The Institute

basil hetzel institute for translational health research

BASIL HETZEL INSTITUTE RESEARCH REPORT

Translational health research creating positive outcomes for thousands of South Australians

2016

the hospital research foundation

DR BASIL S HETZEL
1922–2017

The research community at The Queen Elizabeth Hospital (TQEH) was saddened by the death of Dr Basil S Hetzel AC on February 4 2017.

Basil was appointed as the first Michell Professor of Medicine at the University of Adelaide, TQEH in 1959. He will be remembered around the world for his pioneering work on iodine deficiencies and thyroid disease. Since visiting the highland villages of Papua New Guinea in 1964, Basil became an international advocate for iodine supplementation and ultimately co-founded the International Council for Control of Iodine Deficiency Disorders (ICCIDD) which had its inaugural meeting in Kathmandu, Nepal in 1986. Today this organisation is known as the Iodine Global Network (IGN).

In 2001 the long-standing research activities of TQEH were renamed as the Basil Hetzel Institute. Basil was a proud supporter of all research endeavours and regularly attended the annual TQEH Research Day. In addition he was a great mentor and active supporter of research and of people doing research.

The photo on the front cover of this report was taken at the unveiling of the portrait of Basil by South Australian artist Avril Thomas. This portrait is on display in the atrium of the Basil Hetzel Institute.

We thank THRF staff for providing content and photos for this report. We also thank the Royal Australasian College of Surgeons and the Adelaide G-TRAC Centre for allowing us to use some of their images. Additional photos used in this report were taken by Andrew Beveridge (ASB Creative), Basil Popowycz and Rebecca Anderson.

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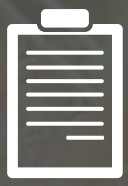
BASIL HETZEL INSTITUTE

Research at The Queen Elizabeth Hospital 2016

$20M
REVENUE

grants, clinical academic salaries, scholarships and infrastructure support



350+
PEER REVIEWED PUBLICATIONS

100+
CLINICAL/RESEARCH STAFF

TQEH & BHI

84
HIGHER DEGREE STUDENTS

150+
COMMUNITY ENGAGEMENT PRESENTATIONS

DIRECTOR'S REPORT

Successful research depends on many things, but outstanding staff and adequate funding is certainly a good place to start. The Basil Hetzel Institute (BHI) continues to feel the effects of a national downturn in research support and locating sufficient funds to maintain its strong research success is becoming increasingly challenging.

Without funds it is impossible to provide the infrastructure that then supports the staff who wish to come and work in a research environment. This is a problem which is having an impact around Australia and many excellent research groups are shrinking or disappearing as a result of insufficient funding being made available. Despite this, the sum of money invested annually in research at the BHI is still in the order of $20 million a year and this has been maintained despite the contractions that are being felt elsewhere.

The outputs as measured by publications and successful grants continues to be strong, with some outstanding research being generated over the past twelve months. Nonetheless, the support from NHMRC is not growing but we have been fortunate in that other sources of funds have been identified that have enabled the BHI to continue to flourish. Funding comes from many sources in research and it is becoming increasingly important to diversify sources of funds rather than to rely on NHMRC which in real terms nationally has reduced and in proportionate terms to South Australia has shrunk even further.

Specialty funding groups such as the Kidney Foundation and Heart Foundation are, of course, valuable alternate funding sources, along with the Commonwealth Government, the Royal Australasian College of Surgeons and, perhaps most importantly, The Hospital Research Foundation. Because of The Hospital Research Foundation's support in providing basic infrastructure and equipment, we continue to have a viable institution which is able to offer researchers most of the equipment requirements necessary for their research.

We will continue to source funds from a variety of opportunities as this is the only way of ensuring that the ongoing research develops and flourishes. With the certain move of the Royal Adelaide Hospital during 2017 there will also be an opportunity to help research groups displaced from the Royal Adelaide Hospital. The new Royal Adelaide Hospital has no "wet lab" facilities and the opportunity to support strong, viable and relevant groups at the BHI will be an important development over the next twelve months. While the new Royal Adelaide Hospital will continue to have a significant focus of clinical activity, The Queen Elizabeth Hospital's volume of work continues to increase. The two institutions provide a substantial pool of patients on which important studies can be conducted. This will continue to be developed in the foreseeable future with the research staff potentially being located at The Queen Elizabeth Hospital and BHI and the patients being investigated and researched at both venues. With respect to ongoing funding, the Medical Research Future Fund provides an opportunity for increased research initiatives. A number of our research groups have grown in strength and size in recent years and it will be essential that we consolidate these groups. At the same time it will be important to foster new and embryonic groups in order to continue to be the "incubator" of research activity in South Australia.

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

16 February 2017

SIGNIFICANT IMPACT PUBLICATIONS

Rachel Jakobczak, Translational Vascular Function Research Collaborative.

SIGNIFICANT IMPACT PUBLICATIONS 2016

AGEING

Adelaide G-TRAC Centre

Impact Factor: 3.8

Theou O, Tan ECK, Bell JS, Emery T, Robson L, Morley JE, Rockwood K, Visvanathan R. Frailty levels in residential aged care facilities measured with the Frailty Index and FRAIL-NH Scale. *J Am Geriatrics Society*. 2016;64(11):207-212.

https://www.ncbi.nlm.nih.gov/pubmed/27783396

Through this paper we confirmed that 85% of residents are frail and 25% of them are severely frail. Professors Morley and Visvanathan proposed a screening tool for use in nursing homes where increasing levels of frailty could be detected. The publication of this cross-sectional validation paper in the official *Journal of the American Geriatrics Society* is an important first step in validating this tool. The researchers have investigated predictive validity of the screening tool and this paper is currently under review. Once validated, clinicians will have available to them a screening tool for frailty that they will be able to use to identify the risk of residents and tailor interventions to better meet their health and care needs.

CANCER

Breast Cancer Research Unit

Impact Factor: 8.4

Kaur G, Willsmore T, Gulati K, Zinonos I, Wang Y, Kurian M, Hay S, Losic D, Evdokiou A. Titanium wire implants with nanotube arrays: A study model for localized cancer treatment. *Biomaterials*. 2016 Sep;101:176-88.

www.ncbi.nlm.nih.gov/pubmed/27289379

Direct delivery of anti-cancer drugs locally to the cancer site based on nanotechnology is a promising approach in cancer therapy. We report the design and fabrication of nano-engineered 3D titanium wire based implants with titania nanotube arrays (Ti-TNTs) for various applications such as drug delivery. This study demonstrated for the first time the feasibility of using such Ti-TNTs loaded with anti-cancer agent for localized cancer therapy using pre-clinical cancer models and tested local drug delivery efficiency and anti-tumour efficacy within the tumour environment. Based on current experimental findings these Ti-TNTs wire implants have shown promising capacity to load and deliver anti-cancer agents maintaining their efficacy for cancer treatment.

Colorectal Cancer Research Group

Impact Factor: 4.7

Dorward HS, Du A, Bruhn MA, Wrin J, Pei JV, Evdokiou A, Price TJ, Yool AJ, Hardingham JE. Pharmacological blockade of aquaporin-1 water channel by AqB013 restricts migration and invasiveness of colon cancer cells and prevents endothelial tube formation in vitro. *J Exp Clin Cancer Res* 2016;24;35:36.

www.ncbi.nlm.nih.gov/pubmed/26912239

This paper, published in one of the highest ranked experimental cancer journals, reflects work done at the BHI in collaboration with Professor AJ Yool. New drug therapies are needed for colorectal cancer patients to avoid the toxicities of chemotherapy and to provide an alternative therapy for those resistant to existing drugs. Aquaporin 1 (AQP1) is critical for tumour blood vessel tube development (angiogenesis), essential for tumour growth and metastasis. In this study one of the AQP1 inhibitors (patented) reduced tumour cell invasiveness and completely inhibited angiogenesis, providing good evidence for further testing this drug as an anti-angiogenic therapy.

Liver Metastasis Research Group

Impact Factor: 5.5

Canavese M, Ngo DT, Maddern GJ, Hardingham JE, Price TJ, Hauben E. Biology and Therapeutic Implications of VEGF-A Splice Isoforms and Single-Nucleotide Polymorphisms in Colorectal Cancer. *Int J Cancer*. 2016 Dec 10. doi: 10.1002/ijc.30567. [Epub ahead of print]

www.ncbi.nlm.nih.gov/pubmed/27943279

This publication reviews the current knowledge about the roles of VEGF-A isoforms and SNPs in colorectal cancer (CRC). Given that anti-VEGF drugs are approved for CRC therapy, it is very important to discuss these issues in light of the modest success of such therapies. Based on the distinct functions of VEGF-A isoforms, we discussed phenomena associated with VEGF inhibition, such as resistance to anti-VEGF treatment, promotion of hypoxia and metastasis. Our conclusion is that since there is a switch from anti to pro-angiogenic VEGF isoforms in colonic tumors, regulation of the ratio of pro to anti-angiogenic isoforms by altering splicing is potentially therapeutic for tumors and other angiogenesis associated diseases and will be a focus of future research.

CARDIOVASCULAR DISEASE

Cardiovascular Pathophysiology and Therapeutics Group

Impact Factor: 5.1

Procter N, Stewart S, Horowitz JD. New-onset atrial fibrillation and thromboembolic risk: cardiovascular syzygy? *Heart Rhythm*. 2016;13(6):1355-61.

www.ncbi.nlm.nih.gov/pubmed/26690062

We demonstrated that platelet nitric oxide signalling was impaired in patients with recent onset atrial fibrillation (AF). In this manuscript the investigators explored potential bases for this anomaly, and its implications regarding treatment of patients of both genders, with or without rapid ventricular responses to atrial fibrillation.

Translational Vascular Function Research Collaborative

Impact Factor: 15.1

Agewall S, Beltrame JF, Reynolds HR, Niessner A, Rosano G, Caforio AL, De Caterina R, Zimarino M, Roffi M, Kjeldsen K, Atar D, Kaski JC, Sechtem U, Tornvall P. Working Group on Cardiovascular Pharmacotherapy. ESC working group position paper on myocardial infarction with non-obstructive coronary arteries. *Eur Heart J*. 2016 Apr 28.

www.ncbi.nlm.nih.gov/pubmed/27125953

This is a key publication presenting the European Society of Cardiology's position on patients with myocardial infarction and non-obstructive coronary artery disease (MINOCA). MINOCA is a heterogeneous entity with many potential aetiologies that can elucidated by a diagnostic algorithm presented by the authors.

Vascular Surgery Research Group

Impact Factor: 2.9

Fitridge RA, Boult M, de Loryn T, Cowled P, Barnes M. Predictors of 1-Year Survival After Endovascular Aneurysm Repair. *Eur J Vasc Endovasc Surg*. 2016;51(4):528-34.

www.ncbi.nlm.nih.gov/pubmed/26831928

This publication describes a predictive model that uses clinical and anatomical measures to predict the likelihood of surviving 12 months after endovascular aneurysm, something that has not been reported previously. Measuring ASA, aneurysm diameter, creatinine, respiratory assessment, and iliac artery calcification all contributed to predicting 12-month mortality which ranged from 98.6% to 68%. We consider that one year is a reasonable time that a patient undergoing elective surgery should expect to survive and therefore obtain benefit from the procedure. This study identified which patients have a significantly elevated risk of dying within 12 months. Surgeons could use this information to ensure that patients have understood and considered the risks and benefits of their elective EVAR prior to surgery.

CHRONIC DISEASE

Endocrinology Unit

Impact Factor: 7.7

Jesudason D, Clifton P. Limitations of using the Chronic Kidney Disease-Epidemiology Collaboration equation for measuring renal function in obese populations. *Kidney International*. 2016 Jun; 89(6):1400-1.

www.ncbi.nlm.nih.gov/pubmed/27181780

The CKD-EPI equation has now been widely adopted around the world including Australia as the best way of estimating GFR based on serum creatinine measurements. Whilst it has been widely validated in many populations, this study highlights some potential limitations when used in obese populations. An alternate CKD-EPI equation using cystatin C may be more accurate. The paper was recognised as an important finding as demonstrated by its publication in *Kidney International*, the official journal of the International Society of Nephrology.

Stroke Research Programme

Impact Factor: 59.6

Johnston SC, Amarenco P, Albers GW, Denison H, Easton JD, Evans SR, Held P, Jonasson J, Minematsu K, Molina CA, Wang Y, Wong KS; SOCRATES Steering Committee and Investigators (incl. Jannes, J). Ticagrelor versus Aspirin in Acute Stroke or Transient Ischemic Attack. *N Engl J Med*. 2016 Jul 7;375(1):35-43.

www.ncbi.nlm.nih.gov/pubmed/27160892

The prestigious *New England Journal of Medicine* is the oldest continuously published medical journal in the world, with an impact factor of 59.55. Associate Professor Jim Jannes was a contributor to this funded international double-blinded controlled clinical trial involving patients with acute ischemic stroke or transient ischemic attack. The trial found that ticagrelor was not superior to aspirin in reducing the rate of stroke, myocardial infarction, or death at 90 days.

CLINICAL SCIENCES, HEALTH SERVICES AND POPULATION HEALTH

Health Performance and Policy Research Unit

Impact Factor: 17.0

Ranasinghe I, Parzynski CS, Searfoss R, Montague J, Lin Z, Allen J, Vender R, Bhat K, Ross JS, Bernheim S, Krumholz HM, Drye EE. Differences in Colonoscopy Quality Among Facilities. *Gastroenterology*. 2016;150:103-13.

www.ncbi.nlm.nih.gov/pubmed/26404952

This paper outlines the development and implementation of a performance measure to profile colonoscopy quality among >4,500 US facilities. Selected for the cover issue of *Gastroenterology,* the highest impact journal in the field, recognising the impact on clinical practice.

Intensive Care Medicine Research Group

Impact Factor: 3.8

Kelly S, Moran J, Williams P, Burns K, Rowland A, Miners J, Peake S. Haemodynamic effects of parenteral vs. enteral paracetamol in critically ill patients: a randomised controlled trial. *Anaesthesia*. 2016 Oct; 71(10):1153-62.

www.ncbi.nlm.nih.gov/pubmed/27611038

Paracetamol is commonly administered to critically ill patients in the intensive care unit (ICU). There have been reports in the literature of an association between the administration of paracetamol and hypotension. This randomised controlled trial showed a trend towards an increased incidence of hypotension following the administration of parenteral paracetamol compared to enteral paracetamol in ICU patients. The overall incidence of clinically relevant hypotension following the administration of either parenteral or enteral paracetamol was also considerably greater than previously reported by the manufacturers. The results of this trial have important implications for clinical practice and the management of pain and fever in critically patients.

Psychiatry Research Group

Impact Factor: 5.5

Clark SR, Baune BT, Schubert KO, Lavoie S, Smesny S, Rice SM, Schäfer MR, Benninger F, Feucht M, Klier CM, McGorry PD, Amminger GP. Prediction of transition from ultra-high risk to first-episode psychosis using a probabilistic model combining history, clinical assessment and fatty-acid biomarkers. *Translational Psychiatry*. 6, e897. Epub 2016 Sept 20.

www.ncbi.nlm.nih.gov/pubmed/27648919

Our prediction model combines clinical data and blood levels of fatty acids to significantly improve the accuracy of the prediction of the first psychotic episode from a clinical high risk state and if replicated in larger studies may help to target early treatment to prevent psychosis.

Respiratory Medicine Unit & Clinical Practice Unit

Impact Factor: 2.7

Elgar NJ, Esterman AJ, Antic NA, Smith BJ. Self-Reporting by Unsafe Drivers Is, with Education, More Effective than Mandatory Reporting by Doctors. *J Clin Sleep Med*. 2016 Mar;12(3):293-9.

www.ncbi.nlm.nih.gov/pubmed/26564385

Health professionals are frequently required to report to relevant authorities all drivers who are potentially unsafe due to medical conditions. However, the effect of mandatory reporting on patient self-predicted behaviour and what factors might encourage unsafe drivers to self-report to these authorities is largely unknown. Our study used questions submitted to the South Australian Health Omnibus Survey with 3,007 responders. It was determined that 9% of people would avoid diagnosis, lie to their doctor or doctor shop to keep their licence, 30.8% were unaware of the legislated requirement to self-report and 37.8% were unaware of potentially jeopardising insurance support if they failed to comply. If educated in these two areas, warned about the dangers of driving against medical advice and instructed to do so by their doctor, then 95.8% of people would self-report to the authorities, a number significantly higher than could be reported by their doctors (91.0%).

Rheumatology Research Group

Impact Factor: 12.4

Hill CL, March LM, Aitken D, Lester SE, Battersby R, Hynes K, Fedorova T, Proudman SM, James M, Cleland LG, Jones G. Fish oil in knee osteoarthritis: a randomised clinical trial of low dose versus high dose. *Ann Rheum Dis*. 2016 Jan;75(1):23-9. doi: 10.1136/annrheumdis-2014-207169. PubMed PMID: 26353789.

www.ncbi.nlm.nih.gov/pubmed/26353789

Professor Hill reported a double-blind randomised controlled trial of high dose vs low dose fish oil for osteoarthritis of the knee. The findings were that high dose fish oil was not superior to low dose fish oil, which is important given that high dose fish oil is widely used in the community for the treatment of osteoarthritis. This paper was published in early 2016 in the *Annals of the Rheumatic Diseases,* the top ranked Rheumatology journal, and was selected for an Editorial. It was also selected by the journal as one of their top three 2016 papers to showcase at the European League Against Rheumatism conference in London.

Dr Branka Grubor-Bauk, Virology Group.

DRUG AND VACCINE DEVELOPMENT

Therapeutics Research Centre

Impact Factor: 13.3

Holmes, AM, Song, Z, Moghimi HR, Roberts MS. Relative Penetration of Zinc Oxide and Zinc Ions into Human Skin after Application of Different Zinc Oxide Formulations. *ACS Nano* 2016;10(2): 1810-1819.

www.ncbi.nlm.nih.gov/pubmed/26741484

Zinc oxide (ZnO) is frequently used in commercial sunscreen formulations to deliver their broad range of UV protection properties. Concern has been raised about the extent to which these ZnO particles penetrate the skin and their resultant toxicity. We explored human epidermal skin penetration of zinc oxide and its labile zinc ion dissolution product that may potentially be formed after application of ZnO nanoparticles to human epidermis. We provide evidence that while topically applied ZnO does not penetrate into the viable epidermis, these applications are associated with hydrolysis of ZnO on the skin surface, leading to an increase in zinc ion levels in the stratum corneum, thence in the viable epidermis and subsequently in the systemic circulation and the urine.

Virology Group

Impact Factor: 5.5

Tomusange K, Wijesundara D, Gummow J, Garrod T, Li Y, Gray L, Churchill M, Grubor-Bauk B, Gowans EJ. A HIV-Tat/C4-binding protein chimera encoded by a DNA vaccine is highly immunogenic and contains acute EcoHIV infection in mice. *Sci Rep*. 2016 Jun 30;6:29131.

www.ncbi.nlm.nih.gov/pubmed/27358023

This paper showed that oligomerised Tat effectively induced neutralising anti-Tat antibodies. This represents a considerable advance because anti-Tat immunity has been suggested and recognised as an alternative HIV vaccine strategy to the generation of classical neutralising antibodies to the HIV envelope, because despite great effort, current strategies to induce these anti-envelope antibodies have proved impossible.

INFLAMMATORY DISEASE

ENT Surgery

Impact Factor: 12.5

Lau A, Lester S, Moraitis S, Ou J, Psaltis AJ, McColl S, Rischmueller M, Wormald PJ, Vreugde S. Tertiary lymphoid organs in recalcitrant chronic rhinosinusitis. *J Allergy Clin Immunol*. 2016 Oct 22. pii: S0091-6749(16) 31214-3. doi: 10.1016/j.jaci.2016.08.052. [Epub ahead of print] PubMed PMID: 27780741.

www.ncbi.nlm.nih.gov/pubmed/27780741

We have discovered that recalcitrant Chronic Rhinosinusitis patients show specific immune cell signatures with the organization of immune cells in lymphoid-like structures within nasal polyps. Research is ongoing to define the microbial and immune triggers that govern the formation and maintenance of these follicle-like structures and to characterize their role in the disease process.

Gastroenterology & Hepatology

Impact Factor: 8.9

Costello SP, Tucker EC, La Brooy J, Schoeman MN, Andrews JM. Establishing a Fecal Microbiota Transplant Service for the Treatment of Clostridium difficile Infection. *Clin Infect Dis*. 2016 Apr 1;62(7):908-14.

www.ncbi.nlm.nih.gov/pubmed/26628567

This paper is an invited review that describes how to establish a Fecal microbiota transplant (FMT) service using a stool bank of prescreened donor stool including detail regarding donor recruitment and screening, stool preparation, and delivery of the FMT. It is based on the methods that we used in establishing the South Australian stool bank- the first public stool bank in Australia.

Recurrent or refractory Clostridium difficile infection (CDI) has become an increasing problem in the past decade. FMT is a highly efficacious treatment for recurrent CDI; however, a number of technical, logistical, and regulatory issues have hampered the development of an FMT capability at many hospitals.

Zinc and Inflammatory Disease Research Group

Impact Factor: 1.9

Roscioli E, Hamon R, Ruffin RE, Grant J, Hodge S, Zalewski P, Lester S. BIRC3 single nucleotide polymorphism associate with asthma susceptibility and the abundance of eosinophils and neutrophils. *J Asthma*. 2016 Jun 15:1-9.

www.ncbi.nlm.nih.gov/pubmed/27304223

This paper provides new information on polymorphisms of an apoptosis regulatory gene in subjects with chronic inflammatory airway disease.

Inappropriate cell death of epithelial cells in the walls of the bronchioles is a major trigger to the chronic inflammation of these tubes in patients with asthma. We have shown that the cell death is normally suppressed in healthy people by a gene product called BIRC3. We hypothesized that people who develop asthma may have a polymorphism in the BIRC3 gene that predisposes them to asthma. However, we found no association between asthma and BIRC3 polymorphism in our study, eliminating this as a cause of the increased inflammation. Although this is a negative finding it is important to those looking for genetic predisposition to asthma and we published in *Journal of Asthma*, a well-read journal on the field.

THEMES

Ageing

Cancer

Cardiovascular Disease

Chronic Disease

Clinical Sciences, Health Services and Population Health

Drug and Vaccine Development

Inflammatory Disease

AGEING

Research Group

Adelaide Geriatrics Training and Research with Aged Care (G-TRAC) Centre

Adelaide Geriatrics Training and Research with Aged Care (G-TRAC) Centre

TQEH DEPARTMENT **AGED AND EXTENDED CARE SERVICES**

The Adelaide GTRAC centre aims to improve health outcomes and well-being of older people through high-quality clinical geriatrics and gerontology training and innovative translational research is helping older people better achieve healthy ageing. The GTRAC Centre includes The Queen Elizabeth Hospital - Aged & Extended Care Clinical Services, a community campus located at Resthaven (an aged care organisation) in Paradise and the NHMRC Centre of Research Excellence (CRE) in Frailty & Healthy Ageing which is a global transdisciplinary research network.

Key Findings in 2016

We developed and validated a world first screening tool for frailty (FRAIL-NH) for use in nursing homes. In a previous study, we found that oral testosterone and nutritional supplementation in older people at-risk of under-nutrition reduced their risk of hospitalisation but in a repeat study to confirm our findings, this was not replicated. We have demonstrated that a geriatrics teaching program improves student's perception of the importance of exercise for older people as well as their perceived competency in advising about exercise. We further noted that following course improvement, student perceptions improved further. In an editorial, we discussed the need for research to inform the development of dementia diagnostic services.

Outcomes for the community

We are raising awareness in the community that although geriatric syndromes are common (e.g. under-nutrition, sarcopenia, frailty, falls and dementia) and result in poor health outcomes, there are interventions that can help prevent or treat it. Our research focuses on the development of screening strategies and the development of cost-effective interventions.

BHI Researcher Story

DR BEATRIZ ARAKAWA MARTINS
ADELAIDE G-TRAC CENTRE

Leaving her position as a geriatrician in Brazil, Dr Beatriz Arakawa Martins came to Adelaide in 2016 to work with researchers in the Centre for Research Excellence in Frailty & Healthy Ageing in search of answers on a condition impacting the quality of life of our ageing population – frailty.

Her research now also includes collaboration not only with geriatricians and geographers but also with architects, qualitative research experts and computer engineers. Her research project includes collaboration in Japan and Hong Kong.

Specifically, Dr Martins, who is based at the BHI, wants to understand the role our environment plays in the development of frailty through its effects on physical activity.

> "As a geriatrician, when I am treating patients we see that some become frail while others don't and I became interested in finding out why that is," Dr Martins said.

"Nowadays it's not only people suffering from diseases such as heart disease that cause them to become frail, it's also the influence of the surrounding environment they live in."

Taking a new approach with her research into the globally growing condition that is frailty, Dr Martins is investigating how the suburbs that we live in contribute to a frailty diagnosis, studying older people both here in Adelaide and in Nagoya, Japan.

"Japan has the highest population of older people in the world so they are working out ways of how to cope with this growing population, and I think we can definitely learn from them," Dr Martins said.

Dr Martins began her PhD in August 2016 under the supervision of Professor Renuka Visvanathan and Dr Helen Ruth Barrie who are both University of Adelaide Chief Investigators in the Centre of Research Excellence in Frailty & Healthy Ageing. Her overall goal is for older people to achieve increased physical activity through the built environment that they are exposed to. Dr Martins is one of the first students to undertake the joint University of Adelaide- Nagoya University PhD program which will see her graduate with a PhD from each of the universities. She is a recipient of the Beacon Scholarship from the University of Adelaide.

"I plan on monitoring people over the age of 65 who show risk of frailty by first undertaking having them complete a questionnaire and then being assessed clinically for frailty risk. The older person at risk of frailty will then wear a device so that we can track the amount of physical activity that they're doing. We will potentially use GPS monitoring to also determine where people are walking in their neighbourhoods." Dr Martins said.

"The Japanese project began when they started recruiting cohorts of older people enrolled in an education program to determine the incidence of frailty. My co-supervisor from Japan, Professor Masafumi Kuzuya, is a geriatrician interested in pre frail patients and how to make them more robust so they don't develop frailty."

As part of her study Dr Martins will spend a 18 months undertaking her research in Adelaide, before completing a year of research in Japan and bringing her findings together in the final year in the hopes of preventing frailty from affecting so many Australians in the future.

"So many people want to age in the same neighbourhood that they grew up in yet no one is asking them what they think about how the community could be improved and how they could become more active in that place," she said.

"I want to prove that preventing frailty matters and that built environment changes can improve physical activity. Hopefully we can make small changes and make policies that reflect the research helping Adelaide transform to become a global leader recognised as an age-friendly city."

"We need to keep older people in the community. Frailty is a major cost for the healthcare system and this research may provide viable ways of making everyone age well."

PhD student University of Adelaide

Supervisors Professor Renuka Visvanathan (Adelaide G-TRAC), Dr Helen Ruth Barrie (Acting Director, Australian Population and Migration Research Centre, University of Adelaide) and Professor Mazafumi Kuzuya, Institute of Innovation for Future Society, Community Healthcare and Geriatrics Department, Nagoya University.

Scholarship Beacon of Enlightenment PhD Scholarship, Nagoya University Joint Award with the University of Adelaide

CANCER

Research Groups

Acute Myeloid Leukaemia Research Group

Breast Biology and Cancer Unit

Breast Cancer Research Unit

Colorectal Cancer Research Group

Liver Metastasis Research Group

Northern Network Colorectal Surgical Service

Solid Cancer Regulation Group

South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC)

Acute Myeloid Leukaemia Research Group

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

L to R: Ze Ya Maung and Dr James Gray with Collaborator Prof. Richard D'Andrea.

Our focus is Acute Myeloid Leukaemia (AML) gene discovery. We have strong working collaborations with Professor Richard D'Andrea (University of South Australia) and Professor Thomas Gonda (University of Queensland), who head large research teams with overlapping research interests, giving us access to further resources and interactive collaborations.

Key Findings in 2016

The following research findings were presented at the 58th annual meeting for the American Society of Hematology, December 2016.

Rare Variants Affecting the Fanconi Anaemia DNA Repair Genes Associate with Increased Risk for AML: This study involved whole exome sequencing of 131 adult AML patients from two major Australian centres, and a cohort of 329 healthy females. We identified rare FANC gene variants with high probability of pathogenicity. Sanger sequencing of matched tumour/non-tumour DNA showed the large majority of variants tested to be germline (90%). Overall, we identified 52 FANC gene variants in 44 cases with 34% of AML cases carrying one or more variant. For independent validation we determined the presence of somatic and germline FANC variants in a well characterized American AML cohort (TCGA) using an identical pipeline and filtering analysis. In line with our results, we found that 36% of TCGA AML patients carry at least one germline FANC variant.

Mutational burden analysis to investigate enrichment of variants associated with particular FANC genes across the AML cohort revealed a significant enrichment of FANCL variants in AML vs healthy controls (P=0.008). FANCL is the enzymatic component of the FA core complex that monoubiquitinates the FANCD2/I heterodimer initiating DNA repair, and its down-regulation has been linked to AML. Several FANCL variants, found in our AML cohort, affect the catalytic RING domain and are of particular interest.

We hypothesise that in hematopoietic stem/progenitor cells, these variants confer a subtle defect in interstrand cross-link repair leading to an increased accumulation of mutations and subsequent development of AML. Importantly, it is possible to target defects in several DNA repair pathways, and our finding identifies a group of AML patients who may benefit from approaches that target defective FA and homologous recombination pathways.

Outcomes for the community

AML patients with mutations in DNA repair gene pathways may be suitable for targeted therapy. AMLs with defective DNA repair may be sensitive to agents that inhibit alternative DNA repair pathways.

BHI Researcher Story

VAHID ATASHGARAN
BREAST BIOLOGY AND CANCER UNIT

With the first year of his PhD in the Breast Biology and Cancer Unit at the BHI coming to an end, Vahid Atashgaran is confident his research into the link between increased menstrual cycling and breast cancer will lead to promising outcomes for prevention of the disease in the future.

"Based on the analysis of over 100 past studies we know there is a high correlation between an increased number of menstrual cycles and the development of breast cancer in women," Vahid said.

For each year younger a girl begins her menstrual cycle there is a five per cent higher chance of developing breast cancer. Similarly for each year older a woman is at the time of menopause, there is a three and a half per cent increase in her risk of breast cancer.

