Passe and Rodney Williams Memorial Foundation Project Grant "The role of *Staphylococcus aureus* superantigens and fungal antigens in chronic rhinosinusitis" awarded to Dr Harshita Pant, Senior ENT Consultant. The assistance provided by Research Assistants Ms Leonie Baker, Mr Damien Jones and Ms Dijana Miljkovic has seen an increase in the pace of research in the ENT Unit and has been invaluable technical support for the Unit.

Dr Andrew Foreman, Surgeon Scientist PhD candidate, is concluding his PhD research into the role of biofilms in chronic rhinosinusitis (CRS). Through this research our department has made significant advances in the knowledge of this topic. In particular, Andrew has characterized the most common biofilm-forming species in CRS using a newly developed Fluorescence in situ Hybridisation protocol that was validated against the gold-standard BacLight protocol previously developed in our department. Andrew has gone on to use the information gleaned from this initial investigation to highlight both the clinical and immunological consequences of specific biofilm-forming species. In particular *Staphylococcus aureus* and *Haemophilus influenzae* biofilms produce divergent clinical patterns with *S. aureus* being associated with severe disease that is resistant to our current treatment algorithms. Identification of a high-risk group such as this allows directed therapies, such as those being developed by Dr Joshua Jervis-Bardy, to be trialled with the hope of improving the outcomes of these difficult patients. Furthermore, Andrew has also been the first to identify a specific response of the host's immune response in the face of *S. aureus* biofilm residence in the sinuses of CRS patients. This work demonstrated that *S. aureus* biofilms can act both via the superantigen pathway and via an independent induction of the T-helper2 adaptive immune response. Finally Andrew has developed a non-invasive diagnostic test for detecting *S. aureus* biofilms in the sinuses of CRS sufferers, allowing accurate identification of this high risk group without the need for surgery and also providing an objective test for the evaluation of novel anti-biofilm therapies.

Dr Rowan Valentine, Surgeon Scientist PhD candidate, is investigating the effects of chitosan on the nose and sinuses after surgery. This year he is continuing a patient trial comparing the effects of this gel on haemostasis and adhesion formation, showing the gels significant anti-adhesion and haemostatic properties. In addition to this, Rowan has recently developed an animal model of carotid artery injury during endoscopic sinus surgery and skull base surgery. This model has been used to train surgeons worldwide in how to manage this catastrophic complication. He has also examined different haemostatic products under these conditions for haemostasis and pseudoaneurysm formation. Next year we will be continuing to investigate CD Gel by investigating the haemostatic mechanisms by which CD Gel achieves haemostasis, and further delineate the effects of the gel on sinus ostial stenosis following sinus surgery.

Dr Sam Boase, PhD student, has developed an animal model of fungal sinusitis. We successfully sensitized sheep to fungal antigens as evidenced by skin prick test positivity. In addition, we were able to show fungal biofilm formation in the sheep sinus, when fungi was co-inoculated with *staphylococcus aureus*. This research has significant implications for our understanding of fungi in the sinuses, as well as for the treatment of fungal sinusitis patients. This research has been submitted for publication, and was presented at the annual meeting of the American Rhinological Society in Boston, USA, winning the Cottle prize for best manuscript. The second study is examining the role of fungal allergy in chronic sinusitis. We have collected and processed nearly 60 human sinus and serum specimens and data analysis is currently underway. We hope to further our understanding of the role of fungal allergy in CRS, comparing mucosal and serum levels of fungal specific IgE within different disease groups. Additionally, we are examining the role of humoral immunity in CRS. We are analysing mucosal and serum fungal specific IgG. In another study we are comparing the cultured organisms (bacteria or fungi) with specific immune responses in the mucosa. This may highlight whether organisms are inciting a humoral immune response in CRS patients. As an adjunct to this work, we have collaborated with Prof Ehrlich in Pittsburgh USA, to analyse the microbial flora in the sinus mucosa using the IBIS system. This will give more comprehensive information on the flora of the sinuses. In addition to this work we hope to characterise the disease types by the proportion of regulatory T cells in the mucosa. Regulatory T cells are known to be involved in peripheral tolerance

The Department of ENT's research focuses on understanding the cause of chronic sinusitis and improving its management. Bacteria found on the surface of the sinuses (biofilms) has been discovered as a likely cause of this disease and the department is in the process of developing new treatments to eradicate the bacteria, which may cure the disease. While a cure is still to be found, a key component of managing patients who are suffering from chronic sinusitis is surgery. The department is researching how to prevent scar tissue formation – a current hindrance to the effectiveness of this surgery, thus improving comfort and recovery success.

The department has also developed a world-class training model which is now used by national and international surgeons when learning how to conduct surgery through the nose to access tumours of the skull base and brain.



and allergy, and may play a significant role in CRS, producing abnormal immune responses to otherwise innocuous microorganisms.

Dr Josh Jervis-Bardy, PhD candidate, has been investigating the role of *S.aureus* in the recalcitrant chronic sinusitis patients as well as investigating novel and new treatment of patients with recalcitrant *S.aureus* infections. He has also been conducting clinical studies investigating the bacterial biofilm response to surgery.

Dr Deepti Singhal, PhD candidate, has developed the first pictures of fungal biofilms both in a static as well as in the flow chamber and been able to characterize the features of fungal biofilms for the first time in the world. She has also been involved in the development of the fungal biofilm animal model which has now been established and will allow synergism between fungus and other micro-organisms to be tested.

Dr Camille Jardeleza, PhD candidate, is investigating potential *S. aureus* host evasion mechanisms, focusing on its ability to survive high nitric oxide (NO) environments, as well as characterizing the biofilm growth patterns of *S. aureus* when exposed to different nitric oxide concentrations, mimicking sinus NO levels in an in-vitro setting.

Ms Jasmine Micklen is doing a PhD, evaluating the validity and acceptability of currently accepted quality of life questionnaires on the outcomes of aboriginal patients treated for head and neck cancer.

**STAFF**  
**PROFESSOR OF OTORHINOLARYNGOLOGY AND HEAD OF DEPARTMENT**  
P-J Wormald MD FCS(SA) FRCS(Ed)

**SENIOR LECTURER**  
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**STAFF SPECIALIST**  
S Floreani MBBS FRACS  
J Ling MBBS FRACS  
S Rajapaksa MBBS FRACS  
H Pant MBBS FRACS

**RHINOLOGY FELLOW**  
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**ENT REGISTRAR**  
T Athanasiadis MBBS PhD

**GARNETT PASSE & RODNEY WILLIAMS MEMORIAL FOUNDATION RESEARCH SCIENTIST, UNIVERSITY OF ADELAIDE**  
LW Tan BSc(Hons) PhD

**ENT RESEARCH ASSISTANTS**  
L Baker BSc(Hons)

D Miljkovic BSc

D Jones BSc

**CLINICAL NURSE OPERATING THEATRES**  
T Nicholls RN BN MN

**SECRETARY**  
L Martin

POSTGRADUATE DOCTORAL STUDENTS  
**COMPLETED THESIS 2010**

T Le MS	University of Adelaide, Discipline of Surgery, School of Medicine. Thesis: The effect of topical agents on biofilm formation in the in vivo sheep model of chronic rhinosinusitis
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**CONTINUING POSTGRADUATE STUDENTS**

S Boase MBBS (Hons)	Investigating the role of fungus, and fungal biofilms in Chronic Rhinosinusitis (CRS) pathogenesis
A Foreman MBBS	The characterisation of biofilms in chronic rhinosinusitis and its clinical and immunological consequences
C Jardeleza MD	The role of nitric oxide in the pathophysiology of <i>Staphylococcus aureus</i> Biofilm Formation in Chronic Rhinosinusitis
J Jervis-Bardy MBBS	Novel anti-biofilm therapies in chronic rhinosinusitis
J Micklen BBTech (Hons)	Australian Aboriginal Head and Neck Cancer Patients: Health-Related Quality of Life in South Australia and the Northern Territory
D Singhal BMBS	Fungal bacterial Biofilms in chronic rhinosinusitis
R Valentine MBBS	Haemostasis and Wound Healing following Endoscopic Sinus and Skull Base Surgery

**AWARDS**

S Boase. 2010 The Queen Elizabeth Hospital Research Day Adelaide, Best presentation, Senior PhD Student Category (Laboratory research), October 2010.

S Boase. American Rhinologic Society, Boston MA USA, Maurice Cottle Award, Best Scientific Manuscript, September 2010.

C Jardeleza. 2010 The Queen Elizabeth Hospital Research Day, Adelaide, Best presentation 1st year PhD category (laboratory research), October 2010.

J Jervis-Bardy. 2010 The Queen Elizabeth Hospital Research Day, Adelaide, Best presentation 2nd year PhD category (laboratory research), October 2010.

R Valentine. Royal Australasian College of Surgeons Surgical Research Society, 47th Annual Scientific Meeting, Adelaide, Travel Grant, November 2010.

R Valentine. Australian Society of Otolaryngology Head and Neck Surgery SA Branch Meeting, Adelaide, Ronald Gristwood Medal for Best Registrar Presentation, August 2010.

## GRANTS

Garnett Passe and Rodney Williams Memorial Foundation. The nasal innate immune response to fungal and staphylococcal challenge: the role of lysozyme (\$90,000 2010) 2008-2010, Carney AS, Harris P, Woods C, Ooi EH, Tan LW, Wormald PJ.

Garnett Passe and Rodney Williams Memorial Foundation. (Research Scientist grant) Are aberrant sugar profiles of the mucin glycoprotein MUC7 responsible for bacterial and fungal biofilm formation in chronic rhinosinusitis (\$120,000 2010) 2008-2011, Tan LW, Wormald PJ.

Garnett Passe and Rodney Williams Memorial Foundation Scholarship. The role of Staphylococcus aureus superantigens and fungal antigens in chronic rhinosinusitis (\$97,216 2010) 2010-2012, Pant H, Wormald PJ, Foreman A, Tan LW, Macardle P.

Garnett Passe and Rodney Williams Memorial Foundation. (Surgeon Scientist grant) (\$75,000 2010) Foreman A.

Garnett Passe and Rodney Williams Memorial Foundation. (Surgeon Scientist grant) (\$75,000 2010) Valentine R.

Garnett Passe and Rodney Williams Memorial Foundation. (Surgeon Scientist grant) (\$75,000 2010) Boase S.

The Hospital Research Foundation. (Strategic Initiatives Program grant) Inflammatory mechanisms and therapies in chronic disease-asthma, COPD, stroke, cerebrovascular disease, rheumatology diseases and chronic rhinosinusitis (\$250,000 2010) 2009-2011, Rischmueller M, Wormald PJ, Koblar S, Lester S, Lang C, Tan LW, Zalewski P.

The Hospital Research Foundation /ENT Department Postgraduate Research Scholarship (\$22,500 2010) Singhal D.

Garnett Passe and Rodney Williams Memorial Foundation. Postgraduate Research Scholarship (\$45,000 2010) Jervis-Bardy J.



## PSYCHIATRY, University of Adelaide Discipline of



Dr Geoff Schrader

### Research Focus

- The relationship between depression and cardiovascular disease and its management.
- The development of more efficient and effective strategies for the management of mental illness.

Research activity in the Department of Psychiatry at TQEH is focused on improvement in the delivery of mental health services and how psychiatry and medicine can mesh to provide best possible results for patients. Current research includes a study looking at the impact of fish oil on depression in patients with heart disease, and a study of how depression is managed by general practitioners in patients with heart disease. The department is also evaluating changes in how mental health services are delivered at the hospital, particularly on how modifications to service might improve waiting times in the emergency department and lead to better follow up care in the community.

## OVERVIEW

During 2010, patients continued to be recruited for a randomised controlled trial of omega 3 fatty acids for depression in patients with ischaemic heart disease. The trial is part of a project funded by the National Heart Foundation and beyondblue which is also investigating possible mechanisms including the role of endothelial dysfunction on any impact of omega 3 fatty on depression.

Dr Schrader continued his collaboration with Professor Simon Stewart, Professor of Preventative Cardiology at the Baker Heart Research Institute and Professor David Wilkinson, of the Department of Primary Care at University of Queensland on the NHMRC funded "TakeHeart" project. Data from this project from patients recruited from 24 general practices is currently being analysed. Dr Schrader has also continued his collaboration with Prof John Beltrame from the Discipline of Medicine and together they supervise four PhD students, Rosanna Tavella, Alexis Wheeler, Rachel Dreyer and Tracy Air whose projects focus on various aspects of the association between cardiac disease and depression. Rosanna Tavella continued her investigation into the impact of depression on quality of life in cardiac patients. Alexis Wheeler continued a project examining mortality rates in cardiac patients with depression and this work is being carried out in association with the Epidemiology Branch of the South Australian Department of Health. She continued recruiting patients for a study to determine the effect of mindfulness based meditation on heart rate variability in depressed outpatients at the Centre for the Treatment of Anxiety and Depression. Rachel Dreyer continued a project which will examine gender effects in the presentation and management of cardiovascular disease. Tracy Air continued working on her project which will examine the impact of depression on the cost to the community of cardiovascular disease.

Dr Rohan Dhillon, Dr Tarun Bastiampillai and Dr Jorg Strobel and Dr Niranjana Bidargaddi continued to develop their interest in new approaches to the management of mental illness and completed a study into the impact of a reduction of bed numbers in the Cramond Clinic, TQEH.

Dr Stephanie Fryar-Williams began a study aimed at identifying bio-markers in patients with a range of psychiatric disorders. Dr Maura Kenny, clinical senior lecturer, continued to develop her interest in mindfulness based cognitive psychotherapy at the Centre for the Treatment of Anxiety and Depression.



**STAFF**  
**SENIOR LECTURER**  
GD Schrader MBBS PhD FRANZCP

**RESEARCH FELLOWS**  
S Fryar-Williams MBBS Bsc FRANZCP  
N Bidargaddi PhD

**RESEARCH NURSE**  
L Burres RN

**ADMINISTRATION**  
D Alberton

**GRANTS**  
National Heart Foundation of Australia/Beyondblue. Omega-3 fatty acid supplementation for symptoms of depression in cardiovascular disease. (\$222,500 2010) 2008-2011, Schrader GD, Beltrame J, Howe P, Berry N, Coates A, Buckley J.

The Hospital Research Foundation/University of Adelaide Divisional Postgraduate Research Scholarship (\$22,500 2010) Wheeler A.

RENAL UNIT



Professor Graeme Russ

Research Focus

- Many aspects of the care of patients with renal disease with special emphasis on kidney transplantation at clinical, epidemiological and experimental levels
- A new research initiative which began in 2005-6 in the field of pancreatic islet transplantation as treatment for Type-1 diabetes mellitus has produced the department's first islet transplant. Five islet transplants occurred in 2010 with tremendous success.
- The second of a three year Hospital Research Foundation Program Grant continues to establish the renal unit as a centre for renal translational research, and to bring areas of research into the clinical arena for the benefit of renal transplant patients.

**OVERVIEW**  
2010 has again been an extremely productive year for research in the department. The highlights of the year have been:

- Commencement of islet transplantation in South Australia
- Ongoing funding from the Juvenile Diabetes Research Foundation for the Pancreatic Islet Transplant Project
- Research funding to the department exceeding 1 million dollars
- Over forty publications in peer reviewed international medical journals
- Both post graduate students and honours' students commenced during 2010
- Two Honours Students awarded Honours in BSc Honours Degree
- Continuing growth in contract research between commercial companies and the department;

The research program at the Department of Nephrology and Transplantation Services at The Queen Elizabeth Hospital has three broad aims which cover firstly the epidemiology of kidney disease, cellular therapies for chronic renal disease/organ transplantation and clinical renal transplantation research.

The department had another good year for kidney transplantation, with eighty-two kidney transplants, which included twenty-eight with live donors. We maintain the difficult task of being able to perform more difficult transplants, transplanting three recipients with ABO or HLA incompatibility who otherwise may not have been considered for a transplant.

**EPIDEMIOLOGICAL RESEARCH**  
The principal focus of Epidemiological Research has continued to be the Australia and New Zealand Dialysis and Transplant (ANZDATA) and ANZ Organ Donor (ANZOD) Registries, conducted within the Department. Assoc Prof McDonald is the Executive Officer for ANZDATA, and Prof Russ for ANZOD. These are now funded by the National Organ and Tissue Donation and Transplantation Authority; operations of each are overseen by separate steering committees.

POSTGRADUATE STUDENTS  
**PhD CANDIDATES**

R Tavella	Quality of life, depression and cardiac disease
A Wheeler	Associations between depression and cardiac disease
R Dreyer	Variation in Recovery: Role of Gender on Outcomes of Young Acute Myocardial infarction (AMI) – Patients. The VIRGO Study
T Air	The economic impact of depression in cardiovascular disease



For both Registries, the core roles are gathering and utilizing information about the incidence, prevalence and outcomes of dialysis and transplantation across Australia and New Zealand (for the ANZDATA Registry), and the number and characteristics of deceased organ donors (for ANZOD Registry).

As part of this there is an active research role, with a number of papers produced and a wide network of collaborators in renal units throughout Australia. In 2010, the academic output of the registry continued with papers in peer-reviewed literature from a variety of authors. These included contributions about peritoneal dialysis, haemodialysis and transplantation. Extensive collaboration continues with the use of ANZDATA data by various Health and Welfare agencies, producing major reports on chronic kidney disease in Australia. During the year staff expanded. Dr Phil Clayton joined as Epidemiology Fellow, and later in the year Dr Blair Grace joined as a post-doctoral fellow (funded by NHMRC Capacity Building Grant).

## LABORATORY RESEARCH

The study conducted by Ravi Krishnan's group involves the characterization of adult bone marrow mesenchymal stem cells (MSC) and its application in a model of kidney transplantation. MSC have an intrinsic potential to migrate to sites of inflammation and facilitate tissue repair where injury is present and therefore are very useful cell therapy agents.

In solid organ transplantation, immunosuppressive agents are administered to prevent the rejection of the transplanted organ. However, due to long term systemic treatment with immunosuppressive agents side effects such as opportunistic infection and malignancies occur. Thus reducing immunosuppression in the long term may also reduce the side effects. The study focus examines the ability of MSC to complement immunosuppressive agents and thus allowing the reduction in the amount of immunosuppression used and associated side effects. Tim Searcy who is working as a PhD student (Recipient of Australian Post-graduate Award) is examining how the immunosuppressive agent Sirolimus can enhance the ability of MSC to become more potent cells in suppressing the immune response. Ms Kisha Sivanathan, Honours student (recipient of the Petrucco Honours Scholarship) is examining how cytokines in an inflammatory environment can affect how MSC function. Dr Dyane Auclair who is a veterinary/research scientist is currently studying the sheep as a preclinical model to evaluate how

MSC can be combined with the immunosuppressant Sirolimus to inhibit kidney transplant rejection effectively and safely. Mrs Julie Johnston has been characterizing the in vitro immune responses of human and sheep MSC as well as establishing techniques to follow molecular markers of rejection in the sheep model. In addition, the collaboration with Assoc Prof Betty Sallustio and Assoc Prof Ray Morris from the TQEH Department of Clinical Pharmacology have provided expertise in monitoring therapeutic levels of immunosuppressive agents administered in our sheep model. The evaluation of the efficacy of MSC in our model will allow the translation to human clinical trials in the treatment kidney transplant patients.

The Hospital Research Foundation continues to support the laboratory research effort. In 2010 the Foundation continues its Program Grant for the Renal Unit in creating a centre for renal translational research and also supported small grants which assisted Dr Michael Collins and Dr Matthew Stephenson with their studies in renal transplantation.

The Renal Unit encompasses both Kidney Transplantation research and research on Type 1 Diabetes. The team's Kidney Transplant research focuses on the identification, treatment and prevention of kidney disease in our community and the team is using different methods to investigate rejection in transplantation.

The Islet Transplant Group is focusing on the isolation and transplantation of healthy pancreatic islets (insulin producing cells in the pancreas) as a treatment and potential cure for Type 1 diabetes.

During the year Dr Michael Collins continued a major study of 'screening for colo-rectal cancer in kidney transplant recipients'. This study is ongoing and the initial data looks very promising in the management of transplant recipients. Michael has continued his PhD studies into tolerogenic dendritic cell therapy in renal transplantation under the supervision of Assoc Prof Toby Coates and Prof Graeme Russ. Within the dendritic cell laboratory, Dr Natasha Rogers has finalised her studies on tolerogenic liposomes in association with Prof Chris Parish from the Australian National University, and will attend the prestigious Thomas E Starzl Transplant Institute in Pittsburgh Medical Centre for her post doctoral research, commencing in 2011. Dr Claire Jessup has worked on a novel approach to cellular therapy by researching the characteristics of rat endothelial progenitor cells to enhance the engraftment of pancreatic islets. Dr Matthew Stephenson received his PhD from the University of Queensland and continues his study into the effects of how ischaemia of the kidney affects its function as well as investigating dendritic cell markers in urine of kidney transplant recipients to examine patients undergoing acute rejection. Ms Svetlana Kireta continues studies into mesangial cells isolated from nephrectomised kidneys to examine their role in transplant glomerulopathy.

Dr Shaundee Sen is completing his PhD examining the relationship between risk factors and markers of vascular disease among people with kidney disease under the supervision of Assoc Prof Stephen McDonald and Assoc Prof Toby Coates, in addition to Dr Claudine Bonder from the Hanson Institute. Dr Sen's work include assays of endothelial progenitor cell number and function, application of this in clinical studies in dialysis and transplant patients. There has been further investigation of the role of uraemic toxins of p-cresol-indoxyl sulphate in endothelial dysfunction. He has continued to examine the rates of different types of hospital admissions for cardiovascular causes, comparing rates of myocardial infarction and cardiac failure between dialysis and transplant patients and the general population.

Dr Robert Carroll was successful in being awarded a Cellcept Australia Research Grant (CARG) for his study "Immune phenotype to predict recurrent cutaneous squamous cell cancer development in renal transplant recipients: a prospective single blinded multi-centre study".

## SOUTH AUSTRALIAN AND NORTHERN TERRITORY ISLET PROGRAM

In January 2010 the South Australian and Northern Territory Islet Program (SANTIP) conducted its first islet transplant into patients with Type 1 diabetes. A total of five islet transplants were performed during 2010. One recipient has received two transplants while a second recipient received three transplants. One of these recipients is now free of injecting insulin, the first time for 33 years, while the other has thus far markedly reduced her exogenous insulin requirements. Both recipients now have quite stable blood glucose levels and no longer suffer from hypoglycaemia unawareness. Further recipients are on the islet transplant waiting list.