"Whilst we know this fact, it is not yet fully understood how the way the breast functions and changes during a menstrual cycle affects a woman's susceptibility to cancer.

"We know that fluctuations of the ovarian hormones estrogen and progesterone during menstrual cycling affect the structure of the breast. So in every cycle that occurs over a 28 to 31 day period, the structure of the breast is changing."

Based on this knowledge, Vahid's project is focusing on the effects of estrogen and progesterone on the gene expression of the milk producing cells in the human breast.

"So far the results have been quite interesting with particular genes being significantly regulated upon hormone treatments," Vahid said.

"These genes are related to the immune system and could have implications on breast cancer risk."

Still in the early stages of his PhD, Vahid is eager to gain a larger sample size to confirm his findings and ultimately play a part in the fight for prevention of breast cancer in the future.

> "Our goal is to understand and identify a potential gene or genetic pathways that we can target with preventative agents and then hopefully we can prevent breast cancer in the future.

"I think prevention is more worthy than a cure – we are trying to prevent breast cancer for a better future."

As for his plans after completing his PhD, Vahid wants to continue with cancer research in Australia and has a long term dream of running his own lab one day.

"I hope that one day I will find the solution for cancer prevention or the precise pathway for treatment."

PhD student University of Adelaide

Supervisors Associate Professor Wendy Ingman and Dr Pallave Dasari

Scholarship Adelaide Graduate Research Scholarship, University of Adelaide

Breast Biology and Cancer Unit

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

The Breast Biology and Cancer Unit was established at the BHI in 2011. The goal of the research is to better understand the biological mechanisms that underpin breast cancer risk factors including menstrual cycling, pregnancy and breast density to aid in the prevention and early detection of breast cancer.

Key Findings in 2016

Immune cells and inflammatory mediators are altered in breast tissue with high breast density suggesting that an underappreciated aspect of increased susceptibility of highly dense breast tissue to cancer might be chronic low level inflammation.

Outcomes for the community

There has been much interest in breast density as a major risk factor for breast cancer, and for its role in masking breast cancers. We may in the future be able to identify young women with extremely high density at an increased lifetime risk of breast cancer, take steps to reduce that risk, and provide altered screening protocols to detect early breast cancers. In order to reduce breast cancer risk associated with high breast density, we must better understand the underlying biology of highly dense breast tissue, and how the increased cancer risk is conferred at the cellular and molecular level. Our research suggests that chronic low level inflammation is a driver of both high breast density and the associated increased risk of cancer. This research opens new doors for treatments of breast density that could reduce a woman's breast cancer risk.

Breast Cancer Research Unit

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

The Breast Cancer Research Unit's (BCRU) primary research interest is in breast cancer and bone metastasis. Breast cancer is the most common cancer in women that metastasises to bone. Despite recent advances, our knowledge of why bone is such a fertile "soil" for tumour cells to home to the bone remains poor. Our research aims to provide vigorous preclinical data that will facilitate the translation of novel therapeutics to clinical trials for bone metastases.

Key Findings in 2016

We have identified a novel method of treating both cancer progression and metastasis by targeting the body's natural immune response. Myeloperoxidase (MPO) and eosinophil peroxidase (EPO), well known for their anti-microbial activity, are released in high quantities by infiltrating immune cells in a variety of tumour types, including breast cancer. Our laboratory has shown for the first time that peroxidases are causatively involved in modulating the cancer microenvironment to promote blood vessel development and extracellular matrix biosynthesis. These processes are major hallmarks in cancer progression and as such identify peroxidases as drugable targets for cancer therapy. In another study we have harnessed our body's natural defense system to prevent cancer from coming back after it has been surgically removed. The BCRU has developed for the first time a new and innovative therapeutic approach of delivering cancer fighting T cells, known as gamma delta T cells, normally found in our blood but in small numbers, for the treatment of incompletely resected or inoperable tumours. Thus far we have been able to generate large numbers of these cancer fighting cells in the lab. We have inserted these into hydrogel reservoirs and demonstrated that they can be released locally to promote cancer cell killing in the dish. We aim to transplant these hydrogel reservoirs directly into the tumour resection site or next to an inoperable tumour with the aim that these cells will be released locally in large numbers seeking out and killing cancer cells while leaving normal cells unharmed. This approach has not been tried before and we hope that the results of this study will provide support and justification to move relatively quickly towards clinical application.

Outcomes for the community

Our research provides vigorous preclinical data that will facilitate the translation of novel therapeutics to clinical trials for bone metastases. Our goal is to continue towards developing new and cutting-edge therapies to improve the quality of life and longevity of patients with bone metastases.

BHI Researcher Story

DR IRENE ZINONOS
BREAST CANCER RESEARCH UNIT

the hospital research foundation

"Prostate cancer is a very serious disease and there are no real symptoms for this type of cancer – that's the scariest part."

Based in the Breast Cancer Research Unit at the BHI, Dr Irene Zinonos is now part of a collaborative word-first prostate cancer research project.

Led by the University of Adelaide's Associate Professor Lisa Butler, this project aims to help quickly identify life-threatening cases of prostate cancer, compared with cancer that may not require treatment.

A/Prof Butler and her team, based the South Australian Health and Medical Research Institute (SAHMRI), are focussed on lipids (fats), which are the building blocks of cells. They are looking at lipids in prostate tumours as a completely new way of predicting the cancer's future behaviour. Irene has come on board to help conduct some of the studies required to make this project a reality.

"Lipids are building blocks that make cells and are the energy resource that help cells grow and divide," Dr Zinonos explained.

"Cancer cells need even more of these building blocks as they grow uncontrollably and need a lot more energy. Prostate cancers use lipids as an energy source and not only can they get it from fatty tissue in the body, they can also produce it themselves."

Dr Zinonos will be working in collaboration with an international team of researchers, looking at the different types of lipids that are present in prostate tumours from different patients.

"The team are hoping to develop a test that measures the lipid profile in the cancer cells to determine whether a tumour is going to be non-aggressive or aggressive," Dr Zinonos said.

"This would be an exciting outcome as the biggest issue with prostate cancer we currently have is not being able to determine whether patients need radical therapies or not."

The goal for a new test would be that doctors are then able to suggest which treatment may be most beneficial for an individual patient."

Dr Zinonos explained that cancer used to be called 'the old disease' and now a lot of younger people from 50 onwards are being diagnosed, especially men.

"There is a link between being overweight and or obese to more aggressive prostate cancer, however we do not yet fully understand why this is the case," she said.

"A fit and healthy man is still at risk of developing the disease, which is why it's important we continue to raise funds for research in this area."

The researchers involved have the opportunity to improve the quality of life for prostate cancer sufferers if they can find a way to identify what stage the cancer is at, and to better advise patients on the most optimal treatment for their tumour. This is known as personalised medicine.

"This research really could be life-changing," Dr Zinonos said.

Postdoctoral Researcher

Colorectal Cancer Research Group

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

The Colorectal Cancer Research Group headed by Professor Tim Price has recently incorporated the newly established SAHMRI Colorectal Cancer Node, and now works on a comprehensive program in colorectal cancer spanning prevention, development and novel therapies.

Key Findings in 2016

- Using next generation whole exome sequencing we discovered a novel germline single nucleotide polymorphism (SNP) that correlates with poorer survival outcome in advanced colorectal cancer patients in the PIE clinical trial. This work was presented at the European Society of Medical Oncology (ESMO) meeting in Denmark, October 2016.
- Having a first-degree relative with type 2 diabetes was the most significant risk factor for developing colorectal cancer as a young adult.
- The most frequently observed pre-cancer lesion in young adults at colonoscopy is the sessile serrated polyp. This finding was presented at Digestive Diseases Week (DDW) in San Diego, May 2016.
- We have established drug toxicity dose levels in an animal study of our novel anti-angiogenic inhibitors targeting the aquaporin 1 channel.

Outcomes for the community

- Identification, development and clinical trial of new therapeutic agents for the treatment of colorectal cancer.
- Development of new cancer biomarkers of drug resistance and therapeutic targets to optimise personalised medicine approaches.
- Further understanding of the molecular mechanisms underlying colorectal cancer so that pre-cancerous polyps can be used as markers of risk for both patients and their relatives.
- Identification of risk factors in groups of under-recognised colorectal cancer patients including young adults to improve early detection in primary healthcare settings.

Liver Metastasis Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Our group takes advantage of expertise in cancer research, immunology and cell biology to address the urgent clinical need of early detection, prediction and treatment of liver metastases in patients with colorectal cancer. Being a small group with a clear translational research focus on identification and development of predictive and therapeutic biomarkers, we apply a straightforward bed-to-bench-and-back approach utilising high-throughput methods for target discovery and validation in cancer patients' blood and tissue samples.

Key Findings in 2016

The majority of colorectal cancer (CRC) related deaths are attributable to liver metastasis - the most critical prognostic factor observed in CRC patients. However, there is no clinical test to predict metastatic risk and allow informed selection of preventive treatment regimen. The translational challenge, therefore, is to validate immune checkpoint biomarkers controlling metastasis.

In collaboration with other groups at the BHI, we investigated the prognostic value of candidate protein biomarkers. HLA-G expression by tumour cells is an established mechanism to escape immune-mediated destruction. Our analysis demonstrated that soluble HLA-G is a differential prognostic marker of liver metastasis in CRC patients. We therefore propose that HLA-G secretion by different cell types is predictive of particular prognosis in sequential CRC disease stages, and that circulating HLA-G levels could predict the response to chemotherapy. Our proteomic and lipidomic analysis of CRC patients' bowel and liver tissue and blood samples identified additional proteins and lipids, which are candidate biomarkers of progression to liver metastasis. These candidates are currently being validated in a larger patient cohort.

Outcomes for the community

Our clinical research program is powered, both in terms of sample size and technical expertise, to identify the hepatic protein/lipid/cell signature, which render liver tissue either susceptible or resistant to metastatic invasion by circulating tumour cells. In the short term we will identify prognostic markers using state-of-the-art analytical methods to analyse prospective core-needle liver biopsies collected during primary CRC tumour resection. The medium outcome will be the development of a new risk stratification approach for mCRC, based on an integrated biomarker panel. The long-term outcome of the project involves the immersion of this newly developed clinical test into the clinic, resulting in cost saving as well as improved safety and efficacy for the benefit of CRC patients in Australia and worldwide. This prognostic test will also serve as companion diagnostic assay for development of preventive therapies, in combination with surgical mCRC treatments.

Northern Network Colorectal Surgical Service

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

In 2000, the surgeons working within the Colorectal Units at the Royal Adelaide, Lyell McEwin and The Queen Elizabeth Hospitals formed a collaborative partnership - the Northern Network Colorectal Surgical Service. This partnership has successfully facilitated the production of high quality, internationally published research and a multidisciplinary approach to ongoing clinical education and development. Members have been involved in clinical and laboratory-based research and are based at the BHI, the Hanson Institute, colorectal units and the University of Adelaide Discipline of Surgery.

Key Findings in 2016

Professor Peter Hewett heads the research efforts at The Queen Elizabeth Hospital where one of his current primary research interests and focus is on the performance outcomes and development of laparoscopic colorectal surgery, and is a principal investigator on a multi-centre, Australasian phase III randomised clinical trial to compare the use of laparoscopic-assisted resection to open resection for rectal cancer (ALaCaRT). Designed as a non-inferiority study, the aim of ALaCaRT is to determine whether laparoscopic-assisted resection is as safe and effective as the current standard open rectal cancer resection. The study will also assess patient recovery and morbidity, disease-free survival and cancer recurrence rates, and patient quality of life. This study completed recruitment of 475 patients from 24 hospitals in Australia and New Zealand at the end of 2014. The Queen Elizabeth Hospital was the only site in South Australia to be involved, and along with Prof Hewett, Mr Darren Tonkin and Mr Alex Karatassas were surgeons involved from The Queen Elizabeth Hospital. Since recruitment completed in 2014, initial analysis into the pathological outcomes has been performed producing unexpected and potentially practice changing results. Laparoscopic procedures are generally thought to have better outcomes than open procedures. However, because of anatomical constraints, laparoscopic rectal resection may not be better due to limitations in performing an adequate cancer resection. Results showed that among patients with T1-T3 rectal tumours, noninferiority of laparoscopic surgery compared with open surgery for successful resection was not established. Although the overall quality of surgery was high, these findings do not provide sufficient evidence for the routine use of laparoscopic surgery. Longer follow-up of recurrence and survival is currently being acquired, along with data on other secondary endpoints such as quality of life and cost-effectiveness.

Outcomes for the community

Results from this research will have great impact and importance for patients with rectal cancer and the greater community. Surgeons all over the world will be able to use the evidence from this and similar trials to decide whether patients should have laparoscopic or open surgery. Because the results have shown that, in some cases, laparoscopic may not remove the tumour as effectively as open surgery, they will be cautious in their choices.

Solid Cancer Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

We aim to increase the understanding of the biology of prostate and oesophageal cancers, and to discover better biomarkers to guide patient management and new or improved treatment strategies.

Key Findings in 2016

In prostate cancer we have shown a significant association between increased prostate cancer-related death and low levels of androgen receptor, the receptor for the male sex hormones, in the stroma, the tissue which surrounds the cancer cells. We have shown that normal androgen signaling in prostate cancer stroma appears to change the tissue around the cancer so that it inhibits cancer cell invasion, and also leads to destruction of cancer cells. Loss of the androgen receptor in the stroma therefore results in increased cancer cell survival and invasion.

In oesophageal adenocarcinoma (OAC) we have shown that the presence of the androgen receptor and genes which are regulated by this receptor in the cancer cells are related to a significantly shorter survival time. We showed for the first time that androgen signalling can regulate growth and gene expression in oesophageal cancer cell lines cell lines in vitro. The response to androgens can be modified by fibroblasts, cells which are present in the cancer stroma. These findings are consistent for a role of androgen signalling in OAC *in vivo*, with androgen concentration and fibroblasts important determinants of the response.

Outcomes for the community

Prostate cancer is the fourth leading cause of mortality amongst Australian males. Oesophageal adenocarcinoma is a lethal cancer and its incidence is rapidly increasing. We have identified new biomarkers with potential clinical utility in each of these cancers. Loss of stromal androgen receptor is associated with shorter survival in prostate cancer. Expression of androgen receptor and genes regulated by this receptor are associated with shorter survival in oesophageal adenocarcinoma.

Our investigations into the mechanisms which underly these relationships have increased our understanding of the biology of these relatively common cancers. We expect this will lead to better prevention strategies, and improved biomarkers for diagnosis and patient management, and new therapies based on targeting androgen signalling and the cross talk between the different cell types within a tumour.

Helen Palethorpe, Solid Cancer Research Group.

South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC)

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

The South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC) manages the state prostate cancer outcomes registry. The registry underpins clinical quality and research efforts in prostate cancer for South Australia.

Key Findings in 2016

Men with prostate cancer who present with symptoms

Prostate cancer is usually identified with a biopsy following an elevated PSA test reading. For a group of men, investigations commence following bothersome symptoms. This group of men typically has less aggressive treatment, yet worse survival outcomes compared with men whose cancer was identified by PSA testing. Even when symptomatic men were treated curatively, their survival outcomes appeared to be worse than their peers. Further research is need to investigate why these men have worse outcomes.

Trends in prostate cancer management

Combining South Australian and Victorian prostate cancer registry data, there is a trend towards diagnosis at a younger age, using different diagnosis tools and also treatment modalities. Notably, the number of men who are initially observed, rather than treated after diagnosis has risen considerably. Survival outcomes of young men diagnosed with prostate cancer are good compared with their peers.

Younger men diagnosed with prostate cancer

The average age for diagnosis with prostate cancer is 67 years for men in South Australia. This study examined a small group of men (2.6%) who were less than 50 when diagnosed with prostate cancer. It appears that these men are often treated with surgery, less often with radiation therapy and rarely with surveillance (despite nearly half being eligible for surveillance).

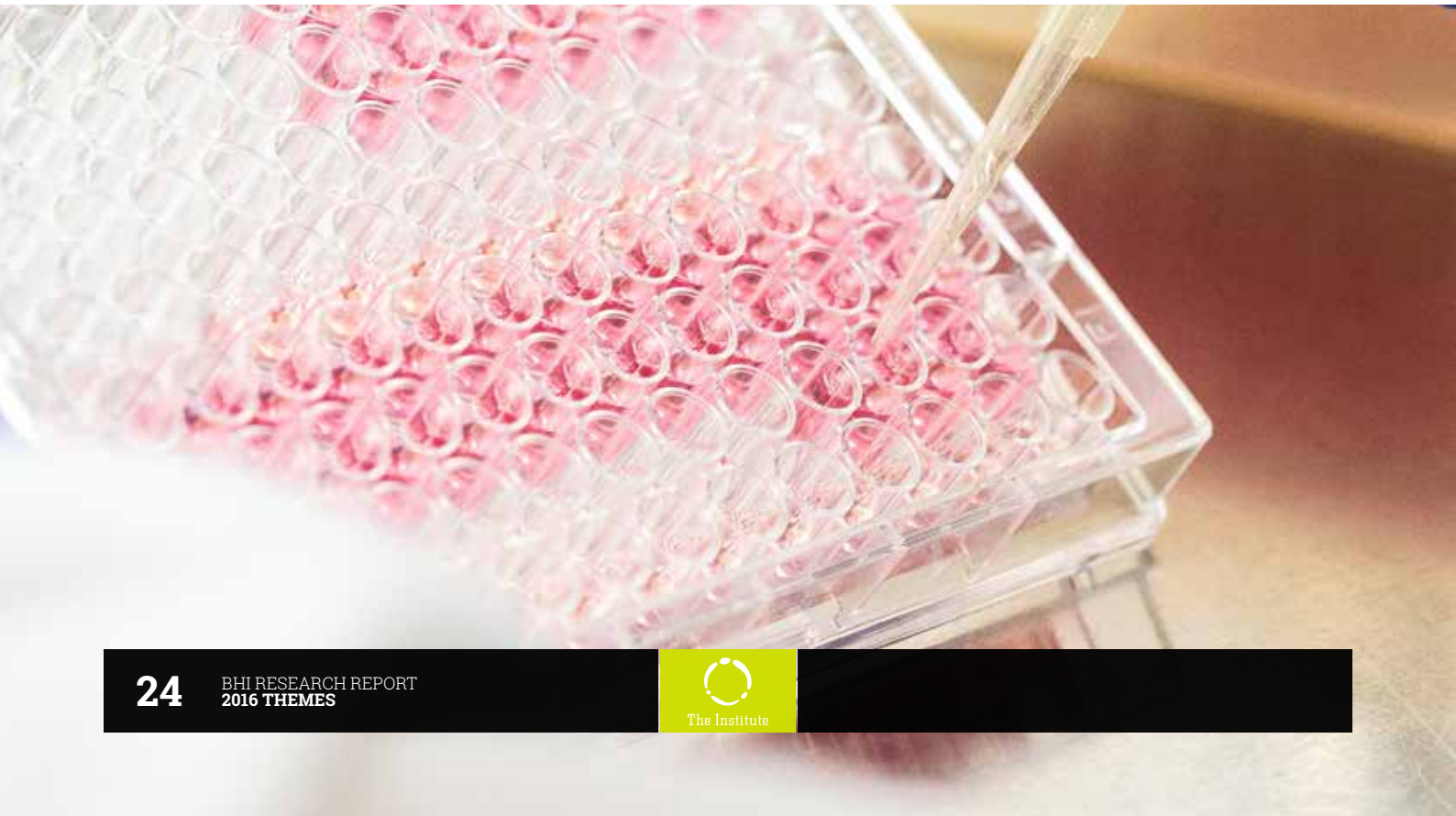
Men diagnosed with prostate cancer who have a PSA test result over 100

A comprehensive summary of this work for media release has been prepared by The Hospital Research Foundation.

Outcomes for the community

Our objectives are:

- To undertake clinical outcomes research in order to better understand progression of prostate cancerand ways of facilitating clinical decision making
- To provide data to contributors relating to their clinical practice for audit and feedback purposes
- To facilitate clinical prostate cancer research for post-graduate students, surgical trainees, clinicians and researchers
- To collaborate closely with other prostate cancer registries in Australia



CARDIOVASCULAR DISEASE

Research Groups

Cardiovascular Pathophysiology and Therapeutics Group

Clinical Pharmacology Research Group

Translational Vascular Function Research Collaborative

Vascular Surgery Research Group

Zinc and Cardiovascular Disease Research Group

BHI Researcher Story

DR DOAN NGO
CARDIOVASCULAR PATHOPHYSIOLOGY AND THERAPEUTICS GROUP

Receiving The Hospital Research Foundation's (THRF) Mid-Career Research Fellowship in 2015 was the beginning of an exciting adventure for Dr Doan Ngo. She is now leading research into a protein confirmed to correlate with the natural process of the heart increasing in size as we age.

"As we age our heart gets bigger in size, it's a natural physiological process. Unfortunately this increase in size affects the risk of developing not only heart failure but also atrial fibrillation, an unnatural heart rhythm," Dr Ngo said.

"What we have discovered through our research is a protein that we've confirmed promotes the increase in size of a patient's heart. So this protein is expressed in the heart, meaning it increases in number as our heart thickens and it changes as the heart does."

"No one knew this until now so this is a very exciting new research area."

A promising breakthrough in heart research, Dr Ngo and her team believe this discovery could lead to a new method for testing a patient's risk of heart failure.

"Since this protein changes so fast it can be used as a way of predicting any early changes in a patient's heart – this can be done through a simple blood test," she explained. "The current way of measuring the size of a patient's heart is through an ultrasound or MRI, both of which are notoriously expensive for patients."

"A blood test will tell us how present this protein is and in turn allow us to measure any increase in thickness of the heart. The protein will also change shape in patients who may be at risk of heart failure."

Proving to be an all-important protein, Dr Ngo confirms this finding will help specialists determine the best course of treatment for patients suffering from a heart condition.

"Since we know that the amount of the protein increases in patients with conditions such as atrial fibrillation, this discovery will help doctors determine if a patient's condition is new onset or if it's a more persistent and permanent case.

"The other potential benefit of this research is helping doctors decide the best treatment for patients with acute heart failure. For patients who suffer from acute heart failure where medical therapy hasn't helped, they are treated with a device. This device only has a 70 per cent response rate, and no one knows why this is the case. What we've discovered is if levels of this protein are high in the patient at the time of the device transplantation then their heart is less likely to respond to the device."

"This could revolutionise treatment and help guide the physician to know which people will have a higher or lower chance of responding to the device."

Support through THRF made it possible for Dr Ngo to kick-start this research project as she and her team eagerly prepare to translate this finding to patients as soon as possible.

"The Fellowship has enabled us to establish this research and we are very excited by all these new things we have recently uncovered," she said. "It's such a long and difficult process to obtain funding, and support from a community like THRF is absolutely crucial for the continuation of this type of research."

With family members of her own affected by various medical conditions as so many families are, Dr Ngo is driven to make her mark in the world of research – passionate about developing new and improved therapies for the conditions affecting so many.

"I'm very passionate about the cardiac and endocrine system. My overall career goal is to continue working towards finding different mechanisms and therapeutic targets to one day discover something that will change medical therapy as we know it."

The Hospital Research Foundation Mid-Career Fellow

Cardiovascular Pathophysiology and Therapeutics Group

TQEH DEPARTMENT **CARDIOLOGY UNIT**

Our group is interested in:

- Cardiovascular disorders associated with ageing
- New therapeutic modalities for heart disease: aortic stenosis, heart failure, coronary artery disease, Tako-Tsubo cardiomyopathy
- Interactions between glycocalyx integrity and acute and chronic cardiovascular disease states
- Heart disease in women
- Heart disease in diabetes and in association with obesity

Key Findings in 2016

Cardiovascular disease with ageing.

Study of pathogenesis of aortic valve stenosis, increased stroke risk with ageing and the effects of stress on the ageing heart. We have demonstrated the association of increased thioredoxin-interacting protein (TXNIP) heart disease in ageing subjects.

New therapeutic modalities.

- Investigated potential new therapeutic roles for derivatives of the "metabolic" anti-ischaemic agent perhexiline, including treatment of hypertrophic cardiomyopathy.
- Observed that nitric oxide (NO) resistance at platelet level can be partially circumvented by nitroxyl donors, and that response to nitrites is increased under hypoxia. Currently evaluating the clinical applicability of findings to conditions like unstable angina and acute heart failure.

- Developing means to increase efficacy of anti-aggregatory agents such as clopidogrel or ticagrelor, used to maintain the patency of coronary stents. Demonstrated that integrity of prostacyclin-adenylate cyclase signalling is critical to maintaining responsiveness to clopidogrel. Evaluating impact of both disease states and drugs on this signalling cascade.
- Demonstrated anomalies of nitric oxide-soluble guanylate cyclase signalling in platelets of patients with coronary vasospastic disorders. Investigating the clinical and therapeutic correlates of this anomaly.
- Tako-Tsubo cardiomyopathy can cause "heart attacks" in ageing women. We aim to identify the precise cause and develop treatments to accelerate recovery. Developed an animal model of the disease. Demonstrated occurrence of nitrosative stress in patients with the disorder. A clinical trial to determine whether limitation of nitrosative stress might improve outcomes has been initiated.

Loss of glycocalyx integrity

The glycocalyx is a protective, carbohydrate-rich layer forming an "outer coat" on most cells. Shedding of the glycocalyx both results from and perpetuates inflammation in blood vessels and the heart. Evaluated role of glycocalyx shedding in heart attacks, Tako-Tsubo cardiomyopathy, heart failure and atrial fibrillation. This problem potentially treatable by currently available drugs, but treatments not yet in routine clinical use.

Heart disease in women

In addition to Tako-Tsubo cardiomyopathy we are also interested in polycystic ovarian syndrome, which affects fertility in younger women, but which may predispose them to early development of heart disease as they age.

Defective angiogenesis in diabetes and obesity.

We aim to determine the physiological role of a recently identified anti-angiogenic isoform of Vascular Endothelial Growth Factor (VEGF). It may play a role in defective angiogenesis in the presence of diabetes or obesity.

Outcomes for the community

The overall objective of our work is to develop better understanding of cardiovascular disease states especially those occurring with ageing, and to implement more effective treatments for such disease states. Specifically, our work has improved outcomes in patients with angina, heart failure and hypertrophic cardiomyopathy, and offers potential improvements in diabetes, patients with stress cardiomyopathy and those with aortic valve disease.

BHI Researcher Story

CLEMENTINE LABROSCIANO
HEALTH PERFORMANCE AND POLICY RESEARCH UNIT

the hospital research foundation

Clementine Labrosciano is undertaking Australian-first research investigating how and why many patients will return to hospital after an initial admission for a heart condition or procedure.

As a PhD candidate based at the BHI under the supervision of Dr Isuru Ranasinghe (Health Performance and Policy Research Unit), Professor John Beltrame and Dr Rosanna Tavella (Translational Vascular Function Research Collaborative), Clementine is hopeful her research will lead to an improved quality of care for patients and their families.

"There are a number of studies that suggest nearly a quarter of cardiac patients are unexpectedly re-admitted to hospital within 30-days of being discharged from hospital. This is not only unfortunate for patients, it also places a burden on our health system," Clementine said.

The new component of Clementine's PhD is that her research is not only looking at hospital readmissions, but also the number of patients re-presenting to emergency departments, who are treated and released back home.

"Currently if a patient presents to an emergency department after being in hospital for a heart condition or procedure and are treated and discharged home (without being admitted to hospital), these emergency cases are not counted in our health system's data. This means that we may be substantially underestimating how many patients unexpectedly seek hospital-based care soon after discharge," Clementine explained.

"If we can demonstrate that many patients unexpectedly return to emergency departments, in addition to readmissions, we might be able to change the process at a hospital-level to reduce the burden on emergency departments.

"Despite their initial admission being for a heart condition, many patients come back to hospital with a wide range of illnesses that are often different to their initial heart condition. For example in heart failure, approximately 50 per cent of patients represent to hospital with a different condition and at this stage we don't know why or how patients acquire these 'new' conditions."

In addition to looking at the Australian statistics, Clementine hopes to research the impact of sleep deprivation in hospital – one of the causes believed to contribute to readmissions and why patients seemingly acquire 'new' conditions.

Her PhD will explore sleep deprivation of patients with heart conditions during their first hospitalisation and determine if this increases the risk of a patient returning to hospital.

This study is the first of its kind looking at whether the disruption of patient's sleep is a risk factor for patients returning to hospital.

> "Sleep helps patients heal and if they aren't getting enough sleep it may impair their recovery and may make them vulnerable to other conditions such as infections."

As part of her PhD, Clementine will recruit patients in a small trial and use four different pieces of equipment to assess the amount and quality of sleep in hospital.

"I will then give them a follow up call to see how they think they've been sleeping and if they have been readmitted to hospital or emergency care for any reason," she said.

PhD student University of Adelaide

Supervisors Dr Isuru Ranasinghe (Health Performance and Policy Research Unit) and Professor John Beltrame (Translational Vascular Function Research Collaborative)

Scholarship Faculty of Health Sciences Divisional Scholarship, University of Adelaide

Clinical Pharmacology Research Group

TQEH DEPARTMENT **CLINICAL PHARMACOLOGY UNIT**

The unit has had a long term interest in developing better therapies for the treament of heart disease. We have focussed on refractory angina, where patients have failed, or are contraindicated for, conventional therapy and continue to experience severe symptoms. We are also moving into the area of cancer chemotherapy, for which the development of heart failure is often an adverse effect that limits the duration and efficacy of therapy. Placing patients at greater risk of treatment failure or relapse, and concomitant heart disease.

Key Findings in 2016

We were fortunate to receive funding from Cancer Council SA for a multidisciplinary collaboration between Clinical Pharmacology, the Breast Cancer Research Unit and Cardiology, to carry out a pilot study investigating novel ways of preventing heart failure during cancer chemotherapy with doxorubicin. The funding supported Dr John Licari, who has completed the treatment phase of a study comparing doxorubicin's anticancer effects when administered alone or in combination with novel cardioprotective agents.

We are now completing analyses of heart function tests and scans of cancer growth and metastasis, and hope to have proof-of-concept for our new therapies by early 2017. In 2016, Ms Cher-Rin Chong submitted her PhD thesis, which investigated novel therapies to improve heart function by modulating energy metabolism and oxidative stress. This work, carried out in conjuction with the Cardiology Unit, screened novel compounds for their ability to inhibit a key enzyme of fatty acid oxidation, carnitine palmitoyl transferase 1, and identified 4 componds to carry forward to efficacy studies. This has led to a new collaboration with researchers from the University of Birmingham to test the lead compounds in pre-clinial models of heart failure.

Outcomes for the community

We have identified new compounds to treat heart disease with which we are moving forward to pre-clinical efficacy studies. We hope that in the future, they may provide clinical benefit in conditions where there are curently few treatment options.

Translational Vascular Function Research Collaborative

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Clinical disorders involving the coronary and peripheral circulation can be largely attributed to abnormalities within blood vessels thereby compromising the blood supply to these organs. The Translational Vascular Function Research Collaborative undertakes interdisciplinary basic, clinical and epidemiological studies into vascular dysfunction to improve our understanding of these disorders and develop new effective therapies. The research group includes both clinicians and medical scientists located at the Basil Hetzel Institute, the University of Adelaide Medical School, the Central Adelaide Local Health Network and the Northern Adelaide Local Health Network. The integrative nature of the group provides a unique opportunity to ensure that innovations are bidirectionally translated; ie as well as the traditional bench to bedside approach, innovations are derived from identifying patients with poor outcomes, understanding the contributing clinical attributes of these patients and returning to the laboratory to discover new therapies.

The multidisciplinary Collaborative consists of three sections that have combined meetings to optimise interdisciplinary input and translation:

- Molecular Physiology,
- Clinical Physiology, and
- Health Outcomes.

Molecular Physiology

This group focuses upon the pathophysiology and molecular signaling of vascular disorders. This includes coronary artery spasm, coronary microvascular disorders, peripheral vascular disorders and reperfusion injury. Laboratory studies include the assessment of isolated human vessel function using myography, followed by a series of biomolecular assays aimed to provide a mechanistic understanding of the disorders and thus direct the translation to improvements in medical therapy.

Key Findings in 2016

- Women have hyper-reactive blood vessels to alpha agonists, which is influenced by the prostaglandin pathway.
- Endothelial biopsies are a feasible and potential tool for personalized medicine.

Outcomes for the community

This research demonstrates that:

(a) the poor outcomes in women with cardiovascular disease could be modulated by therapies targeting the prostaglandin pathway, and

(b) there is a real potential for capture of biological data for personalised medicine.

TRANSLATIONAL VASCULAR FUNCTION RESEARCH COLLABORATIVE CONT'D

Clinical Physiology

This clinical research team utilise both invasive and/or non-invasive techniques to identify the presence of vascular dysfunction in patients with vascular symptoms including angina and intermittent claudication. These include the assessment of coronary artery spasm, coronary blood flow, cardiac magnetic resonance imaging, popliteal artery vasodilation, subcutaneous blood flow and endothelial function.

Key Findings in 2016

- Contributing to the establishment of international diagnostic criteria for vasospastic angina
- The first description of an increased propensity to vasospastic angina amongst Indigenous Australians.
- Establishing Myocardial Infarction and NonObstructed Coronary Arteries (MINOCA) as an important clinical entity that requires diagnostic evaluation.
- Demonstrating a high prevalence of coronary vasomotor disorders amongst patients with chest pain and non-obstructive coronary arteries.

Outcomes for the community

The above clinical syndromes developed and investigated by the Clinical Physiology section of the Translational Vascular Function Research Collaborative translate into improved patient care. With clinician awareness of these conditions, patients are more appropriately diagnosed and treated whereas previously affected patients were undiagnosed or misdiagnosed.

TVFRC Research Leader Professor John Beltrame with Dr Rosanna Tavella and TQEH Cardiac Rehabilitation Consultant Renee Henthorn.

Health Outcomes

This group focuses upon the health status of patients with vascular disorders including their symptomatic status, associated physical limitations and quality of life. Consistent with the changing environment in medical research, this group adopts a 'patient- orientated' approach to the delivery of medical care in patients with vascular disorders by:

(a) evaluating patient health status in population studies and

(b) assessing the quality of care delivered.

The group has developed large databases in patients with acute myocardial infarction, coronary artery and microvascular disease, coronary spasm, and peripheral artery disease. Most of these databases have international links thereby providing collaborative opportunities.

Key Findings in 2016

- Compared to the United States, patients in South Australia undergoing percutaneous coronary interventions are more likely to have procedure performed via a radial artery approach and less likely to utilise potent antiplatelet agents such as glycoprotein IIb/IIIa inhibitors and bivalirudin.
- In the first comprehensive assessment of acute myocardial infarct performance measures in Australia, South Australian public hospitals have performed reasonably but there is the potential to optimise the quality of care delivered.

Outcomes for the community

For the first time in Australia, internationally established quality measures for coronary artery disease have been assessed and internationally benchmarked in preliminary analyses. These will be further developed and quality assurance programs established, thereby improving the quality of care delivered to South Australian Hospitals.

How Research Gave Back a Young Dad's Life
Daniel's Story

the hospital research foundation

"Being in the cardiac ward at 38-years-old and being the youngest person there by 40 odd years felt very strange….".

Father-of-one **Daniel Balmforth** never thought heart disease would affect him at such a young age, but when he collapsed at work one morning he knew something was wrong. Four years later Daniel was visiting the emergency department on a weekly basis.

"It came out of nowhere. I collapsed at work one day, and then it just kept happening, multiple times a week. I would collapse literally out of nowhere," Daniel said.

"The attacks were excruciating. It felt like I was getting stabbed multiple times, and then it begins to spasm, so it feels as if a knife is being twisted inside your body.

"It got to the point that I was in hospital five days out of seven each week. Sometimes I would be in the morning and then back in the afternoon."

Baffling medical professionals, Daniel was suffering from refractory vasospastic angina, a form of angina which causes heart arteries to spasm. For many sufferers of vasospastic angina, it is only a major or minor heart vessel that spasms when an attack occurs, but in Daniel's case it was both.

"This is why it was such a mystery as the professionals hadn't seen it before and they didn't know how to treat it."

Fired from his job and unable to even travel to the local supermarket without risk of a sudden attack, Daniel was becoming increasingly frustrated with his debilitating condition until he was referred to Professor John Beltrame, Head of the Discipline of Medicine and Cardiologist at The Queen Elizabeth Hospital (TQEH).

Fortunately having a well-established research interest in vasospastic angina, Prof Beltrame was confident he knew what Daniel was suffering from and organised a procedure to confirm his suspicions.

"We were about to induce a spasm when Daniel actually experienced a spasm in the middle of the procedure and that's when we made the diagnosis," Prof Beltrame said. "After this we trialled many conventional and unconventional

cardiac drugs to try and control Daniel's condition." Through his research program Prof Beltrame was aware of an international study which suggested that a particular drug was effective in treating vasospastic angina. They then had to go through several regulatory processes to obtain this drug through TQEH's pharmacy.

Daniel has now been taking this treatment for six months and it's already turned his life around. Not only has he avoided weekly trips to the emergency department, he is only experiencing minor chest pain.

"This treatment is working really well. I do have pains every couple of days but my other treatments support that. Without it I would still be in the hospital on a fortnightly basis," Daniel said.

"Now I can start looking forward. My daughter is only 10-years-old and she has seen things she should never have to see."

Now visiting Prof Beltrame every three months, Daniel is slowly returning to doing the things he loved before his condition took over his life. With his case highlighting how important ongoing research is, Daniel is confident Prof Beltrame will go on to answer more questions around vasospastic angina, improving outcomes for others diagnosed in the future.

"As much as this whole ordeal has been hard for me, in the grand scheme of things it's really good. Now the next person who presents to hospital with the same symptoms can be diagnosed straight away, and they'll be able to immediately start on this treatment."

BHI Researcher Story

SIVABASKARI (THARSHY) PASUPATHY TRANSLATIONAL VASCULAR FUNCTION RESEARCH COLLABORATIVE

Whilst 90 per cent of heart attacks are the result of blocked arteries and are treated accordingly, the other 10 per cent of patients don't present with any blockages. These patients are now referred to as Myocardial Infarction with Non Obstructive Coronary Arteries (MINOCA) and have formed the basis of Sivabaskari (Tharshy) Pasupathy's PhD project in the TVRFC for the last three years.

"I started my PhD by first understanding the MINOCA patient group since there was not much known about them. We wanted to compare these patients to other heart attack patients who have blocked coronary arteries," she said.

After extensive research on the existing literature Tharshy published a systematic review which was published in the cardiology journal *Circulation*, an impressive achievement.

"We were pretty excited with the reaction, a lot of people responded to the paper and were talking about it," she said.

"During my PhD, using Coronary Angiogram Database of South Australia (CADOSA) registry, we identified all the MINOCA patients in South Australia and we identified in most cases the MINOCA patients are more likely to go home with no/little medical management since a cause for their heart attack could not be identified, unlike with those who have a visible blockage.

"I am now in the process of writing a paper which highlights the overall characteristics of MINOCA patients in contemporary practice."

Tharshy also studied 50 patients from The Queen Elizabeth Hospital (TQEH) more closely as they had additional tests to determine the cause of their heart attack.

"The first of its kind in Australia, we aim to generate extensive research output and subsequently a guideline that will provide doctors with a clear way of identifying a MINOCA patient and the best way to manage their condition.

"These guidelines will help cardiologists understand a MINOCA patient, and highlight how important it is to do more testing and not treat their condition as a false alarm".

Eager to pursue further research into this patient group, Tharshy will continue her studies through a post-doc in the future.

"I love this area, I had great experiences and there's so much more to explore. I'm looking forward to seeing where new opportunities take me."

PhD student University of Adelaide

Supervisors Professor John Beltrame and Dr Rosanna Tavella

Scholarship Australian Postgraduate Award

Vascular Surgery Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Primary research interests of this group are developing predictive models for outcomes in patients with peripheral arterial disease, diabetic foot ulcers or after abdominal aortic aneurysm repair.

Key Findings in 2016

In 2016 we identified a number of important factors that contribute to patient survival after endovascular repair of their abdominal aortic aneurysm. Firstly we developed a model to predict which patients were most likely to die from any cause within 12 months. The most important factors were ASA (anaesthetic risk), aneurysm diameter, creatinine, respiratory assessment, and iliac artery calcification, all contributing to predicting 12-month mortality, which ranged from 98.6% to 68%.

In a second study (manuscript in preparation), we identified a strong link between self-reported fitness and survival after endovascular aneurysm repair. Patients were asked at their preoperative consultation with the surgeon if they could walk 1km at a good pace or climb two flights of stairs. They were also graded by anaesthetic risk (ASA score). Patients who were identified as high anaesthetic risk but were in the physically fit group had a much better rate of survival for up to three years than those with poor fitness.

A third related study (manuscript in preparation), examined sarcopenia (low muscle mass) as a predictor of survival after endovascular aneurysm repair. The size of the psoas muscle was measured on a single slice of a CT scan and patients classified into normal or sarcopenic according to the area of the psoas muscles. Our results showed that the presence of sarcopenia was correlated with all cause mortality within 3 years, length of hospital stay on admission for their surgery and both early post-operative and long term complications.

Outcomes for the community

Our research aims to improve clinical care for patients with vascular disease, in particular an abdominal aortic aneurysm. Results from our research are providing tools for patients and their surgeons to use to obtain an individualised idea of the risks involved in a particular operation. Patients and surgeons will have more information to make better choices and this will provide better informed consent for patients about to undergo aneurysm repair. Sometimes the best decision, based on this new information, is that the patient would be better off without the operation.

Zinc and Cardiovascular Disease Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

We are investigating the role of the major dietary metal zinc in the blood vessels and vascular diseases. Our project will enable us to directly relate endothelial Zn levels and Zn transporter expression with endothelial dysfunction, vasoconstriction, cigarette smoking and both small and large artery disease in humans. It will provide the rationale for Zn interventional clinical trials.

Key Findings in 2016

There are three major key findings:

1) in an *ex-vivo* model, zinc protects human skin blood vessels against a potent vasoconstrictor known as endothelin-1. The zinc protection occurred at concentrations of available zinc that circulate in the blood stream suggesting the effect is physiological.

2) We have obtained evidence for the presence of three members of the zinc transporter protein in the endothelial linings of the skin vessels.

3) We have developed a technique to isolate endothelial cells from the linings of human arteries by detaching them from guide wires and catheters used in coronary angiograms and related procedures. This will enable us to study the relationship between zinc levels in arterial endothelium and cardiovascular disease.

Outcomes for the community

As we age, the zinc levels in our body decline and make us more susceptible to inflammatory and infectious disease. Our studies in blood vessels are providing the scientific evidence that zinc is important for protecting us against cardiovascular disease and that maintaining or restoring zinc levels in the body through either a well-balanced diet or via zinc supplements will help to minimize the risk of developing age-related pathological changes in our vasculature. The technique to isolate endothelial cells during coronary angiograms has a potential diagnostic role in coronary artery disease.

CHRONIC DISEASE

Research Groups

Clinical Pharmacology Research Group

Endocrinology Unit

Department of Gastroenterology & Hepatology

Stroke Research Programme

The Health Observatory

Clinical Pharmacology Research Group

TQEH DEPARTMENT **CLINICAL PHARMACOLOGY UNIT**

Despite significant advances in immunosuppressive therapies to prevent rejection in kidney transplantation, the average lifespan of transplanted kidneys has not improved in 30 years. This is because some immunosuppressants cause long-term kidney damage. Current clinical care involves measuring immunosuppressants in blood to maintain exposures that minimise both rejection and toxicity. Our research aims to improve clinical outcomes by understanding the factors that determine immunosuppressant exposures at their sites of action: the immune cells that cause rejection, and the transplanted kidney.

Key Findings in 2016

Our work has been supported by two PhD students, Mr Zaipul MD Dom, who submitted his thesis in 2016, and Ms Rong Hu, who is in her first year of research investigating the immunosuppressant tacrolimus. Both students have continued research utilising a large transplant recipient and donor bank of blood and tissue samples, previously established with NHMRC funding. We now have approximately 10 years of clinical outcome data for 200 kidney transplant recipients, and have been able to couple this with assessment of polymorphisms in genes controlling immunosuppressant exposures (e.g. the ABCB1 gene, which codes for the cellular efflux transporter p-glycoprtein; and CYP3A genes which code for tacrolimus metabolising enzymes) as well as direct measurements of immunosuppressant levels in lymphocytes and kidney biopsy specimens. Rong Hu pesented her work at the 2016 national scientific meeting of the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists, confirming the important role of CYP3A5 genetic polymorphisms in determining tacrolimus exposures and reporting the first evidence that ABCB1 haplotype also determines tacrolimus exposure, independently of CYP3A5. Rong was awarded the Pharmacogenomics Special Interest Group Prize for her presentation. We have also completed work demonstrating that the concentration of tacrolimus in blood is a poor predictor of tacrolimus concentrations within the transplanted kidney. Importantly our data suggest that the net uptake of tacrolimus from blood into kidney tissue changes with time post-transplantation, and that tacrolimus-induced renal toxicity is associated with higher net uptake.

Outcomes for the community

We hope our research will enhance understanding of the factors that contribute to the loss of a transplanted kidney, so that we can develop blood tests to better individualise immunosuppressant therapy and prevent rejection and kidney damage.

Endocrinology Unit

TQEH DEPARTMENT **ENDOCRINOLOGY UNIT**

The Unit conducts research in endocrinology, mainly in areas relating to diabetes and osteoporosis. We aim at gaining clinical endocrine knowledge through clinical trials and other research. We also conduct translational research and patient quality improvement studies to improve patient care.

Key Findings in 2016

The study by Dr Jason Tan, in collaboration with Dr David Jesudason, Professor Gary Wittert and Dr Jim Wang, found that low testosterone level is an independent risk factor for the development of type 2 diabetes in men. In addition, the study highlights that the inverse relationship between testosterone levels and type 2 diabetes development is particularly prominent in younger men below 50 years old. This indicates that the group of men at greatest risk of developing type 2 diabetes are specifically the younger men (< 50 yrs old) with very low testosterone levels (< 8.0 nmol/L). Moreover, high waist circumference is also a strong predictive factor in men with low testosterone levels. These results identify a specific population of younger men (< 50 yrs old) with high waist circumference and very low testosterone levels who are at the greatest risk of developing diabetes.

The study by Ms Bhairavi Parimalanathan (4th year medical student), under the supervision of Dr David Jesudason, Professor Gary Wittert and Dr Jim Wang, found that the relationship between sleep (duration, stages, and REM sleep) and thyroid function as measured by T3, T4 and TSH levels is weak. Other factors, such as BMI, stress level, smoking, age may have confounding effect on the relationship.

A sub-analysis of the Men Androgen Inflammation Lifestyle Environment and Stress (MAILES) cohort found that the cohort can be separated into 4 subgroups with distinctive property based on the major sleep study outcome parameters:

- Normal - 46% of the population - high sleep efficiency, long sleep time and low AHI
- Rem OSA - 4% of the population - high AHI at rem sleep and greatly increased snoring time
- OSA - 17% of the population - overall high AHI and high AHI at both rem and non rem sleep, high obstructive apnea index
- Unexplained poor sleep - 32% of the population - low sleep efficiency and short sleep time but normal other parameters.

Outcomes for the community

Nurse educators and dieticians in the Diabetes Centre conducted the patient care improvement oriented studies: Insulin adjustment clinic data analysis in order to improve type 1 diabetes patient self-care.

New Treatment for Psoriatic Arthritis changes a Life
Helen's Story

the hospital research foundation

When **Helen Woodall** developed psoriatic arthritis 23 years ago she suffered debilitating pain.

"I had pain in all my joints. I couldn't walk, I had to stop working. I had tried many different medications but none of them were working," Helen said.

"My arthritis is in both my wrists, shoulders, elbows, fingers and toes, it's everywhere. The pain was so unbearable that I couldn't walk."

Psoriatic arthritis is a chronic disorder that leaves people suffering from progressive joint inflammation and destruction of these joints over time. When offered a chance to take part in the clinical trial of a new treatment at The Queen Elizabeth Hospital, Helen was quick to say yes.

"I tried many different drugs but they didn't help. Then this trial came up and I said I would try anything!"

Having been a patient at TQEH for many years, Helen was eager to be involved in this trial with the support of her Rheumatologist Associate Professor Maureen Rischmueller and Rheumatology Clinical Research Manager Dr Sarah Downie-Doyle and the Rheumatology team.

"Whilst historic treatments for psoriatic arthritis work by controlling the disease activity, they have shown limited efficiency in controlling the disease completely. This means the progression of joint damage still occurs," Dr Downie-Doyle explains.

This clinical trial which began five years ago, is looking into a drug called Apremilast which is used to treat psoriasis. A/Prof Rischmueller and her team were eager to see if this drug could fill a void for psoriatic arthritis.

"Apremilast works by dampening signals between inflammatory cells," Dr Downie-Doyle said.

"We already know it works well for the skin condition of psoriasis, so this trial was for us to see whether it worked on patients with psoriatic arthritis, so on the joints as well. We were testing to see if it helped reduce the aches and pains associated with the chronic condition."

The trial was designed to test the efficacy and safety of two different doses of Apremilast against the placebo for the first 24 weeks.

"What was found is that most patients on the treatment were responding remarkably well, and now many of them, like Helen, have been taking the treatment for the last five years."

For Helen, the new treatment has changed her life, a devoted mother and grandmother who didn't have the strength to hold her grandchildren; she is now able to do all the things that the disease took away from her.

"It was unbelievable the difference."

> "I now have none of the pain I had before, and I can do all the small things I used to take for granted like even lifting up the washing line."

"Every single member of staff at TQEH are amazing, I can't thank them enough for giving me a new lease on life."

Dr Downie-Doyle is confident with ongoing support of research, breakthroughs like Helen's will continue to revolutionise treatments and change the lives of those living with inflammatory conditions.

"This is where research is heading, and it's very exciting," she said.

Department of Gastroenterology & Hepatology

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

Malnutrition is common in patients with liver cirrhosis and is associated with increased morbidity and mortality. Currently the underlying mechanisms contributing to the pathogenesis of malnutrition in these patients is not fully understood. Our primary research aim is to evaluate the relationship between gastrointestinal structure and function, nutrition and clinical outcomes in in patients with chronic liver disease.

Key Findings in 2016

Malnutrition is associated with increased mortality in liver disease. The aetiology of malnutrition in liver disesea is multifactorial but we have shown that gastrointestinal dysmotility as well as abnormal absorption and intestinal permiability are contributory.

Outcomes for the community

Understanding and managing malnutrition in patients with liver cirrhosis has the potential to improve survival and reduce hospital stay in patients with liver disease.

Stroke Research Programme

TQEH DEPARTMENT **NEUROLOGY UNIT**

Our principal focus, stroke, is a leading cause of death and disability. A challenge is to repair the brain after stroke. Neurogenesis is activated in the human brain after stroke, causing increased production of neural stem cells, however this may be too little to be a significant benefit. One therapeutic strategy to treat stroke is to transplant stem cells derived from adult tissues that have the ability to become neurons and interact with the brain. Our research investigates the use of adult stem cells derived from the dental pulp of the human tooth to improve outcomes for stroke patients.

Key Findings in 2016

The key findings emanating from the hospital work of the Stroke Unit related to progress made via the Transforming Health program and the changes that have occurred in the combined Stroke Unit, now located at the Royal Adelaide Hospital. Stroke data from the Central Adelaide Local Health Network (CALHN) is being continually monitored to ensure there is continual improvement of services. The new evidence for the combined use of tPA and endovascular treatment using clot retrieval devices has revolutionised reperfusion therapy in the treatment of stroke and our aim is to attain best-practice in all aspects of stroke treatment. Evidence for this work was presented by A/Prof Jim Jannes at the SA Acute Stroke Workshop held on 2nd September 2016 in Adelaide under the title “Best Care in Reperfusion Therapy”.

Outcomes for the community

The major outcome of the latest developmental work was the release of the South Australian Stroke Services plan, a translational document that incorporates best practice in stroke care from around the world into a working plan for stroke services in South Australia. Stroke services in South Australia were reorganised under Transforming Health to streamline the treatment of stroke victims and and improve management of stroke services. Key performance indicators are being monitored to ensure continuing improvement of services towards international best practice.

The Health Observatory

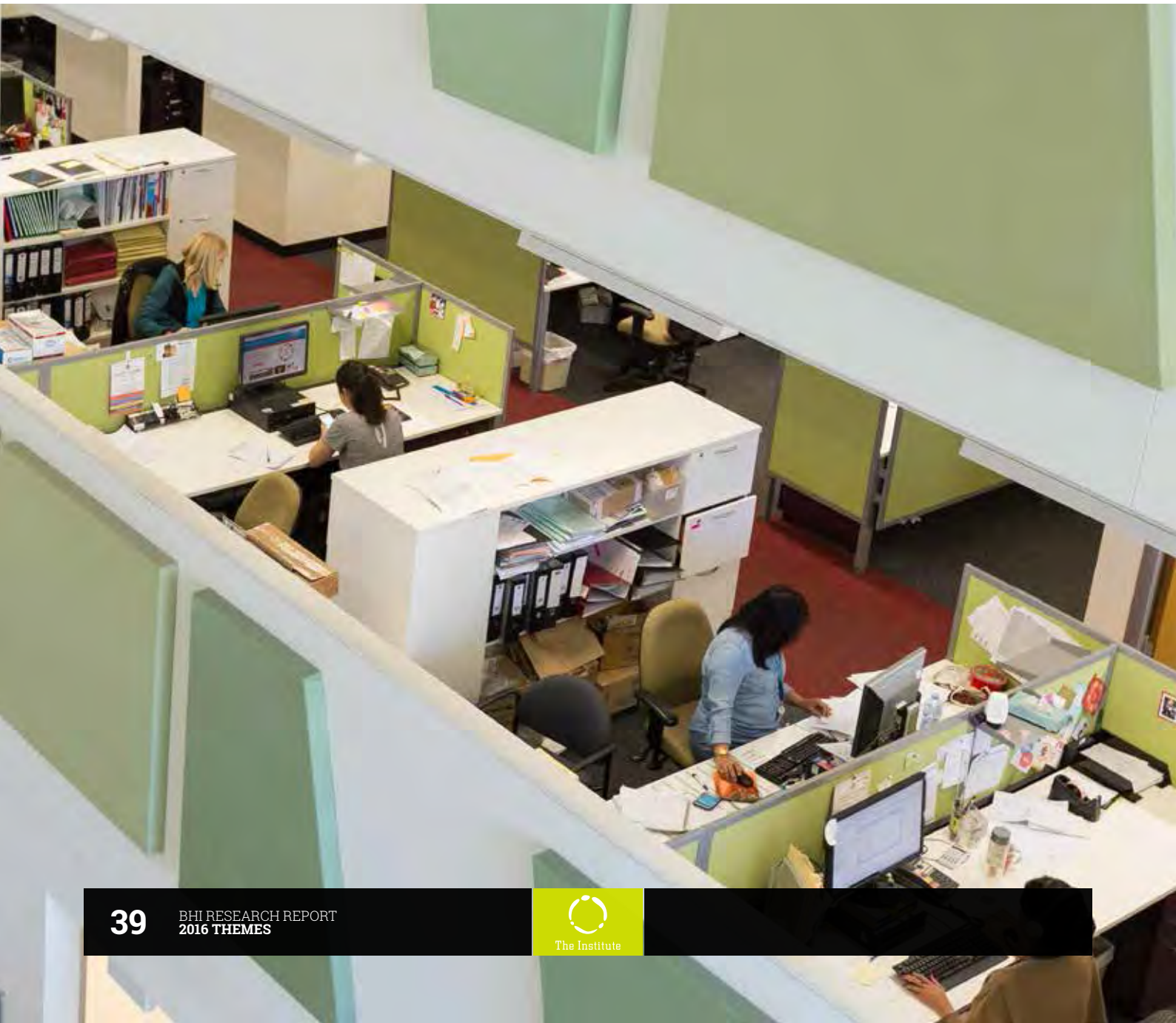
UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Current research is focused in two areas:

1. Sleep health, and
2. Cumberland AU - The Australian Health Care Modelling and Systems Design Collaboration.

Key Findings in 2016

Our work extends knowledge of what specific factors in Obstructive Sleep Apnea (OSA) are associated with significant chronic health problems, independent of comorbid and confounding conditions. This includes the significant independent association of intermittent nocturnal hypoxia in OSA with incident type 2 diabetes, chronic kidney disease, depression and impaired glycaemic control in men without diabetes. We have also shown that OSA in rapid eye movement (REM) sleep, but not non-REM sleep is associated with longstanding and recent onset hypertension, which has potentially major implications for clinical management. These findings together have highlighted the importance of sleep apnea in people with cardio-metabolic conditions and potential role of nocturnal intermittent hypoxia in increasing mortality and morbidity.



Hilary Dorward and Vahid Atashgaran enjoying a game of croquet at the BHI end of year celebration.

CLINICAL SCIENCES, HEALTH SERVICES AND POPULATION HEALTH

Research Groups

Anaesthesia Research Group

Gastrointestinal Health and Disease

Health Performance & Policy Research Unit

Intensive Care Medicine Research Group

Psychiatry Research Group

Respiratory Medicine Unit & Clinical Practice Unit

Rheumatology Research Group

Surgical Science Research Group

Anaesthesia Research Group

TQEH DEPARTMENT **ANAESTHESIA**

The primary research interests of our department were regional anaesthesia and new applications of drugs.

Research was focused on new techniques to provide safe and effective post-operative pain relief. A randomised controlled trial (RCT) was started on a new regional anaesthetic technique: Transmuscular Quadratus Lumborum Block. Systematic reviews were done and accepted for publication on the effects of beta-blockade on analgesia, anaesthesia and postoperative nausea and vomiting.

Key Findings in 2016

Over the last years, regional anaesthetic techniques have been a research focus in our the department. We have shown that Transversus Abdominis Plane (TAP) blocks can provide postoperative analgesia comparable to the gold standard epidural technique. We are now starting to explore the benefits for the transmuscular quadratus lumborum block, which appears to give a better coverage of the abdomen compared to TAP. Both systematic reviews on beta-blockade and anaesthesia show that beta-blockade appears to significantly reduce analgesia and anaesthesia dosing, whilst reducing postoperative pain and nausea and vomiting. This can have significant consequences for the provision of anaesthesia in specific higher risk cases, where e.g. opioids need to be avoided. Specific trials are contemplated to explore this further.

Outcomes for the community

This research will lead to improved outcomes and patient experiences after regional and general anaesthesia.

Gastrointestinal Health and Disease

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

We have been investigating ‘intestinal crypt fission’ and how that leads to growth of the small intestine during infancy in rats and humans. The mucosal lining is covered by finger-like villi and at the base of these villi are up to 10 crypts which supply villi with enterocyte cells. Intestinal stem cells are present in crypts. Our current research is investigating a particular growth factor pathway, namely, the Wnt-beta-catenin pathway that may promote division of these stem cells and increase crypt fission during infancy which in turn promotes growth of the small intestine.

Key Findings in 2016

This project was initated in 2016 with Zenab Dudhwala commencing her PhD. We have found that intestinal crypt fission is elevated in humans particularly in the first 2 years of life. In infants, about 18% of intestinal crypts are undergoing division by crypt fission at this age compared to less than 2% in adults. We have shown that this crypt fission corresponds with elevated activity of the Wnt-beta-catenin growth factor pathway in the base of intestinal crypts where stem cells are located. Continuing studies will investigate whether further stimulation of intestinal stem cells can promote intestinal growth and which of the 19 Wnt growth factors are responsible.

Outcomes for the community

A long sought after goal of gastroenterology is to augment intestinal growth in pre-term infants with an immature intestine, and in infants, children and adults who are left with short bowel syndrome after surgical resection of diseased small intestine. Impaired nutrient absorption leads to prolonged stays in hospital and long term morbidity and mortality. Considerable medical resources are consumed. Our study provides basic knowledge about how intestinal growth may be achieved and we plan to test particular Wnt growth factors in infant rats and depending on funding in piglets.

BHI Researcher Story

DR ISURU RANASINGHE
HEALTH PERFORMANCE AND POLICY RESEARCH UNIT

NHMRC Postdoctoral Fellow, Dr Isuru Ranasinghe, is based at the Basil Hetzel Institute. Isuru is passionate about developing data systems to monitor what happens to patients after hospital admissions for heart conditions.