SANTIP continues to be extremely active in sending organs from to St Vincent's Institute in Melbourne for islet isolation. Dr Daisy Mohanasundaram continued with her expertise in rodent islet isolation in mice and rats. She has initiated a project in Type II diabetes to investigate the role of critical zinc transporters in islet biology. Ms Clare Mee has also utilised her expertise in small animal handling in isolation of islets from rodent pancreata. Mr Chris Drogemuller has developed a unique model of testing the variability of zinc transporter gene expression in isolated human islets. Chris, together with Dr Claire Jessup and Assoc Prof Toby Coates supervised Ms Amy Hughes in developing adenoviral gene therapy as a novel therapy to prevent apoptosis in transplanted islets. Ms Mariea Bosco, supervised by Assoc Prof Toby Coates and Dr Daisy Mohanasundaram commenced her PhD in 2010 to study the role of zinc transporter gene expression in diabetes. Mr Clyde Milner continues to provide laboratory supervision and management on the Islet Transplantation Program, while Islet Transplant nurse Ms Toni Miller has coordinated the transplant list.

Three patients are on the active waiting list and are being constantly monitored in a new clinic at the Royal Adelaide Hospital conducted by Assoc Prof Toby Coates and endocrinologist Assoc Prof David Torpy. Organ donors in South Australia continue to allow SANTIP to contribute a high number of pancreata for islet isolation and a further four organs for whole pancreas transplantation.



**STAFF**  
**CO-DIRECTOR AND PROFESSOR**  
**OF RENAL AND TRANSPLANT SERVICES**  
GR Russ MBBS FRACP PhD

**SENIOR STAFF NEPHROLOGISTS**  
RP Carroll MB BCh MA FRACP

SP McDonald MBBS(Hons) FRACP PhD

**TRANSPLANT SURGEONS**  
CH Russell MB BCh FRACS BA(Hons)  
MA (Oxon) FRCS (Edin)  
NR Brook BSc MSc BM MRCS MD FRCS (Urol)

**RENAL TRANSPLANT NEPHROLOGIST**  
PTH Coates MBBS FRACP PhD

**SENIOR MEDICAL SCIENTIST**  
R Krishnan BSc(Hons) PhD

**MEDICAL SCIENTISTS**  
C Milner BAppSc  
S Kireta BSc  
C Drogemuller BSc  
D Mohanasundaram PhD  
M Stephenson PhD  
C Mee BHLthSc

**CJ MARTIN FELLOW**  
C Jessup PhD

**RESEARCH ASSISTANT**  
D Rojas BSc(Hons) from Oct 2010

**TECHNICAL OFFICER**  
J Johnston

**CLINICAL TRIALS**  
B Hockley RN  
C Russ RN  
M Hockley RN  
K Fisher  
D Turner RN  
E Scott RN  
T Miller RN  
C Chan RN

**ANZDATA REGISTRY**  
L Excell  
B Livingston B Surv G Dip CIS  
N Briggs PhD  
B Grace PhD Dip SCI  
C Leitch  
H Dent BSc(Hons)

**AWARDS**  
N Rogers. Ross Wishart Award,  
Aust Society for Medical Research  
N Rogers. AusBiotech Student Association  
-GSK National prize  
N Rogers. ANZSN Scientific Meeting  
– Novartis Overseas Travelling Award  
N Rogers. ANZSN Scientific Meeting  
– ANZSN Travelling Fellowship  
N Rogers. NHMRC Training Fellowship Overseas  
Biomedical  
N Rogers. TSANZ Travel Grant \$2,500  
N Rogers. TSANZ Scientific Meeting  
– President’s Prize  
N Rogers. TSANZ Scientific Meeting  
– Young Investigator Award  
M Collins. TSANZ Scientific Meeting  
– Young Investigator Award  
M Collins. ANZSN Scientific Meeting  
– Young Investigator Award in Clinical  
Science  
C Jessup. TSANZ Scientific Meeting  
– Young Investigator Award \$500  
D Rojas. TSANZ Scientific Meeting  
– Young Investigator Award  
T Coates, S Kireta, M Stephenson.  
Amgen-TSANZ Award  
D Rojas. TSANZ Travel Grant, \$2,500.  
S Sen. TSANZ Travel Grant, \$2,500.  
A Hughes. TSANZ Travel Grant, \$2,500.  
S Kireta. TSANZ Travel Grant, \$2,500.  
T Searcy. TTS International Basic Science  
Mentor-Mentee Award USD\$5,000  
R Krishnan. TTS International Basic Science  
Mentor-Mentee Award USD\$800  
R Carroll. CARG Research Award  
C Jessup. Faculty International Conference Award,  
Faculty of Health Sciences,  
University of Adelaide \$1,500

**ACKNOWLEDGEMENTS**  
The Renal Unit especially wishes to thank The  
Hospital Research Foundation for its continuing  
program, scholarship and small grants support.  
  
We very much appreciate the generous support of  
the Muriel T Gunn Foundation to enable enhanced  
work to continue in the Renal Unit.

**POSTGRADUATE STUDENTS**  
**CONTINUING POSTGRADUATE STUDENTS**

N Rogers MBBS FRACP	Specific targeting of dendritic cells with tolerogenic liposomes in allotransplantation
M Collins MBChB FRACP	Tolerogenic dendritic cell therapy in kidney transplantation
S Sen MBBS FRACP	Investigation of classical and novel risk factors for cardiovascular disease and function in kidney disease
D Rojas BSc (Hons)	Studies of clinically applicable human tolerogenic dendritic cells and PD-L2 genetic modification of human islet allograft to promote graft survival
A Hughes BSc (Hons)	Transduction of pancreatic islets with insulin-like growth factor-II for transplantation in the treatment of type-I diabetes
M Bosco BSc (Hons)	The role of Zinc transporter families in islet cell biology
C Hope BBiotech(Hons)	Predicting recurrent cutaneous squamous cell carcinoma development in renal transplant recipients
T Searcy BBiotech(Hons)	Mesenchymal stem cells and immunosuppressive agents in the control of transplant rejection

**HONOURS STUDENTS**

D Penko	Rat endothelial progenitor cells to promote pancreatic islet engraftment BSc(Hons) First Class University of Adelaide
K Sivanathan	Proinflammatory cytokines modify mesenchymal y stem cell abilitto suppress T-cell immune responses BSc(Hons) First Class University of Adelaide



## APPOINTMENTS

N Rogers Senior Lecturer Level C, School of Medicine  
Faculty of Health Sciences, The University of Adelaide.

## GRANTS

Amgen-TSANZ. (Research grant) The Role of HLA  
Antibodies in Transplant Glomerulopathy.  
(\$50,000 2010) Kireta S, Eng H, Stephenson M,  
Jessup C, Bennett G, Russ G, Coates T.

Australian Federation of Graduate Women.  
(Postdoctoral grant) (\$5,000 2010) Jessup C.

CellCept Australia. (Research grant) (CARG).  
(\$20,000 2010) Carroll R.

The Hospital Research Foundation. (Strategic Initiatives  
Program grant) South Australian Translational Centre  
for Renal Research (\$250,000 2010) 2009-2011 Russ  
GR, PT Coates, S McDonald, Sallustio BC, Morris RG.

The Hospital Research Foundation/University  
of Adelaide. Divisional Scholarship (\$10,214 2010)  
Rojas DM.

Juvenile Diabetes Research Foundation. (Program  
grant) South Australian and Northern Territory  
Pancreatic Islet Isolation Program (\$377,084 2009-  
2010) 2006 – 2010, Russ GR, Coates PTH, Morris RG,  
Sallustio BC, and all other members of SANTIP.

NHMRC. (Capacity Building grant in Population Health)  
Improving population health by a multidisciplinary,  
multi-method focus on kidney disease of the young,  
the old and of Indigenous Australians (\$54,970 2010)  
2007-2010, Craig J, Cass A, Irwig L, Chadban S,  
McDonald S, Devitt, Macaskill P, Jones M, Howard K.

NHMRC. (Postgraduate Medical Scholarship)  
Tolerogenic Dendritic Cells in Kidney Transplantation:  
studies in Common Marmoset Monkeys (\$32,628  
2010) 2009-2011, Collins M.

NHMRC. (Postgraduate Medical Research Scholarship)  
Specific targeting of dendritic cells with tolerogenic  
liposomes in allotransplantation (\$32,628 2010) 2007-  
2010, Rogers N.

NHMRC. (Project grant # 565033) The role of renal  
dendritic cells in infections and immunity under  
immunosuppression (\$152,125 2010) 2009-2011,  
Coates PTH.

The Royal Australasian College of Physicians (RACP)  
and the Australian and New Zealand Society of  
Nephrology (ANZSN). 2010 Jacquot Research  
Establishment Award (\$90,000 2010) Carroll R.

Trevor Prescott/Freemasons Scholarship.  
(\$5,000 2010) 2009-2011, Hughes A.

University of Adelaide. (Centre for Stem Cell  
Research, Robinson Institute Petrucco Honours  
scholarship) (\$4,000 2010) Sivanathan K.

University of Adelaide. (Centre for Stem Cell  
Research, Robinson Institute Project grant)  
Endothelial progenitor cells and sphingosine  
kinase in islet transplantation (\$75,000 2010-2011)  
Jessup C, Coates T, Bonder C.

University of Adelaide. (Centre for Stem Cell  
Research, Robinson Institute Collaborative Research  
Funding Scheme) (\$12,000 2010) Jessup C et al.

## CONTRACT RESEARCH

Angioblast Systems Ltd. Studies on the therapeutic  
use of adult mesenchymal stem cells in degenerative  
diseases (\$192,000 2008-2010) Krishnan R.

## RESPIRATORY MEDICINE UNIT AND CLINICAL PRACTICE UNIT



**Associate Professor  
Brian Smith**

## Research Focus

- Best Practice/medication/counselling  
combination intervention for inpatient  
smoking cessation (STOP study)  
Smoking prevention initiatives for young  
people Nicotine receptor up-regulation  
with transdermal nicotine patches
- Evaluation of the Central Northern Adelaide  
Health Service (CNAHS) Smoke Free Policy
- Positional aspects to obstructive  
sleep apnoea management
- Nitric Oxide
- Mandatory reporting of sleep apnoea
- Innovative forms of portable oxygen  
delivery (POC study)
- Screening for hepatopulmonary syndrome  
in patients with chronic liver disease and  
chronic active hepatitis

## OVERVIEW

A range of evidence based projects, pharmaceutical  
industry new drug trials, sleep-related and other  
studies are underway.

The Respiratory Medicine Unit and Clinical Practice  
Unit have collaborated across units at The Queen  
Elizabeth Hospital (TQEH) (including Cardiology,  
Neurology/Acute Stroke Service, and Vascular)  
and beyond to evaluate the potential synergistic  
benefits of commencing smoking cessation, for  
inpatients, using latest anti smoking medication  
and Best Practice counselling compared to the  
same counselling on its own. Varenicline, which  
has PBS approval is superior to nicotine patches  
for sustained smoking abstinence yet has never  
been formerly evaluated when commenced in an  
inpatient setting. The best practice counselling is  
supplied by The South Australian Quit Line which is  
based on Greenhill Road and provides a year round  
service to smokers, in the form of highly supportive  
professionally trained counsellor support. In addition  
TQEH Research Officers who have undergone  
Quit SA training via the Quitskills programme and  
training in motivational interviewing techniques  
by collaborator, John Litt (Flinders Medical Centre)  
recruit and initiate the first counselling session for  
all patients. The purpose of the project is to evaluate  
the impact of this inpatient initiated new medication/  
Best Practice counselling, to issue smoking cessation  
as a secondary prevention, in people admitted with  
smoking related illnesses.

A number of TQEH Registrars, Advanced Trainees,  
Research Officers, Medical Students and Consultants  
have undergone training workshops for The  
Cochrane Collaboration to undertake systematic  
reviews in specialised areas of Respiratory Medicine.  
In 2010 three courses were held in Adelaide  
including an 'Introduction to analysis' and 'Review  
completion workshop' in addition to an Advanced  
Cochrane course at the TSANZ Annual Scientific  
Meeting in Brisbane (March 2010). In total fifteen  
reviews are well underway under the supervision of  
Brian Smith and other members of the Australian  
Cochrane Airways Group Network across most  
states of Australia. Two of these manuscripts are  
undergoing final peer review and one was completed  
and published online in the December edition of the  
Cochrane Library 'Mass media interventions for the  
prevention of smoking in young people'.

Respiratory Medicine and The Clinical Practice Unit  
have collaborated with Professor Michael Roberts  
and Dr Tom Robertson, Therapeutics Research



Centre, as well as TQEH Cardiology Unit (Prof John Beltrame) to conduct a pilot evaluation of nicotine receptor up-regulation activity through metabolic induction, changes in responsiveness and surrogate evaluation methods. A successful research application was submitted in 2010 through The Hospital Research Foundation and recruitment is scheduled to commence in 2011.

The Clinical Practice Unit is evaluating the Hospital's Smoke Free Policy which was initiated in May 2010, as per CNAHS recommendations. Follow-up data collection is scheduled for April 2011.

The Respiratory Medicine Unit's Sleep Laboratory, led by Chief Scientist Sean Homan, is evaluating the effects of exercise/weight loss/lifestyle upon the indicators of obstructive sleep apnoea. Also in the laboratory Dr Antony Veale leads activity looking at diagnosis and therapy of positional sleep apnoea. Sleep technician Nathan Elgar is also conducting an evaluation into South Australian government legislation on the mandatory reporting of sleep apnoea by doctors and the subsequent effect on patient diagnosis and care.

An evaluation to compare portable oxygen units and regular oxygen cylinders in a randomised, controlled cross-over design commenced in 2010. This trial aims to evaluate the efficacy and effectiveness of oxygen

delivery with the latest, easy to use portable oxygen device for patients with COPD requiring oxygen therapy. Study completion is expected in 2011.

According to medical literature hepatopulmonary syndrome has a reported prevalence of 20-30%, however the actual prevalence seen in clinical practice is significantly lower. As a result the question is raised whether the prevalence is actually lower than what is reported in the literature, or if failed or miss-diagnosis of hepatopulmonary syndrome is occurring. As such the Respiratory Medicine Unit is collaborating with the TQEH Gastroenterology Unit to screen for hepatopulmonary syndrome in patients with chronic liver disease or chronic active hepatitis via assessment of orthodeoxia. Arterial blood gases are collected while in the supine and prone positions to examine PO2 results along with additional testing. Recruitment is scheduled to finish in 2011.

The Pulmonary Function Laboratory is consolidating its formal comparison of lung function in Asian and non Asian subjects to evaluate the need for correction according to ethnicity, and exploring bronchial challenge techniques, including the use of Mannitol.

The Respiratory Research Unit continues to evaluate a range of new medications for COPD, Asthma, IPF and Bronchiectasis lead by Drs. Antony Veale and Jon Polasek.



Research in the Respiratory Medicine Unit is focused on improving clinical care and quality of life for all patients with respiratory related conditions. The Unit is focusing on clinical trials testing the latest available equipment such as battery powered portable oxygen and methods used to treat sleep apnoea, as well as the latest medications and techniques for the treatment of depression, anxiety, asthma, emphysema, smoking and other respiratory conditions. The Unit also has an interest in Indigenous health, with an aim to reduce the health care gap for Aboriginal populations. As cigarette smoking is the leading risk factor associated with preventable premature death in the world, the Respiratory Unit is also involved in national smoking cessation research targeting hospitalised patients, smoking during pregnancy, cessation for staff, Indigenous smoking as well as prevention initiatives in young people including mass media and community interventions.

STAFF

DIRECTOR

BJ Smith FRACP Dip Clin Epi PhD

SENIOR CONSULTANTS

I Nikitins FRACP  
Prof Ruffin retired from clinic March 2010  
A Veale PhD FRACP  
J Polasek FRACP  
A Roy FRACP  
S Lehmann FRACP

ADVANCED TRAINEE

Z Usmani  
M Chandratilleke

PRINCIPAL MEDICAL SCIENTIST

S Homan MSc

PULMONARY FUNCTION LABORATORY

D Keatley BSc(Biomed)(Hons)  
A Herrero Adv RSC Cert of Science  
N Leonardis BSc  
M Storey

CLINICAL TRIALS UNIT COORDINATOR

K Boath Mgt Cert Adv Cert BHLthSc

RESEARCH NURSE

P Gluyas RN RM CC Cert

SLEEP LABORATORY

M Smith BSc  
T Faulkner BPsych (Hons)  
N Elgar BSc (Hons)  
T Hams (Admin)

RESPIRATORY NURSES

L Kotal RN RM CC Cert Post Grad Dip Health Counselling  
K Lawton BAN  
K Royals RN

UNIT PHARMACIST

T Jones B Pharm Dip Ed PhD

SECRETARIAL

N Pukala Dip BAd  
R McCawley  
M Ashley  
C Deegan

PHD STUDENT

J Bignall  
Positional effects of obstructive sleep apnoea Supervisors B Smith, A Veale.

CLINICAL PRACTICE UNIT

K Carson Cert III Lab Skills; Dip Lab Med  
M Brinn BHLth Sc(Life Sc) BHLth Sc(Anat Hons)  
N Labiszewski BSSc

GRANTS

NHMRC. Effect of asthma during pregnancy on placenta and foetus (\$216,550 2010) 2009-2011, Clifton V. (Smith BJ Associate Investigator).

The Hospital Research Foundation (Small Grant). Pilot evaluation of nicotine receptor up-regulation activity through metabolic induction, changes in responsiveness and surrogate evaluation methods (\$20,000 2010-2011) Roberts M, Smith BJ, Robertson T.

CLINICAL TRIALS (DR ANTONY VEALE, DR JONATHAN POLASEK)

Boehringer Ingelheim. Asthma study designed to assess the efficacy of Spiriva® as add-on controller therapy on top of usual medication for subjects with severe asthma (\$13,211 2010).

Boehringer Ingelheim. LABA Emphysema study designed to assess efficacy of a new long acting medication for subjects with emphysema (\$29,524 2010).

Boehringer Ingelheim. Idiopathic Pulmonary Fibrosis study designed to evaluate efficacy of a new medication to prevent scarring of lungs and disease progression in subjects with Idiopathic Pulmonary Fibrosis (\$19,404 2010).

Boehringer Ingelheim. Roll over study for those subjects participating in the Idiopathic Pulmonary Fibrosis study designed to evaluate efficacy of a new medication to prevent scarring of lungs and disease progression in subjects with Idiopathic Pulmonary Fibrosis (\$1,815 2010).

Boehringer Ingelheim. Emphysema study designed to compare the delivery of Tiotropium® via the Respimat Inhaler versus the currently used handihaler® (\$20,610 2010).

Boehringer Ingelheim. Emphysema study designed to assess the stepwise withdrawal of inhaled steroids in patients with severe COPD (\$24,255 2010).

Gilead. Idiopathic Pulmonary Fibrosis study designed to assess the efficacy of Ambrisentan in subjects with Idiopathic Pulmonary Fibrosis (\$41,594 2010).

Pharmaxi. Study designed to assess the safety and efficacy of inhaled Mannitol® in subjects with bronchiectasis (\$11,825 2010)

RHEUMATOLOGY UNIT



Dr Maureen Rischmueller

Research Focus

- Autoimmunity
- Epidemiology
- Immunogenetics
- Osteoarthritis
- Giant Cell Arteritis

The Department of Rheumatology is undertaking research into causes and complications of rhematic diseases such as Sjögren’s syndrome, systemic lupus erythematosus, scleroderma and giant cell arteritis with a major focus on arthritis, namely osteoarthritis and rheumatoid arthritis. The team is looking at the genetics of these diseases to help determine the causes, which will ultimately assist with finding effective therapies and treatments for these diseases. The department houses one of the three largest Rheumatology Clinical Trial Centres in Australia, where research findings are immediately benefiting many of the over 2000 patients who come to the Clinic.

OVERVIEW

The Department of Rheumatology strives to augment its clinical rheumatology services with research programs into the causation and complications of rheumatic diseases and evaluation of new generations of pharmaceutical agents for the treatment of arthritis. The major focus of this research is towards the immunogenetics, pathogenesis, and epidemiology and treatment of a number of rheumatic diseases.

Associate Professor Catherine Hill is chief investigator on an NHMRC funded randomized clinical trial of fish oil in the treatment of knee osteoarthritis, chief investigator on the Health Observatory Program grant funded by The Hospital Research Foundation, and a newly appointed Chief Investigator to the North West Adelaide Health Study. Her other current areas of investigation include population studies of musculoskeletal disorders, including data from the North West Adelaide Health Study (NWAHS) cohort study, influence of health literacy on health outcomes and chronic diseases, establishment of SA GCA Registry, systematic reviews of steroid sparing agents in GCA and PMR. She is also currently undertaking surveys of gout in collaboration with Arthritis SA.

Dr Maureen Rischmueller’s research group, led by Medical Scientist Ms Sue Lester, continues to focus on the genetics of autoimmunity, providing insights into biological mechanisms underlying disease, and ultimately enabling identification of therapeutic targets. In addition to their large cohort of patients with Sjögren’s syndrome, they, in collaboration with Drs Simon Burnet, Catherine Hill, and Samuel Whittle, are continuing to archive DNA and serum samples from a range of other rheumatic diseases, such as systemic lupus erythematosus, scleroderma osteoarthritis and giant cell arteritis. In the past year, the Rheumatology Department has been contributors/collaborators in two large international genomic studies, one on Sjögren’s syndrome and one on SLE, and both of these are in the data analysis stage. Further, we are an integral part of a recently formed Australia and New Zealand alliance for genomic studies on patients with arthritic conditions and will be the hub for giant cell arteritis samples and associated studies. Additionally, we manage the Australian Scleroderma Interest group sample repository, which now consists of nearly 700 patients, and two comprehensive studies (one on autoantibodies and the other a genome wide scan) are currently underway. We also welcome Professor Hans Nossent, from the University of Tromso in Norway, who is spending a

sabbatical year (from mid 2010 to mid 2011) with us, studying the genetics of the type I interferon pathway and cytokine and clinical associations in both SLE and Sjögren’s syndrome.