After finishing my cardiology training I was planning on working as a full-time cardiologist but I ended up becoming involved in research, and from travelling all over the country I discovered how differently hospitals treated patients for the same condition," Dr Ranasinghe said. His research at Yale University involved measuring healthcare quality and outcomes (the end results of care) in the hope of reducing hospital readmissions among patients who have suffered from conditions such as heart attack and heart failure.

"What was concerning was that we started seeing very different end results for patients, where some patients did well while others were readmitted."

"Some of the variation was due to the underlying condition but some of it was due to variation in care at different hospitals."

According to Dr Ranasinghe, readmissions are a major concern because about one in five heart patients end up coming back to the hospital unexpectedly within 30 days of discharge and many of these readmissions are potentially preventable.

"Unexpected readmissions are incredibly distressing for patients," Dr Ranasinghe said.

"No one wants to end up back in the hospital after being told it is safe for them to go home. It also exposes patients to unnecessary harm such as hospital-acquired infection and is costly for hospitals because the average cost for a hospital admission is around three to five thousand dollars."

Currently, Australia does not have systems in place to routinely monitor important end results of care such as deaths or readmissions after patients leave the hospital.

"The irony is that cardiology often provides lifesaving treatments but we have no way of routinely monitoring how many people survive (or get readmitted) after a patient leaves the hospital," said Dr Ranasinghe.

"How can we improve hospital care if we don't routinely monitor the end results of that care? How do doctors and hospitals learn to improve care if they have no way of knowing what they got right or wrong?"

> "My goal is to develop systems to routinely monitor patient outcomes particularly in the early period after leaving the hospital," said Dr Ranasinghe.

By developing data to inform who is being readmitted and for what condition, Dr Ranasinghe said such systems could potentially save lives and save the health care system thousands of dollars.

"What I want to implement, and what the United States do well, is measuring readmissions and reporting back to the hospital and doctors about why that patient came back," Dr Ranasinghe said.

"If you can see what you are doing is causing harm down the track, you are more likely to do everything you can to make sure that doesn't happen again. It is an opportunity for doctors, and hospitals to learn from every patient that we see so we get the best possible outcomes for our patients."

Dr Ranasinghe's research project is also supported by The Hospital Research Foundation.

NHMRC Postdoctoral Fellow

Research Leader of Health Performance and Policy Research Unit, BHI

Health Performance and Policy Research Unit

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

The Health Performance and Policy Research Unit assesses important end results of healthcare such as effectiveness, safety, quality, and costs. Combining clinical medicine with data science, our goal is to generate research that informs clinical and policy strategies to improve care. We are particularly focused on leveraging the massive volumes of data routinely collected by health care facilities to inform healthcare outcomes and decision-making, and to develop low-cost and implementable measures to detect variation in care.

Key Findings in 2016

The Health Performance and Policy Research Unit's key achievement in 2016 was the establishment of the Observing Recurrent Incidence of Adverse Outcomes following HospitalisatioNs (ORION) study. With the generous support of State Health Departments, ORION, for the first time in Australia, brings together a decade of cardiovascular hospitalisation and procedure data from all Australian States. Encompassing millions of healthcare records from more than 450 public hospitals and many private facilities, ORION allows our team to assess health outcomes such as deaths, hospital readmissions and procedural complications on a national scale and understand how these outcomes vary among the many healthcare facilities in Australia.

Outcomes for the community

Our vision is a patient-centered, value-driven, and transparent health system that delivers the best possible health outcomes for Australian communities for healthcare dollars spent. We achieve this vision through critical and innovative health services research and training, and by generating research output that stimulates and empowers clinicians and health services to improve patient care.

Intensive Care Medicine Research Group

TQEH DEPARTMENT **INTENSIVE CARE MEDICINE**

The Queen Elizabeth Hospital Department of Intensive Care Medicine participates in and conducts research aimed at improving patient outcomes, answering pragmatic, relevant clinical questions that are of importance to the clinicians who provide patient care and also deliver more efficient and effective treatments in the Intensive Care Unit (ICU) that will not only benefit patients but also decrease costs, preserve resources and increase access to scarce critical care beds.

Four main studies relating to the treatment of patients with sepsis, nutritional support, antibiotic dosing and the effect of red blood cell transfusion in the critically ill were either ongoing or in preparation:

1. Adjunctive coRticosteroid trEatment iN criticAlly ilL patients with septic shock (ADRENAL STUDY) is an NHMRC funded randomised blinded placebo controlled trial of hydrocortisone in 3,800 critically ill patients with septic shock. The purpose of this study is to find out whether adult patients admitted to the ICU with septic shock and who are given hydrocortisone will have an improved rate of survival 90 days later compared to those who received the placebo. The study commenced early in 2013 and TQEH continues to be a participating site. Recruitment is expected to be completed in 2017.

2. The Augmented versus Routine approach to Giving Energy Trial: A randomised controlled trial (TARGET NUTRITION STUDY)

This is a pivotal, 4000-patient, multi-centre, double-blinded, randomised, controlled, parallel-group, phase III clinical trial to determine if the enteral delivery of the full-recommended calorie (energy) requirement to critically ill patients improves 90 day survival benefit when compared to standard practice. Approximately 40 Intensive Care Units throughout Australia and New Zealand will participate in the study. The study commenced recruitment in 2016. Sandra Peake is Chief Investigator & co-chair of management committee. P Williams is a member of the Management Committee and TQEH is a lead site.

The TARGET Nutrition Study is funded by a project grant from the NHMRC and the Health Research Council of New Zealand and follows the completion of a point prevalence study of energy prescription practices conducted in 2010 and a randomised, double-blind, feasibility study conducted in 2013 examining the use of a concentrated enteral nutrition solution to increase calorie delivery to critically ill patients. These data supported the conduct of a large, multicentre, randomized, double-blind trial to determine whether the delivery of more calories by using a concentrated enteral nutrition solution can result in improved survival and functional outcomes for critically ill patients.

3. SaMpling Antibiotics in Renal Replacement Therapy (SMARRT STUDY)

A large NHMRC funded, multicentre trial in critically ill patients who are prescribed renal replacement therapy (RRT) and piperacillin-tazobactam, meropenem, vancomycin, imepenem, and linezolid. The aim of the SMARRT study is to develop optimised antibiotic dosing guidelines for ICU patients with life-threatening infections that account for patient characteristics and the type of RRT they are prescribed. TQEH is the lead participating site in South Australia. Study recruitment was completed in 2016.

4. STandaRd Issue TrANsfusion versuS Fresher red blood cell Use in intenSive care – a randomised controlled trial. (TRANSFUSE STUDY)

A multi-centre, randomised, double blind, controlled trial, testing the effect of the freshest available Red Blood Cells (RBC) compared to standard practice on mortality in 5,000 critically ill patients who require RBC transfusion. This study will determine the effect of transfusing the freshest blood in the inventory compared to transfusing the oldest blood in inventory (current standard of care). This study will provide critically important information that will help blood banks implement the findings. The results of this study will impact transfusion policy worldwide and ultimately could save many thousands of lives each year. TQEH was a participating site; recruitment commenced in 2013 and the final patient was recruited in December 2016.

Outcomes for the community

The research has the potential to deliver 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.

Psychiatry Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF PSYCHIATRY**

The University of Adelaide's Discipline of Psychiatry, led by Professor Bernhard Baune, has developed an integrated research program into regeneration of the human mind and brain, based on 3 pillars of neuroscience, clinical psychiatry and translational psychiatry. Clinical Psychiatry: undertakes high quality longitudinal clinical studies in patients with severe mental illness. *Translational Psychiatry*: integrates basic clinical neuroscience to provide improved diagnostics and develop novel treatments for Psychiatric Disorders.

Key Findings in 2016

We developed a probabilistic model to more accurately predict a first psychotic episode within 1 year of assessment in a sample of patients assessed as ultra-high risk of psychosis. The model combined historical data, clinical assessment and blood fatty acid levels to improve 1 year prediction accuracy from 28% to 72% true positives at 96% specificity. Clark SR, Baune BT, Schubert KO, et al. *Translational Psychiatry 6*, e897. Epub 2016 Sept 20. We formed part of an International consortium, Conligen that performed a Genome-wide Association Studies (GWAS) of 2563 patients treated with lithium. We identified a single locus of four linked SNPs on chromosome 21 associated with 2 Linc RNA genes that met genome-wide significance criteria for association with lithium response. In smaller longitudinal sample, carriers of the response-associated alleles had a significantly lower rate of relapse than carriers of the alternate alleles. Hou L, Clark SR, Schubert KO, Baune BT et al. (2016). *Lancet*; Epub 2016 Jan 21. This work was presented at the Society for Mental Health Research Conference in Sydney.

Outcomes for the community

We have developed novel probabilistic models that combine information from the clinical interview and biological markers such as blood fatty acid levels to greatly improve the accuracy of prediction of a first psychotic episode. If replicated in larger samples this finding has the potential to enhance early intervention strategies for prevention or delay of psychosis. We collaborated to identify new genetic markers of response to lithium in bipolar disorder. In the future, clinicians may be able to use these markers to help select patients most likely to benefit from lithium treatment. We have also contributed to the safe use of the antipsychotic drug clozapine by highlighting the risk of toxicity in patients admitted to hospital with infections. Adverse events in this population can be prevented by monitoring of clozapine levels and dose reduction.

Dr Scott Clark, presenting a talk to University of the Third Age (U3A) participants, Flinders University.

Respiratory Medicine Unit & Clinical Practice Unit

TQEH DEPARTMENT **RESPIRATORY MEDICINE UNIT & CLINICAL PRACTICE UNIT**

The Respiratory Medicine Unit and Clinical Practice Unit have over 70 research projects currently underway. Areas of interest include non-invasive ventilation, respiratory failure, asthma, chronic obstructive pulmonary disease (COPD), tobacco cessation and prevention, Indigenous health, pleural disease, depression, anxiety, thromboembolic disease, sleep apnoea, lung volume reduction procedures, pneumonia and many others.

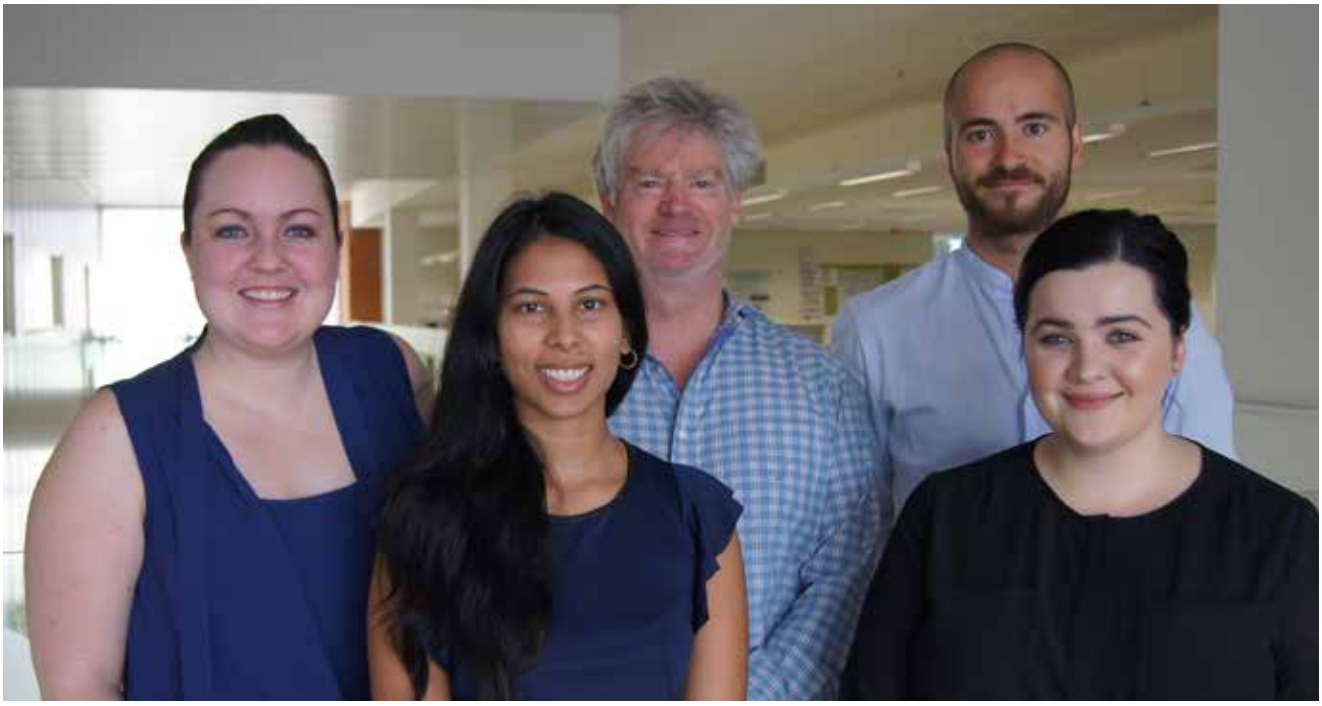
Key Findings in 2016

The first properly powered randomised placebo controlled trial of a pharmacological intervention for the treatment of anxiety in patients with chronic obstructive pulmonary disease (COPD) has been conducted in Respiratory Medicine, with the use of paroxetine. Statistically and clinically significant results were obtained with a substantial improvement in levels of anxiety following four months of paroxetine, compared to those patients on placebo. This is the first study in the world to evaluate a pharmacological therapy for anxiety in this population, which is known to impact the lives of about 1 in 5 patients suffering from COPD.

More than 75% of patients with asthma do not use their inhalers correctly. This leads to sub-optimal disease management, frequent exacerbations and unnecessary hospital admissions. South Australia in particular has the highest rate of hospitalisation and mortality compared to every other state and territory in the country. In an attempt to address these issues we developed a patient information poster displaying images of 22 asthma inhaler devices and overlayed this resource with videos showing how to use each inhaler correctly, using augmented reality technology. This technology uses a free smartphone application that can be used by asthma patients, doctors and other health professionals to show patients correct inhaler technique as well as safety and dosing information. We conducted 21 semi-structured qualitative interviews to evaluate the use of this technology among asthma patients, health professionals and key community stakeholders with promising preliminary results. Delivering inhaler technique education using augmented reality was enjoyed by all participants, particularly around ease of use, and the ability to visually display various inhaler techniques for each device. However, all participants identified some barriers regarding the technology, particularly with use among the elderly.

Outcomes for the community

Improved patient care, reduced hospital admissions for patients, improved quality of life for patients and reduced health care expenditure are expected outcomes of this research.



BHI Researcher Story

JUSTYNA POLLOK
RESPIRATORY MEDICINE UNIT & CLINICAL PRACTICE UNIT

PhD candidate in the Clinical Practice Unit, Justyna Pollok, is dedicated to progressing research in the area of mental health and is eager to address the significant and growing rates of depression in Australia. She is researching treatments for depression in two patient groups at high risk - indigenous Australians and patients suffering from Chronic Obstructive Pulmonary Disease (COPD).

"Depression is a huge disease burden." Justyna said.

"The World Health Organisation says that by 2020 it will be the second leading cause of global disease burden following cardiovascular disease."

"My project is an evaluation of existing evidence for treatment of depression in these two high risk patient groups. Depression in these groups is either not treated or it's under-treated and there's a lack of conclusive evidence for the effectiveness of existing treatments. This is why there is a need to support the current clinical guidelines to inform policy and help these two groups in the future."

To understand the Indigenous community perspective on depression, Justyna will be working closely with an Indigenous Health Clinic, Nunkuwarrin Yunti, conducting surveys, interviews and focus groups with doctors, healthcare workers and patients.

"I'm looking at the Indigenous community because in Australia there is a huge health and life expectancy gap of approximately 10 years between Indigenous and non-Indigenous Australians. This is the biggest gap out of all Indigenous populations around the world. I'll be running focus groups and interviews with doctors and healthcare workers who work with Aboriginal patients and I'll be recruiting community members who are willing to be involved."

"I will also be working closely with Lifeline to determine why only three to five per cent of the Indigenous community use the service and if there is something that needs to change to make them more likely to call up."

Whilst running this aspect of her project, Justyna will also be furthering her research into the growing prevalence of depression in patients with COPD.

"Physical activity is often encouraged in COPD patients to improve their condition, but if a patient is depressed, the physical activity is likely to be reduced. This in turn may worsen their COPD symptoms leading to increased hospitalisation rates and high costs to the healthcare system," she explained.

"This is why research into more effective treatments for depression in COPD is vital."

"If we can find the right way to treat these patients' depression this could in fact be linked with more positive outcomes including better quality of life and a longer life expectancy."

Justyna's supervisors at The Queen Elizabeth Hospital are Professor Brian Smith and Dr Kristin Carson.

PhD student University of Adelaide

Supervisors Professor Brian Smith, Dr Kristin Carson and Professor Julio Licinio (SAHMRI)

Scholarship The Hospital Research Foundation Scholarship / Faculty of Health Sciences Divisional Scholarship, University of Adelaide

Rheumatology Research Group

TQEH DEPARTMENT **RHEUMATOLOGY UNIT**

The Rheumatology Unit strives to augment its clinical rheumatology services with research programs into the epidemiology, causation and complications of rheumatic diseases ("bedside to bench"), coupled with the evaluation of new generations of pharmaceutical agents for the treatment of arthritis (bench to bedside). These rheumatic diseases include Sjögren's syndrome, giant cell arteritis (GCA), polymyalgia rheumatica (PMR), osteoarthritis, systemic sclerosis, rheumatoid arthritis, ankylosing spondylitis, gout, and fibromyalgia.

Key Findings in 2016

Health Observatory/Musculoskeletal Disease (Prof Hill)

Publications from the North West Adelaide Health Study in 2016 included studies on the relationship between joint pain and sleep quality, muscle grip strength and type 2 diabetes, and population predictors of foot pain and gout.

Clinical Trials

Prof Hill is part of an Osteoarthritis Clinical Trials Consortium which has NHMRC funding for three current multicentre Osteoarthritis trials into the role of statins, zolendronic acid, and Krill oil in knee Osteoarthritis, as well as a future trial of methotrexate in hand osteoarthritis. She also has funding for a trial of colchicine in hand osteoarthritis in 2017. She is principal investigator on several industry-sponsored studies of Giant Cell Arteritis and osteoarthritis.

A/Prof Rischmueller leads one of the three largest rheumatology clinical trial units in Australia, and is a principal investigator on clinical trials for patients with a wide range of rheumatological diseases.

Both Dr Whittle and Prof Hill have co-authored important papers relating to ethical approval issues for clinical research. Dr Whittle's paper was published in the prestigious British Medical Journal.

Giant Cell Arteritis (GCA), Polymyalgia Rheumatica (PMR)

A PhD student (Dr Jem Ninan) has enrolled in late 2016 to continue work on The South Australian Giant Cell Arteritis Registry.

Prof Hill co-chaired the Polymyalgia Rheumatica Special Interest Group, OMERACT (Outcome Measures in Rheumatology), Whistler, Canada, May 2016, which determined a core set of outcome measures for use in PMR clinical trials.

Corticosteroid side effects and patient reported outcome measures

Prof Hill, Dr Black (PhD student), in collaboration with Arthritis SA Postdoctoral Fellow Elizabeth Hoon, are developing patient reported outcomes in PMR and GCA. Prof Hill co-chaired the glucocorticoid adverse events Special Interest Group at OMERACT in May 2016, and Dr Black was the associated Fellow.

Outcomes for the community

There is currently no disease-modifying treatment for osteoarthritis. In 2016, we published the important finding that high dose fish oil is not superior to low dose fish oil for the treatment of knee osteoarthritis. A similar trial of Krill oil is currently underway. Other osteoarthritis trials are investigating whether statins, zolendronic acid and colchicine may play a disease-modifying role.

In contrast, corticosteroids are a very effective treatment for diseases such as GCA and PMR, yet result in a high burden of treatment related side effects, particularly in elderly patients. Here we focus on whether other, readily available anti-inflammatory treatments, such as methotrexate and colchicine, may have a steroid-sparing effect. Further, we are developing a patient reported outcome measure for steroid-related side effects.

Our initial findings are that the side effects the clinician is most concerned with are not necessarily those that most concern, or bother, the patient.

BHI Researcher Story

PROFESSOR CATHERINE HILL
RHEUMATOLOGY RESEARCH GROUP

Our research at The Queen Elizabeth Hospital (TQEH) aims to halt the progression of osteoarthritis, a very chronic condition of the joints impacting the lives of many Australians.

In a bid to improve the quality of life for these people, Professor Catherine Hill, Head of Rheumatology at TQEH, is preparing to launch two national studies exploring new treatments for osteoarthritis.

"Osteoarthritis in the knee alone affects 30 per cent of North West Adelaide. This is significant and will only increase as our population ages," said Prof Hill.

While symptomatic treatments are available for osteoarthritis there is no cure for this debilitating disease. The disease occurs when the cartilage between joints begin to break down, leading the patient to experience severe pain and inflammation.

"There are no current treatments for osteoarthritis that have shown to stop the slow progression of the disease. Unfortunately, if it progresses severely enough, the patient is often forced to have a joint replacement," Prof Hill said.

Seeing the pain this debilitating disease causes her patients, Prof Hill is investigating a new treatment that could directly target and slow down the disease progression to stop the necessity for a joint replacement.

"We are collaborating with researchers across Australia to conduct these studies. This way we can do it much quicker and get results out to patients faster," she said.

> "The first study is looking at krill oil as an alternative treatment for osteoarthritis. There has been a lot of talk about this oil in the media lately, but no evidence about whether it can help patients with osteoarthritis."

"We are also investigating the use of zoledronic acid as a treatment for knee osteoarthritis. This drug has previously shown success in treating osteoporosis, a disease that results in the weakening of the bones," Prof Hill said.

"With the knee osteoarthritis particularly, we are looking at things that will reduce a patient's risk of the need for joint replacements.

"When I talk to patients, that's really the key area they are interested in. They want to avoid a joint replacement to have a better quality of life."

Throughout the period of these studies, volunteers will be asked to undergo a knee examination, complete a questionnaire about their level of pain, and undertake a knee MRI at the beginning and end of the study to see how their arthritis is progressing.

"With the krill oil trial, patients will take a tablet twice a day on top of their regular medication. The zolendronic acid would be one tablet weekly for six weeks."

Head of Rheumatology Unit, TQEH

Research Leader Rheumatology Research Group, BHI

Surgical Science Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

The Surgical Science Research Group is primarily interested in clinical research in the surgical setting.

Key Findings in 2016

A major focus of the Surgical Science Research Group is enhancing teaching methods and opportunities in surgery. In 2016, two projects investigated surgical skills at the two ends of the surgical career lifespan.

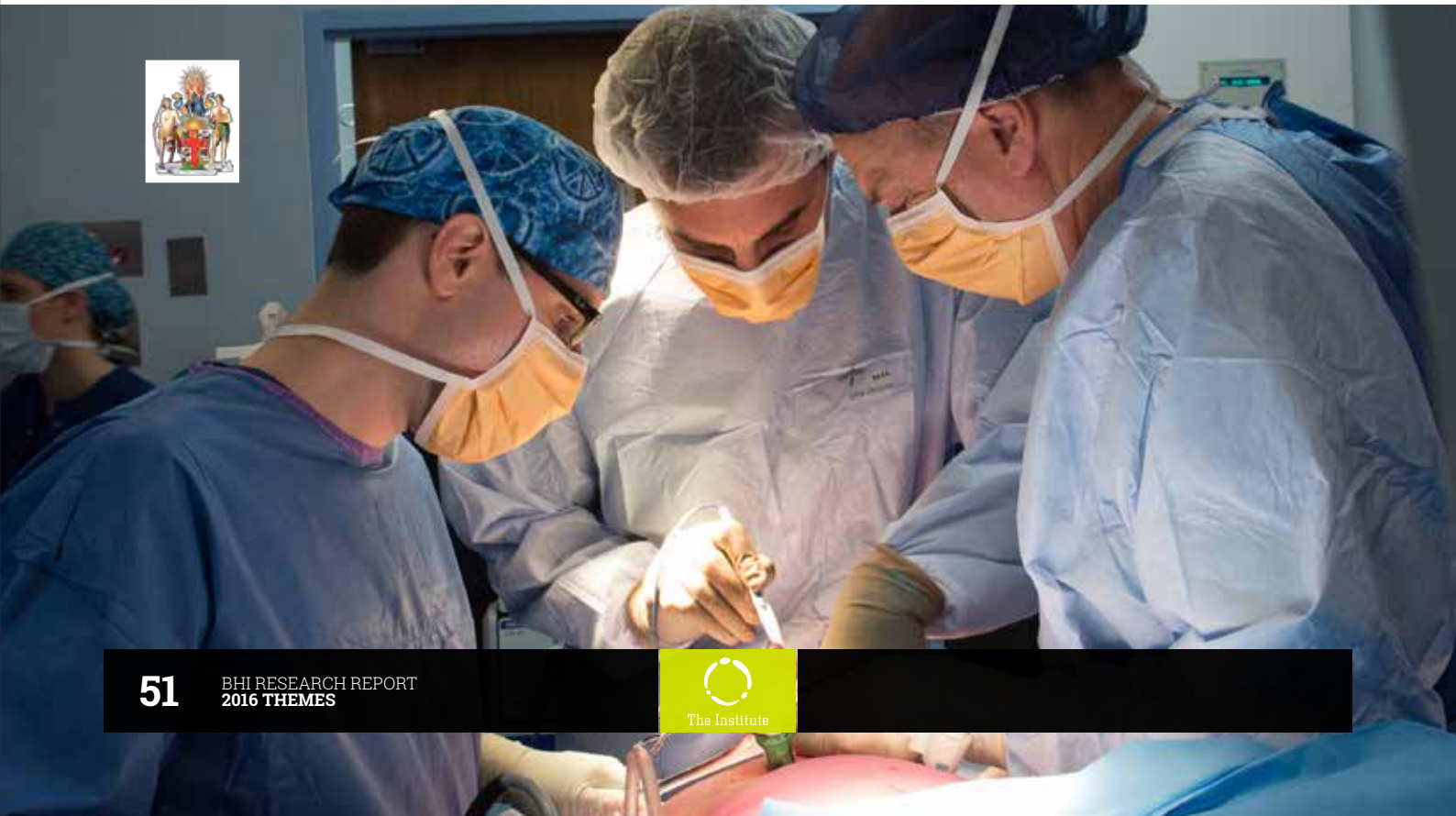
The Laparoscopic Simulation Skills Project is investigating the efficacy and feasibility of a simulated laparoscopic skills course delivered in a Mobile Simulation Unit to junior doctors and surgical trainees at rural and metropolitan hospitals. This project commenced in 2015, and continued in 2016 where 9 sites around South Australia were visited. Data is now being analysed and results published.

At the other end of a surgeon's practice, the project coaching to enhance surgeon's non technical skills is investigating whether surgical coaching is a potentially valuable tool to enhance surgeons' non-technical skills and whether it would be beneficial to develop a surgical coaching program for General Surgeons for the purpose of improving surgeons' ongoing professional development.

In 2016, the Surgical Science Research Group continued its research efforts in the development of an anti-adhesion gel for abdominal surgery. Postoperative intra-abdominal adhesions are a major cause of morbidity and mortality and a heavy burden to health care resources. In 2016 we investigated the effectiveness of novel recombinant human lubricin gel in preventing intra-abdominal adhesion formation in a rat model. A total of 62 male Wistar Albino rats were randomized into 4 groups: (i) control caecal abrasion; (ii) treatment (0.5mg/mL lubricin) caecal abrasion; (iii) control caecal enterotomy and primary closure; and (iv) treatment (0.5mg/mL lubricin) caecal enterotomy and primary closure. Recombinant human lubricin significantly reduced intra-abdominal adhesions in the caecal abrasion group. In 2017, further studies will be completed using higher concentration of lubricin solution to investigate its toxicity and anti-adhesion properties in more significant operations.

Outcomes for the community

The concept of coaching for performance improvement is an established approach in fields such as sports and business; however it has only been much more recently that application of this model of learning to the health care settings has been considered. Once surgeons are fully qualified, they are often left to their own devices and have no further formal training or learning requirements outside their technical skills. Non-technical skills relevant to surgical practice include situation awareness, decision-making, communication, teamwork and leadership. There is strong evidence to indicate that failure in these domains is an important contributor to adverse events in theatre. It is proposed that positive findings in this study may ultimately allow expansion into a coaching program uniquely suited to the surgical environment and culture in Australian practice and will ultimately translate into improved patient outcomes in the future.



DRUG AND VACCINE DEVELOPMENT

Research Groups

Therapeutics Research Centre

Virology Group

Michael Pastore and Dr Amy Holmes, Therapeutics Research Centre.

Therapeutics Research Centre

UNIVERSITY OF SOUTH AUSTRALIA **THERAPEUTICS RESEARCH CENTRE**

Our focus is on mechanistic, pharmacokinetic, clinical and regulatory science studies in pharmaceutical science, therapeutics and toxicology of small molecules, biologicals, nanosystems and cells. Our research covers development of sophisticated analytical methods for drugs and poisons analysis in patients, design and testing of pharmaceutical and nanosystem products, quantifying the disposition and effects of drugs and nanosystems in living cells, physiological pharmacokinetic modelling to improved therapeutics for various conditions including medicine adherence and the impact of de-prescribing.

Key Findings in 2016

We have reported significant findings of the effects on the body and various organs following intentional poisonings (suicide attempts) with several classes of drugs and chemicals (5 publications). We have also studied the skin and its permeation parameters under several different "in use" conditions of various topical application including the development and testing of various formulations /carriers to enhance the penetration of different compounds through or into the skin of compounds, drugs and ion species (10 publications). In the critically ill we have established the effects of obesity on the pharmacokinetics of several antibiotics (2 publications) and studied toxicity of various nanoparticles *in vitro*, in *ex vivo* skin and *in vivo* establishing the effect of shape and also of long term circulation of different nanoparticles (4 publications). We have further developed the use of multiphoton imaging for the study of the anatomy, physiology and pharmacology of the liver (1 publication) and finally established the *in vivo* distribution of mesenchymal stem cells as a potential treatment option (1 publication).

Outcomes for the community

Our work provides insight into the effects of poisons on various organs of the body and potential treatments/ antidotes with effective timelines including strategies for suicide prevention. Everyday people apply various compounds to their skin, desiring protection eg. against UV rays, penetration through the skin to reach the underlying systemic circulation or delivery into the skin. We have added to the knowledge of the barrier actions of the skin allowing us to design formulations to deliver drug to desired levels of penetration facillitating the development of less toxic, more targeted products. Our data on nanoparticle toxicity helps to establish better regulatory and safety measures to keep the community safe. Understanding how antibiotics behave ie. absorption, distribution, metabolism and elimination in the critically ill and how they are altered by confounding disease states eg. obesity allows for better management of treatments in this vulnerable population.

Pharmacist Practitioner Pilot Program Outcomes Report

Program details

The first group of candidates (Chong C-R, Nooney VB, Sinnollareddy M) have now completed the joint clinical pharmacy registrar/PhD research program, with an outstanding 34 peer reviewed publications between them. This collaboration between The Queen Elizabeth Hospital, the University of South Australia and the University of Adelaide was created in May 2010 as a 5 year pilot program. The program is now being refined for the launch of its next phase that will recognise recent changes in SA Health, in the PhD requirements for UniSA and in the emerging career opportunities for future graduates. Additional information regarding the new Pharmacist Practitioner Program will be posted on the University of South Australia and the BHI web sites in due course.

Aim of the Program

This program sought to develop future pharmacy practitioner – researchers (also called clinician scientists) as a first step in a career path toward pharmacy leadership and research positions, including becoming NHMRC Pharmacy Practitioner-Fellows. They will seek to undertake "research which results in the translation of new evidence into improved clinical practice and health policy and which delivers improvements in health and healthcare to Australians".

Program design: The program had two components:

1) Embedded clinical training/practice (0.5 FTE appointments) across clinical pharmacy specialities. The clinical training, experiential and work component provided advanced training in clinical medicine and therapeutics, including mentorship by pharmacists, health scientists, physicians, case discussions, ward rounds and outpatient clinics and personalised pharmacy practice over a two year period.

2) Embedded PhD research within a speciality. Scholarships were provided by TQEH Departments and/or Universities. The research component consisted of a PhD thesis undertaken through embedded laboratory and clinical research in a clinical speciality after completion of a core research program.

Key Mentors: The program was designed by Professor Michael Roberts (Pharmaceutical Science & Therapeutics, University of South Australia), Ms Sharon Goldsworthy (Associate Director of Pharmacy at TQEH, SA Health), Professor Pat Buckley (Dean Of Graduate Studies, University of South Australia) and Professor John Horowitz (Director of Cardiology and Clinical Pharmacology, TQEH and Professor of Cardiology, University of Adelaide). Mr Stefan Kowalski led the Advanced Pharmacy Practice training program, with Professor Horowitz leading the clinical experiential component. Administrative support was provided by Associate Professor Bernie Hughes, Dr Simon Gunn and Dr Lorraine Mackenzie (University of South Australia).

Ms Chong and Mr Nooney's PhD's in cardiovascular medicine, with subspecialties of clinical pharmacy and therapeutics, were mentored by Professor John Horowitz and supported by Associate Professor Betty Sallustio and Dr Yuliy Chirkov. Dr Sinnollareddy's PhD in critical care medicine was mentored by Professor Jason Roberts (NHMRC Pharmacy Practitioner Fellow at University of Queensland, adjunct at UniSA) and supported by Associate Professor Sandy Peake (University of Adelaide) and Professor Michael Roberts.

Awards and Grants

Cher-Rin Chong

1. 2015 – 2016 Nuffield Medical Fellowship, Nuffield Dominions Trust Fund, UK. This fellowship is awarded to two out of three countries (Australia, New Zealand and South Africa) every year on rotation. Winner from Australia in 2015.
2. 2014 Cardiac Society of Australia and New Zealand (CSANZ) Travelling Fellowship to American Heart Association Scientific Sessions at Chicago.
3. 2014 CSANZ Affiliate Clinical Development Award.
4. 2014 National Health and Medical Research Council (NHMRC) Dora Lush Biomedical Research Postgraduate Scholarship (APP1075767).
5. 2013 CSANZ Travelling Fellowship to American Heart Association Scientific Sessions at Dallas, Texas
6. 2013 Professional Development Grant, Young Professional Group, South Australian Department of Health
7. March 2012 - December 2013 School of Medicine (University of Adelaide) and Vascular Diseases and Therapeutics Research Group (Queen Elizabeth Hospital) postgraduate scholarship

8. 2011 – 2013 Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT) student travel grant

Vivek Babu Nooney

1. 2013 De La Lande Award (Travel Grant) in cardiovascular research presented on TQEH Research Day, October 2013.

Mahipal Sinnollareddy

1. 2015 Private practice fund, Canberra Hospital $1,500 – Medicines Management 2015, Society of Hospital Pharmacists of Australia
2. 2013 ASCEPT travel grant for oral presentation and poster presentation $500
3. 2014 Roberts JA, Sinnollareddy MG, Lipman J, Wallis S. Dose optimization of fluconazole in critically ill patients. Royal Brisbane and Women's Hospital foundation 2103-14, $34,400.
4. 2014 University of South Australia Travel grant for Higher Degree Research students $2,000, towards attending International Conference on Antimicrobial Agents and Chemotherapy (ICAAC) 2014.
5. 2013 SA Health Young Professional Group, professional development grant $500 to attend ICAAC.

This program sought to develop future pharmacy practitioner – researchers (also called clinician scientists) as a first step in a career path toward pharmacy leadership and research positions.

Publications from Pharmacist Practitioner Pilot Program (2012-2016):

The combined research results of the 3 graduates from this program (Cher-Rin Chong,Vivek Babu Nooney, Mahipal Sinnollareddy) have contributed to 33 peer reviewed journal articles in top class journals with impact factors ranging from 0.3 to 10.1 and 1 book chapter.

For a full list please visit the Therapeutics Research Centre page on the BHI website.

Virology Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

The primary research interest of the Virology Group is to develop novel vaccines against important diseases for which no vaccine is available. We focussed our efforts on vaccines for hepatitis C virus (HCV) and human immunodeficiency virus (HIV). A major thrust is to design effective DNA vaccines, although as mucosal immunity against HIV is important, we developed unique recombinant human rhinoviruses which encode HIV proteins to elicit pan-mucosal immunity. In response to the need for a Zika virus vaccine, we developed a DNA vaccine to elicit neutralising antibody and experiments to examine efficacy are ongoing.

Key Findings in 2016

We continued our development of novel DNA vaccines and confirmed that our unique cytolytic DNA vaccine is not only effective in a small animal model, but is also effective in large animals, as vaccination of pigs resulted in robust immune responses to HCV. These experiments also confirmed that the increased efficacy of the vaccine is the result of inducing necrosis in vaccine-targeted cells that in turn results in uptake and effective cross presentation of the immunogen by circulating dendritic cells.

We also showed that a novel DNA vaccine which encodes the HIV Tat protein fused to a molecule, IMX313, that results in oligomerisation of Tat, induced high titres of anti-Tat antibodies in mice. These antibodies were shown to neutralise Tat function in a trans-activation assay, and in a collaboration with colleagues in the Burnet Institute, Melbourne, were shown to significantly reduce the HIV titre in cell culture experiments. More recently, we combined this anti-Tat DNA vaccine with a DNA vaccine which encodes another HIV protein, Gag, and with recombinant human rhinoviruses which encode Tat and Gag, and showed that this combination resulted in considerable protection against challenge with EcoHIV, a recombinant HIV that can infect and replicate in mice.

We have also continued our collaboration with colleagues in Melbourne and India to examine the potential of virus-like particles (VLPs) as a vaccine for HCV, and the efficacy of combining the VLPs with recombinant adenovirus vaccines. The studies with the VLPs confirmed that this approach also generated robust immune responses in pigs, and as successful experiments in large animals are necessary before human clinical trials can be contemplated, this suggests that this vaccine regimen may be equally effective in humans.

Outcomes for the community

Despite the availability of effective antivirals for HCV and HIV, there is still a clear need for effective vaccines, particularly as the antivirals are expensive. In the case of HCV, patients who are treated successfully can still be re-infected and in the case of HIV, the viral load is reduced to undetectable levels, although patients are not cured.

In contrast to HCV and HIV which both result in life-long persistent infections, infection with Zika virus results in an acute, self-limited infection, although this often has catastrophic consequences for children born to mothers who are infected during pregnancy. Thus, because most Zika virus infections show few or non-specific symptoms and are therefore undetected, is it unlikely that antiviral agents will either be developed or prescribed in a timely manner. As a result, the development of an effective vaccine is a priority.

Commercialisation

PCT/AU2013/000509 This is now in National Phase in Australia, USA, China, Europe, India.

BHI Researcher Story

KHAMIS TOMUSANGE
VIROLOGY GROUP

the hospital research foundation

"I come from Uganda, a country ravaged by HIV/AIDS. I've had a chance to work in a HIV setting for four years in Africa and came up close to communities devastated by the disease. I've seen people suffer. I've been at the forefront of research in this area," he said.

While undertaking his PhD in Professor Eric Gowans' Virology Group at the BHI, Khamis created and tested two vaccines for HIV, a virus he has personally witnessed tear families apart. He has had two successful research papers as well as a book chapter published and has been invited to speak at two internationally renowned conferences.

"I've seen HIV from so many perspectives – it makes sense that I am now working in this area. I'm determined to generate new information that might be used to design a cost-effective and highly effective vaccine against HIV. I join other scientists in accepting that a vaccine against HIV is probably our best opportunity to eradicate HIV infections and secure an HIV/AIDS-free generation."

> "I see myself as a point of reference in HIV vaccine development and research and obviously an advocate for better HIV care. I want a world free of HIV. I want to help people all over the world."

Going into his PhD with the goal of creating one vaccine, a number of troubleshooting difficulties led to Khamis needing to create another vaccine to generate data for his PhD. Both have now been proven to show promising results. He is very pleased with what he has been able to achieve and has high hopes for his research future.

"It's incredibly hard with the kind of work we do to really achieve what we want in three years of a PhD candidature and I have encountered a number of ups and downs along the way," Khamis said.

"It's been a very hard and interesting process, starting right at the beginning when I needed to create a live genetically modified virus that I wanted to use in my first vaccine – a virus that is so notoriously hard to make that nobody else in the world had ever made an attempt."

"Despite all the difficulties, in the past three years I should say I've managed to generate two vaccines (a live virus vaccine and a DNA vaccine) and the data are actually

very good – although these vaccines show efficacy when used individually, we have noted that a combination of both vaccines provides superior protection."

Khamis finished his PhD in June 2016. His big dreams to make a difference in this area of research have led to a role in the United States.

"For now, the question is how, where and what with? I've been so grateful to receive financial support from THRF during my PhD candidature. It is unfortunate that funding for HIV vaccine research is dwindling globally. Many promising researchers like me face an uncertain future. However, the pursuit to realise my research ambitions remains unrelenting," he said.

PhD student University of Adelaide

Supervisors Professor Eric Gowans and Dr Branka Grubor-Bauk

Scholarship The Hospital Research Foundation International Scholarship

INFLAMMATORY DISEASE

Research Groups

ENT Surgery

Gastroenterology & Hepatology

Zinc and Inflammatory Disease Research Group

Sophia Moraitis, ENT Surgery.

Living a Pain-Free Life Thanks to Research
Martin's Story

the hospital research foundation

For many years Martin Darling suffered from chronic headaches taking a huge toll on his everyday life. The good news is medical research changed his life!

Constantly on antibiotics for what he thought were minor infections, Martin continued to have no relief and knew something needed to change. Sent by his doctor for CT and MRI scans of his brain, facial bones and sinuses it was discovered that Martin suffered from chronic sinus infections.

Referred to ENT specialist Professor Peter-John Wormald in December 2013, Martin underwent Functional Endoscopic Sinus and Septoplasty Surgery at Memorial Hospital in North Adelaide in May 2014 to treat his sinus infections.

"Things dramatically improved after the surgery. My headaches had stopped and I began sleeping a lot better!" Martin said.

Despite the success of the operation, Martin was still suffering from recurring infections and Prof Wormald soon discovered Martin had a staph infection in his sinuses, which explained the constant sinus infections. In January 2016 Prof Wormald was conducting a world-first clinical trial for a promising new treatment for chronic sinusitis and Martin didn't hesitate to participate.

Professor Wormald and his ENT Surgery research team, including PhD candidate Dr Mian Li Ooi and Research Assistant Sophia Moraitis, have been developing the treatment for the clinical trial – an alternative nasal flush treatment.

"Our research is about finding an alternative treatment for patients like Martin who are not responding to the current medical and surgical therapy. We believe there are bacteria that keep growing back inside these patients sinuses after oral antibiotic treatments and these are learning to reproduce, making them a thousand times more resistant to all antibiotics," Dr Ooi explained.

"The bacteria that learns to reproduce is called biofilm, and our aim is to find an alternative treatment that is going to penetrate the biofilm and kill the bacteria to ensure it doesn't come back.

"In this bacteriophage (phage) trial we developed a nasal flush that patients use twice daily, for seven to 14 days, the phage is a type of virus that is very specific to bacteria which will be able to target and essentially hijack the mechanism within the bacteria.

"We are testing to find the optimum dose and the right concentration of phage that we should use, as well as the right duration of treatment."

Martin began phage therapy in January 2016 and used the therapy twice a day for seven days.

> "I have been extremely lucky and haven't experienced any bad side effects from the phage therapy," Martin said.

"This trial absolutely changed my life! During my last visit to Prof Wormald before the trial, I was suffering from nasal polyps (soft jelly-like growths), which Prof Wormald noted have gone, saving the need for further surgery.

"Prof Wormald also believes there is now no sign of staph infection, but it is still early stages. I cannot thank Prof Wormald and the researchers involved enough. They have changed my quality of life for the better and hopefully can continue to do so in the future. I am now headache and pain free, and can enjoy my life with my wife, Val."

ENT Surgery

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

The Department of Otolaryngology, Head and Neck Surgery, is focused mainly on understanding the pathogenesis of chronic rhinosinusitis (CRS), using a multidisciplinary approach, aimed at identifying new diagnostic/prognostic markers and treatment strategies to the benefit of our patients. Research projects cover all aspects of rhinological research from pathophysiological aspects of CRS to the identification and validation of new treatment strategies *in vitro* and *in vivo*, bringing research from bench to bedside.

Key Findings in 2016

We have discovered several new treatments that are effective to fight infections with antibiotic resistant bacteria. Four human clinical trials are currently ongoing; these include the use of a surgical hydrogel with enhanced anti-inflammatory properties. Different new compounds and biological treatments are in different stages of development assessing their safety and efficacy to treat chronic rhinosinusitis in animal models and in humans.

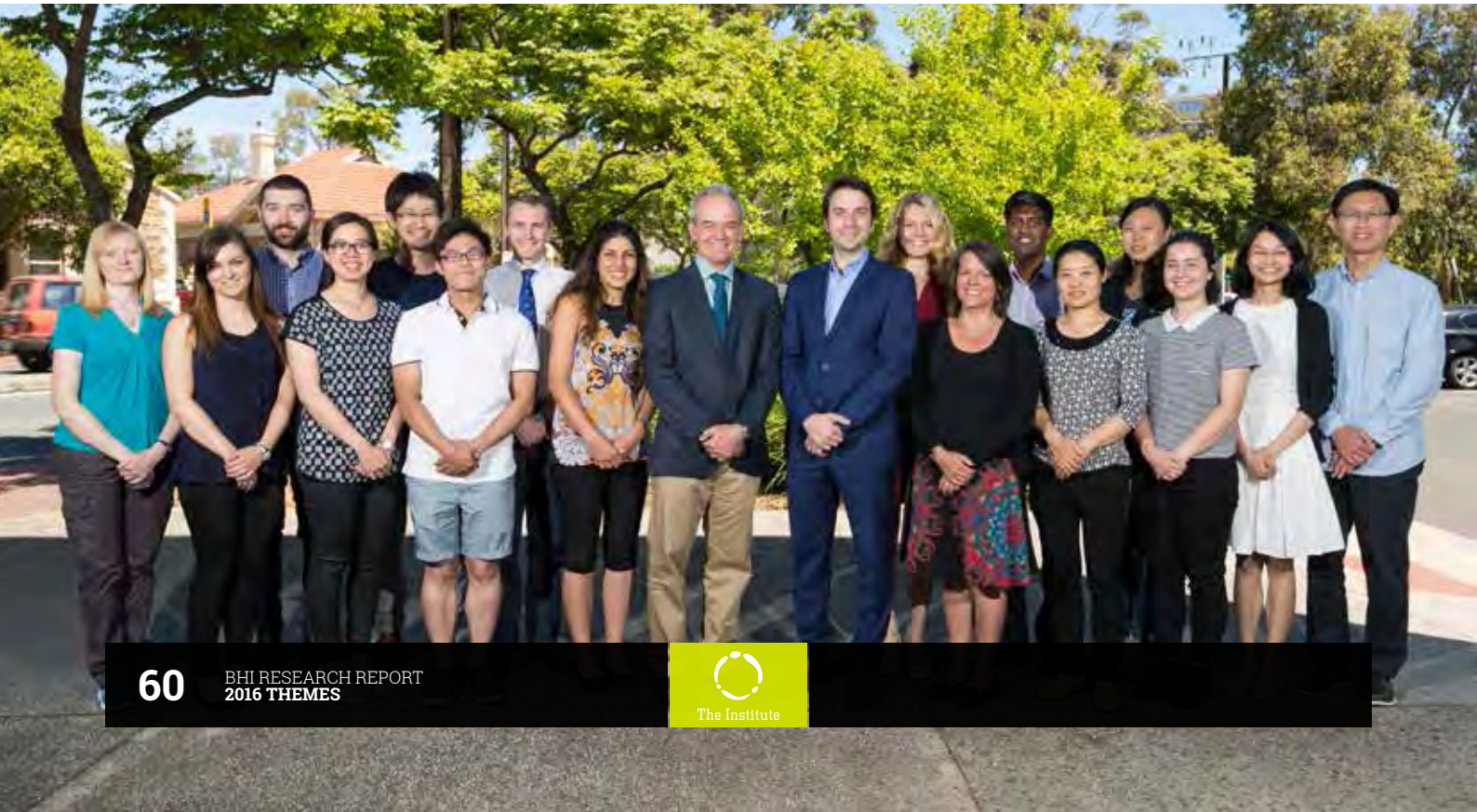
We have discovered that recalcitrant CRS patients show specific immune cell signatures with the organisation of immune cells in lymphoid-like structures within nasal polyps. Research is ongoing to define the microbial and immune triggers that govern the formation of these follicle-like structures. These findings may lead to the discovery of new therapeutic targets for these difficult-to-treat patients.

We have identified the specific fungal species that are associated with sinonasal fungal infections and are in the process of developing specific targeted treatments for these fungi. We have also discovered a new combination treatment that targets the microbial iron homeostasis pathways and that is highly effective for the treatment of different microbial infections and biofilms and at the same time, the treatment has beneficial wound healing properties All these projects are in different stages of preclinical and clinical development.

Outcomes for the community

Our research is translational, aimed at the discovery of new treatments for CRS. Hence, our research findings are bringing direct benefit to the community by developing safe and effective new treatments for CRS. Currently, 4 human clinical trials are ongoing to test the safety and efficacy of these novel treatments in CRS patients.

Our department is also actively involved in direct interactions with the community with the organisation of research forums and presentations accessible to all. One such example is “The Pint of Science Festival”, a festival over 3 days organized by Katharina Richter, a PhD student in our department. The festival brought our research to the public by scientific lectures in local pubs. The department was also engaging with the public via invited articles published in the University of Adelaide alumni magazine Lumen (worldwide readership), the Australasian Science magazine (readership in Australia, New Zealand and Asia) and ENT Today (readership in the USA).



BHI Researcher Story

DIJANA MILJKOVIC
ENT SURGERY

the hospital research foundation

Working in the Ear, Nose and Throat (ENT) Surgery group, Dijana has been investigating the immune cells of patients living with Chronic Rhinosinusitis (CRS), a disease affecting one in five Australians.

"I was always interested in science and biology. After completing a Bachelor of Medical Pharmaceutical Biotechnology I became a research assistant in the ENT Surgery group here and then I decided to take my research further by completing a PhD," Dijana said.

"Having interaction with patients with CRS, I saw how bad their disease was and how much it was having a negative impact on their quality of life. I then wondered if these patients had differences in their immune cells compared to healthy patients who don't have the disease, so this formed the topic of my PhD."

"I've been lucky to make a really exciting discovery through this research, finding a specific immune cell that appears to be more prevalent in patients with severe CRS compared to patients who don't have the disease at all."

With this world first discovery under her belt, Dijana is now attempting to investigate what this cell does, hopeful it will lead to better treatment options in the future.

"It's been really exciting making this finding and now we are continuing to gather patient tissue donations and starting to look closely at this cell, working out what it does so we can understand it more," she said.

"It's so great to have so many patients from The Queen Elizabeth Hospital willing to donate their tissue when having surgery to go towards research."

Dijana is very thankful for the excellent facilities at the BHI.

"The BHI is great, it has modern facilities and it's fantastic to be able to work alongside so many other types of research groups," she said.

"Working with Professor Peter-John Wormald is also amazing. He is at the forefront of research and ENT surgery and really leads by example – it's great to have someone like him in Adelaide."

Upon completion of her PhD early in 2017, Dijana will be continuing work in this area, ensuring her research has the best chance at getting to the stage where it can help everyday people.

"I'd love to continue my work through to the clinical trial stage, where we can use my findings to develop a treatment that really helps to alleviate all the trouble CRS causes so many people."

PhD student University of Adelaide

Supervisor Professor PJ Wormald

Scholarship Faculty of Health Sciences Divisional Scholarship, University of Adelaide

Gastroenterology and Hepatology

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

Our research focused on the roll of the microbiome in inflammatory bowel disese and other gut disorders and manipulating the microbiome for therapeutic effect. We have conducted a randomised controlled trial of Faecal microbiota transplant (FMT) for the treatment of active ulcerative colitis. We are looking at the therapeutic efficacy of FMT as well changes to the microbiome and mucosal immune system that are induced following FMT. We have also established a trial of FMT for multi-resistant bacterial infection.

Key Findings in 2016

We have completed our randomised, double-blind, placebo-controlled trial of FMT in adults with active Ulcerative Colitis (UC). We found that FMT was an effective therapy at indicing remission in UC. The primary outcome was steroid-free remission of UC as defined by a total Mayo score of ≤ 2 with an endoscopic Mayo score of ≤ 1 at week 8. Secondary end points included clinical response (≥3 point reduction in Mayo score), clinical remission (Simple Clinical Colitis Activity Index ≤ 2), endoscopic remission (Mayo ≤ 1) and safety. A mandatory taper of oral corticosteroids was performed; those patients unable to cease oral corticosteroids were considered FMT non-responders.

73 patients with UC were randomised; 38 received donor FMT and 35 received autologous FMT. In the intention to treat (ITT) analysis, 12/38 (32%) patients who received pooled donor FMT achieved the primary end point of steroid-free remission, as compared to 3/35 (9%) who received autologous FMT (p=0.02). Clinical response and clinical remission rates were 55% vs 20% (p<0.01) and 50% vs 17% (p<0.01) respectively. Steroid-free endoscopic remission occurred in 55% vs 17% (p<0.01). UC disease extent and disease duration were not significantly associated with achieving the primary endpoint in the donor FMT group. The frequency of serious adverse events (SAE) was not different between the donor and autologous FMT groups; 3 SAE's were recorded in the donor FMT group (1 worsening colitis, 1 Clostridium difficile colitis requiring colectomy, and 1 pneumonia) and 2 SAE's in the autologous FMT group (both worsening colitis).

We concluded that, in active UC, one week of induction therapy with anaerobically prepared pooled donor FMT is more effective than placebo (autologous FMT) in inducing both clinical and endoscopic remission at 8 weeks.

Outcomes for the community

Our study demonstrates that a short treatment period of FMT can induce remission in patients with active ulcerative colitis. This provides evidence that this new therapy is both effective and practical in terms of delivery for patients. It is a therapeutic option for patients that does not result in immune suppression that many current therapies do. We have also established a stool bank that is also used to treat SA patients with recurrent clostridium difficile infection.

Zinc and Inflammatory Disease Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Chronic Obstructive Pulmonary Disease (COPD) is an incurable, cigarette-smoke related, chronic inflammatory airways disease that is predicted to be the 3rd leading cause of death in the world by 2020. There are no treatments that prevent the disease progression, and identifying new therapeutic targets is a priority for COPD research. We are investigating therapies aimed at reducing the accumulation of apoptotic material in the airways, and the consequent secondary necrosis and potentiation of the inflammatory milieu.

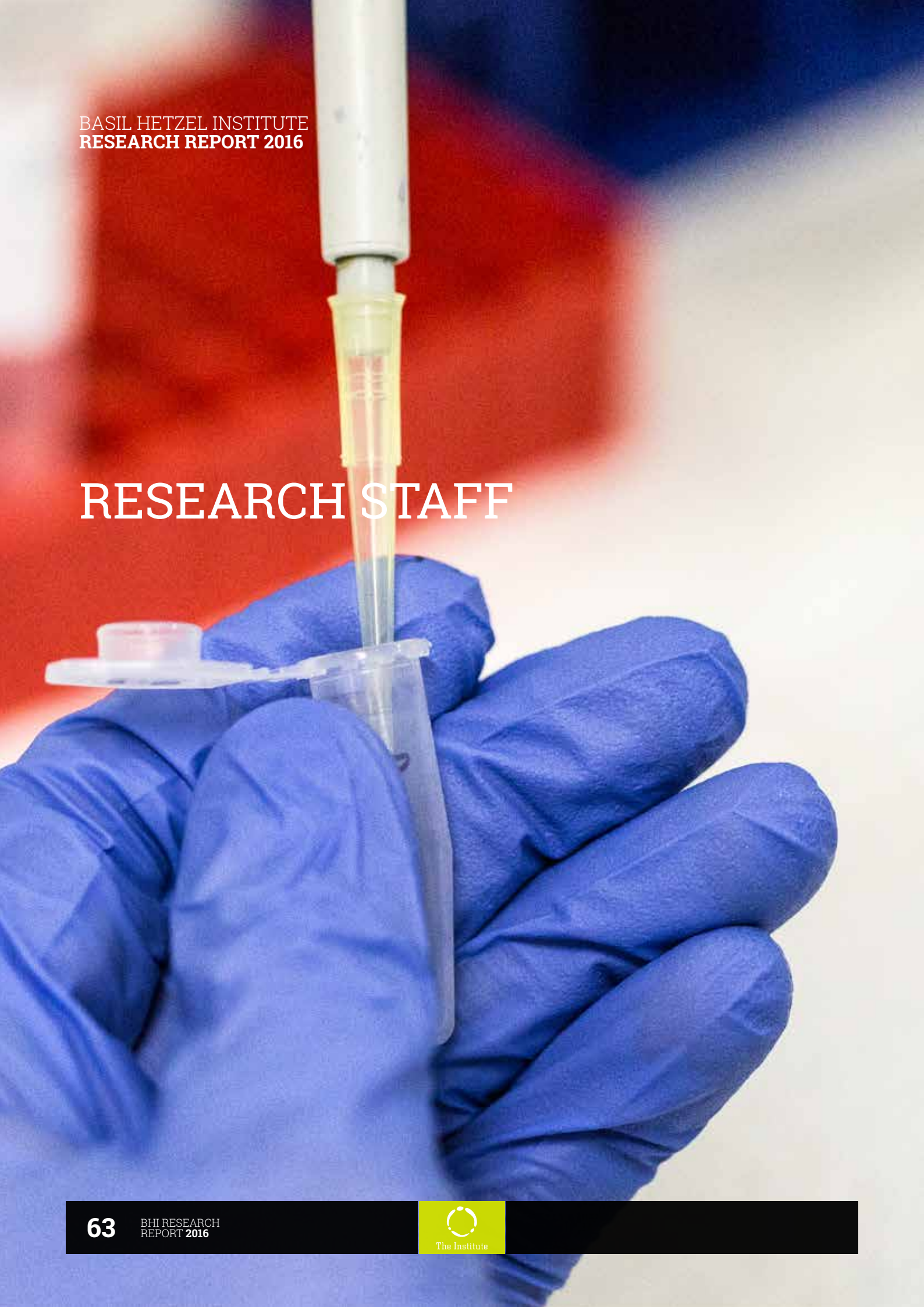
Key Findings in 2016

We are the first group to have shown disturbances of lung zinc homeostatic mechanisms to be a critical factor in both asthma and emphysema. Cigarette smoke, which causes and exacerbates lung inflammatory disease, resulted in a 2.5-fold decline in zinc levels in the lung bronchioles. This, in turn, caused the bronchial epithelial cells and lung macrophages to undergo excessive autophagy, a process which normally helps our cells to repair damage but which, in excess, leads to cell death and inflammation. Zinc supplements, *in vitro*, protected lung cells against this cigarette smoke toxicity.

Outcomes for the community

Our studies have allowed us to obtain the first measures of how much zinc is present in the fluids of our lungs. Low levels of lung zinc were found in patients with asthma and emphysema, especially in current smokers. More normal levels of zinc were found in emphysema patients who had given up smoking. This adds to other evidence that cessation of smoking can benefit patients with already established lung disease. We are now investigating novel therapies (including zinc-based strategies) that can reduce autophagy in diseased lungs. The project is funded by NHMRC.