Dr Samuel Whittle completed the degree of Master of Clinical Epidemiology at the University of Newcastle in 2010. He is a multi-national fellow of the 3e (“Evidence, Expertise, Exchange”) initiative, an international collaboration of rheumatologists and epidemiologists, and will publish a set of international guidelines on pain management in the inflammatory arthropathies in 2011. He is involved in the Cochrane Collaboration, currently undertaking systematic reviews of opioid therapy in rheumatoid arthritis, neuromodulators, antidepressants and muscle relaxants in inflammatory arthritis, and steroid-sparing agents in GCA and PMR. He is an associate editor of the International Journal of Rheumatic Diseases.

Another important component of the Department of Rheumatology’s research interests in the Centre for Inflammatory Diseases Research (CIDR), where Dr Rischmueller is CIA, and Sue Lester and Catherine Hill are CI and AI respectively. In the past year we have gained important epidemiological data (through the SA Health Omnibus questionnaire) and insight into some important inflammatory disease mechanisms, through the work of Dr Hai Tran, which has set us up for an exciting year in 2011.

**STAFF**  
**DIRECTOR/SENIOR LECTURER**  
M Rischmueller MBBS FRACP

**STAFF SPECIALISTS**  
S Burnet MBBS FRACP  
CL Hill MBBS MD MSc(Epi) FRACP  
SL Whittle MBBS FRACP

**REGISTRAR**  
J Ninan

**MEDICAL SCIENTISTS**  
S Lester BSc(Hons)  
H Tran BSc PhD

**TECHNICAL OFFICER**  
A Berry

**CLINICAL TRIALS COORDINATORS**  
S Downie-Doyle BSc(Hons) PhD  
R Battersby BSc Grad Cert Drug Development

**CLINICAL TRIALS ASSISTANTS**  
**/ADMINISTRATIVE SUPPORT**  
J Marrett BBus(Mkt)  
M Bubicich BSc(Hons)  
E Dunstan  
M Devine

**RHEUMATOLOGY CLINICAL NURSES**  
A Batty BNursing  
C Tosh Dip AppSc(Nursing)

**GRANTS**  
NHMRC. (Project Grant ID# 451900) Fish Oil in knee osteoarthritis (\$162,875 2010) 2008-2010, Hill CL, Cleland LG, Jones G, March LM.

The Hospital Research Foundation. (Strategic Initiatives Funding Program Grant) The Health Observatory (\$250,000 2010) 2009-2013, Adams RJ, Wilson DW, Hill CL, Visvanathan R, Ruffin RE, Wittert G.

The Hospital Research Foundation. (Strategic Initiatives Funding Program Grant) Inflammatory mechanisms and therapies in chronic disease – asthma, COPD, stroke, cerebrovascular disease, rheumatology diseases and chronic rhinosinusitis (\$250,000 2010) 2009-2011. Rischmueller M, Wormald PJ, Koblar SA, Lang CJ, Lester S, Tan LW, Zalewski P.

Arthritis Australia. (Project grant) Association of n-3 fatty acid levels and serum COMP levels with inflammation, symptoms and cartilage volume in knee osteoarthritis. (\$35,000 2010) Hill CL, Cleland LG, Jones G, March LM.

Arthritis Australia. (Project grant) Novel autoantibodies target purinergic receptors in patients with Sjogren’s syndrome. (\$15,000 2010) Tran H, Neufing P, Rischmueller M.

The Hospital Research Foundation. (Small grant) Is XIAP a susceptibility gene for asthma? (\$5,000 2010-2011) Zalewski P, Roscioli E, Lester S.

**NEW GRANTS AWARDED FOR 2011**  
Arthritis Australia (Project Grant) The arthritis genomics recruitment initiative in Australia. \$50,000, Brown M, Merriman P, Rischmueller M.



SURGERY, University of  
Adelaide Discipline of



Professor Guy Maddern

Research Focus

- Surgical simulation
- Liver tumour ablation
- Abdominal adhesion prevention
- Vascular disease risk factors
- Sinus surgery and its pathophysiology
- Fast track colorectal cancer surgery
- Single port surgery
- Increase use of local anaesthesia for day surgery

OVERVIEW

2010 has seen a continuation of our major areas of research endeavour with increased interest and publications arising from the areas of liver tumour ablation, abdominal adhesion prevention, risk factor determination for aneurysm repair, sinus surgery and its pathophysiology, single port surgery and, more recently, work is coming to conclusion on surgical simulation.

The surgical simulation work, in particular, has been conducted in collaboration with the Royal Australasian College of Surgeons and has been attempting to look at the role of not only high fidelity simulators compared to simple box trainers in obtaining useful surgical skills development but also a pilot has now been performed of a mobile surgical simulator that takes the form of a van fitted out with four surgical stations able to deliver surgical simulation training at remote sites both in rural New South Wales and South Australia as well as in greater metropolitan areas that do not have access to appropriate simulation training.

This development offers exciting potential for a country such as Australia which has smaller hospitals scattered throughout its land mass requiring training to be performed but unable to afford or staff simulator units. This piece of research may well provide evidence that such a simulator works well in the Australian situation and should be supported by State Governments as well as the College of Surgeons.

The Discipline of Surgery has also acted as a focus for the annual meeting of the Surgical Research Society of Australasia. This Society brings together young surgical scientists to an annual forum held at the Basil Hetzel Institute and critiques their work. The meeting in 2010 saw over 40 abstracts submitted and most of them presented as either oral or poster formats. It also has developed strong links with the American Academic Surgeons and an exchange has now been put in place.

South Australia is a long way from many European and North American centres and the ability to attract outstanding faculty to South Australia and interact with our own researchers as well as others around Australia is an important and valuable activity which, for the moment, the Basil Hetzel Institute is supporting and reaping the benefits.

STAFF

**RP JEPSON PROFESSOR OF SURGERY  
HEAD, DISCIPLINE OF SURGERY  
HEAD, SCHOOL OF MEDICINE  
DIRECTOR, DIVISION OF SURGERY  
DIRECTOR OF RESEARCH,  
BASIL HETZEL INSTITUTE**  
GJ Maddern MBBS PhD MS MD FRACS

**PROFESSOR OF VASCULAR SURGERY**  
R Fitridge MBBS MS FRACS

**ASSOCIATE PROFESSORS**  
N Rieger MBBS MS FRACS  
WEW Roediger MBBCh MSc DPhil(Oxon) FRACS

**SENIOR LECTURERS**  
M Bruening MBBS MS FRACS  
J Miller MBBS FRACS  
G Rees MBBS FRACS  
D Rodda MBBS FRACS  
D Walsh MBBS FRACS

**STAFF SPECIALISTS**  
A Anthony MBBS FRACS  
M Hamilton MBChB FRACS  
P Hewett MBBS FRACS  
H Kanhere MBBS FRACS  
C Lai MBBS FRACS  
P Subramaniam MBBS FRACS  
D Tonkin MBBS, FRACS  
D Walters MBBS FRACS  
N Wright MBBCh, FRSA

**VISITING SPECIALISTS**  
B Carney MBBS FRACS  
R Harries BMBS FRACS  
M Lodge MBBS FRACS  
I Patterson MBBS FRACS  
D Lance BM FRACS  
A Lord MBBS FRACS  
B Landers MBBS FRACS  
K Moretti MBBS FRACS  
M Lloyd MBBS FRACS  
R Parkyn MBBS FRACS  
F Bridgewater MBBS FRACS FRACS  
G Benveniste MBBS FRACS

**CLINICAL TITLE HOLDERS**  
S Ali Clinical Lecturer  
A Anthony Clinical Lecturer  
W Babidge Affiliate Lecturer  
F Bridgewater Clinical Assoc/Professor  
P Byrne Clinical Lecturer  
B Carney Clinical Lecturer

D Close Clinical Lecturer  
P Cowled Affiliate Senior Lecturer  
A Cowin Affiliate Assoc/Professor  
P Drew Visiting Research Fellow  
A Economos Clinical Lecturer  
P Fleming Clinical Lecturer  
H Forbes Clinical Lecturer  
N Gehling Clinical Lecturer  
P Hewett Clinical Professor  
V Humeniuk Clinical Lecturer  
A Karagiannis Clinical Lecturer  
A Karatassas Clinical Lecturer  
C Lai Clinical Senior Lecturer

The Department of Surgery has a number of active research groups investigating benchtop surgical research and its application to patients. Current areas of research include investigating methods to reduce adhesion formation (a detrimental consequence of any surgery) inside the abdominal cavity and nasal sinuses following surgery. Within the department, the Vascular research group are currently working on improved methods to predict which patients are likely to gain most benefit from aneurysmal repair of abdominal aortic aneurysms.

The liver surgeons are looking at techniques to destroy liver tumours, as well as interventions designed to detect and control liver tumours when they occur, particularly from bowel cancer. The Colorectal surgeons have been assessing the outcome of major colorectal operations, which has meant improvements in patient care, particularly focused on returning bowel function more rapidly and enabling quicker return home for patients.

CM Lee Clinical Senior Lecturer  
M Lloyd Clinical Lecturer  
A Luck Clinical Senior Lecturer  
E Mah Clinical Senior Lecturer  
B McCusker Clinical Lecturer  
R McGovern Clinical Lecturer  
K Moretti Clinical Lecturer  
J Muecke Clinical Lecturer  
S Neuhaus Clinical Assoc/Professor  
R Parkyn Clinical Assoc/Professor  
M Patkin Clinical Lecturer  
C Pozza Clinical Lecturer  
T Proudman Clinical Senior Lecturer  
M Rao Clinical Assoc/Professor  
S Raptis Clinical Senior Lecturer  
T Rayner Affiliate Lecturer  
D Roach Clinical Senior Lecturer  
C Russell Clinical Associate Lecturer  
S Sabaratnam Clinical Lecturer  
N Sacks Clinical Professor  
R Strickland Clinical Lecturer  
P Stuart Clinical Lecturer  
P Sutherland Clinical Senior Lecturer  
LW Tan Affiliate Senior Lecturer  
M Tie Clinical Lecturer  
D Walters Clinical Senior Lecturer  
RP Jepson Research Fellow  
P Cowled PhD

TECHNICAL OFFICERS

B Hutchens  
M Slawinski  
M Smith

PROJECT COORDINATOR

L Leopardi BSc BEng(Biomedical)(Hons)

CLINICAL TRIALS COORDINATORS

S Page BMedSc(Hons)  
B Sivendra BMedRad(NucMed)

NHMRC PROJECT MANAGER

M Boulton BSc(Hons) GradDiplIM

NHMRC PROJECT COORDINATOR/DATABASE MANAGER

K Fitzpatrick BSc(Hons) PhD

COLORECTAL RESEARCH COORDINATOR

J Stephens BSc(Hons) MPH

POSTGRADUATE STUDENTS  
COMPLETED THESIS

E Mullin	Evaluation of ex-vivo liver perfusion as a liver support device in a porcine model of fulminant hepatic failure Doctor of Medicine 2010.
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PhD CANDIDATES

S Krishnan BHLthSc(Hons)	The clinical evaluation of fast-track surgery including extended local anaesthetic infusion for post-operative pain
N Ruzehaji BSc(Hons) BAppSc(Podiatry)	The role of Flii in the pathology of diabetic wounds
J Smith MBBS	The litigation threat to surgical practice: Legal reform and risk management
T Matthews BHLthSc(Hons)	The clinical analysis of liver function: can portosystemic shunts be measured?

MASTER OF SURGERY CANDIDATES

P Ho MBBS	Physician Assistants: Trialling a new health professional in the South Australian health system
C Lauder MBChB	Peritoneal adhesion formation and modulation
L Tiong MBBS	Improving the safety and efficacy of bimodal electric tissue ablation

POSTGRADUATE SCHOLARSHIPS

RACS Foundation for Surgery. (WG Norman Research Fellowship) (\$60,000 2010) Tiong L.

RACS Foundation for Surgery. (Lewis Waller Medico-Legal Scholarship) (\$60,000 2010) Smith J.

The Hospital Research Foundation /University of Adelaide Faculty of Health Sciences (\$22,500 2010) Krishnan S.

The Hospital Research Foundation /University of Adelaide Faculty of Health Sciences (\$22,500 2010) Matthews T.

VACATION SCHOLARSHIPS 2010-11

YS Chan. Department of Surgery funding \$1,200  
HI Wong. ASERNIPS funding \$1,600

GRANTS

ACT Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$56,718 2010) Maddern G.

ANZGOSA. Database. ASERNIP-S. (\$160,000 2010) Maddern G.

BreastScreen Aotearoa (NZ Ministry of Health). Three annual reports showing breast cancer cases referred through BreastScreen Aotearoa. ASERNIP-S (\$33,333 2010) Maddern G.

Cancer Council of South Australia. Seeding Grant: Data Manager support for National Breast Cancer Audit. ASERNIP-S. (\$35,000 2010) Maddern G, Kollias J, Babidge W, De Silva P.

Commonwealth Department of Health and Ageing. MSAC grant. Systematic reviews. ASERNIP-S. (\$384,125 2010) 2008–2011, Maddern G.

Commonwealth Department of Health and Ageing. Horizon scanning. ASERNIP-S. (\$158,639 2010) Maddern GJ.

Commonwealth Department of Health and Ageing. MBS Quality Framework. ASERNIP-S. (\$146,501 2010) Maddern G.

Commonwealth Department of Health and Ageing. Simulated Surgical Skills Program. ASERNIP-S (\$1,000,000 2010–2011) 2008-2011, Maddern G.

Commonwealth Department of Health and Ageing. Therapeutics Goods Administration. ASERNIP-S. (\$21,681 2010) Maddern G.

Cook Australia. Endoluminal audit. ASERNIP-S. (\$62,500 2010) Maddern G.



The Hospital Research Foundation. (Strategic Initiatives Program Grant) Development and assessment of novel surgical technologies and their introduction into the Australian healthcare system. (\$250,000 2010) 2009–2013, Maddern G, Wormald PJ, Jamieson G, Fitridge R, Hewett P.

The Hospital Research Foundation. (Strategic Initiatives Program Grant) Vascular Diseases and Therapeutics Research Group: Towards improved outcomes for vascular disease (\$250,000 2010) 2009–2011, Horowitz JD, Beltrame JF, Morris, RG, Fitridge RA, Zeitz CJ, Wilson DP, Sallustio BS, Chirkov YY, Kennedy JA, Cowled PA.

National Breast Cancer Centre. National Breast Cancer audit. ASERNIP-S. (\$50,000 2010) Maddern G.

NHMRC. (Project Grant) Development of novel treatment for wounds. (\$62,000 2010) 2008–2010, Cowin A.

NHMRC. (Project Grant) Prospective evaluation of a model to predict outcomes following endovascular aortic aneurysm repair. (\$253,000 2010) 2009–2013, Fitridge R, Boulton M, Golledge J, Maddern G, Thompson M, Barnes M.

NHMRC (Project Grant). Function of flightless I in the skin blistering disorder epidermolysis bullosa. (\$172,000 2010) 2010–2012, Cowin A.

NHMRC Development Grant. Development of novel treatment for wounds. (\$23,375 2010) 2008–2010, Cowin A.

NT Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$67,031 2010) Maddern G.

Queensland Department of Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$284,101 2010) Maddern G.

RACS/MMIM/CSSANZ. Colorectal cancer audit. ASERNIP-S. (\$69,828 2010) Maddern G.

South Australian Department of Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$476,431 2010) Maddern G.

South Australian Department of Health. Assessment of New Technologies. ASERNIP-S. (\$165,000 2010) 2009–2011, Maddern G.

South Australian Department of Health. (ENT funding) (\$500,000 2009–2010) 2010–2015, Maddern G.

Tasmanian Department of Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$58,921 2010) Maddern G.

Victorian Department of Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$884,979 2010) Maddern G.

Victorian Department of Health. Project Work. ASERNIP-S. (\$43,065 2010) Maddern G.

WA Department of Health. Annual Reports, Case Note Review booklets, special ad hoc recommendation reports. ASERNIP-S. (\$355,000 2010) Maddern G.

**STAFF**  
**HEAD OF UNIT**  
J Gilhotra MBBS FRANZCO

**VISITING SPECIALISTS**  
M Goggin MBCh BAO FRCSI(Ophth) FRCOphth DO MS  
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D Economos MBS FRANZCO  
N Gehling BMBS FRACO  
P Fleming MBBS FRANZCO  
J Black MBBS FRANZCO  
R Phillips MBChB FRCS DO FRCOphth MD  
D Taranath MBBS FRANZCO  
P Cooper MBBS FRACO

**PHOTOGRAPHER**  
A Drew

**PHOTOGRAPHER/CATARACT AUDIT**  
P Anderson

**CURRENT RESEARCH ACTIVITIES**  
Research and publication has been taking place in the Department of Ophthalmology for many years particularly regarding cataract surgery outcome, focusing on astigmatism. This research continues and with the recent appointment of a fellow in cataract and refractive surgery, the number of publications and presentations has increased. Care of patients with retinal disease continues to grow in this Department prompting further efforts to improve outcome in this area. The fruits of research into these diseases are also being presented and published with considerable growth planned in the near future. Acquisition of several key pieces of equipment over the last two years will facilitate this growth and provide opportunities to progress research in other fields.

**ORTHOPAEDICS  
AND TRAUMA,  
TQEH DEPARTMENT OF  
STAFF**

**DIRECTOR**  
G Morrison MBChB FRCS (Ed) FRACS FAOrthA

**DEPUTY DIRECTOR**  
N Cullen MD FRCS(C) FRACS FAOrthA (from Nov 09)

**VISITING SPECIALISTS**  
ET Mah MD BMBS FRACS FAOrthA  
P Lewis MBBS FRACS FAOrthA  
L Ferris MBBS BSc (Med) FRACS  
R Montgomery MBBS FRACS  
J van Essen MBBS FRACS (Orth)  
W Duncan, MBBS FRACS (Orth)  
G Nimon, MBBS FRACS (Orth)  
C Begg, MBBS FRACS (Orth)  
T Stevenson MBChB FRCS FRACS FAOrthA  
N Pourgeizis, MBBS FRACS (Orth)  
C Gooi, MBBS FRACS (Orth)

**MEDICAL COVER GERIATRIC TEAM  
ARTHROPLASTY FELLOW**  
A Hopcroft (Trauma & Orth)

**SPINAL FELLOW**  
S Zahari MBBS MMed (Ortho)

**HAND AND UPPER LIMB FELLOW**  
T Sharpe MB CHB FRACS

**ARTHROPLASTY OUTCOMES OFFICER**  
G West B Physio

**EXECUTIVE SECRETARY**  
B Stoddard

**SECRETARIES**  
E Smythe  
L Georgeff  
J Whatling

**NURSING STAFF**  
L Thomas CPC – Joint Replacement  
J Gould CSC – Joint Replacement



## ORTHOPAEDICS AND TRAUMA CURRENT RESEARCH ACTIVITIES

The Unit continues to undertake the responsibility to collect and interpret data from a number of long term prospective randomised trials in addition to planning and initiating new Consultant driven research. The Unit also supports various levels of Orthopaedic trainee staff with appropriate advice and logistical support for the implementation and presentation/publication of their own research.

Research continues to be of vital importance in all areas of health. This is no more evident than in the area of Orthopaedics. With higher consumer expectations driven by ease of access to information and an increasing amount of new arthroplasty prostheses and instrumentation entering the market, the need for institutions like the TQEH Department of Orthopaedics and Trauma to continue to supply a quality impartial research capacity to monitor these new technologies is vitally important for optimal outcomes for both Orthopaedic professionals and the wider community.

Our research focus will continue to be predominately monitoring outcomes for prosthetics and surgical equipment in addition to studying surgical procedures with a view to optimising patient rehabilitation times.

## RECRUITMENT COMPLETE – FOLLOW UP CONTINUES

Bauze R, Clayer M, Lewis P, Stevenson T, Morrison G, Butcher C, Waters D, Mah E, Brook P, Cullen N. A Comparative Trial between the Spectron Total Hip Replacement and the Exeter Total Hip Replacement.

Munyard A, Cullen N. A Trial of the TRAC Mobile Bearing Total Knee Replacement.

Butcher C, Lewis P, Stevenson T, Morrison G, Waters D, Mah E, Brook P, Bauze R, Clayer M. A Comparative Trial between the NexGen Fixed Bearing Total Knee Replacement and the NexGen Rotating Platform Total Knee Replacement.

Lewis P, Butcher C, Phillips S, Gillespie P, Morrison G, Cullen N, Duncan W, West G Functional Outcome Study Comparing Small and Large Diameter Metal on Metal Hip Prostheses.

## RECRUITMENT CONTINUES

Morrison G, Cullen N, Duncan W, Begg C, van Essen J. Total Knee Arthroplasty Using Patient Specific Templating – An Outcome Study

Deshaies A, Lewis P, Butcher C, Gillespie P. Evaluation of Blood Flow in the Proximal Tibia during Unicompartmental and Total Knee Replacements

Mah E, Sharma K. Comparative study on the clinical outcome of arthrodesis versus arthroplasty for small finger carpo-metacarpal arthritis – a prospective randomized study.

Ferris L, Cullen N, Wilkinson D, Fintland J. Functional Outcome Study Treating Tendinopathy in and around the foot using Hyperbaric Oxygen (HBO) treatment.

## NEW TRIALS

Pourgeizis N, Morrison G, Pillai A, Yeo C, West G. The accuracy of MRI based specific cutting blocks in TKR.

Morrison G, Pourgeizis N, Duncan W, Begg C, van Essen J, Pillai A. The Visionaire Cutting Block System – An outcome study.

Morrison G, Cullen N, Duncan W, Begg C, van Essen J. The Signature Knee Guide. Total Knee Arthroplasty using Patient Specific Templating – An outcome study.

French T, Russell N, Pillai A, Morrison G. Clinical Audit: Diagnosing Loosening of Total Knee and Hip Replacements Using Radionuclide Arthrography.

Funding for research in this department has been obtained totally from industry contributions to the Orthopaedic and Trauma Research Fund. In 2010 contributions have come from Smith & Nephew (\$28,352) and Biomet (\$24,948).





THERAPEUTICS RESEARCH  
CENTRE University of  
South Australia



Professor Mike Roberts

Research Focus

- The focus of the Therapeutics Research Centre is to improve patient outcomes by improved diagnosis and treatment with medicines. Our work, in collaboration with a number of medical specialties, includes:
- Intensive care – Improved use of antibiotics and other medications in the severely ill.
- Skin cancer & other skin conditions – Better diagnosis and treatment using advanced non-invasive imaging technologies and topical products.
- Blood vessels – Using the skin as a window to study and treat cardiovascular problems.
- Liver disease – Understanding how liver diseases affect medicines and how to treat patients.
- Nanomedicines – Exploring the therapeutic potential and safety for nanomedicines.
- Chemical safety – Improving assessment and treatment.
- Patient medicines – Strategies for improving medication outcomes for patients in their own home.