RESEARCH STAFF



Research Staff

listed by Department/Unit

AGED AND EXTENDED CARE SERVICES, TQEH

Professor in Geriatric Medicine & Clinical Director

R Visvanathan PhD GradCertEd (Higher Ed.) FRACP FANZSGM MBBS ATCL

Clinical Associate Professor in Geriatric Medicine & Deputy Director

S Yu PhD FRACP MBBS LTCL (Deputy Director)

Clinical Senior Lecturers & Consultant Geriatricians or Physicians

J Ng FRACP MBBS (Head of General Medicine)

K Tham Dip PalMed FRACP MBBS

F Cai FRACP MBBS

P Shibu FRACP MD CCT UK MRCP MBBS

S Nair MPhil FRACP MBBS MRCP Fellowship Geriatric Medicine (Malaysia)

K Parasivam FRACP MBBS

F Ibrahim FRACP CCT UK MRCP MBBCh LRCPSI

Academic Staff

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GTRAC Centre Academic (Psychologist)
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GTRAC Nurse Practitioner
D Preston RNPract

Research Nurse
C Smyth RN

Administrative Staff

CRE Frailty Manager
L Baker BSc(Hons) Grad Dip Bus Administration (GDip BA)

GTRAC Administration Support Officer
N Wiltshire

Postdoctoral Fellow

J Dollard PhD Grad Cert Public Health, BA (Honours in Pyschology)

Specialist Registrars in Geriatric Medicine

M Kee MBBS- Anemia in the Elderly

K Khow MBBS- Hip Fracture in the Elderly

S Nawi MBBS- Screening for Sarcopenia in the Community

T Jayaweera MBBS- Screening for Sarcopenia in Residential Care

H Arunasalam MBBS- Sarcopenia and Lung Function

International Observers

N Makwana MBBS MD (PSM)

S Ahip MBBS MMed in Family Medicine

P Pithadia MBBS MD

DEPARTMENT OF ANAESTHESIA, TQEH

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CARDIOLOGY UNIT, TQEH

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D Barrow RN Grad Cert (Diab Ed)
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R Wilson RN

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C Roberts BSc MND

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S Kour
V Watson
J Cocks

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R Kimber MBBS FRACP
M Lorenzetti MBBS FRACP
G Nind MBBS FRACP
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Ma Teo MBBS FRACP

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S Yeend MClinT(R)

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BREAST BIOLOGY AND CANCER UNIT

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D Clayton BSc MBBS FRCA FANZCA FCICM
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P Williams RN BN IntC

Research Project Officer

C Kurenda

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Visiting Research Fellow

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B Hoang BSc(Biomedical Science) BSc(Hons)

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JA Greutner Cert IV Bus Admin (until Dec 2016)

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R Richards (until Oct 2016)

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K McKinna

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Epilepsy Nurse Practitioner

S Horn NP MNSc

Clinical Research Trials

PCK Cheung RN

S Casey RN BN

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P Vanderzon BSc (until May 2016)
C Baronian BHlthSc (until March 2016)
A Bonnici BHlthSc
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M Slawinski
B Hutchens

SURGERY – ENT SURGERY

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D Miljkovic BMedPharmBiotechnology

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M Suzuki PhD
G Zhang BA MA PhD

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S Hughes RN

Secretary
L Martin

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I Zinonos PhD

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V Panagopoulos PhD

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M Boult BSc GIDM

Data Manager
R Battersby BSc GradCert Drug Dev (UNSW)

SA-PROSTATE CANCER CLINICAL OUTCOMES COLLABORATIVE

Chair
K Moretti MBBS FRACS(Urol)

THERAPEUTICS RESEARCH CENTRE, UNIVERSITY OF SOUTH AUSTRALIA

Professor
MS Roberts BPharm PhD DSc MBA FACP

Centre Manager
L Mackenzie BSc PhD

Postdoctoral Researchers/Research Associates
A Holmes BSc(Hons) PhD
H Studier BSc MSc PhD (until July 2016)
T Robertson BSc PhD
J Wood BPharm, PhD (Jan - March 2016)
A Abdalla BPharm PhD

Technical Officer
K Burns BSc

Visiting Academics
A Alinaghi BPharm PhD
M Nakhjavani BPharm PhD


NO ADMITTANCE
DURING

RESEARCH STUDENTS

Research Students

Higher Degrees Awarded - PhD/Masters

G Mahadavan MBBS FRACP
Supervisors: Frenneaux MP, Horowitz JD
The pathophysiology and potential therapeutics of diastolic heart failure
Cardiovascular Pathophysiology and Therapeutics Group
University of Adelaide, PhD awarded 19/05/2016

N Hurst MBBS FRACP
Supervisors: Horowitz JD, Chirkov Y, McRae S
The effect of the nitric oxide and prostacyclin pathways on platelet aggregation
Cardiovascular Pathophysiology and Therapeutics Group
University of Adelaide, PhD awarded 12/02/2016

K Kuan MBBS
Supervisors: Maddern G, Trochsler M, Chung W
Factors influencing transplant surgery: exvivo porcine pancreas normothermic perfusion
Surgical Science Research Group
University of Adelaide, MResearch awarded 25/8/2016

H Jagdale BSc
Supervisors: Gowans EJ, Grubor-Bauk B, Wijesundara D
Production and characterisation of recombinant porcine adenoviruses
Virology Group
University of Adelaide, MResearch awarded 25/5/2016

K Tomusange BSc(Hons) MSc
Supervisors: Gowans EJ, Grubor-Bauk B, Wijesundara D
Systemic and mucosal immunity to HIV
Virology Group
University of Adelaide, PhD awarded 14/10/2016

V Panagopoulos BSc (Hons)
Supervisors: Evdokiou A, De Nichilo M
A novel role for peroxidases in breast cancer development progression and metastasis
Breast Cancer Research Unit
University of Adelaide, PhD awarded 2/11/2016

M Sinnollareddy BPharm
Supervisors: Roberts MS, Roberts JA
Dose optimisation of antimicrobial agents: Pharmacokinetic and pharmacodynamic approach
Therapuetics Research Centre
University of South Australia, PhD awarded 18/08/2016

M Chapman BSc
Supervisors: Horowitz JD, Nguyen TH
Pathogenisis of valvular and aortic degenerative changes in association with bicuspid aortic valve.
Cardiovascular Pathophysiology and Therapeutics Group
University of Adelaide, MResearch awarded 9/11/2016

T Pasupathy BSc(Hons)
Supervisors: Beltrame JF, Tavella R
Novel clinical in-sights into myocardial infarction
Translational Vascular Function Research Collaborative
University of Adelaide, PhD awarded 12/12/2016

Current PhD Students

AGED AND EXTENDED CARE SERVICES, TQEH

A Daria Jadczak Dip Sports Science
Supervisor: Visvanathan R, Luscombe N
Exercise in Older People
Adelaide G-TRAC Centre

WMASB Wickramasinghe BSc (Hon)
Supervisors: Ranasinghe D, Visvanathan R
Highly Accurate Human Activity Classifier to Mitigate the Risk of Falls in Elderly Based on Wearable RFID Technology
Adelaide G-TRAC Centre

K Sok Fun Khow MBBS
Supervisors: Visvanathan R, Yu S
Fractures and Outcomes In Older People
Adelaide G-TRAC Centre

R Ambagtsheer
Supervisors: Beilby J, Yu S.
Screening for Frailty in General Practice
Adelaide G-TRAC Centre

A Datta Gupta FAFRM
Supervisors: Visvanathan R, Koblar S, Cameron I
Lower Limb Spasticity
Adelaide G-TRAC Centre

B Martins BMed (University of San Paolo, Brazil)-specialisation in Geriatric and Internal Medicine
Supervisors: Visvanathan R, Barrie H
Physical Activity and Frailty: Exploring Cross-cultural and Neighbourhood Influences
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CARDIOLOGY UNIT, TQEH

C Ajaero MBBS FMCP FRACP
Supervisors: Horowitz JD, Arstall M, Chan A, McGavigan
A Vascular "remodelling" from a physiological and biochemical point of view as a potential source of variable improvement post CRT insertion
Cardiovascular Pathophysiology and Therapeutics Group

C-R Chong BPharm
Supervisors: Horowitz JD, Sallustio B
A pharmacological approach towards myocardial protection: new perspectives in acute and chronic cardiac disease
Cardiovascular Pathophysiology and Therapeutics Group

V Goh MBBS FRACP
Supervisors: Horowitz JD, Hii J
Reverse genesis: does atrial fibrillation perpetuate dyshomeopathic origins?
Cardiovascular Pathophysiology and Therapeutics Group

H Imam MedBiosc Bpharm
Supervisors: Horowitz JD, Chirkov Y
Post-receptor signalling mechanisms and platelet responsiveness to ADP receptor antagonists
Cardiovascular Pathophysiology and Therapeutics Group

G Ong MBChB
Supervisors: Horowitz JD, Chirkov Y
The natural history and treatment of Tako-Tsubo Cardiomyopathy
Cardiovascular Pathophysiology and Therapeutics Group

R Shah MBBS FRACP
Supervisors: Horowitz JD, Nguyen TH
Assessment of progression of bicuspid aortic valve dysfunction and aortopathy: correlation with inflammatory activation and vascular endothelial function
Cardiovascular Pathophysiology and Therapeutics Group

S Surikow BSc(Hon)
Supervisors: Horowitz JD, Nguyen TH, Chirkov Y
The role of oxidative and nitrosative stress in the pathogenesis of Tako-Tsubo Cardiomyopathy-Tsubo Cardiomyopathy
Cardiovascular Pathophysiology and Therapeutics Group

CLINICAL PHARMACOLOGY UNIT, TQEH

Z MD Dom BHSc(Hons)
Supervisors: Sallustio BC, Somogyi AA, Coller JK
Pharmacogenetics of renal transplantation
Clinical Pharmacology Research Group

R Hu
Supervisors: Somogyi AA, Sallustio BC, Coller JK
Pharmacogenomics research on tacrolimus and mycophenolate mofetil among patients receiving kidney transplantation
Clinical Pharmacology Research Group

COMBINED DEPARTMENTS OF HAEMATOLOGY AND MEDICAL ONCOLOGY, TQEH

Y Tomita MBBS FRACP MSc
Supervisors: Hardingham J, Price T, Yool A
Pharmacological Blocking of Aquaporin 1 to Restrict Tumour Angiogenesis and Metastasis in Pre-Clinical Models of Human Colon Cancer
Colorectal Cancer Research Group

KZY Maung BSc (Hons)
Supervisors: Gray JX, Bray SC, Arceri CD, D'Andrea R
AML Gene Discovery Project
Acute Myeloid Leukaemia Research Group

Breast Biology and Cancer Unit

M Archer BSc (Biomedical science) BHSc (Hons)
Supervisors: Ingman W, Evdokiou A, Dasari P
Immune modulation of breast density and cancer risk
Breast Biology and Cancer Unit

V Atashgaran BSc(Medical Bioscience), MBiotec(Biomedical)
Supervisors: Ingman W, Dasari P, Barry S
Hormonal regulation of immune microenvironment in the breast: implications for breast cancer susceptibility
Breast Biology and Cancer Unit

S Bernhardt BSc (Biomedical) BHSc (Hons)
Supervisor: Ingman W
Hormonal modulation of prognostic and predictive biomarkers in premenopausal breast cancer
Breast Biology and Cancer Unit

J Wrin BSc
Supervisor: Ingman W
The role of Ctq and macrophages in breast carcinogenesis and cancer progression
Breast Biology and Cancer Unit

DEPARTMENT OF GASTROENTEROLOGY AND HEPATOLOGY, TQEH

S Costello MBBS
Supervisors: Roberts-Thomson I, Hughes P, Conlon M, Andrews J
The role of faecal transplantation in the treatment of ulcerative colitis
Dept of Gastroenterology & Hepatology

Z Dudhwala BHSc(Hons)
Supervisors: Cummins A, Howarth G, Gibson R
Promotion of intestinal adaption by induction of crypt fission therough the Wnt-B-catenin pathway
Gastrointestinal Health and Disease

DISCIPLINE OF MEDICINE, UNIVERSITY OF ADELAIDE

C McNally MPhil (Dent) GCHP Assoc DDH
Supervisors: Adams R, Visvanathan R, Liberali S
Oral Health, General Health and Operative Risk in Hospitalised Older Patients
The Health Observatory

D Di Fiore MBBS MD FRACP
Supervisors: Beltrame JF, Zeitz C
Vasospastic Angina: Clinical considerations in coronary artery spasm
Translational Vascular Function Research Collaborative

V Lamin BSc(Hons) MSc MPhil
Supervisors: Beltrame JF, Wilson D
Mechanisms of serotonergic and α1-adrenergic vasoconstriction in the internal mammary artery of male and female patients
Translational Vascular Function Research Collaborative

AR Sheikh MBBS MD FRACP
Supervisors: Beltrame JF, Zeitz C, Rajendran S
Coronary and peripheral haemodynamic studies of patients with angina and normal coronary arteries
Translational Vascular Function Research Collaborative

G Tucker
Supervisors: Adams R, Wilson D, Wittert G
Statistical and methodological aspects of assessment of health-related quality of life
The Health Observatory

R Dhillon MBBS
Supervisors: Adams R, Bidargaddi, Schrader GN
The longitudinal impact of psychiatric morbidity on physical health and service use
The Health Observatory

C Labrosciano BSc BHSc(Hons)
Supervisors: Beltrame J, Ranasinghe I, Tavella R
Adverse patient outcomes following pacemaker and implanted converter defibrillator implantations in Australia
Translational Vascular Function Research Collaborative & Health Performance and Policy Research Unit

DISCIPLINE OF SURGERY, UNIVERSITY OF ADELAIDE

ENT Surgery

T Ha MBBS
Supervisor: Wormald PJ
The effects of Chitosan gel on wound healing following Endoscopic Sinus Surgery and Modified Endoscopic Lothrop Procedure
ENT Surgery

D Miljkovic BMedPharmBiotechnology
Supervisors: Wormald PJ, Vreugde S, Psaltis A
Characterization of the immune compartment in Chronic Rhinosinusitis
ENT Surgery

K Richter MSc Pharmacy
Supervisors: Wormald PJ, Vreugde S, Prestidge C
Staphylococcus aureus biofilm molecular ultrastructure and its breakdown upon challenge with antibacterial compounds
ENT Surgery

C Chan MBBS
Supervisors: Wormald PJ, Psaltis A, Vreugde S
Bacterial interference as a novel treatment against Staphylococcus aureus in chronic rhinosinusitis
ENT Surgery

J Murphy MBBS
Supervisors: Wormald PJ, Vreugde S, Psaltis A
The mucosal barrier in chronic rhinosinusitis
ENT Surgery

Ooi, Mian Li MBBS
Supervisors: Wormald PJ, Psaltis A, Vreugde S
The use of chitodex gel as slow-release drug delivery system to improve wound healing after sinus surgery in chronic rhinosinusitis
ENT Surgery

H Lau MSc
Supervisors: Vreudge S, Lester S, Rischmueller M
Autoimmunity in salivary gland and upper airway mucosal surfaces
ENT Surgery & Rheumaology Research Group

S Fong MBBS DipChildHlth
Supervisor: Wormald PJ
Surfactant-based carriers incorporating corticosteroids for the treatment of Chronic Rhinosinusitis
ENT Surgery

S Paramasivan MBBS BMedSc(Hons)
Supervisors: Wormald PJ, Vreugde S
Microbe-microbe and microbe-host interactions in Chronic Rhinosinusitis
ENT Surgery

A Jukes MBBS
Supervisors: Wormald PJ, Vreugde S
Haemorrhage control in skull base surgery
ENT Surgery

L Cherian MBBS
Supervisors: Wormald PJ, Vreugde S
The effect of Topical and Oral corticosteroids on the sinonasal microbiome
ENT Surgery

Breast Cancer Research Unit

V Liapis BAgSc
Supervisors: Evdokiou A, De Nichilo M, Zinonos I
Targeting cancer in bone with hypoxia activating pro-drugs
Breast Cancer Research Unit

A Zysk BSc (Hons)
Supervisors: Evdokiou A, De Nichilo M
Targeting bone metastases using adoptive therapy of gamma delta T-cells
Breast Cancer Research Unit

C Difelice BSc (Hons)
Supervisors: Evdokiou A, De Nichilo M, Zinonos I
Fibrosis, cancer and the pre-metastatic niche: implications for peroxidases
Breast Cancer Research Unit

A Shoubridge BSc (Hons)
Supervisors: Evdokiou A, De Nichilo M, Anderson P
The role of peroxidase enzymes during bone repair and regeneration
Breast Cancer Research Unit

N Pantarat BSc (Biology) MSc (Biotech)
Supervisors: Evdokiou A, Zinonos I, Hauben E
Hydrogel-based delivery of cancer fighting T cells for the localised treatment of completely resected or inoperable tumours
Breast Cancer Research Unit

Solid Cancer Regulation Group

HM Palethorpe BMedPharmSci(Hons) BLabMed DipBiomedSci
Supervisors: Drew P, Smith E
The regulation of tumour cell behaviour by cancer associated fibroblasts
Solid Cancer Regulation Group

J Ferdoush
Supervisors: Drew P, Gustafsson J
Characterisation of human cancers by molecular imaging mass spectrometry
Solid Cancer Regulation Group

Surgical Science Research Group

J Smith PhD
Supervisors: Maddern G, Hewett P
Surgery, ethics and climate change
Surgical Science Research Group

M Wee MBBS
Supervisors: Maddern G, Smith E, Drew P
Pathways and treatment in liver ischaemia-reperfusion injury
Surgical Science Research Group

Virology Group

M Masavuli BSc(Hons)
Supervisors: Gowans EJ, Grubor-Bauk B, Wijesundara D
DNA vaccines to induce neutralising antibody to HCV
Virology Group

Z Mekonnen BSc(Hons)
Supervisors: Gowans EJ, Grubor-Bauk B, Wijesundara D
A novel large animal challenge for HCV
Virology Group

J Gummow BSc(Hons)
Supervisors: Gowans EJ, Grubor-Bauk B
A novel DNA vaccine for hepatitis C virus
Virology Group

NEUROLOGY UNIT, TQEH

A Nagpal MBBS MD FRCA (UK)
Supervisors: Koblar S, Hamilton-Bruce A
TOOTH Stroke Study – Impact analysis of an early phase clinical stem cell study
Stroke Research Programme

J Winderlich BSc(Health Sci)(Hons)
Supervisors: Koblar S, Kremer K
Investigations into the mechanisms of action of stem cell therapy for stroke
Stroke Research Programme

M Djukic BHSc(Hons) GradCertBus(Acc) DPT (UniMelb)
Supervisors: Koblar S, Chataway T, Hamilton-Bruce A, Lewis M
Proteomic and genomic investigations in transient ischaemic attack
Stroke Research Programme

VJ Krawczyk BSocSc(Hum Serv) BA(Hons) GDipArtHist
Supervisors: Caluya G, Hamilton-Bruce A
Human-animal relations in organisations: identifying discourses for respectful engagements with animals
Stroke Research Programme

RESPIRATORY MEDICINE UNIT & CLINICAL PRACTICE UNIT, TQEH

Z Usmani MBBS FRACP
Supervisors: Smith B, Esterman AJ
Treatment of anxiety in patients with chronic obstructive pulmonary disease
Respiratory Medicine Unit & Clinical Practice Unit

H Jayasinghe BSc (BioS) BHlthSc(Hons)
Supervisors: Smith B, Clifton V, Carson KV
Advancing the understanding of tobacco use, prevention, and cessation and related illnesses caused by smoking during pregnancy in Indigenous populations
Respiratory Medicine Unit & Clinical Practice Unit

Z Kopsaftis BMedRadSc(NucMed) BHlthSc(Hons)
Supervisors: Smith B, Phillips P, Carson KV
A multimodal evidence based clinical guideline for multi-disciplinary use in the management of patients with COPD
Respiratory Medicine Unit & Clinical Practice Unit

J Pollok BEd Grad DipPsych BHlthSc(Hons)
Supervisors: Smith B, Licinio G, Carson KV
Evaluation of existing evidence for the treatment of depression in vulnerable populations
Respiratory Medicine Unit & Clinical Practice Unit

RHEUMATOLOGY UNIT, TQEH

R Black MBBS Associate Rheumatologist
Supervisors: Hill C, Dixon WG, Cleland L
The epidemiology of glucocorticoid prescribing and ophthalmological side effects in patients with rheumatoid arthritis
Rheumatology Research Group

THERAPEUTICS RESEARCH CENTRE, UNIVERSITY OF SOUTH AUSTRALIA

M Pastore BPharm MPharm
Supervisors: Roberts MS, Mackenzie L
Penetration and distribution of fluorescent model compounds in normal and diseased skin
Therapeutics Research Centre

A Macedo BPharm
Supervisors: Roberts MS, Mackenzie L, Holmes A
The development and characterisation of novel nanosystems for transdermal delivery of actives
Therapeutics Research Centre

L Gebremichael MSc (Pharmacology)
Supervisors: Roberts MS, Mackenzie L
Pharmacokinetics of drugs and drug response in at risk patients
Therapeutics Research Centre

V Nooney BPharm
Supervisors: Roberts M, Horowitz JD, Chirkov Y
Determinants of clinical response to platelet ADP receptor antagonists
Therapeutics Research Centre and Cardiovascular Pathophysiology and Therapeutics Group

Current Masters Students

AGED AND EXTENDED CARE SERVICES, TQEH

R Teh BPharm (Hon) MBBS
Supervisors: Visvanathan R, Wilson A, Mahajan N
A Health Information Tool to Prevent Falls
Adelaide G-TRAC Centre

M Thompson
Supervisors: Visvanathan R, Yu S
The influence of frailty on four years mortality, disability and quality of life in community dwelling older South Australians
Adelaide G-TRAC Centre

RESPIRATORY MEDICINE UNIT & CLINICAL PRACTICE UNIT, TQEH

K Royals RN
Supervisors: Smith B, Veale A, Carson KV
Outreach respiratory nursing in the management of Chronic Obstructive Pulmonary Disease (COPD)
Respiratory Medicine Unit & Clinical Practice Unit

K Lawton BAN
Supervisors: Smith B, Veale A, Carson KV
Management of Bronchiectasis: A Tertiary Healthcare Perspective
Respiratory Medicine Unit & Clinical Practice Unit

DISCIPLINE OF SURGERY, UNIVERSITY OF ADELAIDE

S Oue MBBS
Supervisors: Wormald PJ, Psaltis A, Vreugde S
Neo-osteogenesis in chronic rhinosinusitis
ENT Surgery

J Oh MBBS
Supervisors: Maddern G, Tiong L
Effect and biocompatibility of human recombinant Lubricin on the formation of adhesions in rats
Surgical Science Research Group

H Gostlow MBBS
Supervisors: Maddern G, Babidge W
Development of a simulated laparoscopic short course that can be delivered in a Mobile Simulation Unit to both rural and metropolitan surgical trainees
Surgical Science Research Group

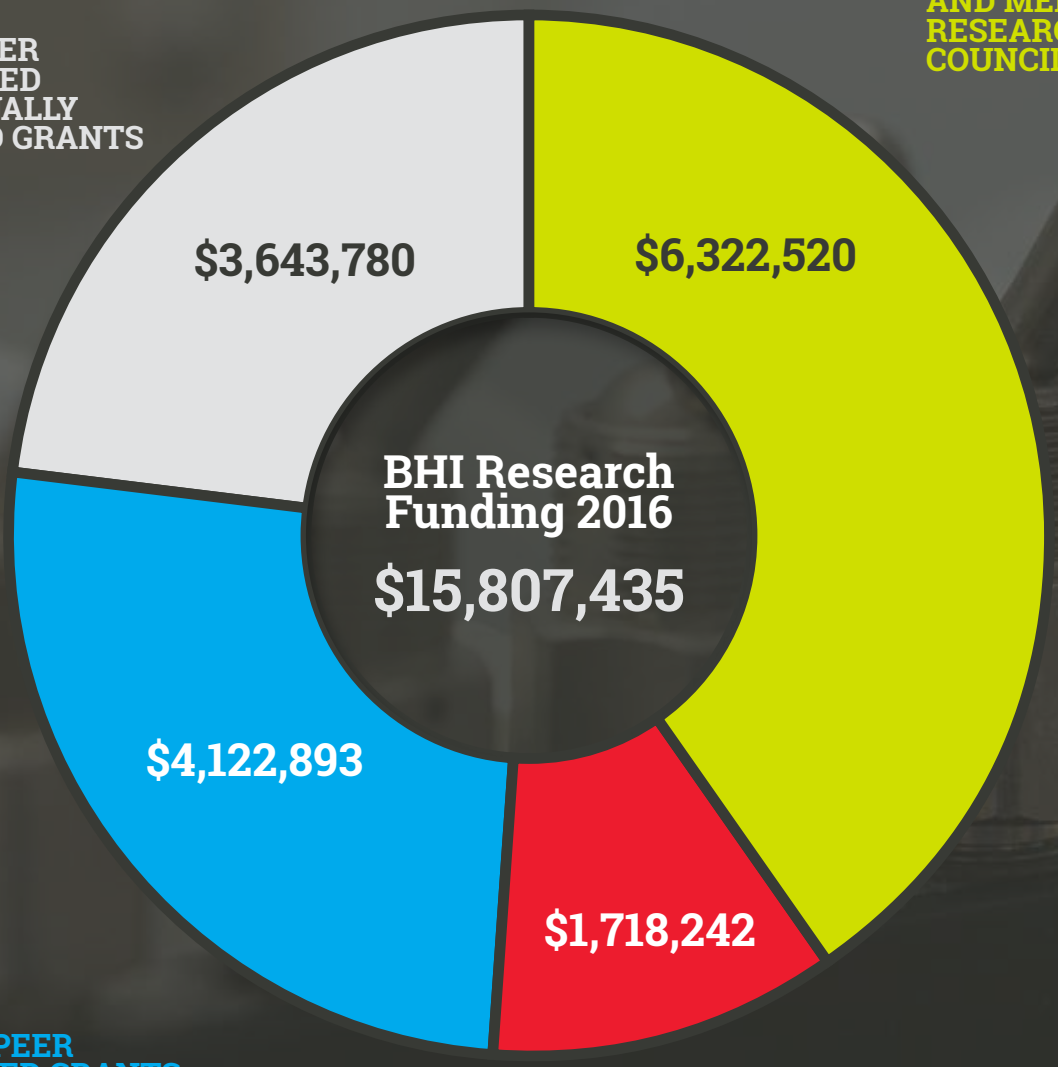
S Ellis MBBS
Supervisors: Maddern G, Hewett P
Coaching to enhance surgeons' non-technical skills
Surgical Science Research Group

Honours students

A Jothin
Supervisors: Wormald PJ, Vreugde S
The effect of colloidal silver sininasal rinses in recalcitrant chronic rhinosinusitis
Supervisors: Wormald PJ, Vreugde S
ENT Surgery

C King BPharmSc
Supervisors: Carson KV, Smith B, van Agteren J
The use of innovative technology to deliver health interventions for asthma
Respiratory Medicine Unit & Clinical Practice Unit

GRANTS



OTHER PEER REVIEWED GRANTS

(including AISRF, ARC, Cancer Australia, SAHMRI, Garnett Passe and Rodney Williams Foundation, SA Heart Foundation, Australian Centre for HIV and Hepatitis Virology, DART, Fay Fuller Foundation, National Foundation for Medical Research and Innovation, Heart Foundation, Lundbeck Institute, University of Adelaide, US Food and Drug Administration, National Stroke Foundation, RACP, RACS)

NHMRC Funding $6,322,520

BHI investigators [bolded]	Granting body/Funding period/	Project Title	Revenue 2016 / Type of Grant
Golledge J, Norman P, Walker P Ahimastos A, Dalman R, **Fitridge R**	**NHMRC** 2012-2016	TELmisartan in the management of abDominal aortic aneurYsm (TEDY)	**$221,178** Project
Buckley N, Isbister G, Dawson A, **Roberts M**	**NHMRC 1055176** 2014-2018	An integrated research program in human toxicology to ensure rapid translation of results into practice and regulation	**$1,369,360** Program grant
Ranasinghe I	**NHMRC & Heart Foundation (co-funded)** 2013-2016	Delivery & Performance of Cardiac Health Services	**$93,661** Neil Hamilton Fairley Clinical Overseas Fellowship
Sverdlov A	**NHMRC 1037603** 2012-2016	Lipotoxicity, mitochondrial sysfunction and the pathogenesis of heart failure	**$91,221** CJ Martin Biomedical Fellowship
Stewart S, **Horowitz JD,** Carrington M, Suffham P, Wong C, Newton P, Rischbieth A	**NHMRC 1049133** 2013-2016	Which heart failure Intervention is most Cost-effective in reducing Hospital care: (WHICH? II) Trial: A multicentre, randomised trial of standard versus intensified management of metropolitan and regional-dwelling patients with heart failure.	**$296,445** Project
Ridding MC, Rothwell JC, **Koblar S**, Ward N, McDonnell M	**NHMRC 1058639** 2014-2017	Characterising post-stroke cortical plasticity in humans - identifying a critical window for rehabilitation.	**$164,820** Project
Torresi J, **Gowans EJ**	**NHMRC 1060436** 2014-2016	A quadrivalent vaccine for hepatitis C	**$157,341** Project
Beltrame JF, **Zeitz CJ**, **Tavella R**, Worthley MI	**NHMRC 1062331** 2013-2017	The ACCESS Project - Assessment of Coronary Artery disease using CT Effectively for Stable Symptoms	**$141,677** Partnership
Chapman M, **Peake SL**, Dean A, O'Connor	**NHMRC 1078026** 2015-2019	The Augmented versus Routine approach to Giving Energy Trial (TARGET)	**$945,061** Project
Stevenson A, Solomon M, **Hewett P**, Lumley J, Fleshman J, Clouston A, Hague W	**NHMRC 1078113** 2015-2019	A La CaRT: Australasian Laparoscopic Cancer of the Rectum Trial. A phase III prospective randomised trial comparing laparoscopic-assisted resection versus open resection for rectal cancer	**$108,846** Project
Visvanathan R, Hill K, Ranasinghe D, Lange K, Wilson A	**NHMRC 1082197** 2015-2017	Effectiveness of an Ambient Intelligence Geriatric Management system to prevent falls in older people in hospitals: a clinical trial.	**$289,363** Project
Andrews J, Hughes P, Conlon M, **Roberts-Thompson I**, **Costello S**	**NHMRC 1085080** 2015-2017	Faecal microbiota transplant for ulcerative colitis:A randomised controlled trial	**$256,769** Project