OVERVIEW

The Director of the Centre, Professor Michael Roberts, is an Australian National Health & Medical Research Council Senior Principal Research Fellow based at both The Institute (Basil Hetzel Institute; affiliated with the UniSA School of Pharmacy) and the School of Medicine at Princess Alexandra Hospital in Brisbane, Australia. The Centre’s research interests cover a spectrum of therapeutics from the chemistry of drugs, the effects drugs have on the body and the effects the body has on drugs, through to how drugs can be best used to treat disease. Current special interest areas include defining drug disposition and effects by in vitro and in vivo bioimaging using confocal and multiphoton reflectance, fluorescence and Raman spectroscopy.

INTENSIVE CARE

Inappropriate doses of antibiotics are likely to contribute to poor outcomes for ICU patients. Emerging data describes how clinician-led dosing frequently results in inappropriate serum antibiotic concentrations. Such inappropriate concentrations can lead to antibiotic failure, antibiotic toxicity and/or the development of antibiotic resistance. The question confronting clinicians is – what is the appropriate antibiotic dose to use in the individual patient to achieve the best outcome for this patient. Our project aims to develop dosing guidelines to achieve serum concentrations that optimise antibiotic exposure in these patients.

SKIN CANCER, SKIN AGEING  
& OTHER CONDITIONS

Many products are applied to the skin to prevent skin cancer or to treat skin diseases. Our work seeks to better understand how we can make such products more effective, safer and appropriate for conditions such as psoriasis. One major component is concerned with the evaluation of nanotechnology products applied to the skin.

Although milk has been acknowledged as a good nutrient and is used in skin care formulations, a systematic study of the benefits of milk on the skin has not been carried out. We are defining rules governing the delivery of peptides (especially those derived from milk) to the different layers of the epidermis using different formulations and certain delivery devices. This project will also define the distribution patterns of milk peptides in terms of both the properties of the peptides and the delivery systems used.

BLOOD VESSELS

Multimodal microscopy and spectroscopy offer the exciting prospect of non-invasive imaging of human skin in vivo in high resolution, in three dimensions and in time. Our ability to image the skin to a depth of 200µm (papillary dermis) with this technology will enable us to use it as a potential window to study and treat cardiovascular problems such as those arising from diabetes complications, cardiovascular disease, arthritis and smoking.

LIVER DISEASE

The liver is the main organ in the body for drug metabolism and detoxification. Our work in this area seeks to address the poorly understood question: what is the in vivo disposition and response in liver of the drugs for treatment of liver diseases? The results of this work will help us better design new drugs and choose the most effective drugs for liver disease. The

research may also help us find a better strategy for liver transplantation and thus improve success rates.

NANOMEDICINES

Nanomaterials are defined as having at least one dimension within the range 1-100 nm. Commercial applications that use nanomaterials include sunscreen (zinc oxide) and clinical imaging agents. We are investigating what happens to commercially available and therapeutic nanoparticles if they pass through the skin and enter the blood.

SAFETY OF OCCUPATIONAL  
AND ENVIRONMENTAL CHEMICALS

Assessment of skin absorption is a major regulatory requirement in registering any product that presents potentially harmful or therapeutic skin exposure. While the rigorous assessment used in regulating therapeutic drugs is well established, the main tool used for dermal regulatory human health risk assessments on potentially harmful chemicals needs further validation and refinement to provide a more reliable assessment of in vivo bioavailability, effects and decontamination.

PATIENT MEDICINES

Some patients have difficulty in remembering to take their medicines and, in some instances, packaging the tablets into special boxes, called Dose Administration Aids (DAA), in which all of the tablets are grouped together with clear information on when the tablets should be taken, can aid the patient to adhere to recommended medication routines. This work seeks to evaluate the Department of Veterans Affairs DAA Service and compare: a) the cost of providing health services to veterans enrolled in the DAA Service (including any cost benefits) and b) health outcomes for veterans using DAAs with those of veterans who do not use DAAs.

POSTGRADUATE STUDENTS  
PhD CANDIDATES

Q Zhang BPharm	Structural Determinants and Formulation Effects on Percutaneous Absorption
A Amarasekare BPharm	Does Vitamin D Deficiency Contribute to Endothelial Dysfunction in Diabetes Patients with Obesity?
R To-a-nan BPharm MCLinPharm	Pharmacokinetics and Pharmacodynamics of Antioxidant Vitamins in Patients with Peripheral Vascular Diseases
R Kuswahyuning BPharm	Role of Formulation and Solute Properties in Cosmeceutic Delivery and Effects

The focus of the Therapeutics Research Centre is to improve patient outcomes by improved diagnosis and treatment with medicines. The departments’ work, in collaboration with a number of medical specialties, includes reducing the likelihood of deaths in intensive care patients by measuring antibiotic dosing and better use of other medications in severely ill patients. Better diagnosis and treatment of skin cancers and other skin conditions is another focus, as is using the skin as a window to study and treat cardiovascular problems such as those arising from diabetes complications, cardiovascular disease, arthritis and smoking. The Centre is also focused on understanding how liver diseases, including fatty liver and cirrhosis, affect medicines and investigating strategies for improving medication outcomes for patients in their own home, e.g. dose administration aids, medicine reviews, education, continuity of care and medicines to avoid in the aged.

STAFF

UNISA RESEARCH CHAIR: THERAPEUTICS  
& PHARMACEUTICAL SCIENCE

MS Roberts BPharm PhD DSc MBA FACP

UNISA RESEARCH FELLOWS

TA Robertson BSc PhD

P Li BPharm MPharm

GRANTS

The Hospital Research Foundation. (Small Grant 2010 – 2011) Pilot evaluation of nicotine receptor up-regulation activity through metabolic induction, changes in responsiveness and surrogate evaluation methods (\$20,000 2010), Roberts M, Smith B, Robertson T.

NHMRC. (Project Grant # 569710) Pharmacodynamics in Liver Disease and in Liver Surgery. (\$288,592 2010) 2009-2011, Roberts MS.

NHMRC. (Project Grant # 519703) Targeted delivery by topical application. (\$202,271 2010) 2008-2010, Roberts MS.



## PUBLICATIONS & INVITED PRESENTATIONS

## PUBLICATIONS 2010

### ANAESTHESIA, DEPARTMENT OF PAPERS

Black AS, Newcombe GN, Plummer JL, McLeod DH, Martin DK. Spinal anaesthesia for ambulatory arthroscopic surgery of the knee: a comparison of low-dose prilocaine and fentanyl with bupivacaine and Fentanyl. *Br J Anaesth*, 2011 Feb;106(2):183-8

Rangappa P, Jeyadoss J, Flabouris A, Clark JM, Marshall R. Cardiac pacing in patients with a cervical spinal cord injury. *Spinal Cord* 2010 Dec; 48(12):867-71. Epub 2010 May 25

Rao Kadam V, Lambert P, Panth H, O'Reilly M. Speaking Valve aspiration in a laryngectomy patient. *Anaesth Intensive Care* 2010; 38: 197-200.

Rao Kadam V, Lambert P, Panth H, O'Reilly M. Aspiration of a Speaking Valve or tracheo-oesophageal valve-reply. *Anaesth Intensive Care* 2010; 38: 777-78.

Thiruvengkatarajan V, Osborn KD, Van Wijk RM, Euler P, Sethi R, Moodie S, Biradar V. Torsade de pointes in a patient with acute prolonged QT syndrome and poorly controlled diabetes during sevoflurane anaesthesia. *Anaesth Intensive Care*. 2010 May;38(3):555-9

### CARDIOLOGY UNIT PAPERS

Brown A, Brieger D, Tonkin A, White H, Walsh W, Riddell T, Zeitz C, Jeremy R, Kritharides L. Coronary disease in indigenous populations: summary from the CSANZ indigenous Cardiovascular Health Conference. *Heart Lung Circ*. 2010 May-Jun;19(5-6):299-305. Epub 2010 Apr 8.

Brown A, Tonkin A, White H, Riddell T, Brieger D, Walsh W, Zeitz C, Jeremy R, Kritharides L. The Cardiac Society Inaugural Cardiovascular Health Conference: conference findings and ways forward. *Heart Lung Circ*. 2010 May-Jun;19(5-6):264-8. Epub 2010 Apr 8

Chirkov YY, De Sciscio M, Sverdlov AL, Leslie S, Sage PR, Horowitz JD. Hydralazine does not ameliorate

nitric oxide resistance in chronic heart failure. *Cardiovasc Drugs Ther*. 2010 Apr;24(2):131-7.

Horowitz JD, Chirkov YY. Perhexiline and hypertrophic cardiomyopathy: a new horizon for metabolic modulation. *Circulation*. 2010 Oct 19;122(16):1547-9.

Horowitz JD, Chirkov YY, Kennedy JA, Sverdlov AL. Modulation of myocardial metabolism: an emerging therapeutic principle *Curr Opin Cardiol*. 2010 Jul;25(4):329-34.

Jeremy R, Tonkin A, White H, Riddell T, Brieger D, Walsh W, Zeitz C, Brown A, Kritharides L. Improving cardiovascular care for indigenous populations. *Heart Lung Circ*. 2010 May-Jun;19(5-6):344-50.

Kritharides L, Brown A, Brieger D, Ridell T, Zeitz C, Jeremy R, Tonkin A, Walsh W, White H. Overview and determinants of cardiovascular disease in indigenous populations. *Heart Lung Circ*. 2010 May-Jun;19(5-6):337-43.

Kritharides L, Brown A, Brieger D, Ridell T, Zeitz C, Jeremy R, Tonkin A, Walsh W, White H; CSANZ IHC Writing Group. Recommendations arising from the inaugural CSANZ Conference on Indigenous Cardiovascular Health. *Heart Lung Circ*. 2010 May-Jun;19(5-6):269-72.

Lopes RD, Alexander JH, Al-Khatib SM, Ansell J, Diaz R, Easton JD, Gersh BJ, Granger CB, Hanna M, Horowitz J, Hylek EM, McMurray JJ, Verheugt FW, Wallentin L; ARISTOTLE Investigators. *Am Heart J*. 2010 Mar;159(3):331-9.

Ngo DT, Stafford I, Sverdlov AL, Qi W, Wuttke RD, Zhang Y, Kelly DJ, Weedon H, Smith MD, Kennedy JA, Horowitz. Ramipril retards development of aortic valve stenosis in a rabbit model: mechanistic considerations JD. *Br J Pharmacol*. 2010 Oct 20. doi: 10.1111/j.1476-5381.

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**THERAPEUTICS RESEARCH CENTRE, UNIVERSITY OF SOUTH AUSTRALIA PAPERS**

Fernando GJP, Chen XF, Prow TW, Crichton ML, Fairmaid EJ, Roberts MS, Frazer IH, Brown LE, Kendall MAF. Potent Immunity to Low Doses of Influenza Vaccine by Probabilistic Guided Micro-Targeted Skin *Delivery in a Mouse Model*. PLOS One. 2010;5.

Gawarammana IB, Roberts DM, Mohamed F, Roberts MS, Medley G,Jayamanne S, Dawson A. Acute

human self-poisoning with bispyribac-containing herbicide Nominee (R): a prospective observational study. *Clinical Toxicology*. 2010;48: 198-202.

Grice JE, Ciotti S, Weiner N, Lockwood P, Cross SE, Roberts MS. Relative Uptake of Minoxidil into Appendages and Stratum Corneum and Permeation through Human Skin In Vitro. *Journal of Pharmaceutical Sciences* 2010;99: 712-718.

Grice JE, Cross SE, Brownlie C, Roberts MS. The application of molecular structural predictors of intestinal absorption to screening of compounds for transdermal penetration. *Journal of Pharmacy and Pharmacology* 2010;62: 750-755.

He S, Liu X, Yang Y, Huang W, Xu S, Yang S, Zhang X, Roberts MS. Mechanisms of transforming growth factor beta(1)/Smad signalling mediated by mitogen-activated protein kinase pathways in keloid fibroblasts. *British Journal of Dermatology* 2010;162: 538-546.

Hickman PE, Potter JM, Aroney C, Koerbin G, Southcott E, Wu AHB, Roberts MS. Cardiac troponin may be released by ischemia alone, without necrosis. *Clinica Chimica Acta* 2010; 411: 318-323.

Liu X, Yang Y, Zhang XX, Xu SX, He SF, Huang WJ, Roberts MS. Compound Astragalus and Salvia miltiorrhiza extract inhibits cell invasion by modulating transforming growth factor-beta/ Smad in HepG2 cell. *Journal of Gastroenterology and Hepatology* 2010;25: 420-426.

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Monajjemzadeh F, Hassanzadeh D, Valizadeh H, Siahi-Shadbad MR, Mojarrad JS, Robertson TA, Roberts MS. Detection of Gabapentin-Lactose Maillard reaction product (Schiff’s base): Application to Solid dosage form

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Prow TW, Chen XF, Prow NA, Fernando GJP, Tan CSE, Raphael AP, Chang D, Ruutu MP, Jenkins DWK, Pyke A, Crichton ML, Raphaelli K, Goh LYH, Frazer IH, Roberts MS, Gardner J, Khromykh AA, Suhrbier A, Hall RA, Kendall MAF. Nanopatch-Targeted Skin Vaccination against West Nile Virus and Chikungunya Virus in Mice. *Small* 2010;6: 1776-1784.

Roberts JA, Kirkpatrick CMJ, Roberts MS, Dalley AJ, Lipman J. First-dose and steady-state population pharmacokinetics and pharmacodynamics of piperacillin by continuous or intermittent dosing in critically ill patients with sepsis. *International Journal of Antimicrobial Agents* 2010;35: 156-163.

Roberts JA, Ulldemolins M, Roberts MS, McWhinney B, Ungerer J, Paterson DL, Lipman J. Therapeutic drug monitoring of beta-lactams in critically ill patients: proof of concept. *International Journal of Antimicrobial Agents* 2010;36: 332-339.

Sanchez WY, Prow TW, Sanchez WH, Grice JE, Roberts MS. Analysis of the metabolic deterioration of ex vivo skin from ischemic necrosis through the imaging of intracellular NAD(P)H by multiphoton tomography and fluorescence lifetime imaging microscopy. *J. Biomed. Opt.* 2010; 15.

Weiss M, Li P, Roberts MS. An Improved Nonlinear Model Describing the Hepatic Pharmacokinetics of Digoxin: Evidence for Two Functionally Different Uptake Systems and Saturable Binding. *Pharmaceutical Research* 2010;27: 1999-2007.

Xia CH, Sun JG, Wang GJ, Shang LL, Zhang XX, Zhang R, Peng Y, Wang XJ, Hao HP, Xie L, Roberts MS. Herb-Drug Interactions: In Vivo and In Vitro Effect of Shenmai Injection, a Herbal Preparation, on the Metabolic Activities

of Hepatic Cytochrome P450 3A1/2, 2C6, 1A2, and 2E1 in Rats. *Planta Medica* 2010;76: 245-250.

Zou Y, Liu X, Khlentzos AM, Asadian P, Li P, Thorling CA, Robertson TA, Fletcher LM, Crawford DHG, Roberts MS. Liver Fibrosis Impairs Hepatic Pharmacokinetics of Liver Transplant Drugs in the Rat Model. *Drug Metabolism and Pharmacokinetics* 2010; 25:442-449.

REVIEWS

Grice JE, Roberts MS. Skin abrasion: transdermal delivery, cosmetic and immunological applications. *Transdermal* 2010;2: 11-16.

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Grice JE, Zhang Q, Roberts MS. Chemical structure – skin transport relationships. In; Toxicology of the skin: Target Organ Toxicology Series. Monteiro-Riviere N (ed.), Taylor & Francis Group LLC, Boca Raton, USA, 2010; pp. 55-68.

Dancik Y, Thörling C, Krishnan G, Roberts MS. Cutaneous Metabolism And Active Transport In Transdermal Drug Delivery. In; Toxicology of the skin: Target Organ Toxicology Series. Monteiro-Riviere N (ed.), Taylor & Francis Group LLC, Boca Raton, USA, 2010; pp. 69-82.

ABSTRACTS

Geusens B, Van Gele M, Braat S, Smedt SC, Stuart MCA, Prow T, Sanchez W, Roberts MS, Sanders NN, Lambert J. Flexible nanosomes (SECosomes) enable efficient siRNA delivery in cultured primary skin cells and in viable epidermis of ex-vivo human skin. *Journal of Pharmacy and Pharmacology* 2010;62: 788-788.

INVITED PRESENTATIONS AT INTERNATIONAL AND NATIONAL MEETINGS 2010

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
<b>ANAESTHESIA, Department of</b>		
69th ASA National Scientific Congress, Melbourne, Australia, October 2010	ASA guidelines for obstructive sleep apnoea (OSA): a 23hour Unit observational study	V Rao Kadam
Research Society of Anaesthesiology and Clinical pharmacology Meeting, Bangalore, India, October 2010	Transversus abdominis plane block: Video presentation	V Rao Kadam
<b>CARDIOLOGY UNIT</b>		
Japanese Circulation Society 74th Scientific Meeting, Kyoto, Japan, March 2010	Racial Differences in Coronary Artery Spasm	JF Beltrame
South Australian Cardiovascular Research Forum Second meeting, Adelaide, Australia, April 2010	Novel Approaches in the Management of coronary Heart Disease	JF Beltrame
Inaugural Network to Network 2010 Conference, Melbourne, Australia, March 2010	Trends in Non-specific Chest Pain Separations in South Australia	JF Beltrame, DP Chew, MI Worthley, MA Arstall, R Tirimacco, D Brooking, P Basso, PA Phillips
European Society of Cardiology Congress, Stockholm, Sweden, September 2010	Implications of insulin sensitivity on inflammatory activation and atherogenic risk in normal and PCOS females	WP Chan, DT Ngo, S Rajendran, T Hersztyn, A Amarasekare, A Sverdlov, YY Chirkov, JD Horowitz
Cardiac Society of Australia and New Zealand 58th meeting, Adelaide, Australia, August 2010	Implications of insulin sensitivity on inflammatory activation and atherogenic risk in normal and PCOS females	WP Chan, DT Ngo, S Rajendran, T Hersztyn, A Amarasekare, A Sverdlov, YY Chirkov, JD Horowitz
Cardiac Society of Australia and New Zealand 58th meeting, Adelaide, Australia, August 2010	The role of T-type calcium channels and store-operated calcium channels in endothelin-1 mediated vasoconstriction of rat mesenteric arteries	Y Chan, JF Beltrame, DP Wilson
Cardiac Society of Australia and New Zealand 58th meeting, Adelaide, Australia, August 2010	Simvastatin Modulates Vasoconstriction via Activation of Smooth Muscle Myosin Phosphatase and Endothelial Nitric Oxide Synthase	S Copley, JF Beltrame, DP Wilson
European Society of Cardiology Congress, Stockholm, Sweden, September 2010	Evolution of ECG changes in Tako-Tsubo Cardiomyopathy: arrhythmias first, QT prolongation later?	AM Kucia, CJA Neil, TH Nguyen, JF Beltrame, MA Arstall, JD Horowitz
Cardiac Society of Australia and New Zealand 58th meeting, Adelaide, Australia, August 2010	Relationship between precipitant stressor and timing of clinical diagnosis in Tako-Tsubo Cardiomyopathy	CJA Neil, AM Kucia, TH Nguyen, A Sverdlov, R Dautov, IM Mohasseb, WC Chan, J Selvanayagam, YY Chirkov, CJ Zeitz, JF Beltrame, JD Horowitz
Australian and New Zealand Society for Geriatric Medicine Annual Scientific Meeting, Brisbane, Australia, May 2010	Secondary Prevention Appears Better in Octogenarians compared to Younger Patients: Have We Missed The Boat?	S Rajendran, JF Beltrame, AJ Weekes, C Morgan, R Visvanathan
European Society of Cardiology Congress, Stockholm, Sweden, September 2010	Relationship between LV mass and diastolic function is independent of NO generation	A Sverdlov, DT Ngo, S Rajendran, JD Horowitz
58th Cardiac Society of Australia and New Zealand, Adelaide, Australia, August 2010	Relationship between LV mass and diastolic function is independent of NO generation	A Sverdlov, DT Ngo, S Rajendran, JD Horowitz
58th Cardiac Society of Australia and New Zealand, Adelaide, Australia, August 2010	Health Status Outcomes in Patients with Non-Obstructive coronary Artery Disease	R Tavella, N Cutri, JF Beltrame
58th Cardiac Society of Australia and New Zealand, Adelaide, Australia, August 2010	Health Status of Stable Patients with Obstructive or Non-Obstructive coronary Artery Disease Compared with Healthy Controls	R Tavella, N Cutri, JF Beltrame
58th Cardiac Society of Australia and New Zealand, Adelaide, Australia, August 2010	Presence of Recent Chest Pain in Patients with Non-Obstructive Coronary Artery Disease	R Tavella, C Wong, S Cherian, JF Beltrame
Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Scientific Sessions, Washington, USA, May 2010	Health Status Outcomes in Patients with Non-obstructive Coronary Artery Disease	R Tavella, N Cutri, JF Beltrame
Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Scientific Sessions, Washington, USA, May 2010	Health Status of Stable Patients with Obstructive or Non-obstructive Coronary Artery Disease Compared with Health Controls	R Tavella, N Cutri, JF Beltrame



CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
<b>CLINICAL PHARMACOLOGY UNIT</b>		
Japanese Pharmacology Society, Osaka, Japan, March 2010	Therapeutic Drug Assays. Can we do it better? Plenary Lecture	RG Morris
Symposium celebrating 40-years in TDM – Prof DW Holt, London, UK, April 2010	Digoxin – An analytical challenge” Plenary Lecture	RG Morris
TDM Workshop of ASCEPT, AACB, SHPA, RCPA, Brisbane, Australia, March 2010	Assay Methodology – Digoxin	RG Morris
TDM Workshop of ASCEPT, AACB, SHPA, RCPA, Brisbane, Australia, March 2010	Pharmacogenetics – perhexiline	RG Morris
Clinical Pharmacokinetics Workshop for the Therapeutic Goods Administration, Canberra, Australia, November 2010	Basic Clinical Pharmacokinetics	BC Sallustio
<b>ENDOCRINOLOGY UNIT</b>		
ADS/ADEA Sydney, Australia, September 2010	The Characteristics of Type 1 Diabetes Patients Assessed in Diabetes Assessment Clinic (DAC)	I Aziz, PJ Phillips, J Wang
ADS/ADEA Sydney, Australia, September 2010	Ankle Brachial Index: A comparison of measurement by palpation and Doppler.	R Cox, M Hodgson, J Wang, PJ Phillips
ADS/ADEA Sydney, Australia, September 2010	Standardising the treatment of hypoglycaemia in metropolitan public hospitals	L Green, C Hooper, J Lyon-Green, S McCullough, N Price, P Smith, M Vidler, T Willson
ADS/ADEA Sydney, September 2010	A Comparison of Asian Type 2 Diabetes Patients with Patients of Other Background	J Wang, PJ Phillips
ADS/ADEA Sydney, September 2010	A Comparison of Medication use by Asian Type 2 Diabetes Patients and Patients of other Background	J Wang, PJ Phillips
6th World Congress on Prevention of Diabetes and its Complications Dresden Germany, April 2010	Dresden, Germany, April 2010 The role of Coronary Risk Assessment in Planning and Assessing Treatment of Type 2 Diabetes study	PJ Phillips, J Wang
6th World Congress on Prevention of Diabetes and its Complications. Dresden, Germany, April 2010	Antihyperglycaemic Medication Use by Type 2 Diabetes Patients at TQEH Diabetes Assessment Clinic	PJ Phillips, J Wang
6th World Congress on Prevention of Diabetes and its Complications Dresden Germany, April 2010	Factors Predicating Progression of Dysglycaemia in an Australian Population Cohort	Z Shi, A Taylor, T Gill, J Grant, J Wang, K Price, PJ Phillips and the North West Adelaide Health Study Team
6th World Congress on Prevention of Diabetes and its Complications. Dresden Germany, April 2010	Medication patterns by glucose levels in the North West Adelaide Health Study	Z Shi, A Taylor, T Gill, J Grant, J Wang, K Price, PJ Phillips and the North West Adelaide Health Study Team
Endocrine Society 92nd Annual Meeting & Expo. San Diego, California, USA, June 2010	The Trend of Medication Use since 2000 in a Cohort of Medium To Long Term Diabetes Patients	PJ Phillips, J Wang
European Association for the Study of Diabetes (EASD) 46th Annual Meeting, Stockholm, September 2010	The role of Coronary Risk Assessment in Planning and Assessing Treatment of Type 2 Diabetes	TM Phillips, PJ Phillips, J Wang
National Medical Symposium, Melbourne, May 2010	Antihyperglycaemic Medication Use by Patients with Type 2 Diabetes at TQEH Diabetes Assessment Clinic	J Wang, PJ Phillips
<b>GASTROENTEROLOGY AND HEPATOLOGY UNIT</b>		
Australian Gastroenterology Week, Gold Coast, Qld, Australia, October 2010	Inhibition of Notch signalling by DAPT decreases postnatal intestinal growth in the rat	GS Howarth, JA Woenig, RP Donato, PK Grover, AG Cummins
Australian Health and Medical Research Congress, Melbourne, Australia, November 2010	Wnt expression during postnatal growth of the small intestine	RP Donato, JK Fauser, IA Penttila, I Roberts-Thomson, AG Cummins
<b>GYNAECOLOGY UNIT</b>		
AGES, international pelvic floor Meeting, May 2010, Melbourne, Australia	Conservation of the uterus in utero-vaginal prolapse	M Juneja
RANZCOG, Annual Scientific Meeting, Adelaide, Australia, March 2010	Anatomy workshop for female pelvic anatomy	C Barry (Chairman, convenor, presenter)

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
<b>INTENSIVE CARE UNIT</b>		
ANZICS Clinical Trials Group Spring Forum, Melbourne, Australia, October 2010	ARISE RCT study Update	SL Peake
Asia Pacific Critical Care Medicine 16th Congress, Manila, Philippines, October 2010	Biomarkers in Sepsis	SL Peake
Asia Pacific Critical Care Medicine 16th Congress, Manila, Philippines, October 2010	Early Goal Directed Therapy in Sepsis	SL Peake
Asia Pacific Critical Care Medicine 16th Congress, Manila, Philippines, October 2010	Early Parenteral Nutrition in Critically ill patients	SL Peake
Clinical Trials in Intensive Care 12th Annual Meeting, Noosa, Australia, March 2010	ARISE RCT study update	SL Peake
<b>MEDICINE, University of Adelaide Discipline of</b>		
1st International Congress on Abdominal Obesity, Hong Kong, January 2010	Body composition in metabolically healthy obese normal weight phenotypes	S Appleton, D Wilson, R Ruffin, C Seaborn, A Taylor, RJ Adams
1st International Congress on Abdominal Obesity, Hong Kong, January 2010	Correlates and longitudinal outcomes in metabolically healthy obese and metabolically obese normal weight phenotypes	S Appleton, D Wilson, R Ruffin, A Taylor, RJ Adams
21st Annual AaeE Conference, Sydney, Australia, December 2010	A unique assessment of stress and stress factors on engineering academics in the research and teaching environ-ment	J Cheung, K Davey, R Visvanathan, J Willson
Thoracic Society of Australia & New Zealand Annual Scientific Meeting, Brisbane, Australia, March 2010	Effects of lipid lowering therapy in a representative asthma population	RJ Adams, S Appleton, D Wilson, A Taylor, R Ruffin
Thoracic Society of Australia & New Zealand Annual Scientific Meeting, Brisbane, Australia, March 2010	Correlates of poor asthma control in a population sample	RJ Adams, S Appleton, D Wilson, A Taylor, R Ruffin
Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Brisbane, Qld, Australia, March 2010	Cardiologists and respiratory physicians’ responses to clinical scenarios involving β-blocker prescription	TE Jones, RE Ruffin, M Arstall
Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Brisbane, Qld, Australia, March 2010	Dietary zinc protects against inflammation and muscle wasting in mice exposed to sustained cigarette smoke	CJ Lang, M Hansen, E Roscioli, J Jones, PD Zalewski, G Anderson, RE Ruffin
Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Brisbane, Qld, Australia, March 2010	The role of Xiap in modulating apoptosis in normal and asthma affected respiratory epithelium	E Roscioli, CJ Lang, RE Ruffin, A Kicic, PD Zalewski
13th Asia-Pacific Regional Conference of Alzheimer’s Disease International, Kuala Lumpur, October 2010	An Integrated Geriatric and Psychogeriatric Care Model Leads To Better Health Outcomes	R Visvanathan
13th Asia-Pacific Regional Conference of Alzheimer’s Disease International, Kuala Lumpur, October 2010	Preventing Functional Decline In Patients With Dementia In Acute Hospitals	S Yu
Asia Pacific Respiratory Society 2011, Manila, Philippines, November 2010	Apical localization of zinc transporter ZnT4 in human airway epithelial cells and its loss in a murine model of allergic airway inflammation	PD Zalewski, C Murgia, E Roscioli, CJ Lang, H Tran, M Stoltenberg, G Danscher, D Grosser, RE Ruffin
Thoracic Society of Australia & New Zealand Annual Meeting, Brisbane, Australia, April 2010	Cough Symposium: What’s new from Australia? Burden of illness from chronic cough in Australia	RJ Adams
Australian Primary Care Collaboratives Workshop, Brisbane, Australia, May 2010	Health Literacy, Plenary Session	RJ Adams
2010 International Patient Safety Reporting System Conference, Department of Health, Taiwan Joint Commission on Hospital Accreditation (TJCHA), Taipei, September 2010	Patient safety reporting system in Australia	RJ Adams

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
<b>NEUROLOGY UNIT</b>		
Neuro-Ophthalmology Society 18th International meeting, Lyon France, June 2010	Association of Retinal Nerve Fibre Layer and Brain Volume Changes in Leukoaraiosis	CS Chen, AK Rudkin, AW Lee, A Lam, S Patel, E-W Khoo, MA Hamilton-Bruce J Jannes, SA Koblar
4th Mt Lofty Workshop on Frontier Technologies for Nervous System Function and Repair, Adelaide, December 2010	Human Dental Pulp Stem Cells survive, migrate and differentiate following transplantation in the ischaemic rat brain	WK Leung, T Henshall, S Helps, R Vink, M Lewis, S Gronthos, SA Koblar
4th Mt Lofty Workshop on Frontier Technologies for Nervous System Function and Repair, Adelaide, December 2010	Stem cells, multi-electrode arrays & brain repair	SA Koblar
International Society for Stem Cell Research Annual Scientific Meeting - Number 1 Stem Cell Meeting in the World, San Francisco, USA, June 2010	Human Adult Dental Pulp Stem Cell Transplantation Improves Functional Outcome Following Ischaemic Stroke	T Henshall, WK Leong, A Arthur, S Warming, M Lewis, S Helps, R Vink, S Gronthos, SA Koblar
Stroke Society of Australasia 21st Annual Scientific Meeting, Melbourne, Australia, September 2010	Proteomic Analysis of Plasma Following Transient Ischaemic Attack (TIA)	M Djukic, MD Lewis, E Leung, MA Hamilton-Bruce, TK Chataway, SA Koblar
Stroke Society of Australasia 21st Annual Scientific Meeting, Melbourne, Australia, September 2010	Case Report: Use of the Penumbra System (PS) in two Octogenarians	A Rosser, M Phillips, MA Hamilton-Bruce, J Jannes, S Chryssidis, R Sebben, SA Koblar
Stroke Society of Australasia 21st Annual Scientific Meeting, Melbourne, Australia, September 2010	A case study of medical scientific researchers: community of practice identification	V Krawczyk, J Crichton, MA Hamilton-Bruce, SA Koblar
TQEH Research Day 2010, Adelaide, Australia, October 2010	Community of Practice Identification within the Translational Research Paradigm: A Case-study of a Multidisciplinary Research Team in the Biomedical Sciences.	V Krawczyk, J Crichton, MA Hamilton-Bruce, SA Koblar (poster)
TQEH Research Day 2010, Adelaide, Australia, October 2010	Proteomic analysis of plasma following Transient Ischaemic Attack (TIA).	M Djukic, MD Lewis, E Leung, MA Hamilton-Bruce, TK Chataway, SA Koblar
TQEH Research Day 2010, Adelaide, Australia, October 2010	Murine Dental Pulp Derived Mesenchymal Progenitor Cells Attenuate Lipopolysaccharide Stimulated Macrophage Inflammatory Response in Vitro.	J Rich, C Lang, SA Koblar, P Zalewski, M Lewis (CIDR Collaborative)
<b>NUCLEAR MEDICINE</b>		
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	Distance-dependant resolution compensation in brain SPECT reconstruction.	D Badger, LR Barnden
Australian Rheumatology Association, Melbourne, Australia, May 2010	The Enigma of Fatigue: Novel analysis of structural MRI detects extensive changes in chronic fatigue syndrome	LR Barnden, B Crouch, R Burnet, R Kwiatek, A Mernone, G Scoop, P del Fante
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	Gray to white matter perfusion ratios from SPECT and segmented MR data	B Crouch, LR Barnden
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	Importance of cine review in detection of incidental pathologies	K Eberhard
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	Is hepatobiliary scan a better option than colloid liver/spleen scan to detect focal nodular hyperplasia?	N Farnham
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	Precautions for VRE patients in nuclear medicine	D Nicholls
Australian and New Zealand Society of Nuclear Medicine Annual Scientific Meeting, Auckland, New Zealand, April 2010.	The value of interictal and postictal brain SPECT imaging in refractory temporal lobe epilepsy and its use for pre-surgical localisation	P Sotiropoulos
Engineering and Physical Sciences in Medicine, Melbourne, Australia, December 2010	Evaluation of Distance-dependent Resolution Compensation in brain SPECT	D Badger, LR Barnden
Engineering and Physical Sciences in Medicine, Melbourne, Australia, December 2010	Comparison of spin-echo and gradient recalled echo T1 weighted MR images for quantitative voxel-based clinical brain research	LR Barnden, B Crouch
Engineering and Physical Sciences in Medicine, Melbourne, Australia, December 2010	Estimates of Gray/White Matter Perfusion Ratios from HMPAO Brain SPECT using Segmented MR Data	B Crouch, LR Barnden

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
Engineering and Physical Sciences in Medicine, Melbourne, Australia, December 2010	MR Guided Spatial Normalization of SPECT Scans	B Crouch, LR Barnden
International Science Symposium on Myalgic Encephalitis / Chronic fatigue Syndrome, Bond University, Queensland, Australia, December 2010.	Magnetic Resonance Imaging evidence of brainstem dysfunction in Chronic fatigue Syndrome	LR Barnden, B Crouch, R Kwiatek, R Burnet, A Mernone, S Chryssidis, P del Fante
Organization of Human Brain Mapping, Barcelona, Spain, June 2010	SPM of T1- and T2-weighted spin-echo brain MR detects changes in cerebral pathophysiology	LR Barnden, R Kwiatek, B Crouch, R Burnet
<b>NURSING RESEARCH</b>		
AUSMED Selected Nursing Skills Seminar, Oct 2010	Improving total patient care	C Anderson ACSC
ADS-ADEA Scientific Meeting at the Sydney Convention Centre on 1st September 2010	Ankle Brachial Index (ABI): A comparison of measurement by Palpation and Doppler	R Cox, M Hodgson, J Wang, P Phillips
General Practice SA Annual Workshop, Adelaide SA, October 2010	Support infrastructure for Rural Diabetes Services	J Giles
NovoNordisk Statewide Symposium, Adelaide SA, March 2010	Type 2 Diabetes and Blood Glucose Monitoring	J Giles
Quality Assurance in Aboriginal Medical Services (QAAMS) National Workshop, Adelaide SA, September 2010	Matching education to medical management	J Giles
Renal Society of Australasia 38th Annual Conference, Cairns, Queensland, June 2010	Teach the Teacher Workshop – Practical teaching strategies in the clinical setting	D Ind
South Australian Perioperative Nurses Association, Convention Centre Adelaide, Australia, Nov 2010	ECG Monitoring	D Cunningham
Australian Infection Control Association National Conference, Perth, Australia, October 2010	Should we focus our hand hygiene education on patients and visitors not just healthcare workers?	M Juraja
AUSMED Aged Care Conference. February 2010	The value of immunisation	M Juraja
Comparison of Infection Prevention and Control Programs at the Royal Brompton and Harefield and the Royal Marsden Hospital, London, UK with The Queen Elizabeth Hospital, Adelaide, SA, Sept 2010.		M Juraja
Infection Prevention Society Conference, Bournemouth, UK, September 2010	To assess patients’/visitors’ perceptions of hand hygiene and the healthcare workers’ compliance with offering hand hygiene	M Juraja
Australian Infection Control Association National Conference, Perth, October 2010	Establishing Emergency Department Hand Hygiene Compliance	D Keen
Australian and New Zealand Society of Nuclear Medicine Conference, 2010	VRE – Infection Prevention and Control – Application in Nuclear Medicine.	D Nicholls RN Nuclear Medicine
Australian Infection Control Association National Conference, Perth, October 2010	Factors in timing of first dose antibiotic administration in the intensive care unit	Y Pearce
Australian College of Operating Room Nurses 14th National Conference, Perth, WA, May 2010	The Perioperative Career Pathway – A South Australian Perspective	P Teekens
Australian Practice Nurse Association annual conference, Adelaide SA, October 2010	Current trends in management of Neuropathy and Foot Care in people with Diabetes	K Visentin
<b>OTOLARYNGOLOGY, HEAD AND NECK SURGERY, Department of</b>		
USSC Endoscopic FESS Course Los Angeles, USA, February 2010	Frontal recess and frontal sinus 3-D anatomy reconstruction and surgical approaches. Extended frontal sinus approaches-Modified Endoscopic Lothrop procedure Decisions: Obliterate or Drillout? Management of Severely Diseased Maxillary sinus. Management of nasal polypsSurgical options: When, What and Why Preparing the skull base for craniofacial resection (Lothrop, Ethmoidal Ligation etc). Anatomy and approach to the Anterior Cranial Fossa LesionsManagement of the Benign and Malignant Tumors Involving Maxillary Sinus, Pterygopalatine/Infratemporal Fossa, Orbital Apex. Managing Complications (Including Carotid Injury) in skull base surgery. Endoscopic approach to the Anterior Cranial Fossa/MELP Pro-section. Endoscopic Approach to the Infratemporal Fossa, Pterygopalatine Fossa, Orbital Apex. Pro-Section: Endoscopic Maxillary Antrostomy; Anterior & Posterior Ethmoidectomy; Sphenoidotomy; Frontal Recess and Frontal Sinus Dissection; “Axillary flap Technique”; Orbital Decompression; Optic Nerve Decompression; Vidian Neurectomy; “Bath-Plug” technique for CSF Leak Repair; Powered Inferior Turbinoplasty and Septoplasty; Lateral Canthotomy and Cantholysis	PJ Wormald



CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
Australian Society of Otolaryngology Head and Neck Surgery, Boomrock, New Zealand, March, 2010	The future of Rhinology Biofilm/Staph superantigens Management of the frontal recess The best thing that I've done in the past 12 months that has changed my practice	PJ Wormald
Australian Society Otolaryngology Head and Neck Surgery, Sydney, Australia, March 2010	Panel Controversies in the current limits of Endonasal Sinus Surgery and Skull Base Surgery	PJ Wormald
Advanced Endoscopic Sinus and Skull Base Surgery Course, Taiwan, May 2010	Endoscopic Modified Lothrop Procedure Endoscopic wound healing process in endoscopic sinus surgery Skull base surgery: past, present and future. An ENT Surgeon's view	PJ Wormald
5th Rhinology Meeting, Sao Paulo, Brazil, May 2010	Infratemporal fossa approach: Nasal polyposis: nasalization x FESS Building the blocks: comprehensive frontal sinus approach How to optimize your access for anterior cranial fossa tumors Advanced technologies in endoscopic skull base surgery - Moderator.	PJ Wormald
6th Advanced Functional Endoscopic Sinus Surgery Course, Winchester, UK, July 2010	Frontal Sinus Anatomy, Surgical approaches DCR & anatomy & technique DCR "Mucosal Flap Technique. Cerebrospinal Fluid Leak Closure -"Bathplug Technique"	PJ Wormald
2nd Adelaide Skull Base Course Adelaide, July 2010	Medial orbital decompression/optic chiasm/lateral recess sphenoid: anatomy and technique Preparing the skull base for craniofacial resection (Lothrop, sphenoidotomies and ethmoidal ligation) Techniques for managing large vessel injuries	PJ Wormald
Frontiers in Otorhinolaryngology 2010, Garnett Passe & Rodney Williams Memorial Foundation, Registrar's Conference, Sydney, Australia, July 2010	Furthering the basic science and practice of Otorhinolaryngology: Seminar	PJ Wormald
The Fourth Shanghai International Conference of Otolaryngology & Head and Neck Surgery, Shanghai, China, August 2010	The management of malignant tumors of the nose and sinuses	PJ Wormald
Australasian Rhinologic Society Sydney, September 2010	Staph Aureus: Diagnostic, Treatment and Prognostic implications Surgical approaches to the infratemporal and middle cranial fossae Frontal recess debate: is there a case for primary Lothrop surgery?	PJ Wormald
American Academy of Otolaryngology Head & Neck Society, Boston, USA, September 2010	An Endoscopic approach to tumors of the Infra-Temporal Fossa Topical therapies in chronic sinonasal disease Improving Outcomes in FESS tips from revision surgeons Improving outcomes in FESS: Tips from revision surgeons Biofilms in Chronic Sinusitis Powered Endoscopic Dacryocystorhinostomy	PJ Wormald
ERAM/SERIN 2010 Congress, Malmo, Sweden, November 2010	Chronic infection in rhinosinusitis/nasal polyps – "The role of biofilms" Biofilms and sinusitis My philosophy on FESS The anatomy and surgical approaches to the frontal recess; Swing-door technique of uncinctomy Precise dissection of the posterior ethmoids and sphenoid sinus with 3 dimensional reconstruction of the anatomy The management of the bloody surgical field	PJ Wormald
2nd Adelaide Endoscopic management of Vascular Injuries Workshop, Adelaide, November 2010	Vascular surgical steps in sheep model of vascular injury -Venous surgical steps - Arterial surgical steps Controlling the surgical field during vascular injury Vascular controversy discussion	PJ Wormald
13th Advanced Functional Endosocpic Sinus Surgery Course, Adelaide, November 2010	The anatomy and endoscopic approaches to the frontal recess Review of CT scans with reconstruction of the anatomy of the frontal recess SPA ligation and Vidian neurectomy dissection Vidian Nerve Neurectomy Modified endoscopic lothrop dissection: the surgical field	PJ Wormald
13th Advanced Functional Endosocpic Sinus Surgery Course, Adelaide, November 2010	The role of biofilms in CRS	A Foreman
Australasian Society of Otolaryngology Head & Neck Surgery, Adelaide, Australia, November 2010	Clinical significance and prevention of bacterial contamination of nasal irrigation bottles?	A Foreman
American Rhinologic Society, Boston, MA, USA, September 2010	Can bottle design prevent the bacterial contamination of nasal irrigation devices?	A Foreman
AAO-HNS Annual Scientific Meeting, Boston, MA, USA, September 2010	Biofilms in chronic sinusitis	PJ Wormald, A Psaltis, A Foreman
5th Australasian Rhinologic Society, Sydney, Australia, September 2010	S. aureus biofilms in CRS	A Foreman (invited speaker)
2nd Endoscopic and Skull Base Dissection Course, Sydney, Australia, August 2010	Biofilms and CRS	A Foreman (invited speaker)

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
Frontiers in Otolaryngology, Melbourne, Australia, July 2010	Characterisation of biofilms in CRS and its clinical and immunological consequences	A Foreman (invited speaker)
Australasian Society of Otolaryngology Head & Neck Surgery, Sydney, Australia, March 2010	Do S. aureus biofilms contribute to the pathogenesis of CRS?	A Foreman
Australasian Society of Otolaryngology Head & Neck Nurses Group, Sydney, Australia, March 2010	Blocks and bugs: failing endoscopic sinus surgery	A Foreman
Surgical Research Society of Australia 47th Annual Scientific Meeting, Adelaide, Australia, November 2010	Endonasal carotid artery injuries	R Valentine
56th Annual American Rhinology Society meeting, Boston, MA, USA October 2010	Endoscopic hemostatic techniques in the sheep model of ICA injury	R Valentine
5th Australasian Rhinology Society meeting, Sydney, Australia, August 2010	Endoscopic techniques in large vascular injuries during endoscopic surgery	R Valentine
5th Australasian Rhinology Society meeting, Sydney, Australia, August 2010	Controlling the endoscopic surgical field during endonasal ICA injury	R Valentine
79th Royal Australasian College of Surgeons Annual Scientific Congress, Perth, WA, May 2010	A Carotid Catastrophe in Pituitary Surgery	R Valentine
Australasian Society of Otolaryngology Head & Neck Surgery, Sydney, Australia, March 2010	Nasal irrigation position on Eustachian tube penetrance	R Valentine
Australasian Society of Otolaryngology Head & Neck Surgery, Sydney, Australia, March 2010	The efficacy of a novel Chitosan gel on haemostasis and wound healing following endoscopic sinus surgery	R Valentine
Australasian Society of Otolaryngology Head & Neck Surgery, Adelaide, Australia, August 2010	Carotid artery injury during endonasal surgery	R Valentine
Australasian Society of Otolaryngology Head & Neck Nurses Group, Sydney, Australia March 2010	The endoscopic surgical field	R Valentine
13th Advanced Functional Endoscopic Sinus Surgery Course, Adelaide, Australia November 2010	Controlling major vascular injuries	R Valentine
2nd Adelaide Endoscopic Skull Base Surgery Course, Adelaide, Australia, July 2010	Carotid artery injury during skull base surgery	R Valentine
American Rhinological Society Annual Meeting Boston, USA, September 2010	A sheep model to investigate the role of fungal biofilms in sinusitis: fungal & bacterial synergy	S Boase
13th Advanced Functional Endoscopic Sinus Surgery Course, Adelaide, Australia, November 2010	Treatment of the recalcitrant infection	J Jervis-Bardy
Australasian Rhinological Society, Sydney, Australia, September 2010	Methyloglyoxal-infused honey mimics the anti-Staphylococcus aureus biofilm activity of Manuka Honey: Potential implications in Chronic Rhinosinusitis	J Jervis-Bardy
Australasian Society of Otolaryngology Head & Neck Surgery, Sydney, Australia,March 2010	Manuka Honey: A treatment for chronic rhinosinusitis?	J Jervis-Bardy
Australian Wound Management Association Annual Scientific Meeting, Perth, Australia, March 2010	The in vitro activity of Manuka Honey on S.aureus biofilms is time and dose dependent: Potential implications for treatment of persistent mucosal infection following endoscopic sinus surgery	J Jervis-Bardy
American Rhinologic Society Annual Scientific Meeting, Boston, USA, September 2010	The etiology of sinonasal Staphylococcus aureus following surgery for Chronic Rhinosinusitis	J Jervis-Bardy
Australasian Society of Otolaryngology Head & Neck Surgery Annual Scientific Meeting, Sydney, Australia, March 2010	Minitrephination of the Frontal Sinus: Indications and Uses in Today's Era of Endoscopic Sinus Surgery	C Jardeleza
The Queen Elizabeth Hospital Research Day, Adelaide, Australia, October 2010	The Role of Nitric Oxide in the Pathophysiology of Staphylococcus aureus Biofilm Formation in Chronic Rhinosinusitis	C Jardeleza
RENAL UNIT		
American Society of Nephrology, Denver, USA, November 2010	Conversion to sirolimus increases regulatory T cell and NK cell numbers in renal transplant recipients with previous squamous cell carcinoma: results of a randomised controlled trial	R Carroll
ANZSN 46th Annual Scientific Meeting, Perth, Australia, September 2010	Successful depletion of donor-specific anti-HLA antibodies (DSA) by combined liver and kidney transplantation in a highly sensitised renal allograft recipient	M Stephenson

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
ANZSN 46th Annual Scientific Meeting, Perth, Australia, September 2010	Urinary dendritic cell markers DC-SIGN (CD209) and CD83 do not correlate with renal allograft rejection	M Stephenson
Asia Pacific Histocompatiblilty Immunoge- netics Association, Queenstown, New Zealand, November 2010	Anti-HLA antibodies mediate Transplant Glomerulopathy	T Coates
Asia Pacific Histocompatiblilty Immunoge- netics Association, Queenstown, New Zealand, November 2010	Depletion of donor-specific anti HLA antibodies by combined liver-kidney transplantation	T Coates
Australian Health and Medical Research (AHMR) Conference, Melbourne, Australia, Nov 2010	Role of HLA Antibodies in Renal Transplantation	T Coates
CITR Annual Meeting, Washington DC USA, February 2010	The current status of the Adelaide Islet Transplantation program	C Drogemuller
Japanese Society of Transplantation, Kyoto, Japan, October 2010	New Cellular Therapies for Organ Transplantation	T Coates
Kanazawa Medical Society, Kanazawa, Japan, October 2010	Treatment of Transplant Glomerulopath	T Coates
Roche Symposium Adelaide, Australia, Oct 2010	Healthy outcomes of SA live kidney donors: an overview	A Abeyeratne
Roche Symposium Adelaide, Australia, October 2010	Outcomes of the first successful islet transplants performed in SA	T Coates
Roche Symposium Adelaide, Australia, October 2010	Indigenous living renal transplants: a poor outcome for recipi- ents and their donors	N Rogers
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Comparison of wildtype adeno-associated virus (AAV) serotype 2 vectors to pseudotyped AAV vectors for the transduction of rat pancreatic islets	A Hughes
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Liposomal curcumin ameliorates renal ischaemia-reperfusion injury via NFβββB inhibition and anti-oxidant pathways	N Rogers
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Sphingosine kinase in pancreatic islet transplantation	C Jessup
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	T cells acquire Antigen presenting function from dendritic cells (DC): DC modified with immunosuppressive agents subvert T cell antigen presenting function.	R Krishnan
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Assessment of the first Australian successful islet transplanta- tion using islets shipped to a remote centre	C Milner
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Formation of Mosaic pseudoislets with incorporated endothelial progenitor cells for pancreatic islet transplantation	D Penko
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Curcumin induces clinically applicable maturation-arrested dendritic cells and expands regulatory T cells in vitro and in vivo	N Rogers
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Plasma cell rich rejection and renal allograft outcomes	N Rogers
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Sustained expression of immunosuppressive PD-L2 in human islets: a potential therapy for islet allograft rejection	D Rojas
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Rapid generation of IFN-Gamma modulated dendritic cells induce T-cell hyporesponsiveness that is associated with the generation of CD4+CD25+FOXP3HI T-regulatory cells (T-REGS): implications for clinical islet allotransplantation	D Rojas
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Combined Immunomodulation of immunosuppressive agents and mesenchymal stem cells on T cell proliferation and dendritic cell maturation	T Searcy
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Successful depletion of donor-specific anti-HLA antibodies (DSA) by combined liver and kidney transplantation in a highly sensitised renal allograft recipient	M Stephenson
TSANZ 28th Annual Scientific Meeting, Canberra, Australia, June 2010	Urinary dendritic cell markers DC-SIGN (CD209) and CD83 do not correlate with renal allograft rejection	M Stephenson
TSANZ 28th Annual Scientific Meeting, Canberra 2010	Comparative Structural and Phenotypic Characterisation of New World Primate and Human Pancreatic Islets	D Mohanasundaram, C Drogemuller, J Brealey, AG Milton, S Kireta, C Murgia, C Lang, PD Zalewski, GR Russ, PT Coates
TTS XXIII International Congress, Vancouver, Canada, August 2010	IFN-β modulated fast-dendritic cells promote the generation of CD4+CD25+FOXP3hi T-regulatory cells: a potential therapy for clinical islet allotransplantation	D Rojas

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
TTS XXIII International Congress, Vancouver, Canada, August 2010	Synergistic Immunomodulation by Immunosuppressive agents and Human Mesenchymal Stem Cells on T cell proliferation and Dendritic cell maturation	T Searcy
TTS XXIII International Congress, Vancouver, Canada, August 2010	Dendritic Cells Modified with immunosuppressive agents subvert T cell Antigen presenting function	R Krishnan
TTS XXIII International Congress, Vancouver, Canada, August 2010	Sphingosine kinase in pancreatic islet transplantation	C Jessup
TTS XXIII International Congress, Vancouver, Canada, August 2010	Transduction of rat pancreatic islets with wildtype Adeno-associated virus (AAV) serotype 2, pseudotype AAV2/8, AAV2/1 and surface-exposed tyrosine mutant AAV vectors – a comparative study	A Hughes
TTS XXIII International Congress, Vancouver, Canada, August 2010	Adenovirus-mediated transduction of isolated pancreatic islets using insulin-like growth factor-II to promote islet survival post-transplantation	A Hughes
RESPIRATORY MEDICINE UNIT		
TSANZ Annual Scientific Meeting 2010, Brisbane, Australia, March 2010	Varenicline tartrate and counselling versus counselling alone in a randomized controlled trial for inpatient smoking cessation: 3 month interim results	KV Carson, MP Brinn, BJ Smith, CG Garside, SJ Goldsworthy, RA Fitridge, AJ Esterman, JC Litt, JD Horowitz, SA Koblar, J Jannes, AJ Veale
TSANZ Annual Scientific Meeting 2010, Brisbane, Australia, March 2010	Bridging the Gap: Getting evidence into use	BJ Smith
TSANZ Annual Scientific Meeting 2010, Brisbane, Australia, March 2010	A meta-analysis (Cochrane Review) of pharmacological and psychological interventions for anxiety and depression in COPD	ZA Usmani, J Cheng, BJ Smith, KV Carson
TSANZ Annual Scientific Meeting 2010, Brisbane, Australia, March 2010	Home care by outreach nursing for Chronic Obstructive Pulmonary Disease: A Systematic Review	CX Wong, BJ Smith, KV Carson
RHEUMATOLOGY UNIT		
ARA State Meeting, Adelaide, Australia, October 2010	The inflammasome pathway in asthma	H Tran, S Lester, M Rischmueller
ARA State Meeting, Adelaide, Australia, October 2010	South Australian Scleroderma Register: Autoantibodies as predictive biomarkers of phenotype and outcome	S Graf, P Hakendorf, S Lester, K Patterson, J Walker, M Smith, M Ahern, P Roberts-Thomson
ARA State Meeting, Adelaide, Australia, October 2010	The BAFF-APRIL axis is associated with susceptibility to SLE: the LLAS2 study	S Lester, M Rischmueller
Quarterly retreat of the CY O’Connor ERADE village, WA, December 2010	FCGR3B copy number variation in SLE and Sjögren’s syndrome	S Lester
Australasian College of Dermatologists, Annual Scientific Meeting, Darwin, Australia, May 2010	Putting risk into perspective for patients. Invited symposium	SL Whittle
ARA State Meeting, Adelaide, Australia, October 2010	The efficacy and safety of opioids in inflammatory arthritis: a systematic literature review	SL Whittle
Media Coverage		
Professional Medical News. In Reuter’s Health Online (www.reutershealth.com). First featured Feb 17, 2010.	Risk of cancer in patients with biopsy-proven giant cell arteritis. Rheumatology. 2010;49:756-9. Giant cell arteritis does not increase cancer risk.	CL Hill, A Cole, M Rischmueller, T Dodd, M Coleman, G Tucker, PJ Roberts-Thomson.
SURGERY, University of Adelaide Discipline of		
Early Postgraduate Medical Education, The Queen Elizabeth Hospital, Adelaide, Australia, March 2010	War Trauma - An English admiral and an American Aviator	F Bridgewater
Lyell McEwin and Modbury Palliative Care Meeting, Modbury Hospital, August 2010	Pseudomyxoma peritoneii pathology and treatment	P Hewett
RACS ASC, Perth, May 2010	Assessment of simulated surgical skills training	P Hewett
RACS ASC, Perth, May 2010	ALCCaS Trial 5 year results. Key Note Speaker	P Hewett



CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
Seminars in Operative Surgery, Flinders Medical Centre, March 2010	Cylindrical APR	P Hewett
Christian Medical College, Vellore, India, February 2010	Ultrasonography in the assessment of the pelvic floor	N Rieger
Christian Medical College, Vellore, India, February 2010	Obstructed defecation	N Rieger
Seminars in Operative Surgery, Flinders Medical Centre, February 2010	Single incision laparoscopic colectomy	N Rieger
CFA meeting Tanunda, South Australia, March 2010	Every woman’s business – Continence across the life span, Pregnancy, childbirth, ageing and faecal incontinence. What is the connection?	N Rieger
RANZCOG 2010 Annual Scientific Meeting, Adelaide, Australia, March 2010	Third and fourth degree perineal trauma: challenges in repair and ongoing care	N Rieger
Australian Chinese Medical Association ASC, Adelaide, Australia, May 2010	SILS: The way forward?	N Rieger
RACS ASC, Perth, Australia, May 2010	SILS [Video presentation]	N Rieger
AGITG 12th Annual Scientific Meeting, Adelaide, Australia, September 2010	The Bi-National Colorectal Cancer Audit	N Rieger
CFA meeting, Adelaide, November 2010	Art and Surgery: Is there a link?	N Rieger
American Society of Cataract and Refractive Surgery, Boston, 2010	Managing Astigmatism with Toric IOLs and LRIs in Cataract and Refractive Surgery: didactic course	M Goggin, N Alpins
Australian Society of Cataract and Refractive Surgeons, Annual Congress, Cairns, Australia, 2010	Astigmatic effect of 1.9mm co-axial micro-incision phacoemulsification	M Goggin, A Esterman, S Moore
European Society of Cataract and Refractive Surgeons, Annual Congress, Paris, France, 2010	Toric intraocular lens outcome adjusting for anterior chamber depth and intraocular lens sphere equivalent power effects	M Goggin, S Moore, A Esterman
European Society of Cataract and Refractive Surgeons, Annual Congress, Paris, France, 2010	Managing astigmatism with toric implants and LRIs in cataract and refractive surgery: Didactic course	M Goggin, N Alpins
European Society of Cataract and Refractive Surgeons, Annual Congress, Paris, France, 2010	Astigmatic effect of 1.9 mm co-axial micro-incision phacoemulsification	M Goggin, S Moore, A Esterman
European Society of Cataract and Refractive Surgeons, Annual Congress, Paris, France, 2010	Goldmann applanation tonometry versus dynamic contour tonometry in LASIK for hyperopia and PRK for myopia	S Moore, A Esterman, C Kaufmann, M Goggin
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	Goldmann applanation tonometry versus dynamic contour tonometry in LASIK for hyperopia and PRK for myopia	M Goggin, S Moore, A Esterman, C Kaufmann
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	Astigmatic effect of 1.9 mm co-axial micro-incision phacoemulsification	M Goggin, S Moore, A Esterman
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	Corneal disease for the general ophthalmologist: “My graft is clear but I still can’t see”	M Goggin
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	LIV study: Lucentis in combination with Visudyne	J Gilhotra
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	Hand foot mouth disease associated maculopathy	J Gilhotra
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	Phaco-Chop in micro-incision cataract surgery	S Moore, M Goggin, A Drew.
Royal Australian and New Zealand College of Ophthalmologists Annual Congress, Adelaide, Australia, 2010	IFIS(intra-operative floppy iris syndrome) in micro-incision cataract surgery	S Moore, M Goggin, A Drew
Grand Round, University Hospital, Zurich, Switzerland, January 2010	New surgical technologies: how should they be assessed?	G Maddern
1st Malaysian Day Surgery Congress, Subang Jaya, Malaysia, April 2010	Plenary session: Day surgery in the 21st century	G Maddern
1st Malaysian Day Surgery Congress, Subang Jaya, Malaysia, April 2010	23 hour day surgery	G Maddern

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
RACS ASM Younger Fellows’ Forum, Perth, Australia, May 2010	How should new technology be assessed?	G Maddern
RACS ASM Younger Fellows’ Forum, Perth, Australia, May 2010	Why every surgeon can and should be an academic surgeon	G Maddern
RACS 2nd International Conference on Surgical Education and Training, Dublin, Ireland, May 2010	Skill transfer from lab to operating room	G Maddern
HTAi 7th Annual meeting, Dublin, June 2010	Plenary session: Rapid versus full systematic reviews: finding the balance	G Maddern
HTAi 7th Annual meeting, Dublin, June 2010	Panel session: Health technology assessment of new interventional procedures: Australia	G Maddern
Medical Insurance Group Australia, 31 July 2010, 21 August 2010, 11 September 2010, 18 September, 6 November, 2010, 13 November 2010, 27 November	Hypothetical: Good medicine requires good notes – Poor notes = a poor defence	G Maddern
Medical Insurance Group Australia, Brisbane, February 2010, Sydney, March 2010	Hypothetical: Treating adolescents – A challenge in confidentiality and consent	G Maddern
Adelaide University Surgical Society Career Series Lecture, Robson Lecture Theatre, Royal Adelaide Hospital, August 2010	The importance of research for a career in surgery	G Maddern
St Mark’s College, Adelaide, August 2010	Is surgical technology out of control?	G Maddern
SimTecT Health, Melbourne, August 2010	An overview of the current state of evidence around the acquisition and retention of surgical skills both in the clinical and simulated setting	G Maddern
Medical Technology Association of Australia Annual Conference, Sydney, September 2010	Innovative medical technologies for a sustainable healthcare system – Panel member	G Maddern
Medical Technology Association of Australia Annual Conference, Sydney, September 2010	The future of medical registries	G Maddern
Flinders University Surgical Society, Surgical Careers Night, Adelaide, September 2010	Who in their right mind would become an academic surgeon?	G Maddern
Ministry of Health, Singapore, October 2010	Innovative surgical technology: how do we know if it works?	G Maddern
Ministry of Health, Singapore, October 2010	Models of implementation of HTA activities	G Maddern
Healthcare Quality Improvement Conference, Singapore, October 2010	An introduction to HTA: How, when and why? – Workshop	G Maddern
Healthcare Quality Improvement Conference, Singapore, October 2010	HTA: a practical solution to cost and quality? – Plenary	G Maddern
International Society for Quality in Health Care, Paris, October 2010	What is Health Technology Assessment?	G Maddern
National Forum on Safety and Quality in Health Care, Canberra, October 2010	How to encourage surgical enthusiasm and keep the public safe	G Maddern
Scientific Forum: Research and Innovation in the Brazilian Hospital Sector, Belo Horizonte, Brazil, November 2010	The Australian experience in surgical mortality and audit	G Maddern
Developing RACS–University collaborations, RACS Section of Academic Surgery, Adelaide, November 201	Masters in Minimally Invasive Surgery	G Maddern
Developing RACS–University collaborations, RACS Section of Academic Surgery, Adelaide, November 2010	What the universities have to offer	G Maddern
Developing RACS–University collaborations, RACS Section of Academic Surgery, Adelaide, November 2010	Surgeon Scientist program and universities	G Maddern
Surgical Simulation Leadership Forum, Hilton, Orlando, December 2010	Experiences and future direction in surgical simulation	G Maddern
Crohns and Colitis Foundation’s National Clinical and Research Conference, “Advances in Inflammatory Bowel Diseases”, Hollywood(Miami), Florida, December 201	Mycoplasma fermentans in acute Crohn’s disease: a putative aetio-pathogenic agent	W Roediger, A Cummins, J Burke, R Philpot
Annual Scientific Meeting, RACS, Perth May 2010.	Prospective evaluation of a model to predict outcomes following endovascular aortic aneurysm repair- trial update.	K Fitzpatrick, M Boulton, G Maddern, J Golledge, M Barnes, R Fitridge.

CONFERENCE TITLE & DATE	TITLE OF TALK/POSTER	ATTENDEE NAME
Annual Scientific Meeting, RACS, Perth May 2010.	Fitridge R, Cowled P, Grosser D. Characterisation of defects in small bowel permeability following skeletal muscle ischaemia- reperfusion injury.	R Fitridge
Annual Scientific Meeting, RACS, Perth May 2010.	Cowled P, Fitridge R, Hassen T, Field JBF. Development of a preoperative risk assessment model to predict sepsis following elective open abdominal aortic aneurysm repair: A pilot study.	R Fitridge
Annual Scientific Meeting, World Federation of Vascular Societies, Kyoto Japan, July 2010	Can we work together to develop resources to support our training programs?	Fitridge R.
Annual Scientific Meeting, ANZ Society for Vascular Surgery. Gold Coast, October.	Current status of the EVAR trial in Australia and UK.	Fitridge R.
Annual Scientific Meeting, ANZ Society for Vascular Surgery. Gold Coast, October.	Current management of calf DVT in Australia	Blest N, Mcrae S, Fitridge R.
ORTHOPAEDICS AND TRAUMA, TQEH Department of		
Australian Orthopaedic Association (SA) August 2010	Radionuclide Arthrogram (RNA) as an adjunct in the diagnosis of hip and knee prosthetic loosening	T French
Australian Orthopaedic Association (SA) August 2010	A study on the comparative accuracy of bone resection width in total knee joint arthroplasty when using patient customized cutting blocks	CH Yeo
Australian Orthopaedic Association (SA) November 2010	Thromboprophylaxis with rivaroxaban in arthroplasty patients. Is routine INR monitoring indicated?	CH Yeo
Orthopaedics Association 33rd Annual Conference, Singapore, October 2010	Intra-Op accuracy of bone resection in Knee Arthroplasty with patient specific Cutting blocks (Smith & Nephew)	CH Yeo
Asia Pacific Orthopaedic Triennial Conference, Taipei, Taiwan, November 2010	Intra-Op accuracy of bone resection in Knee Arthroplasty with patient specific Cutting blocks (Smith & Nephew)	CH Yeo
THERAPEUTICS RESEARCH CENTRE		
5th Workshop on Advanced Multiphoton and Fluorescence Lifetime Techniques: FLIM 2010, Saarbrücken, Germany, June 2010	Studies on dynamic changes in skin and liver in vivo using multiphoton microscopy and FLIM imaging	MS Roberts
12th Perspectives in Percutaneous Penetration International Conference, La Grande Motte, France, April 2010	Skin structure and function	MS Roberts
Novartis Pharma AG: Development, Modelling & Simulation, Basel, Switzerland, March 2010	Topical drug delivery - chemical structure, product, skin and pharmacokinetic relationships	MS Roberts
8th International Conference and Workshop on Biological Barriers – in vitro Tools, Nanotoxicology, and Nanomedicine, Saarbrücken, Germany, March 2010	Fluorescence Lifetime Imaging (FLIM) and Its Application On Skin	MS Roberts
United States of America Defense Threat Reduction Agency Meeting, St Petersburg, Florida, January 2010	Dermal Kinetics	MS Roberts
Australian Health and Medical Research Congress, Melbourne, Australia, November 2010	Unraveling drug disposition in organs using 4D imaging and impulse-response modelling	MS Roberts
Australia's National Industrial Chemicals Notification and Assessment Scheme – NICNAS, Sydney, Australia, July 2010	Dermal Absorption	MS Roberts
Australian Office of Chemical Safety & Environmental Health, Canberra, Australia, June 2010	Pharmacokinetic/toxicokinetic principles	MS Roberts
Australian Office of Chemical Safety & Environmental Health, Canberra, Australia, June 2010	Dermal Exposure	MS Roberts
Australian Pesticides and Veterinary Medicines Authority (APVMA) nanotechnology workshop, Canberra, Australia, May 2010	Pharmacokinetics of nanomaterials	MS Roberts

RESEARCH  
SUPPORT STRUCTURES



THE BASIL HETZEL INSTITUTE POLICY COMMITTEE

Professor Guy Maddern was reappointed to the position of Director of Research in April 2010 for a five-year term. This leadership position has been critical to furthering the aims of research excellence and enhancing the research reputation of TQEH.