NHMRC FUNDING $6,322,520 CONTINUED

BHI investigators [bolded]	Granting body/ Funding period/	Project Title	Revenue 2016 / Type of Grant
Holliday E, Attia J, Thijs V, **Koblar S**, Sturm J, Maguire J, Lincz L.	**NHMRC 1085550** 2015-2018	Helping stroke physicians choose who to thrombolyse – the "Targeting Optimal Thrombolysis Outcomes" (TOTO) study.	**$209,497** Project
Carson KV	**NHMRC 1092680 and Cancer Australia (cofunded)** 2015-2016	Translating Research into Practice Fellowship	**$136,456** TRIP Fellowship
Hodge S, **Zalewski P**, Roscioli E	**NHMRC 1099040** 2016-2018	Exploiting increased autophagy in bronchial epithelial cells: a new therapeutic approach for chronic obstructive pulmonary disease (COPD)	**$241,387** Project
Roberts JA, Lipman J, **Peake S**, Turnidge J, Slavin M, Hopkins P, Bulitta J, Paul S, De Waele J, Joynt G	**NHMRC 1099452** 2016-2020	Centre for REdefining antibiotic use to reDUce resistanCE and prolong the lives of antibiotics (REDUCE)	**$431,659** Centres of Research Excellence - Clinical
Visvanathan R, Karnon J, Kitson A, Beilby J, Cameron I, Chehade M, Bell S, Feist H	**NHMRC 1102208** 2016-2020	Frailty Trans-Disciplinary Research To Achieve Healthy Ageing	**$449,861** Centres of Research Excellence - Health Services
Jones G, Wluka A, **Hill CL**, March L, Keen H, Laslett L.	**NHMRC 1102732** 2016 - 2018	A randomised trial of krill oil for osteoarthritis of the knee	**$250,497** Project
Roberts M	**NHMRC 1107356** 2016 - 2020	Research Fellowship	**$170,396** Research Fellowship
Smith B, **Carson KV**, Esterman A, Peters M, Gould G	**NHMRC 1108309** 2016-2018	Training health professionals in tobacco cessation and evidence translation for Aboriginal Australians	**$185,725** Project
Dreyer R	**NHMRC 1111039** 2016-2019	Sex Differences in Long-Term Outcomes of Young Patients with Acute Myocardial Infarction	**$111,300** Sidney Sax Public Health Early Career Fellowship (Overseas)

The Hospital Research Foundation Funding $1,718,242

FELLOWSHIPS

BHI investigators	Granting body/Funding period/	Project Title	Revenue 2016 / Type of Grant
Evdokiou A	**The Hospital Research Foundation** 2011-2019	Michell McGrath Breast Cancer Research Fellowship	**$250,000** Fellowship
Ingman W	**The Hospital Research Foundation** 2011-2019	THRF Breast Cancer Research Fellowship	**$200,000** Associate Professor in Breast Cancer Research Fellowship
Ngo D	**The Hospital Research Foundation** 2015-2017	Modulation of the anti-angiogenic VEGF-A165b in adipose tissue: novel approach to combat obesity	**$120,000** Mid Career Fellowship
Wijesundara D	**The Hospital Research Foundation** 2015-2018	Early career Research position: Exploiting cytolytic adjuvants and novel recombinant viral cvaccines as a way forward for HIV-1 and HCV vaccine design	**$120,000** Early Career Researcher
Ranasinghe I	**The Hospital Research Foundation** 2016-2017	Reducing unwanted variation in early complications after cardiac pacemaker and defibtillator implantation among Australian hospitals	**$50,000** Mid Career Fellowship

PROJECTS

BHI investigators	Granting body / Funding period	Project Title	Revenue 2015 / Type of Grant
Maddern G, Price T, Young J, Hewett P, Hardingham J, Worthley D, White D, Mulligan D	**SAHMRI/Beat Cancer/ The Hospital Research Foundation** 2014-2017	Individualised Risk Assessment and Therapeutic Intervention for Colorectal Cancer in the South Australian Population.	**$150,000** Project
Moretti K	**HMRI/Beat Cancer/ The Hospital Research Foundation** 2016	SA-PCCOC - Data Collection Automation Project	**$54,225** Project
Ingman W	**The Hospital Research Foundation** 2016-2017	Exploring the impact of menstrual cycle on personalised medicine for premenopausal breast cancer patients	**$100,000** Project
Gowans E	**The Hospital Research Foundation** 2016-2017	A DNA vaccine to induce protective neutralizing antibodies to the HIV Tat	**$100,000** Project
Beltrame J	**The Hospital Research Foundation** 2016-2017	Coronary Haemodynamic Indices – their clinical usefulness for predicting persistent symptoms in patients with chest pain and non-obstructive coronary arteries.	**$100,000** Project
Various	**The Hospital Research Foundation** 2016	Various Honours projects	**$9,000** Honours Research Scholarships
Various	**The Hospital Research Foundation** 2016	Various Postgraduate scholarships (including international)	**$79,720** Postgraduate Research Scholarships
BHI	**The Hospital Research Foundation** 2016	Infrastructure support	**$250,000** Strategic Research Directions
BHI	**The Hospital Research Foundation** 2016	Equipment support	**$108,797** THRF equipment allocation
BHI	**The Hospital Research Foundation** 2016	Career and research skills training support for Postgraduate students (attendance at workshops, conference dinners, posters, travel, Research Day)	**$26,500**

Peer Reviewed Grants Commencing 2017 $2,755,200

BHI investigators [bolded]	Granting body / Funding period	Project Title	Revenue 2017 / Type of Grant
Hill CL, Ruediger C	**Arthritis Australia/ THRF** 2017	A randomised clinical trial of colchidine in inflammatory hand osteoarthritis	**$50,000** Project
Moretti K	**Beat Cancer/The Hospital Research Foundation** 2017	SA-PCCOC - Consumer Website	**$37,480** Project
Adams R, **Appleton SL**, McEvoy RD, **Beltrame J**	**Heart Foundation** 2017	Cardiovascular impacts of obstructive sleep apnea in men	**$75,000** Vanguard
Tavella R, **Beltrame JF**, **Zeitz C**, **Ranasinghe I**	**Heart Foundation** 2017	EVALuation of Appropriate UsE of Elective Percutaneous Coronary Intervention – Value of PCI	**$75,000** Vanguard
Ranasinghe I	**Heart Foundation (101186)** 2017-2020	Leveraging Big Data to Inform Cardiovascular Healthcare Outcomes	**$130,000** Future Leader Fellowship
Teichtahl A, **Hill CL** et al	**NHMRC** 2017-2019	METHODS - A randomised controlled trial of METhotrexate to treat Hand Osteoarthritis with Synovitis	**$256,671** Project
Ritchie R, **Horowitz J**, Kemp-Harper B, Du XJ, **Chirkov Y**	**NHMRC 1120895** 2017-2019	Therapeutic Approaches to Circumvent NO• Resistance in the Type 2 Diabetic Heart and Vasculature	**$187,779** Project
Lipman J, **Peake S** et al	**NHMRC APP 1121481** 2017-2021	BLING III: A phase III randomised controlled trial of continuous beta-lactam infusion compared with intermittent beta-lactam dosing in critically ill patients	**$653,989** Project
Adams R, McEvoy D, Antic N, **Appleton S**, Wittert G, Catcheside P, Vakulin A, Vincent A, Taylor A	**NHMRC APP 1122342** 2017-2019	Health impacts of sleep apnea in Australian men- a longitudinal population study.	**$104,019** Project
B Bonevski B, Gould GS, Clough A, Mattes J, **Carson K**, Doran C, O'Mara P, Oldmeadow C, Smith R, Boydell K	**NHMRC GACD APP 1116084** 2017-2019	Indigenous Counselling and Nicotine (ICAN) QUIT in Pregnancy' - a cluster randomised trial to implement culturally competent evidence-based smoking cessation for Aboriginal and Torres Strait Islander pregnant smokers.	**$779,732** Project
Maddern G	**The Hospital Research Foundation** 2017	The nexus between visceral adiposity, associated liver composition, and metastatic progression in colorectal cancer patients	**$75,000** Near Miss Project
Wormald PJ	**The Hospital Research Foundation** 2017	Preclinical development of a novel formulation to prevent adhesions post-abdominal surgery'	**$75,000** Near Miss Project
Fitridge R, Miller M, Delaney C	**Vascular Foundation** 2017	Outcomes in diabetic foot ulcers	**$37,500** Project
Beltrame JF	**University of Adelaide** 2017	Coronary Angiogram Database of South Australia (CADOSA) support	**$204,000** Infrastructure funding
Tavella R	**Heart Foundation Tom Simpson Trust** 2017	CADOSA Biobank	**$14,030** Project

PUBLICATIONS

PEER REVIEWED JOURNAL PUBLICATIONS 2016

Listed by Department/Unit. TQEH authors are underlined

AGED AND EXTENDED CARE SERVICES, TQEH

1. Chen L, Bell JS, Visvanathan R, Hilmer S, Emery T, Hughes JM, Tan ECK. The association between benzodiazepine use and sleep quality in residential aged care facilities. *BMC Geriatrics*. 2016; 16(1):196.

2. Chu W, Gupta AD. Effectiveness of botulinum toxin type A on gait and quality of life in adult post-stroke patients with lower limb spasticity: a systematic review protocol. *JBI Database of System Rev Implementation Rep.* 2016 Jun;14(6):23-9.

3. Gupta AD, Wilson D. Rethinking diagnoses in Rehabilitation: An educational case series. *Journal of Rehabilitation Medicine*. 4 2016 Apr 28;48(5):477-80.

4. Flicker L, Visvanathan R, Ratcliffe J. Timely diagnosis for dementia: The need for specialists. *Journal of the American Medical Directors Association*. 2016 May 17;(5): 462-463.

5. Jadczak A, Makwana N, Luscombe-Marsh N, Visvanathan R, Schultz T. Effectiveness of exercise interventions on physical function in community-dwelling frail older people: an umbrella review protocol. *JBI Database Of Systematic Reviews And Implementation Reports*. 2016 Sep;14(9):93-102.

6. Gupta AD, Visvanathan R. Botulinum toxin for foot dystonia in patients with Parkinson's disease having deep brain stimulation: A case series and a pilot study. *J Rehabil Med*. 2016 Jun 13;48(6):559-62.

7. Hiltunen H, Tan EC, Ilomäki J, Hilmer SN, Visvanathan R, Emery T, Robson L, Jones MJ, Hartikainen S, Bell JS. Factors associated with antidepressant use in residents with and without dementia in Australian aged care facilities. *Ther Adv Drug Saf*. 2016 Jun;7(3):79-88.

8. Khow SFK, Paterson F, Shibu P, Yu S, Chehade M, Visvanathan R. The postoperative outcomes of atypical femoral fractures are similar with typical hip fractures in older adults: a case control study. *Injury*. 2016 Oct 28. pii: S0020-1383(16)30701-X. doi: 10.1016/j.injury.2016.10.035.

9. Khow KSF, McNally C, Shibu P, Yu SCY, Visvanathan R, Chehade M. Back on their feet after a break of the hip. *Medicine Today*.2016; 17(5): 30-39.

10. Khow KA, McNally C, Shibu P, Yu S, Visvanathan R, Chehade M. Getting patients back on their feet after a hip fracture. *Medicine Today*. 2016 May;7(5):30-39.

11. Nair S, Visvanathan R, Piscitelli D. Effects of Postprandial Blood Pressure on Gait Parameters in Older People. *Nutrients*. 2016 Apr 13;8(4).

12. Shinmoto Torres RL, Visvanathan R, Hoskins S, van den Hengel A, Ranasinghe DC. Effectiveness of a Batteryless and Wireless Wearable Sensor System for Identifying Bed and Chair Exits in Healthy Older People. *Sensors* (Basel). 2016 Apr 15;16(4).

13. Stasinopoulos J, Jokanovic N, Tan EC, Emery T, Robson L, Visvanathan R, Pitkälä KH, Bell JS. Do Clinicians Recommend Multivitamin and Mineral Supplements to Long-Term Care Residents According to Nutritional Status? *J Am Med Dir Assoc*. 2016 Jun 1;17(6):563-5.

14. Tan EC, Visvanathan R, Hilmer SN, Vitry A, Emery T, Robson L, Pitkälä K, Ilomäki J, Bell JS. Analgesic use and pain in residents with and without dementia in aged care facilities: A cross-sectional study. *Australas J Ageing*. 2016 Sep;35(3):180-7.

15. Theou O, Tan ECK, Bell JS, Emery T, Robson L, Morley JE, Rockwood K, Visvanathan R. Frailty levels in residential aged care facilities measured with the Frailty Index and FRAIL-NH Scale. *J Am Geriatrics Society.* 2016; doi: 10.1111/jgs.14490. [Epub ahead of print] .

16. Theou O, Chapman I, Wijeyaratne L, Piantadosi C, Lange K, Naganthan V, Hunter P, Cameron ID, Rockwood K, Visvanathan R. Can an intervention with testosterone and nutritional supplement improve the frailty level of under-nourished older people? *Journal Frailty and Aging*. 2016;5(4):247-252.

17. Torres RLS, Visvanathan R, Hoskins S, van Den Hengel A, Ranasinghe D. Effectiveness of a Battery-less and Wireless Wearable Sensor System for Identifying Bed and Chair Exits in Healthy Older People. *Sensors (Basel)*. 2016; 16(4): pii:E546.

18. Vanlint A, Tam KL, Yu S, Visvanathan R. Evaluation of the introduction of the OSCE to the fifth-year Geriatric Medicine Teaching Programme. *Australas J Ageing*. 2016 Dec;35(4):285-288.

19. Visvanathan R, Piantadosi C, Lange K, Naganathan V, Hunter P, Cameron ID, Chapman I. The Randomized Control Trial of the Effects of Testosterone and a Nutritional Supplement On Hospital Admissions in Undernourished, Community Dwelling, Older People. *J Nutr Health Aging*. 2016;20(7):769-79.

20. Wickramasinghe A, Ranasinghe DC, Fumeaux C, Hill KD, Visvanathan R. Sequence Learning with Passive RFID Sensors for Real Time Bed-egress Recognition in Older People. *IEEE J Biomed Health Inform*. 2016 Jun 2. [Epub ahead of print] PubMed PMID: 27295696.

21. Woo T, Yu S, Visvanathan R. Systematic Literature Review on the Relationship Between Biomarkers of Sarcopenia and Quality of Life in Older People. *J Frailty Aging*. 2016;5(2):88-99.

22. Yu S, Khow K, Jadczak A, Visvanathan R. Clinical screening tools for sarcopenia and its management. *Current Gerontology & Geriatrics Research.* 2016;2016:5978523.

23. Yu S, Powell A, Khow K, Visvanathan R. The performance of five bioelectrical impedance analysis prediction equations against dual x-ray absorptiometry in estimating appendicular skeletal muscle mass in an adult Australian population. *Nutrients*. 2016 Mar 29;8(4):189.

ANAESTHESIA, TQEH

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CARDIOLOGY UNIT, TQEH

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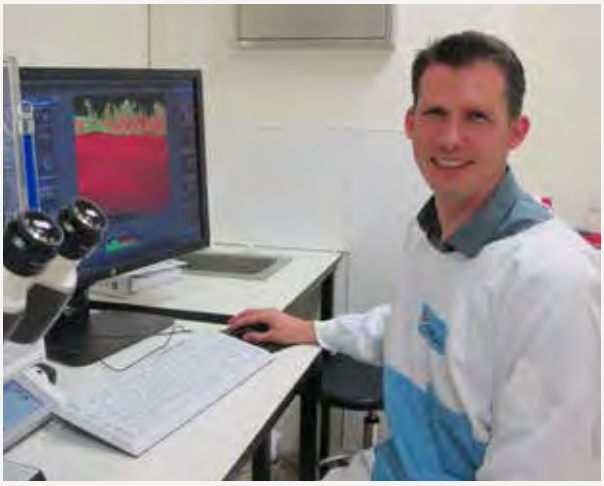
BHI Researcher Story

DR NICKY THOMAS
ENT SURGERY



The World Health Organisation predicts by 2050 superbugs will be the cause of 10 million deaths each year. This is far more deaths than from cancer and diabetes combined.

Superbugs are antibiotic resistant bacteria, and Dr Nicky Thomas from the University of South Australia and the BHI is in a race against time to halt them in their tracks.

"The main reason these superbugs exist is because antibiotics are being used too much. On top of that, most bacteria are surrounded by a slime that protects them from antibiotics, rendering the medication ineffective and leading to chronic infections," Dr Thomas explained.

Working as a Pharmacist in Germany and Switzerland for over six years, Dr Thomas would regularly see patients suffering from chronic infections come in for antibiotics that weren't working.

Determined to play his part in the fight against superbugs, Dr Thomas eventually landed in Adelaide where he now works between the Basil Hetzel Institute for Translational Health Research (BHI) and the University of South Australia's School of Pharmacy and Medical Science where he supervises PhD and Honours students and teaches undergraduate students in Pharmacy and Pharmaceutical Sciences. His team's goal is to find a way to improve the effectiveness of current medications to ensure patients receive the best treatments available to them.

"We are not trying to develop new antibiotics through our research. What we are doing is to make existing antibiotics more effective against bacteria by combining them with other compounds that are not antibiotics but complement their action."

Dr Thomas and his team have been developing a multi-step approach to killing these superbugs. Their first hurdle was determining how to penetrate the barrier, or biofilm, that is shielding the bacteria from antibiotics.

"These biofilms essentially form an armour around the bacteria, so if we can strip them of this armour we can target the bacteria residing inside the biofilm and then the antibiotics can do the job they are supposed to," he said.

"We're using a few different approaches to rip apart the biofilm and make bacteria more vulnerable. One approach is to camouflage medicine so they look like food to the bacteria. However, once inside the biofilm this smart medicine disrupts the biofilm.

> "By opening gates for the actual antibiotics to find their way to the bacteria we have made antibiotics up to 100 times more efficient in killing the bacteria."

"This means we can use far less antibiotics with better effects, which also means less side effects that are typically associated with antibiotic therapy."

Dr Thomas is confident the re-designed antibiotics will beat a diverse range of debilitating diseases including lung, bone and wound infections and chronic rhinosinusitis.

Exuding passion for his research Dr Thomas is excited about the translational potential of these projects, made possible thanks to the generosity of THRF community.

"After six years working in pharmacies I got a great idea of how antibiotic resistance affects people, how sub-optimal medication leads to poor patient compliance and how side effects stops patients taking their medicine leading to dangerous therapy failures. I am now thrilled my research will help those people."

"That's extremely important to me, that my research is going to be useful and applicable for the wider community."

Postdoctoral Researcher ENT Surgery, BHI

HIGH PROFILE INTERNATIONAL TALKS 2016

Professor PJ Wormald, ENT Surgery.

Conference/meeting	Title of presentation	Significance
Renuka Visvanathan Adelaide G-TRAC Centre		
International Conference on Frailty and Sarcopenia 2016 **Philadelphia, USA; 28-19 April**	Hosted Full Research Symposium: Models of Care For Frail Older People In The Community	Hosted and presented a multi speaker Symposium of our centres work.
Tim Price Colorectal Cancer Research Group		
HKACO & HKSCO, Hong Kong **Hong Kong; 8 Nov**	CRC therapy in 2016	Mini symposium
Malaysian Oncology Society **Malaysia; 11 Nov**	Anti-EGFR as a rational choice for RAS WT mCRC patients	Invited presentation
ESMO Asia **Singapore; 19 Dec**	Evolution of therapy for Gastric & Hepatic carcinoma	Invited panel member
Kim Moretti SA-PCCOC		
Asian Prostate Cancer (A-CaP) Registry Meeting **Seoul, South Korea; 8 Sep**	Report from South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC) and the Prostate Cancer Outcomes Registry – Australia and New Zealand (PCOR-ANZ)	Invited Speaker
Sandra Peake Intensive Care Medicine Research Group		
American Thoracic Society International Conference, San Francisco, USA. **San Francisco, USA; May**	Early Goal Directed Therapy, Life after Rivers: Neither EGDT nor neglect	Invited Speaker

HIGH PROFILE INTERNATIONAL TALKS 2016 CONTINUED

Conference/meeting	Title of presentation	Significance
Scott Clark Psychiatry Research Group		
RANZCP International Congress **Hong Kong; May**	Clozapine: The Double Edged Sword	International workshop. Update on latest developments in management of patients with treatment resistant schizophrenia
Kristin Carson Respiratory Medicine Unit & Clinical Practice Unit		
Asia Pacific Society of Respirology **Bangkok, Thailand; 12-15 November**	Tobacco world map and effective tobacco control policies	Invited Speaker
Michael Roberts Therapeutics Research Centre		
13th Advanced Imaging Methods Workshop **Berkeley, USA; 10-12 February**	Imaging the disposition and safety of nanoparticles and theranostics (and cells) in vivo and ex vivo	Invited Speaker
11th International Conference and Workshop on Biological Barriers **Saarland University, Saarbrucken Germany; 7-9 March**	Session Topic: Novel Nanocarriers: Concepts and Properties	Session Chair
11th International Conference and Workshop on Biological Barriers **Saarland University, Saarbrucken Germany; 7-9 March**	Topical and Cutaneous Delivery using Nanosystems	Invited Speaker
International Conference on Dermal Drug Delivery by Nanocarriers **Berlin, Germany; 14-16 March**	Topical and Cutaneous Delivery using Nanosystems	Invited Speaker
Perspectives in Percutaneous Penetration, 15th International Conference **La Grande Motte, France; 30 March - 1 April**	Topical semisolid drug product critical quality attributes (Q3 characterization) with relevance to topical bioequivalence	Invited Speaker
3rd International Congress of Veterinary Pharmacology & Pharmaceutical Sciences **Shahrekord, Iran; 25-27 May**	1) Case studies in human, animal and regulatory toxicology – possible linkages? 2) Intravital multiphoton microscopy as a tool to investigate disposition of small molecules, nanoparticles and cells	Invited Speaker
FLIM 2016: 11th Workshop and Conference on Advanced Multiphoton and Fluorescence Lifetime Imaging Techniques **Vestec near Prague, Czech; June**	Minimally invasive intravital imaging in characteristing the morphology and redox state of organs and their impact on the *in vivo* and *ex vivo* disposition of nanoparticles and solutes	Invited Speaker
International Conference on Advanced Fluorescence Imaging Methods **Dagomys/ Sochi, Russia; 3-6 October**	Using multiphoton tomography with fluorescence lifetime imaging to characterize tissue morphology and exogenous material transport in organs	Invited Speaker
Charite 5th Galenus workshop: The advanced use of nanocarriers in future skin delivery **Berlin, Germany; 16-18 November**	Nanotechnology in future skin drug delivery and personal care, application of multiphoton microscopy for skin penetration measurements	Invited Speaker
Sam Costello Gastroenterology & Hepatology		
International Human Microbiome Consortium Congress **Houston, Texas; November 9-11**	Establishimg a hospital based faecal microbiota transplant service	Invited Speaker

HIGH PROFILE INTERNATIONAL TALKS 2016 CONTINUED

Conference/meeting	Title of presentation	Significance
Peter-John Wormald ENT Surgery		
6th Emirates Otorhinolaryngology Audiology and Communication Disorders Congress **Dubai; 10-15 January**	Pathogenesis of Chronic Rhinosinusitis, The role of Biofilm and Microbiome in chronic rhinosinusitis	Key note Speaker
USC Skull Base Course **Los Angeles, USA; 25-28 February**	Endoscopic approach to the anterior cranial fossa lesions	Invited Speaker
The 8th Wessex Advanced Endoscopic Sinus Surgery Course **25-27 June**		Invited Speaker
Rhinological Disorders - A Health Priority for the Future. ERS-ISAN 2016 **Stockholm, Sweden; 3-7 July**		Invited Speaker
29th Annual Conference of All India Rhinology Society **Hyderabad, India; 12-14 August**	Cutting edge research into the pathogenesis of chronic rhinosinusitis	Key note Speaker
American Society of Otolaryngology Head & Neck Society, Annual Meeting **San Diego, USA; 18-20 September**	The Bacteriology of Rhinosinusitis: Biofilms and Microbiome	Invited Speaker
Santiago, Chile; 21-23 September	Modified Endoscopic Lothrop Procedure (MELP)	Invited Speaker
John Beltrame Translational Vascular Function Research Collaborative		
Japanese Circulation Society 80th Annual Scientific Meeting **Sendai, Japan; 19 March**	Coronary Vasomotion Disorders International Study group (COVADIS)	Invited Speaker
Japanese Circulation Society 80th Annual Scientific Meeting **Sendai, Japan; 19 March**	Assessing Determinants of Post-PCI Prognosis	Invited Speaker
Washington Hospital Center Cardiac Cath Conference **Washington, USA; 8 June**	Myocardial Infarction with Non-Obstructive Coronary Arteries (MINOCA)	Invited Speaker
European Society of Cardiology Congress **Rome, Italy; 30 August**	MINOCA: Plaque Disruption, Thromboembolism, and the Microcirculation.	Invited Speaker
COVADIS Summit **Rome, Italy; 1 September**	Is A COVADIS Clinical Trial Possible?	Invited Speaker
ICHOM Value-based Healthcare Course **Cardiff, UK; 5 October**	Coronary Angiogram Database of South Australia (CADOSA)	Invited Speaker
American Heart Association Scientific Sessions 2016 **New Orleans, USA; 14 November**	Patient-Centered Outcome Measurement in Practice in Coronary Artery Disease Patients	Invited Speaker
Sivabaskari Pasupathy Translational Vascular Function Research Collaborative		
Late Breaking Clinical Trials Hot Line Session, European Society of Cardiology Congress, **Rome, Italy; 30 August**	NACIAM Trial – the early use of N-acetylcuysteine (NAC) with Glycery Trinitrate (GTN) in ST-segment Elevation Myocardial Infarction patients undergoing primary percutaneous coronary intervention	Invited Presentation

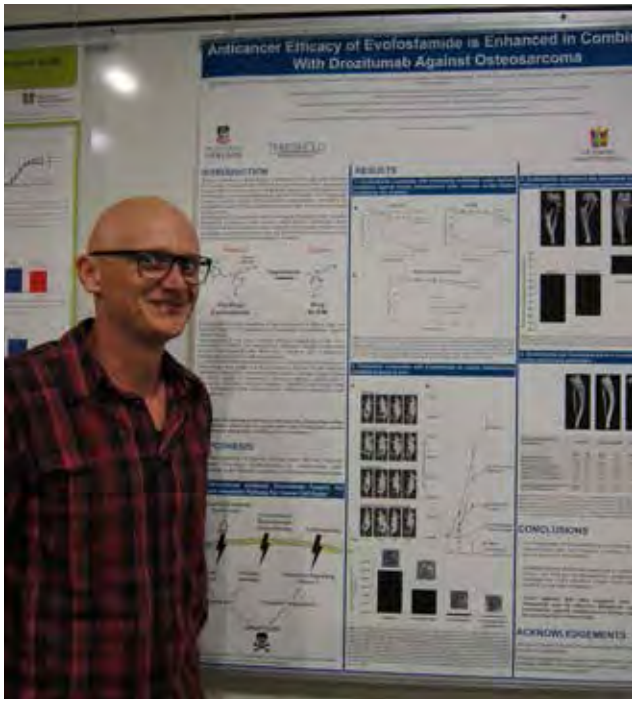
TQEH Research Day 2016

TQEH RESEARCH DAY 2016 25th Anniversary

The 25th Anniversary of TQEH Research Day was held on Friday 21 October 2016. Our congratulations to all the postgraduate students and registrars who participated in Research Day! Once again the scope and quality of the research presented was of a consistently high standard, which made the judges' jobs even more difficult.

The purpose of Research Day is to provide an opportunity for our post-graduate students and those in training to develop and practice writing and presentation skills under conditions that are typical of most professional society congresses. They are asked to write an Abstract and prepare either a 10-minute oral presentation or a poster with a 3-minute oral presentation. They receive guidance and encouragement from their supervisors and peers during preparation of both the Abstract and the presentations. On Research Day, they experienced giving their presentations before a large audience and then answering questions. With this experience, it is hoped that the students will feel more confident when they are presenting their studies at major national and international conferences. It is also hoped that, by holding Research Day as a significant professional development activity, high quality researchers will graduate from The Basil Hetzel Institute and The Queen Elizabeth Hospital, adding to the campus' reputation as a significant research facility.

Our Plenary Speaker this year was Professor Anne Kelso, CEO of the NHMRC. She provided a very interesting perspective on how the NHMRC is reviewing its support for research funding in Australia and, in particular strategies that early career researchers can consider when developing strategies for developing their career pathways.



Successful events such as this don't just happen, our thanks to the volunteer Chairs of all the sessions, all the judges of Abstracts, Oral and Poster presentations and all the members of Research Day Organising Committee. Special thanks must go to The Hospital Research Foundation for their wonderful support over the years in underwriting the day, as well as sponsoring three of the oral speaker prizes and, in particular, sponsoring the baristas! Many thanks to our other sponsors including companies who set up trade displays on the day.

TQEH Research Day 2017 will be held on Friday 20 October, so put the date in your diaries now!