- Several sub-committees assist the BHI Policy Committee as required, notably the:
- Research Day Organising Committee, chaired by Dr Prue Cowled, University of Adelaide Discipline of Surgery, in the planning and running of the annual Research Day event.
  - Scholarship Selection Committee, chaired by Professor Maddern, in awarding a range of scholarships funded by The Hospital Research Foundation.
  - BHI Management Committee, chaired by Professor Ray Morris, Clinical Pharmacology Unit, in managing the new research facility.

TQEH Research Secretariat undertakes a range of activities to assist the Director of Research in supporting, fostering and administering quality research activity across TQEH. Gwenda Graves and Bronwyn Lenton man the Secretariat.

RESEARCH TRAINING

The BHI Policy Committee aims to support the research capacity within basic and clinical areas through its strategy of providing a number of scholarships at postgraduate, Honours and vacation levels.

RESEARCH TRAINING PROMOTION

In 2010 research training opportunities and Scholarship support were actively promoted through the hospital’s research Internet site with links to key university research training sites.

THE HOSPITAL RESEARCH FOUNDATION VACATION RESEARCH SCHOLARSHIPS

Five placements offered in TQEH research settings over the 2009/2010 vacation were generously funded through the Research Foundation Program grants and provided scholars with the opportunity to gain valuable research experience in a clinical/ laboratory environment.

HONOURS RESEARCH SCHOLARSHIPS

Honours Scholarships continued to be offered at TQEH in 2010. Six Scholarship recipients undertook projects across a range of Programs and Departments including Vascular, Chronic

Inflammatory Disease Research Group (CIDR), Transplantation-Immunology, Haematology Oncology, and Gastroenterology.

HIGHER DEGREES

In 2010 over sixty scholars were undertaking research towards Higher Degrees at TQEH, with five students supported with Hospital research Foundation Scholarships. In 2010 The Hospital Research Foundation Scholarships provided for stipends which matched the Australian Postgraduate Award (APA) rate. From 2010 The Hospital Research Foundation Scholarships are funded via the Program grants, with primary responsibility for selection of research students devolved to research groups.

Other higher degree students at TQEH have scholarship support from a range of funding bodies, including NHMRC, the University of Adelaide (International scholarships, APA, and Faculty ‘Divisional’ scholarships) and the non-profit sector including Kidney Health Australia and Freemasons.

RESEARCH DAY 2010

Research Day 2010 was again held in our new research building, with our combined seminar rooms, atrium and common spaces comfortably accommodating the sizeable event. Research Day has been held for 16 years now and continues to be recognized as a significant annual event in the research calendar at TQEH. The long-established purpose of the Day is to provide an opportunity for students and those “in training” to practice and develop presentation skills under conditions that are typical of most professional society congresses. With this experience, it is expected that research quality from TQEH will benefit as researchers deliver their work to national or international congresses. Prizes are awarded in a number of categories for the best presentation and competition is fierce!

Sponsorship for the Day was obtained from many sources, both University and corporate. However our major sponsor for Research Day has for many years been The Hospital Research Foundation and we are very grateful for this long term support. This year the Foundation sponsored three of the seven presentation prizes and we look forward to the Foundation’s continued support. The Day was very successful, and our winners are identified in the Award section of the report.

DR PRUE COWLED,  
Chair, Research Day Organising Committee, 2010



BASIL HETZEL INSTITUTE MANAGEMENT COMMITTEE 2010

Back Row (left to right): Mrs Sandy Pickering, Dr Andrew Holmes, Prof Ray Morris, A/Prof Peter Coyle, Dr Matthew Stephenson, Mr Matthew Smith, Dr David P Wilson

Front Row (left to right): Ms Sarah Bray, Ms Gwenda Graves, Dr Prue Cowled, Ms Kathryn Hudson, Ms Nisha Rao

Absent: Dr Peter Zalewski

THE INSTITUTE (BHI) POLICY COMMITTEE  
CURRENT MEMBERS, DECEMBER 2010

- Prof Guy Maddern
- Prof John Beltrame
- Prof Justin Beilby (proxy – Prof Andrew Somogyi)
- Mrs Jackie Wood
- Prof Pat Buckley
- Ms Diana Brown
- Dr Andrew Holmes
- Dr Prue Cowled
- Dr Cynthia Piantadosi
- A/Prof Richard D’Andrea
- Prof Ray Morris
- Mr Paul Flynn
- Ms Kathryn Hudson (maternity leave)
- A/Prof Simon Koblar

Executive Support  
Ms Gwenda Graves

BASIL HETZEL INSTITUTE MANAGEMENT COMMITTEE  
CURRENT INSTITUTE MEMBERS, DECEMBER 2010

The Institute Level	Representative
Ground Level	Mrs Sandy Pickering
Level 1	Dr Prue Cowled
	Dr Matthew Stephenson
	Ms Sarah Bray
Level 2	Dr Peter Zalewski
	Dr David Wilson
	Dr Andrew Holmes
Surgical Suite	Mr Matthew Smith
Hanson Institute (external rep)	A/Prof Peter Coyle
Postgraduate Rep	Ms Nisha Rao
Chair	Prof Ray Morris
BHI Facility Manager	Ms Kathryn Hudson
Executive Support	Ms Gwenda Graves





Dr John Field  
BSc(Hons) PhD AStat

#### STATISTICAL SUPPORT SERVICE, TQEH

The Statistical Support Service, jointly funded by BHI and the Faculty of Health Sciences at the University of Adelaide, provides twelve hours per week of statistical assistance to staff and students at the BHI and TQEH more generally.

The service is well used by staff and students, with over 65 different clients during the year, many of whom needed help with several problems. This resulted in about 70 formal reports with many other consultations resulting in 'on the spot' advice.

The range of services has included advice to research staff and students about:

- Design of health-related research
- Statistical aspects of research programs
- Preparing data for analysis
- Data analysis
- Manuscript preparation
- Analysis of data from research programs based at BHI and TQEH.

#### PAPERS PUBLISHED DURING 2010

Beule A, Asthanasiadis T, Tan LW, Field J, Hosemann W, Wormald P-J. (2010): The effect of simulated bleeding in an in vitro nasal fibroblast wound healing model. *American Journal of Rhinology and Allergy* 24(3) 186-91.

Cummins AG, Alexander BG, Chung A, Teo E, Woenig JA, Field JBF, Thompson FM, Roberts-Thomson IC. (2010): Morphometric evaluation of duodenal biopsies in celiac disease. *American Journal of Gastroenterology*, 24 August 2010; doi: 10.1038/ajg.2010.313

Tiong LU, Parkyn R, Walters D, Field J, Lai C, Walsh D. (2010) Dilemma in multifocal breast cancer – largest versus aggregate diameter. *ANZ Journal of Surgery*, 19 May 2010; doi: 10.1111/j.1445.2197.2010.05569.



AWARDS





**Professor Basil Hetzel unveiled his portrait "The Remedy" at Research Day, 22 October 2010.**

**Pictured l-r:**  
Ms Avril Thomas,  
Prof Basil Hetzel,  
Mrs Anne Hetzel

**AWARDS**  
2010 AWARD WINNERS TQEH RESEARCH DAY 2010

	<b>HONOURS STUDENTS</b> <b>Joshua Woenig,</b> Gastroenterology Unit, TQEH Supervisor: A/Prof A Cummins.	<i>"Inhibition of Notch signalling by DAPT decreases postnatal intestinal growth parameters in the rat"</i> (Prize sponsored by The University of Adelaide)
	<b>FIRST YEAR PhD STUDENT (LABORATORY RESEARCH)</b> <b>Camille Jardeleza,</b> ENT, TQEH. Supervisors: Prof PJ Wormald.	<i>"The role of Nitric Oxide in the pathophysiology of Staphylococcus aureus biofilm formation in Chronic Rhinosinusitis"</i> (Prize sponsored by the University of South Australia)
	<b>SECOND YEAR PhD STUDENTS (LABORATORY RESEARCH)</b> <b>Josh Jervis-Bardy,</b> ENT, TQEH. Supervisors: Prof PJ Wormald, Dr LW Tan.	<i>"Methylglyoxal-infused honey mimics the anti-Staphylococcus Aureus biofilm activity of Manuka Honey"</i> (Prize jointly sponsored by Sarstedt and AD Instruments)
	<b>SENIOR PhD STUDENTS (LABORATORY RESEARCH)</b> <b>Sam Boase,</b> ENT, TQEH. Supervisors: Prof PJ Wormald, Dr LW Tan.	<i>"Development of a sheep model for the study of fungal biofilm in Rhinosinusitis: fungal and bacterial synergy".</i> (Prize sponsored by The Hospital Research Foundation)
	<b>CLINICAL HIGHER DEGREES &amp; REGISTRARS</b> <b>Rachel Dreyer,</b> Cardiology Unit, TQEH. Supervisors: Prof J Beltrame, G Schrader.	<i>"Gender differences in St Elevation Myocardial Infarction (STEMI) management and outcomes"</i> (Prize sponsored by The Hospital Research Foundation)
	<b>POSTER PRIZE</b> <b>Sumi Krishnan,</b> Clinical Pharmacology Unit, TQEH. Supervisors: Prof R Morris, Prof P Hewett.	<i>"Local anaesthetic infused at the incision site for post-operative pain management following abdominal surgery"</i> (Prize sponsored by Qiagen)
	<b>BEST LAY DESCRIPTION</b> <b>Chris Lauder,</b> Discipline of Surgery, TQEH. Supervisor: Prof G Maddern.	<i>"A porcine model of peritoneal adhesion formation and modulation"</i> (Prize sponsored by The Hospital Research Foundation)



OTHER 2010 AWARD WINNERS

CARDIOLOGY UNIT	
K Rajopadhyaya	International Society for Heart Research Young Investigator prize for her research focusing on Endothelin-1 signalling in vasculature.
CLINICAL PHARMACOLOGY UNIT	
J Licari	De la Lande Travel Award \$3,000 (joint award from Clinical Pharmacology Unit and Cardiology Unit TQEH)
NEUROLOGY UNIT	
S Horn	Anne Crouch Award for Post Graduation Education. 2009 (awarded in 2010)
SA Koblar	Leopold Dintenfass Award (\$5,500) for the most interesting or innovative research application made to the Rebecca L Cooper Foundation in 2010.
WK Leong	1st Prize in the 5th Annual Science Images Competition (camera – \$200 value), Open Science Category Award at the School Molecular Biomedical Science, University of Adelaide 2010.
WK Leong	Poster Prize (\$100), 4th Mt Lofty Workshop on Frontier Technologies for Nervous System Function and Repair, Adelaide, December 2010.
DEPARTMENT OF OTOLARYNGOLOGY, HEAD AND NECK SURGERY	
S Boase	Best presentation, Senior PhD Category, TQEH Research Day 2010, Adelaide., October 2010.
S Boase	Maurice Cottle Award, Best Scientific Manuscript. American Rhinologic Society, Boston MA USA. September 2010.
C Jardeleza	Best presentation First Year Higher Degree Students (Laboratory) category. TQEH Research Day 2010, Adelaide October 2010.
J Jervis-Bardy	Best presentation Second year Higher Degree students (Laboratory research) category.TQEH Research Day 2010, Adelaide October 2010.
R Valentine	Travel Grant. Royal Australasian College of Surgeons Surgical Research Society, 47th Annual Scientific Meeting, Adelaide, November 2010
R Valentine	Ronald Gristwood Medal for Best Registrar Presentation, Australian Society of Otolaryngology Head and Neck Surgery SA Branch Meeting, Adelaide. August 2010

RENAL UNIT	
R Carroll	CARG Research Award
T Coates, S Kireta, M Stephenson – Amgen	TSANZ Award
M Collins	TSANZ Scientific Meeting – Young Investigator Award
M Collins	ANZSN Scientific Meeting – Young Investigator Award in Clinical Science
A Hughes	TSANZ Travel Grant \$2500
C Jessup	Faculty International Conference Award, Faculty of Health Sciences, University of Adelaide \$1500
C Jessup	TSANZ Scientific Meeting – Young Investigator Award \$500 voucher
S Kireta	TSANZ Travel Grant \$2500
R Krishnan	TTS International Basic Science Mentor-Mentee Award USD\$800
D Rojas	TSANZ Scientific Meeting – Young Investigator Award
D Rojas	TSANZ Travel Grant \$2500
N Rogers	Ross Wishart Award, Australian Society for Medical Research
N Rogers	AusBiotech Student Association – GSK National prize
N Rogers	ANZSN Scientific Meeting – Novartis Overseas Travelling Award
N Rogers	ANZSN Scientific Meeting – ANZSN Travelling Fellowship
N Rogers	NHMRC Training Fellowship Overseas Biomedical
N Rogers	TSANZ Travel Grant \$2500
N Rogers	TSANZ Scientific Meeting – President’s Prize
N Rogers	TSANZ Scientific Meeting – Young Investigator Award
T Searcy	TTS International Basic Science Mentor-Mentee Award USD\$5000
S Sen	TSANZ Travel Grant \$2500



ACKNOWLEDGEMENTS

ACT Health
Adelaide Microscopy
AIB Labs
Alzheimer’s Australia
Angioblast Systems Ltd
ANGOSA
Anne Marie Trimboli Trust
Arthritis Australia
ASERNIPS
Australian Federation of Graduate Women
Australian National University
Australian Neurology
Australian Red Cross Blood Service (ARCBS)
Australian Research Council (ARC)
Australian Society for Medical Research
Belnaves Foundation
beyondblue
BioInnovation SA
Biomet
Boehringer Ingelheim
Biomet
Breast Screen Aotearoa
BUPA Australia
Cancer Australia
Cancer Council of South Australia
Catholic Archdiocese of Sydney
CellCept Australia
Centre for Genomic Sciences
Channel 7 Children’s Medical Research Foundation of SA
Child Health Research Institute
Child, Youth & Women’s Health Service – Familial Cancer Unit
Clive and Vera Ramaciotti Foundation
Commonwealth Dept of Health & Aged Care
Cook Australia
Flinders University
Garnett Passe and Rodney Williams Memorial Foundation
Haemophilia Foundation
Hanson Institute
Inner Wheel Australia
Intensive Care Foundation
Janssen Cilag

John T Reid Charitable Trusts
Juvenile Diabetes Research Foundation
Kidney Health Australia
Leukaemia and Lymphoma Society of USA
Muriel T Gunn Foundation
National Breast Cancer Centre
National Health & Medical Research Council (NHMRC)
National Heart Foundation of Australia
National Stroke Foundation
Nepean Hospital
Northern Territory Department of Health
Pfizer Australia (CVL)
Peter MacCallum Institute
Rebecca L Cooper Medical Foundation
Royal Adelaide Hospital
Royal Australasian College of Physicians
Royal Australasian College of Surgeons
Royal Prince Alfred Hospital
SA Heart Foundation
SA Pathology
Sanofi-Aventis
Smith and Nephew
South Australian Department of Health
Stryker
St Jude’s Research Institute, Memphis USA
St Vincent’s Institute Melbourne
Tasmanian Department of Health
The Captain Courageous Research Fund
The Hospital Research Foundation
The Mason Foundation
The Northern Communities Health Foundation Inc
Transplant Society of Australia and New Zealand
Trevor Prescott/Freemasons Society
Victorian Department of Health
Women’s and Children’s Hospital
University of Adelaide
University of Columbia
University of South Australia
WA Department of Health
Women’s and Children’s Hospital Adelaide



THE HOSPITAL RESEARCH FOUNDATION



CHAIR REPORT

It gives me great pleasure to present the Chair report for The Hospital Research Foundation (THRF) for 2010.

The Hospital Research Foundation has had an amazing year. Directors, Staff, Volunteers, Sponsors and Donors have combined their best efforts to ensure that 2010 was one of the best and busiest years in our 45 year history of supporting world class medical research at The Queen Elizabeth Hospital and the Basil Hetzel Institute for Translational Health Research (BHI).

This past year we were able to increase our financial support for medical research and patient care to \$7.2 million which is one of the largest contributions THRF has ever been able to make. This was made up of \$2.8 million in medical research support grants and contributions as well as \$4.4 million contributed to a Medical Research Reserve which guarantees ongoing funding to long term research programs.

After extensive market research, consultation and evaluation we made a decision to introduce a new image in 2010. The Hospital Research Foundation brand has been introduced to focus the attention of the broader community on the vital medical research undertaken at The Queen Elizabeth Hospital and the BHI. The ‘bench to bedside’ medical research that we support has far reaching impacts in all Hospitals. The work of the clinical and medical scientists at The Queen Elizabeth Hospital improves people’s lives everywhere and our new brand is focused on bringing that message to the community.

We continually strive to deliver our services with the utmost transparency to the people who support medical research via their donations and assistance. The Hospital Research Foundation has adopted General Purpose Reporting Standards for our financial reporting. The adoption of these standards means that we report on the same basis required of publically listed companies, with the same exacting standards and very high transparency requirements. The Hospital Research Foundation is independently audited by well known firm Edwards Marshall & Co, who also audit our lottery programs. Our annual financial statements are posted on our website at [www.hospitalresearch.com.au](http://www.hospitalresearch.com.au) for our supporters to review our performance.



Our Board of Directors has adopted best practice standards for corporate governance in all of our activities. To oversee these processes we utilize a committee structure which includes the following Board sub-committees:

- Governance and Risk Management Board Sub Committee;
- Finance Audit Board Board Sub Committee,
- Business Development Board Sub Committee,
- HR and Remuneration Board Sub Committee,
- Nominations Board Sub Committee

The operation of this committee structure ensures that all areas of the operations of the Foundation have a focused strategic view at Board level.

We are very proud of the vital work undertaken by the researchers whom funds raised by The Hospital Research Foundation supports – none of this would be possible without the tireless efforts of the staff and volunteers. I would like to take this opportunity on behalf of the board to recognize their efforts and the passion with which they apply themselves to ensuring the growth and smooth operation of The Hospital Research Foundation.

We look forward to an exciting year in 2011 and beyond.

LEE JAMESON

BOARD DETAILS

- CHAIR**  
**Ms Lee Jameson** – Managing Director, Gray Management Group
- DEPUTY CHAIR**  
**Mr John MacPhail** – Partner, Finlaysons
- BOARD MEMBERS**  
**Professor John Beltrame** – Professor of Medicine, The Queen Elizabeth Hospital
- Mr John Hender** – State Manager – SA, Private Wealth – Private Clients, Perpetual Pty Ltd.
- Mr Ken Milne** – Architect, Milne Architects Pty Ltd.
- Professor Richard Ruffin** – Emeritus Professor, The Queen Elizabeth Hospital.
- Mrs Melinda O’Leary** – General Manager, Nova Aerospace Australia
- Ms Luciana Larkin** – Partner, Tregloans Chartered Accountants
- Mr Paul Flynn** – CEO, The Hospital Research Foundation

Welcome to our newly appointed board member;  
**Associate Professor Richard D’Andrea**, Chief Medical Scientist-Department of Haematology-Oncology, The Queen Elizabeth Hospital.



Ms Lee Jameson



Mr John MacPhail



Prof John Beltrame



Mr John Hender



Ms Luciana Larkin



Mr Ken Milne



Prof Richard Ruffin



Mrs Melinda O’Leary



A/Prof Richard Dandrea



Mr Paul Flynn



## CHIEF EXECUTIVE OFFICER REPORT



Medical Research impacts all of us, our family, our friends and our loved ones. I do not know a single person who won't at sometime need medical care in a hospital. When that time comes we can only hope that the medical care we seek will be informed and shaped by the very best and the very latest, world-class medical research.

At The Hospital Research Foundation we support and advocate world-leading medical research that translates into the prevention of disease, the relief of suffering, improved patient care and the restoration of health and wellness for all in our community. That is our mission and that is what we strive to achieve.

Our new brand, The Hospital Research Foundation has been introduced to highlight to the broader community that the vital medical research undertaken at The Queen Elizabeth Hospital and The Basil Hetzel Institute for Translational Health Research (BHI) has broad and far reaching positive impacts.

The Hospital Research Foundation's major long term funding commitments are in the areas of Cardiac Disease, Renal Disease, Cancer, Stroke, Diabetes, Rheumatology, Surgical techniques and a broad population health study aimed at improving health outcomes in the community. We also provide significant funds to the purchase of medical research equipment and provide a variety of smaller grants to assist early career researchers in their work.

In the last financial year, with the support of the community, we were able to make some great strides assisting world-class medical research right here in South Australia at The Queen Elizabeth Hospital and the BHI. A total of \$7.2 million was allocated either directly to medical research, medical research equipment, patient support, research support or to the establishment of a specific medical research reserve.

The Hospital Research Foundation has made forward commitments of over \$13.5 million to support medical research and patient care over the next 5 years. The establishment of the medical research reserve is an exciting new initiative for The Hospital



Research Foundation which has the objective of ensuring that our pre-commitments to medical research funding is consistent and long term, and will not be adversely affected by negative economic impacts such as the recent global financial crisis.

In 2010 we were pleased to announce the launch of the Michell McGrath Breast Cancer Fellowship at the BHI. This Fellowship, which is one of the largest on-going grants awarded in South Australia, will attract the best and brightest in the field of Breast Cancer research in an effort to find a cure and increase care for this dreadful disease.

Our operating focus is always on efficiency and transparency and as such we have chosen to adopt General Purpose Reporting Standards for our annual financial report which sets the highest possible standard of financial reporting for our donors and stakeholders. Our audited financial reports are published on our website [www.hospitalresearch.com.au](http://www.hospitalresearch.com.au). We strongly advocate that all not for profit organizations examine this as it sends a positive message to the community about our commitment to openness.

Over the past year the team at The Hospital Research Foundation have been extremely active with major



fundraising initiatives such as the Home and the Lifestyles Lotteries, Dry July, the Bunsen Burners and Bowties Dinner, supporting various community fundraising events and responding to many generous donation and bequest enquiries from our generous supporters.

I would like to take this opportunity to thank the Board of Directors, the Staff and selfless Volunteers of The Hospital Research Foundation for their wonderful work supporting medical research. Without the efforts of these wonderful people, the ongoing support to medical research at The Queen Elizabeth Hospital and the BHI would not be possible.

I would like to make special mention of the dedicated team of clinical and medical researchers who continually strive to find cures and improve care. They are the heroes of our community and we should encourage the youth of our society to take inspiration from their work and to follow in their footsteps.

Our generous donors and sponsors deserve our heartfelt thanks for their ongoing support. As a society we have great faith that when we need medical attention we will receive the very best. This high quality medical care for our friends and family is only possible if our doctors, nurses and medical specialists have access to the very best medical research and body of knowledge available. Without your ongoing support this vital world-class medical research would not be possible.

If you would like to explore other ways that you can support this vital work please call us on 08 8244 1100 or visit our website [www.hospitalresearch.com.au](http://www.hospitalresearch.com.au).

Once again thank you for your ongoing interest and we look forward to working with you in the future to improve the health and wellbeing of all in of community.

PAUL FLYNN

## SUPPORTING WORLD-CLASS RESEARCH

### RESEARCH HIGHLIGHT ACHIEVEMENTS

The Hospital Research Foundation is proud of our assistance in funding a number of breakthrough research projects thanks to the generous support of our donors. 2010 has been a fantastic year for South Australian research and the following research developments are just a few of the year's highlights.

### A STEP CLOSER TO DIABETES CURE

One of the most exciting research outcomes of the year was the first successful islet transplant in South Australia to treat type 1 diabetes.



Margaret Harrigan, pictured, who was the recipient of the transplant islets (insulin producing cells) had been suffering with type 1 diabetes for 35 years, experiencing regular hypoglycaemic episodes due to her frequently dropping blood sugar levels causing her to fall unconscious without warning. This had a significant negative impact on her lifestyle and she constantly lived in fear of passing out unexpectedly.

Researchers at The Queen Elizabeth Hospital were instrumental in background research and delivering the two islet infusions to Margaret in 2010. The first infusion procedure was completed in January which reduced her daily dose of insulin by two thirds, and a second infusion in June was so successful that Margaret is now producing enough of her own insulin she no longer needs her insulin pump or injections.

Associate Professor Toby Coates, a key Transplant Immunologist involved in Margaret's infusion treatment and the rest of the Renal team are ecstatic with the results and the success of this treatment is very promising as a cure for diabetes sufferers in the future.

### BREAKTHROUGH IN STROKE TREATMENT

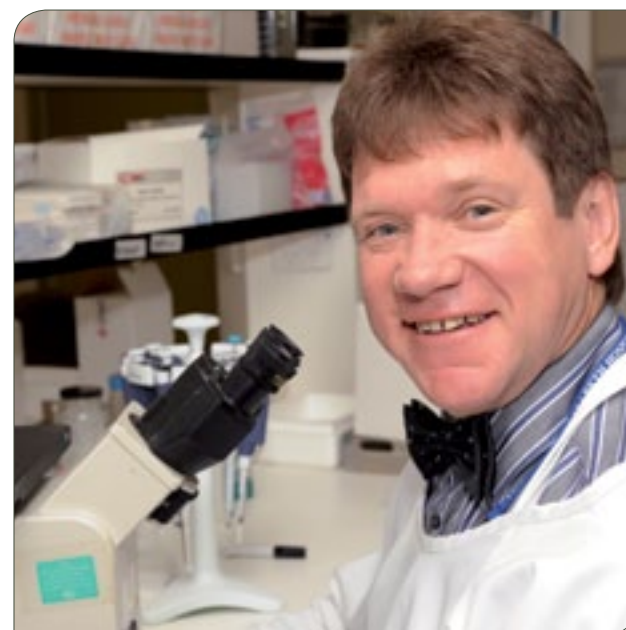
Stroke researchers at TQEH had a significant breakthrough this year finding that stem cell transplantation may be the key to improving in the lives of thousands of Stroke sufferers in Australia.

Associate Professor Simon Koblar (pictured below) and his team at The Queen Elizabeth Hospital in collaboration with The University of Adelaide and the Hanson Institute have been researching the possibility of using adult stem cells derived from human teeth to treat stroke victims, repairing the brain or improving function after stroke.

This year, in vivo testing in Stroke suffering rats has shown that 24 hours after inducing a stroke, stem cells can be injected into the brain causing a dramatic improvement in limb function after 4 weeks- a tremendously exciting revelation.

The next step for the team is to see if a similar benefit can be produced in a larger animal, such as a sheep, as this is much closer to the size of a human brain. As part of the bigger picture, if benefits can be seen in the larger brain there may be the possibility of moving towards clinical trials involving patients at TQEH.

The benefits from using adult stem cells are numerous, which adds to the advantage of this significant breakthrough. One advantage is that using stem cells from teeth is autologous transplantation- meaning that patients are receiving their own cells. This is the best form of transplant as it avoids rejection issues associated with other forms of transplantation.



### KIDNEY TRANSPLANT BREAKTHROUGH

Transplant researchers at TQEH have been looking at using a compound known as Curcumin, found in the spice Tumeric, as a possible way of lowering the rates and perhaps even eliminating kidney transplant organ rejection.

In 2010, researchers at TQEH undertook studies using Curcumin to modify immune cells; these cells in their natural state are the ones that cause damage to a transplanted kidney and start the process of organ rejection.

Dr Natasha Rogers, pictured above, a PhD student whose work has been instrumental in advancing this research, has shown that if Curcumin is given to both a kidney donor and recipient prior to a transplant, injury caused by interruption in blood flow to the transplanted kidney is prevented or at least reduced.

This is a significant step forward, as injury to a transplanted kidney is a key cause of organ rejection, whether it be immediate or long term. This research is incredibly exciting, as currently there is no known treatment to prevent injury due to interruption of blood flow. There are also numerous benefits to this treatment over other anti-rejection treatments because of the limited side effects that have been seen so far.

Currently, this research is still in laboratory testing stages, but once its success is proven, this process has the potential to be used in other organ transplantation procedures. It may also be useful for other conditions where there is interruption and then restoration of blood supply, like a heart attack or stroke.

### PROMISING LEUKAEMIA TREATMENT

Research being undertaken in TQEH's Department of Haematology-Oncology has made a significant advance towards finding a drug that could reduce or even eliminate relapses of the fatal blood cancer, leukaemia.

A PhD student funded by The Hospital Research Foundation Research, Chung Kok and his team have been instrumental in identifying and gaining understanding of this possible treatment. They have identified a drug which is effective in attacking the leukemic stem cell population that resides in the bone marrow of leukaemia patients which is unaffected by normal chemotherapy and thought to cause relapses of the cancer.

The success of this research has been so great that the team has advanced into collaboration to test the drug in in vivo models of leukaemia. If studies in the in vivo model are successful, further research will investigate the most beneficial way to use this drug, whether it is in conjunction with chemotherapy, by itself, or with another drug.

Many Acute Myeloid Leukaemia (AML) patients are elderly, so a significant percentage can't tolerate toxic chemotherapy treatment, so researchers are hopeful this drug could be an effective alternative treatment.

### BRINGING RESEARCH NEWS TO YOU

Regular research news like the above highlights are regularly posted on our website – [www.hospitalresearch.com.au](http://www.hospitalresearch.com.au). Highlights and updates are also covered in our quarterly print and e-newsletters. If you would like to receive a copy of our e-newsletter directly to your email inbox, you can now subscribe online via our website, or if you would like to receive a printed copy to your mailbox, please call us on (08)8244 1100. We are now also keeping our supporters up-to-date using social media- join our page on Facebook or follow us on Twitter!





**Pictured:** Ben Noll, Ian Westley, Catherine De Nichilo and Ray Morris with the new Tandem Mass Spectrometer

### EQUIPMENT PURCHASES

One way The Hospital Research Foundation (THRF) supports world-class medical research is by purchasing vital pieces of equipment. In 2010 we allocated over \$500,000 for equipment purchases.

### TANDEM MASS SPECTROMETER

THRF assisted with the purchase of a \$380,000 Tandem Mass Spectrometer which will principally be used to advance organ transplantation research at the BHI.

Among many of its uses, the Mass Spectrometer will be used to measure how effectively tissue and blood samples take up drugs that are administered to inhibit rejection of transplanted organs, mainly kidneys. This will assist researchers to understand why some donated kidneys are more likely to be rejected than others. This equipment will ultimately improve transplant patients' quality of life with reduced need for hospital visits and a reduced chance of organ rejection. The potential for the Mass Spectrometer goes well beyond research into drugs for organ transplantation and in future, it is likely to be used to study the effect of cancer drugs in particular, along with many others.

### GAITRITE

The Rotary Club of Kidman Park this year generously committed to supporting a piece of equipment called a GaitRite. They will put \$25,000 towards this vital machine which is essentially an electronic mat that allows researchers to measure different aspects of gait or the way a person walks.

Australia's population is ageing and consequently, many older people are at risk of balance related injury such as fractures from falling. The GaitRite

will assist researchers to determine if certain interventions are helping to improve how patients walk during rehabilitation, whether it is from a serious fall, a stroke or numerous other conditions. It will also be used as a preventative tool to improve people's gait, as a better gait means a lower risk of falling and essentially a better quality of life for patients.

### BENCHTOP CENTRIFUGE

A BenchTop Centrifuge was purchased with the help of the Marian & E.H Flack Trust and the Commonwealth Bank Staff Community Fund who generously donated \$10,000 and \$11,600 respectively this year.

The Renal Unit is using the Centrifuge to assist the Pancreatic Islet Transplantation Program, which is currently being undertaken to develop a cure for type 1 diabetes. It will also be used in Kidney Transplantation research where researchers are developing more effective treatments for kidney failure and trying to reduce the risk of rejection in transplant recipients.

The centrifuge has replaced equipment that was more than 25 years old. The more advanced technology this piece of equipment provides will ultimately present more accurate research outcomes to benefit patients.

### ALOKA LAPAROSCOPIC ULTRASOUND PROBE

Long time supporters of THRF, the Olympic Spirit Greek Friends and OEEGA (The Organisation of Hellene and Hellene- Cypriot Women of Australia) came together to raise significant funds to assist with purchasing an Aloka Laparoscopic Ultrasound Probe to be used in vital cancer research at TQEH. The probe will enable researchers to determine the extent of cancer within the abdomen, enabling treatment to be more precisely directed to cancer cells that have spread, particularly within the liver, often without more invasive surgery being required.



### HOSPITAL COMMUNITY EVENTS

The Hospital Research Foundation has long played a pivotal role in assisting in the promotion of community focused health initiatives which benefit the local and broader community of South Australia.

This year, THRF proudly provided support for the TQEH Geriatric Evaluation and Management Unit's Mindful of Dementia Day. This inspiring event brought together health professionals, community workers and home carers to learn the very latest about dementia research, treatments and support services. The hospital based event welcomed more than 500 people to a day focused on the positive life management of this impactful disease.

With one Australian suffering a Stroke every 10 minutes, raising awareness and providing community education is a major focus for Stroke Researchers and Clinicians at TQEH. As part of National Stroke Week, THRF assisted in turning the spotlight on Stroke with a week-long series of public seminars conducted at the BHI. Leading stroke specialists and researchers gave invaluable insight into stroke recognition, prevention and current cutting edge treatments which are helping to save lives and improve outcomes through the hospital's renowned Stroke Unit.

### MICHELL MCGRATH BREAST CANCER RESEARCH FELLOWSHIP

The Hospital Research Foundation was also delighted to announce the inaugural Michell McGrath Breast Cancer Research Fellowship this year to enhance the world-class work currently undertaken at TQEH and the Basil Hetzel Institute for Translational Health Research.

Named in honour of John Michell AM and Ray McGrath in recognition of their outstanding contributions to the South Australian community, the Fellowship, one of the largest awarded in the State, will inject \$1.25 million over five years into breast cancer research at the Basil Hetzel Institute (BHI).

Director of Research at The Queen Elizabeth Hospital, Professor Guy Maddern said the Research Fellowship will lead to a focused and innovative team in breast cancer research based at the BHI.

It is also a fitting tribute to John Michell and Ray McGrath for their long standing advocacy and support of medical research at The Queen Elizabeth Hospital.

With a successful candidate to be announced early in 2011, the Fellowship is expected to have a very positive impact on the future health and well-being of all Australians.



The Olympic Spirit Greek Friends and OEEGA (The Organisation of Hellene and Hellene- Cypriot Women of Australia)



## SUPPORTING STUDENTS AT THE INSTITUTE

Nurturing and supporting talented students is a high priority for The Hospital Research Foundation. Each year THRF supports students by granting scholarships. In 2010, THRF supported 5 Postgraduate scholarships, 3 Honours scholarships and 1 vacation scholarship.

THRF was again the major sponsor of the Annual Research Day at the Basil Hetzel Institute for Translational Health Research (BHI) held in October. As part of our support we brought radio station Mix 102.3 along to assist with raising the profile of the dedicated researchers at the BHI.

Researchers were interviewed about their research projects and broadcast on air. A number of students were also part of the You Choose evening program, calling up to request 'medical and health' related songs.

Research Day is designed to benefit research quality at TQEH, as it gives researchers the opportunity to practice and develop their presentation skills in preparation for delivering their work at national or international congresses. THRF is happy to support this valuable event and will continue its support in coming years.

## WAYS YOU CAN HELP

### BEQUESTS- LIFE GUARDIAN PROGRAM

Our Life Guardian Program is a wonderful way people can leave a lasting legacy to research by making a gift in their Will. We have over 730 supporters who have generously made this commitment which signifies a strong base for the support of world-class medical research in South Australia well into the future.

We have a number of especially generous Life Guardians who have left gifts of \$10,000 or more to support medical research in their Wills. The Basil Hetzel Society was developed to acknowledge these very special contributors. Our 2010 Basil Hetzel Society Luncheon was a great success, held as a thank you to more than 160 members. Guests enjoyed a feature presentation by Mr Christopher Drogemuller from the Renal Transplantation Laboratory who discussed Type 1 Diabetes, as well as special talks from Associate Professor Simon Koblar and Mr Austin Milton on Stroke, and Dr Maureen Rischmueller who spoke on Rheumatology Research.

One of the guests, Gordon Watson greatly appreciated the event and said that "it was great to hear firsthand about the varied areas of research his donations are going toward in such an enjoyable luncheon environment."

## REGULAR GIVING

Our Regular Giving program allows our supporters to generously provide ongoing support to help ensure the long-term success of life-changing medical research projects. You can easily set up regular donations to research on a weekly, monthly, quarterly or yearly basis. We have many regular givers who want to make a difference to peoples' lives with regular support.

## ONLINE DONATIONS

One of our major projects for 2010 was the development of our bright new website – [www.hospitalresearch.com.au](http://www.hospitalresearch.com.au) – meaning our supporters can donate securely online to vital medical research more easily than ever before. The website gives you many ways to donate, whether it be a one off donation, an In Memoriam gift or if you would like to make on-going contribution via Regular Giving.

It is important that our supporters know how vital funds are being used. The website is focused on detailing the many different research departments, diseases and illnesses that our supporters are assisting, as well as the many research advancements that are only possible with their generous and committed support.

## KEEPING IN CONTACT...

One of the many ways we keep in contact with our valued supporters is through mail. We understand that our donors like to hear about how their donations are being spent and our mail campaigns are one way we communicate the many research advancements possible through their support. If you are further inspired by the research detailed in these letters, we give you the opportunity to continue your support by easily posting back the attached donation slip, or direct you to donate online via our website.

We also like to keep in contact with supporters and potential donors by phone. It is an easy and effective way to spread the word about the life-changing research being conducted at the BHI and many people in the community have been inspired in this way to support the endeavours of the researchers and scientists at The Institute. A highly effective part of this process is our Key Medallion Program which not only supports vital medical research, but provides a valuable key safety service to members of the Program. We offer membership to our Key Medallion Program as a thank you to those supporters who donate \$50 or more.



The Hospital Research Foundation Life Guardian Jacky pictured with daughter Jemma.





Home Lottery winner Samantha Horden with friend Judith.



Peter, Julie and daughter Ruby were the lucky winners of the 2010 Lifestyles Lottery.



The 2010 Lifestyles Lottery home.

## LOTTERIES

The Hospital Research Foundation hosts two major lotteries each year, the Home and Lifestyles Lotteries. Our lotteries are a fantastic way people can support vital medical research, but also have the chance of winning many of our amazing prizes!

We were thrilled to congratulate the Home Lottery winner of the \$1.3million Grand Prize Showhome at Blackwood Park, Samantha Horden – a regular supporter of our lottery program, who was simply overwhelmed by the win.

Our second ever Lifestyles Lottery had a prize pool of over 2.2 million and more than 3,100 prizes in total. The lottery proved to be very lucky for the Coles family who were the winners of the Grand Prize Showhome located at St Clair, Woodville. Peter, Julie and daughter Ruby Coles could hardly contain their excitement when handed the keys to the home by builder Scott Salisbury. "We are blown away by the win and to know we are also supporting vital medical research is absolutely wonderful," said Peter.

## CORPORATE AND COMMUNITY SUPPORT

Corporate and community groups choose to support world-class medical research at the BHI in a number of different ways, whether it be sponsorship of a major event, raising funds to purchase a piece of scientific equipment, hosting a fundraising event for THRF or developing a staff charity fund. The variety of different medical research projects undertaken at the

BHI supported by THRF means that no matter how community or workplace groups decide to raise funds for THRF, they can choose a specific area of research that is most important and relevant to them.

In 2010 we received support from a number of generous corporate businesses. Panurgem, Adelaide's leading project management company, were platinum sponsors of our major dinner donating \$10,000. For their sponsorship they were widely acknowledged on the night in the program, had exclusive visual screen branding and were publicised with banners and acknowledgements throughout the evening. They also received many other corporate publicity benefits for their kind sponsorship. We thank Panurgem and all our Annual Dinner sponsors.

We are also grateful to our other corporate supporters such as the CMV Foundation who supported Stroke research with a generous contribution of \$14,000. The Commonwealth Bank Staff Community Fund donated \$10,000 towards Renal research and BankSA donated \$5000 through their staff charity fund towards the Michell McGrath Breast Cancer Fellowship.

We also have a number of dedicated and passionate community groups who continue to support life-changing medical research undertaken at the BHI. Maria Giannoudis, along with the Women's Group of the Pierkos Society, have held annual cancer

support dinners to raise money for cancer research at The Institute for the past 8 years. After surviving cancer herself, Maria decided she wanted to do something that would help others with cancer. This year they raised over \$12,600 through ticket sales, auctions and a prize raffle, a magnificent contribution for which we are very grateful.

Another of our loyal community group supporters, headed up by Alexandra Vakitsidis, regularly raise money for cancer research through cake stalls and carol singing at Christmas. Since 1997, the Olympic Spirit Greek Friends have supported research at TQEH after a close friend and neighbour of Alexandra Vakitsidis passed away tragically from cancer. Earlier in the year they presented over \$4900 to the Haematology/Oncology Department from their carol singing and cake stall successes in 2009. The group plan to continue their endeavours of raising much needed funds in the future and we sincerely thank them for their generosity and commitment.

## INCREASING COMMUNITY AWARENESS

This year we have increased our focus on growing awareness throughout the community about world-class medical research at the Basil Hetzel Institute.

We provide the opportunity for community groups to visit the BHI for a tour and hear from a particular researcher on the fantastic work being undertaken.

We also have a program which allows community groups to book a researcher to attend and present at one of their meetings. Our dedicated researchers are passionate about sharing their knowledge, projects and goals with the wider community which is why they kindly donate their time to present to community groups on their chosen field of medical research.



**BUNSEN  
BURNERS & BOWTIES**

## EVENTS- BUNSEN BURNERS & BOWTIES

Our major event for 2010 was the Bunsen Burners & Bowties black-tie dinner which was a fantastic way for people to support world-class medical research while enjoying a fabulous night out.

The dinner held at The Intercontinental was aimed at bringing the message about medical research 'back to basics', turning the ballroom into a giant laboratory. Waiters, dressed up in lab coats, served wines donated by Alchemy and Peter Lehmann Wines, complementing a menu that was designed with the main theme in mind, incorporating the use of test tubes and pipettes.

This year funds were dedicated to supporting a piece of high priority equipment called a High Performance Liquid Chromatography System. It will assist patients suffering from head injuries, severe burns, pancreatic or liver disease through vital research which will improve treatment outcomes. The dinner raised in excess of \$40,000 which will contribute to the purchase of this system.

"I've been to many fundraising dinners in my time, but this was by far the most entertaining and clever evening. We'll definitely be back next year!" said Andrew O'Connor and Linley Golan who were guests at the dinner.



Phil Grove & Brett MacDonald presented the 2010 Dry July funds to Paul Flynn and Jena Clark from THRF.

DRY JULY

For the second year in a row The Hospital Research Foundation was the South Australian beneficiary for the Dry July program. Dry July encourages participants to give up alcohol for the month of July and solicit donations from family and friends for their brave efforts. Over 9500 people participated across the nation, including 372 people in SA who raised over \$66,000 to improve comfort for patients in the Haematology/Oncology wards at TQEH.

Last year over \$54,000 was allocated to TQEH through the Dry July campaign which has seen the quality of the cancer wards improve significantly.

Kristin Linke, Haematology/Oncology Day Centre Clinical Services Coordinator said that last years’

funds have made a significant improvement to the cancer wards and is excited about the possibilities for the use of this years’ funds.

“Just simple things like watching movies or being able to check and reply to emails, now possible for our patients through the web enabled laptops, makes a real difference to the comfort of their stay,” she said.

Possibilities for the use of the 2010 contribution, which will be implemented in 2011, include Foxtel for patient rooms, more comfortable treatment chairs, fold out beds for visitors to stay in and a vehicle to transport rural patients to and from the hospital for treatment.

CREDITS

The Hospital Research Foundation would like to acknowledge the contribution towards this report from the following:

**Graphic Design:** Bridgehead Australia Pty Ltd

**Printing:** Finsbury Green

**Photography:** Basil Popowycz, Ashley Turner

**Production:** The Hospital Research Foundation

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