Prue Cowled
Retiring Chair, Research Day Organising Committee, 2016

TQEH Research Day 2016 Award Winners

Best Oral Presentation:	Prize Sponsor	Winner and title	Research Theme/Group
Best Oral Presentation: Honours & Summer Students	The Hospital Research Foundation	Bahador Assadi-Khansari	Medicine (Cardiology)
Best Oral Presentation: Junior Laboratory PhD students	Sarstedt and The Hospital Research Foundation (co-sponsored)	Vahid Atashgaran	Surgery (Breast Biology and Cancer Unit)
Best Oral Presentation: Senior Laboratory PhD Students	The University of Adelaide	Dijana Miljkovic	Surgery (ENT Surgery)
Best Oral Presentation: Clinical Trainees	The Hospital Research Foundation	Ben Thurston	Surgery (Vascular Surgery Research Group)
Best Oral Presentation: Clinical Higher Degrees Students	The University of South Australia	Scott Ellis	Surgery (Surgical Science Research Group)
Poster Prize	Southern Cross Science	Vasilios (Bill) Liapis	Surgery (Breast Cancer Research Unit)
Best Lay Description	John Morris Group	Vasilios (Bill) Liapis	Surgery (Breast Cancer Research Unit)

AWARDS

Recipient	Award	Sponsor	Value
Adelaide G-TRAC Centre			
Dr Beatriz Martins **March**	The Beacon of Enlightenment Scholarship	University of Adelaide	
Agathe Jadczak **July**	Student Travel Award	School of Medicine, University of Adelaide	$2,000
Prof Renuka Visvanathan **November**	Distinguished member award	Australian Association of Gerontology	
Prof Renuka Visvanathan **December**	Highly Cited Paper award (one of 5 most highly cited papers) for "Evidence-based recommendations for optimal dietary protein intake in older people: A position paper from the prot-age study group" 2013	*Journal of The American Medical Directors Association*	
Breast Biology and Cancer Unit			
Dr Sally Sun **May**	National Award for Outstanding Self-Financed Chinese Students Studying Abroad	China Scholarship Council	$5,000
A/Prof Wendy Ingman **May**	Award for mentoring Dr Sally Sun	Chinese Government	
A/Prof Wendy Ingman **June**	Women's Research Excellence Award	University of Adelaide	$5,000
A/Prof Wendy Ingman **July**	Robinson Resarch Institute Award for Excellence in Reproductive Biology Research	Society for Reproductive Biology	$3,000
Breast Cancer Research Unit			
Bill Liapis **June**	Finalist, Ross Wishart Award	Australian Society for Medical Research (ASMR)	
Bill Liapis **September**	Winner, Research contracts and partnerships Award, Florey Postgraduate Research Conference	Faculty of Health and Medical Sciences, University of Adelaide	
SA-PCCOC			
Sophie Plagakis	Justin Miller Medal for Clinical Research	RACS	
Kerri Beckmann	Best Abstract, Global Congress on Prostate Cancer, Vienna		$500
SA-PCCOC Operations team	Finalist, SALHN Research Excellence Award	SALHN	
Cardiovascular Pathophysiology and Therapeutics Group			
Cher-Rin Chong **May**	Oxford Nuffield Medical Fellowship	Unveristy of Oxford, England	£41,564
Su Jen Chua **August**	International Society of Heath Research (ISHR) Poster Prize	Cardiac Society of Australia and New Zealand (CSANZ) and International Society of Heath Research (ISHR)	
Bahador Assadi-Khansari **August**	Cardiac Society of Australia and New Zealand (CSANZ) Poster Prize	Cardiac Society of Australia and New Zealand (CSANZ) and International Society of Heath Research (ISHR)	$1,000
Sven Surikow **September**	Winner, Florey Medical Research Foundation Prize, Florey Postgraduate Research Conference	Faculty of Health and Medical Sciences, University of Adelaide	
Bahador Assadi-Khansari **September**	Trevor Prescott Memorial Scholarship	The Masonic Foundation Inc.	$6,000

A/Prof Wendy Ingman & Dr Sally Sun.

Recipient	Award	Sponsor	Value
Translational Vascular Function Research Collaborative			
Dr Abdul Sheikh **September**	Winner, Adelaide Medical School Prize, Florey Postgraduate Research Conference	Faculty of Health and Medical Sciences, University of Adelaide	
Clinical Pharmacology Research Group			
Rong Hu	Pharmacogenomics Prize	The Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT)	
Respiratory Medicine Unit and Clincial Practice Unit			
Harshani Jayasinghe **February**	Finalist, Channel 9 Young Achiever Award, Category - Career Kick Start Award	University of Adelaide	
Harshani Jayasinghe **February**	The CRE in Lung Health of Aboriginal and Torres Strait Islander Children	Cochrane Airways Australia Scholarship	$2,000
Harshani Jayasinghe **February**	Finalist, The Australia Day Young Citizen of the Year Award, Campbelltown Council		
Harshani Jayasinghe **April**	Travel grant for the TSANZ meeting	TSANZ meeting	$616
Zoe Kopsaftis **April**	Travel grant for the TSANZ meeting	TSANZ meeting	$616
Joep van Agteren **April**	Travel grant for the TSANZ meeting	TSANZ meeting	$616
Dr Kristin Carson **April**	Asia Pacific Society of Respirology Young Investigator Award	TSANZ meeting	$1,000
Dr Kristin Carson **April**	Ann Woolcock Young Investigator Award	TSANZ meeting	$3,000
Zoe Kopsaftis **April**	Best Oral Presentation Award, Evidence based Medicine Special Interest Group	TSANZ meeting	$500
Joep van Agteren **April**	Finalist, poster competition, COPD Special Interest Group (Chronic Obstructive Pulmonary Disease)	TSANZ meeting	
Dr Michelle Tan	Thoracic Society of Australia and New Zealand SA/NT branch Young Investigator Award	GSK	$1,000
Dr Kristin Carson **August**	Finalist, SA Science Excellence Awards, PhD Research Excellence and Early Career STEM Professional Category	SA Government	

Recipient	Award	Sponsor	Value
Respiratory Medicine Unit and Clinical Practice Unit continued			
Dr Kristin Carson	Travel grant to attend the American Thoracic Society conference	Lung Foundation of Australia and A Menarini	$3,000
Dr Kristin Carson, Harshani Jayasinghe, Joep van Agteren and Zoe Kopsaftis **October**	Finalists, Young Professional of the Year Award, SA Health Awards	SA Government	
Therapeutics Research Centre			
Dr Amy Holmes **April**	Travel Award to present at PPP Conference, France (Perspectives in Percutaneous Penetration)	Translational Australian Clinical Toxicology (TACT)	$4,500
Dr Amy Holmes, A/Prof Ivan Kempson, Dr Lorraine Mackenzie, Prof Michael Roberts **April**	3 day use of synchotron: X-ray fluorescence beamline	Australian Synchrotron	$56,265
Dr Amy Holmes **August**	Finalist, Young Researcher Award, 2016 LUSH Prize	Lush, Fresh Handmade Cosmetics	
Dr Amy Holmes **November**	Travel award to present at ASCEPT, Melbourne (The Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists)	Adelaide Pharmacology Group	$500
Dr Ahmed Abdalla **November**	Travel award to present at ASCEPT, Melbourne (The Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists)	Translational Australian Clinical Toxicology (TACT)	$1,000
Dr Amy Holmes, A/Prof Ivan Kempson, Prof Michael Roberts **November**	3 day use of synchotron: infra-red microscopy beamline	Australian Synchrotron	$56,265
ENT Surgery			
Katharina Richter **February**	Research Abroad Scholarship	University of Adelaide	$2,500
Katharina Richter **February**	Finalist, Channel 9 Young Achiever Award, Category - Science and Technology Award	Australian Super	
Arvind Jothin **July**	Winner, 3MT competition at 57th Australian Medical Students' Association National Convention	Welch-Allyn	
Katharina Richter **July**	School of Medicine Research Travel Award	University of Adelaide	$3,000
Katharina Richter **September**	People's Choice Winner, 3MT University of Adelaide, "Bug Wars - battlefront biofilms"	University of Adelaide	$1,000
Katharina Richter **September**	Student Travel Award, and 3MT Award	Australian Society for Microbiology	$1,000
Ahmed Bassiouni **September**	Best poster presentation	American Rhinologic Society	
Katharina Richter **September**	Trevor Prescott Memorial Scholarship	Freemasons Foundation	$6,000
Mian Li Ooi **October**	Bertha Sudholz Research Scholarship	University of Adelaide	$5,000

COMMUNITY ENGAGEMENT

BHI staff and students are regularly involved in community talks, held at various locations around Adelaide, and tours of the BHI laboratories that are organised and hosted by The Hospital Research Foundation (THRF). THRF also coordinate media releases and follow-up media opportunities, in liaison with the universities and SA Health, for BHI researchers. BHI researchers are also invited to participate in THRF's regular radio segments on Coast FM. Articles for THRF and related brand newsletters and websites about BHI researchers and their research are written by THRF staff. In addition to these THRF led interactions with the general public, BHI researchers also participate in a range of other community engagement activities including hosting work experience students.

Appendix B: Community Engagement Activities 2016 does not include research presentations, or participation in activities directly related to research.

Science Alive! 2016

An estimated 25,000 people visited Science Alive! from the 5-7 August 2016 at the Adelaide Showgrounds in Wayville. This was the 3rd year that the BHI had a hands-on display, allowing visitors young and old to measure their FEV1 (the amount of air expelled during 1 second) using hand-held spirometers, and to test their surgical skills on Laparoscopic Box-Trainers on loan from The Royal Australasian College of Surgeons (RACS). This year we were fortunate to have many surgeons who use laparoscopic techniques volunteer to help out at the BHI booth. In addition to the box-trainers the RACS also provided some videos of laparoscopic surgeries showing an appendix, and a gall bladder, being removed. These elicited great interest from those who had had similar surgery and groans of squeamishness, particularly from school-aged children!

Special thanks to Nicholas Marlow and Dr Hannah Gostlow from the RACS for arranging for the box-trainers and videos to be available. Thanks also to the following people for volunteering: Surgeons Dr Markus Trochsler, Dr Jono Yong, Dr David Rodda, Dr Andrew Lord, Dr Darren Tonkin, Professor Peter Hewett and Dr Lilian Kuan; BHI-TQEH Staff and students Dr Hannah Gostlow, Charmaine King, Dr Kristin Carson, Joe Wrin, Pam Kidd, Kati Richter, Dr Nicky Thomas, Dr Pallave Dasari, Aneta Zysk, Jason Gummow, Justyna Pollok, Dr Mark Jurisevic, Agathe Jadzack, Dr Amy Holmes, Kathryn Hudson and Dr Rebecca Anderson. In addition, Dr Kristin Carson and Dr Dan Wijesundara acted as "Career Ambassadors" at the Careers Day for high school students on Friday 5th August.

SUPPORT STRUCTURES

Above: Management Committee members, 2016.

The Basil Hetzel Institute (BHI) Policy Committee provides strategic advice for the running of the BHI and optimises the available support for research programs across The Queen Elizabeth Hospital (TQEH).

The Policy Committee is comprised of senior representatives from:

- the two universities with whom the hospital is affiliated, the University of Adelaide and the University of South Australia
- University of Adelaide academic heads of departments at TQEH (Medicine and Surgery)
- Chair, Strategic Research Directions Working Group
- BHI Facility Manager and
- TQEH scientific community

Several sub–committees assist the BHI Policy Committee as required, notably the:

- **TQEH 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 TQEH Research Foundation.
- B**HI Management Committee**, chaired by Dr Lorraine Mackenzie in 2016, in managing the Basil Hetzel Institute.
- **The Basil Hetzel Institute Strategic Research Directions Group** provides a forum for BHI Researchers to interact and discuss Institute issues and initiatives as well as focus on academic issues such as teaching and postgraduate student recruitment and completions. It reports to The Institute (BHI) Policy Committee, and provided recommendations to The Hospital Research Foundation on the 2016 funding framework.

  All TQEH researchers at Associate Professor level and above, Postgraduate coordinators, Heads of departments, and Chief Investigators on Category 1 grants are eligible to attend each forum, as well as a postdoctoral representative. Professor Eric Gowans has chaired the group since 2012, with Executive Support provided.

Professor Guy Maddern was reappointed to the position of Director of Research in April 2015 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.

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

Seminars

A number of regular seminar programs were held in 2016, including:

- Postgraduate Research seminars which provide all BHI based higher degree students an opportunity annually to brief staff and students on the progress of their research. Dr Prue Cowled coordinated this program in 2016;
- Invited external speaker research seminars, held weekly between March and the end of October 2016. The Research Secretariat coordinated this program;
- The 'Talking Heads' program, also coordinated by the Research Secretariat, provided a number of clinical and scientific heads an opportunity to brief BHI staff and students about their research programs.

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 student levels.

Promotion

In 2016 research training opportunities and Scholarship support were actively promoted through the BHI internet site with links to key university research training sites.

Vacation Research Scholarships

Over the 2016-2017 summer vacation a significant number of undergraduate placements provided scholars with the opportunity to gain valuable research experience in a clinical/laboratory environment. These placements were funded by individual departments, or through University Summer Scholarships.

Honours Research Scholarships

Honours Scholarships continued to be offered at TQEH in 2016 and continue to be supported through The Hospital Research Foundation.

Higher Degree Scholarships

In 2016 over seventy scholars undertook research towards Higher Degrees at TQEH, with five students supported with The Hospital Research Foundation (THRF) Scholarships. Responsibility for the selection and award of THRF Honours and Postgraduate scholarships lies with the BHI Scholarship Selection Committee. The Committee draws representatives from clinical academic and scientist streams, with both the University of Adelaide and University of South Australia represented. Scholarships provide stipends that match the Australian Postgraduate Award (APA) rate. The Foundation also provided Scholarship support for one international student. Other higher degree students at TQEH had scholarship support from a range of funding bodies, including NHMRC, the University of Adelaide and University of South Australia (International scholarships, APA, and University of Adelaide Faculty 'Divisional' scholarships).

Statistical Support Service, TQEH

The Statistical Support Service, jointly funded by BHI and the Faculty of Health Sciences at the University of Adelaide, provides 12 hours per week of statistical assistance to staff and students at the BHI and TQEH more generally. In 2016 the Statistical Service was provided by Dr Stuart Howell of the Data, Design and Statistics Service, Adelaide Health Technology Assessment (AHTA), School of Public Health at The University of Adelaide.

The range of services included:

- advice to research staff and postgraduate 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

HUMAN RESEARCH ETHICS COMMITTEE REPORT 2016

The Queen Elizabeth Hospital, Lyell McEwin Hospital and Modbury Hospital

Human Research Ethics Committee (HREC) activities in 2016 have continued with the expert help of Heather O'Dea as the Executive Officer for the HREC.

Heather has recently been supported by Dominic How who has been appointed as administrative assistant for Heather. Jan-Louise Durand, the Researcher Support Officer, and Lisa Barrie, the Research Administrative Officer, continue in their roles particularly of dealing with low and negligible research applications and amendments. They are also involved in audit and quality assurance applications which do not require formal HREC approval but for subsequent publication need to be endorsed as not requiring formal HREC approval by the Committee.

The HREC members have continued to review research projects and provide feedback to the researchers in a diligent manner. There have been some alternations in workload over the past four years as the table shows:

Year	Full HREC submissions	LNR/audit/QA submissions	Amendments
2013	57	70	N/A
2014	39	73	N/A
2015	35	74	187
2016	41	75+	120+

Therefore it seems as though the workload for the Committee has plateaued and there will be discussions undertaken with all stakeholders to help determine what is the most efficient way for the HREC to function in the future.

During 2016 the HREC welcomed two members bringing their scientific expertise to the Committee. Dr Sarah Appleton became a member in February 2016 and A/Prof Sarah Vreugde in April 2016 and have made important contributions to HREC discussions about research submissions.

The HREC has had a farewell ceremony for a decade of service by Peter Carr. Peter had undertaken a range of activities for the HREC including being Deputy Chair, providing educational sessions to the HREC about science and statistical significance, and leading discussion in the area of confidentiality. His common sense approach will be missed. The HREC wishes Peter well in his retirement.

The Scientific Review Subcommittee (SRS) also lost the services of Dr James X Gray at the end of 2016. James provided excellent reviews of the scientific merit of submitted projects, and consequently helped to develop recommendations which informed the decision making processes of the HREC. The HREC and SRS wish James well in his new endeavours.

Because of the changes in Committee membership there has been a public advertisement for expressions of interest in becoming a member. There will be interviews for potential new members held by the RAH and TQEH/LMH/MH Committees in early 2017.

The HREC continues to encourage researchers to discuss research issues and applications face-to-face in the ground floor area of the Basil Hetzel Institute.

Experience has shown that face to face meetings often simplify what can be tedious email trails when nuances have not been picked up either by the HREC or by the researchers.

The HREC has participated in an on-line educational activity for HREC members run by Praxis which will enable members to check that their skills are up to date and hence help to ensure that HREC is functioning as the NH&MRC intends. The HREC had an Advanced Trainee from Geriatric Medicine participate in reviews and meetings in the second half of 2016. The purpose of this involvement is to increase the knowledge of the Advanced Trainee about the Ethics of Research and to provide practical experience in the processes of ethical research. The opportunity is available to other Advanced Trainees.

The HREC wishes to provide a prompt and effective service and feels it can best do this by maintaining good communication with the researchers. If there are suggestions for improvement, the HREC is very willing to receive and consider such suggestions. One way of improving communication would be a regular meeting between the HREC Executive and the researchers at the Basil Hetzel Institute and also at the Lyell McEwin Hospital. This will be arranged to commence in 2017.

Professor Richard Ruffin
TQEH/LMH/MH HREC Chair 2016

Because of you we can bring hope for better care, treatments and cures

the hospital research foundation

THE HOSPITAL RESEARCH FOUNDATION

For over 50 years, The Hospital Research Foundation has supported 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.

Message from the Chair

"We must find time to stop and thank the people who make a difference in our lives."

John Fitzgerald Kennedy

These wise words of gratitude and inspiration recorded more than fifty years ago are just as relevant today as they were then.

They are especially relevant to us at The Hospital Research Foundation (THRF) as we acknowledge the kind, generous and thoughtful support of our donor community who in turn enable the delivery of new and improved therapies and the best possible patient care in our hospitals.

It is our donors commitment to help others that serves to inspire THRF and the clinicians and researchers we support to reach their potential, to innovate, to discover and push the boundaries.

It is only with our donors continued passion and commitment together with the skill and dedication of the researchers themselves that we can help save and improve the quality of people's lives through research, education and care.

We hope you will share and celebrate the successes of the work being made possible through this support from the latest discoveries in prostate cancer, bowel cancer and breast cancer prevention to the development of vaccines, improvements in heart disease and Australian-first transplant surgeries.

Our donors, supporters and partners should be proud of the impact their support is bringing to families not only in this state but across Australia and internationally.

Recently we were able to share the heartfelt story of young mother of two Nyrie Contor. At just 42, Nyrie is battling metastatic breast cancer. This truly inspirational woman wanted to share her story to help others and raise awareness that we can all play a vital role in fighting this and other life-threatening diseases.

Nyrie has a powerful but simple message, "Research takes time and costs a lot - but not doing it costs so much more."

Her wish is for medical research to thrive – to find better treatments and medications with less side effects, to improve the quality of people lives and give them more time with their children and families.

This is the real impact of donor support, passion and commitment. It has a very real and tangible benefit to the community; to our community and the people we care for and especially for people like Nyrie.

In this Research Report, you will see real stories of lives changed and improved through the latest clinical care and medical research only made possible through donor support.

You will also meet the extraordinary people within our community who work with us to bring their philanthropic goals to life. We are proud to engage and connect with our fundraising champions to translate their worthy endeavours into support of nominated areas of medical research and patient care.

To guide the Foundation's broad direction and future growth we have developed and implemented a new 12-year strategic plan designed with enough flexibility to respond to changes and opportunities as they arise. At the core of this model will be our donors and supporters as we look to enhance our level of engagement, value and communication.

We are committed to innovate and streamline the unique model of the organisation to deliver operational efficiencies that enable funds to reach the highest areas of community need and impact.

Our continued success and growth is testimony to the talented THRF team led by CEO Paul Flynn, our governance structure, financial transparency and an exceptional Board of Directors. I thank each of them for their invaluable contribution and for their time, considerable knowledge and energy they bring to the Foundation's strategic direction and governance.

I would also like to thank The Repat Foundation – The Road Home Board of Governors led by Air Vice-Marshal Brent Espeland AM (Ret'd) and Brigadier Alison Creagh CSC (Ret'd) for their vision and leadership as this affiliate expands its scope and operations on a national scale.

Most importantly, to our many donors, supporters and partners we thank you for your continued trust and confidence in THRF to deliver 100 per cent of donations to medical research and clinical care which is providing both short and long term health benefits to our community.

Together we can, and are making a difference in people's lives.

Thank you.
Melinda OLeary
Chair, The Hospital Research Foundation Board

the hospital research foundation

THRF Board Members

Melinda OLeary
(Chair)

Melinda OLeary is a co-founder, and consultant with Nova Systems, an Engineering and Project Management company, which employs more than 300 staff around Australia, Singapore and The United Kingdom. Prior to joining Nova, Melinda held senior positions in several recruitment firms including State Operations Manager for Select Staff, and State Manager for both Manpower Services and Kelly Services. She joined THRF in 2010 as a Board Member has used her extensive experience in business and HR both at a board level and as former Chair of the HR committee. Melinda is a director on the Board of the Lifetime Support Authority and Deputy Chair of the Training and Skills commission.

John MacPhail
(Deputy Chair)

John MacPhail is a partner of Lynch Meyer Lawyers, a leading Adelaide law firm providing a vast range of useful services for small-to-medium enterprises, large corporations and Not-for-Profit organisations. John has more than 25 years' experience working in law firms in London, Sydney and Melbourne. He is a past President of the Copyright Society of Australia, and taught part-time as a postgraduate university law lecturer and professional examiner on intellectual property subjects. As a practising lawyer he advises clients working in a wide range of industries, particularly medical and healthcare, biotechnology, wine, retail, sports, marketing and sponsorship, and ITC.

Professor John Beltrame

Leading cardiologist Professor John Beltrame brings a medical perspective to the board. He has degrees in both science and medicine, and is a Fellow of the Royal Australasian College of Physicians, the European Society of Cardiology, the American College of Cardiology, the American Heart Association and the Cardiac Society of Australia and New Zealand. He is the Michell Professor of Medicine and the Cardiology Academic Lead for the Central Adelaide Local Health Network.

Professor Peter Hewett

Professor Peter Hewett is a Clinical Professor of Surgery with the Adelaide University Discipline of Surgery and is Head of Colorectal Surgery at The Queen Elizabeth Hospital. He has published more than 100 articles in peer reviewed journals and has held three NHMRC grants. Prof Hewett is also currently Chairman of the Calvary North Adelaide Hospital Clinical Review Committee and teaches at the Adelaide University Masters Course in Minimally Invasive Surgery.

Dr Stephen Rodda

Dr Stephen Rodda is Chief Executive of UniSA Ventures Pty Ltd, the technology commercialisation and investment management arm of the University of South Australia. He was educated at the University of Adelaide gaining a first class honours degree, a PhD in Biochemistry and was awarded the University Medal. Subsequently he was awarded the prestigious CJ Martin and Arthritis Foundation Fellowships for post-doctoral training at Harvard University. Dr Rodda has a combined 16 years of experience in the areas of scientific research, research management, technology commercialisation, investment management and corporate governance. Dr Rodda holds an MBA, is a Graduate of the Australian Institute of Company Directors and has undertaken the Advanced Management Program (AMP) at the Harvard Business School..

Ken Milne

Ken Milne is the Director of Milne Architects Pty Ltd and adds a different aspect to the board. He received a Diploma of Architecture at the University of South Australia and is a Fellow of the Royal Australian Institute of Architects. He is a Past President and former Chapter Councillor of the Royal Australian Institute of Architects; he was National Chair of RAIA Public Affairs Committee and Awards Director. He was also a Board member and Deputy Chair of the Rostrevor College for 10 years overseeing the formulation and introduction of the College Master Plan.

Luciana Larkin

Luciana Larkin is the lead partner of Tregloans, an established and respected Chartered Accountancy practice. As a sharp and strategic thinker, she applies her expertise in financial, complex tax and business transactions to deliver effective outcomes. Luciana brings this professional expertise and strong focus on accountability and governance to the THRF Board together with experience as a trusted advisor to numerous other corporate boards and not-for-profit bodies.

John Woodward

John Woodward has more than 25 years experience in technology related change programs, projects and consulting services across industries including the health, water, energy, and entertainment sectors. John is Non-Executive Director at Statewide Super, an Elected Member (Councillor) with West Torrens City Council, and lectures at the University of Adelaide (Masters of Project Management). John holds an MBA specialising in technology management, is a graduate of the Australian Institute of Company Directors and a certified Project Management Professional through the Project Management Institute. John joined the board of THRF in 2013.

MaryLou Bishop

For the last 23 years MaryLou Bishop has run a surgical devices company selling highly technical operating room equipment into our largest hospitals across SA, WA and NT. MaryLou has a strong understanding of the medical world and the health industry. In 2014 MaryLou was elected a councillor to The Town of Walkerville. She joined THRF in 2014.

Valerie Timms

Valerie Timms has more than 18 years experience in Adelaide's competitive real estate industry. After only two years, Valerie was the number one sales person for a large franchise group and went on to run her own award winning office for nine years. Five years ago she created her own independent real estate company – Timms Real Estate. Valerie is a skilled coach and mentor within the property sector and is dedicated to serving the community and helping others achieve business success.

A breast cancer survivor, Sandra Kanellos is one of THRF's very special community fundraisers, who continues to raise vital funds for research and patient care.

Air Vice-Marshal Brent Espeland retd

Air Vice-Marshal Brent Espeland retd enjoyed a career in the Royal Australian Air Force spanning 36 years. He is an experienced commander, having held unit and formation command twice as well as having tenure as the Air Officer Commanding Training Command and Deputy Chief of Air Force. His final military service position was on secondment to the Department of the Prime Minister and Cabinet. Now retired, he is National President of the Australian Flying Corps and Royal Australian Air Force Association, past National President and current South Australian President of the Royal United Services Institute of Australia, a Director of the Sir Richard Williams Foundation, a member of the Department of Veterans Affairs Round Table, a member of the Air Force Heritage Advisory Committee and is especially pleased to serve as a member of the National Council of the Australian Air Force Cadets.

He is also actively involved as a founding and steering group member of the Alliance of Defence Service Organisations. More recently, following the merger of The Repat Foundation with THRF he became Chair of the Board of Governors and a Board Member of those respective organisations, and in June 2016 was appointed Chair of the Veterans' Advisory Council to the South Australian Government.

Brigadier Alison Creagh CSC retd

Brigadier Alison Creagh CSC retd is a Non-Executive Director of THRF and The Repat Foundation - The Road Home, a Council Member on the Australian War Memorial Council, and a committee member on the Australian Peacekeeping Memorial Project. Brigadier Creagh retired from the Australian Regular Army in March 2015 after a 30 year career and continues to serve in the Army Reserve. In the private sector she has been the Executive Director Spirit of Anzac Centenary Experience, which is a joint venture between the Australian Government, Telstra and the Commonwealth Bank. Brigadier Creagh joined the Army in 1985 and graduated from the Officer Cadet School, Portsea to the Royal Australian Corps of Signals. She served on operations in Cambodia (United Nations Transitional Authority Cambodia) in 1993, East Timor (International Force East Timor) in 1999/2000, Iraq in 2006 and Afghanistan (Headquarters International Security Assistance Force) in 2008/2009. Her senior military appointments included Director-General Public Affairs, Director-General Strategic Communication and Director-General ADF Theatre Project (The Long Way Home).

Paul Flynn
(Chief Executive Officer)

Paul Flynn is an innovative and entrepreneurial Executive who has earned a stellar reputation for achievement during a multifaceted career in both the Finance and Not-for-Profit sectors. He has been acknowledged for his contribution by being awarded the 2005 Ernst & Young Social Entrepreneur of the Year in SA/NT and was also awarded the 2006 Equity Trustees Australian CEO Award for Innovation. Paul is passionate about the opportunity to help medical and scientific researchers in their important voyage of discovery which will benefit all Australians. Paul brings advanced skills to THRF in the areas of Leadership, Sales Management, Property Development and Management, Change Management, Financial Risk Management, Employee and Organisation Development and Employee Relations. He is delighted to be working with the team at THRF and The Institute, contributing to the health and well-being of all Australians.

the hospital research foundation

THRF Corporate and Community Support

Suits in the Sea for Cancer Patients

Over one hundred people flocked to Joe's Kiosk at Henley Beach on Sunday January 31, 2016 to join surreal artist Andrew Baines who dedicated his 10th Anniversary 'Suits in the Sea' photo shoot to THRF's Under Our Roof project, providing homes for country cancer patients and their families.

The early hour didn't faze families, friends or even suited up dogs who arrived at 7am to line up on the water's edge. Dressed up in black, paired with a black umbrella and a soft toy to symbolise families affected by cancer, each person donated $10 to the Under Our Roof project raising nearly $1,000 to build more homes.

"This latest photo shoot was a way of celebrating the last decade while helping a wonderful cause," Andrew said.

"If this photo event can help improve the lives of country patients and families then I think that is a great way to celebrate the last ten years of work."

Valuable Support from Drakes Supermarket

In 2016 THRF was thrilled to be a recipient of $21,500 for health and medical research thanks to the ongoing generosity of Drakes Supermarket, their suppliers and the South Australian community.

This incredible amount was raised through the annual sale of Drakes Supermarkets Charity Show Bags. THRF was one of four charities who received an equal share of $86,055 raised through the 2015 Show Bag campaign.

For 17 years Drakes Supermarket CEO Roger Drake and wife Wendy have been producing this show bag thanks to the generosity of local suppliers, with the bags sold at the Royal Adelaide Show each year.

Below left: Mayor Angela Evans, City of Charles Sturt; Andrew Baines, artist & Kris Lloyd, Woodside Cheese Wrights at 'Suits in the Sea'.

Below right: THRF's CEO Paul Flynn, and staff Fiona and Kate pictured with Roger and Wendy Drake along with other charity recipients of the 2015 Drakes Show Bag campaign.

Main image: Charitable participants at 'Suits in the Sea'.

Dancing for Cancer Research

Long-time THRF supporters, Maria and Chris Giannoudis held their annual Cancer Support Dinner Dance on April 2016, raising an incredible amount for cancer research – $30,810.

This was their 15th annual Cancer Support Dinner Dance and the money raised will be directed to breast cancer research at the BHI.

Thank you so much to Maria and Chris and everyone who attended this wonderful event for a very special cause. We're so proud we can ensure the funds raised are directed to researchers who are doing all they can to find ways to prevent, treat and ultimately cure cancer.

Vaccination Café on World Immunology Day!

To celebrate World Immunology Day on Friday April 29 2016, THRF was proud to sponsor Adelaide's Vaccination Café an initiative of the Australasian Society for Immunology (ASI) to encourage the public to come along and get their flu vaccine.

Hosted by RiAUS, the Science Exchange building was transformed in to a café atmosphere where guests came along to receive their flu vaccine, enjoy a coffee and listen to some leading immunology researchers and PhD students.

With over 70 people receiving their vaccine on the day, the event was a great way to celebrate our immune system and promote the world-class immunology research happening right here in Adelaide!

Above: THRF staff Kate and Abbey receiving their flu vaccine on World Immunology day '.
Main image: Maria and Chris pictured with Head of Breast Cancer Research Unit Professor Andreas Evdokiou (left) and his research team.

International Scientist Comes to Adelaide!

THRF was extremely proud to sponsor Adelaide's Pint of Science Festival in May 2016, organised by the BHI PhD student Katharina Richter and held over three big nights in the comfortable atmosphere of the Wheatsheaf Hotel.

On the final night of the festival the local audience was treated to a special guest speaker, Professor Tom Coenye who travelled all the way from Belgium!

Director of the Laboratory of Pharmaceutical Microbiology at Ghent University in Belgium, Prof Coenye is making fascinating and exciting discoveries through his research into antibiotic resistant bacteria. We caught up with him to discuss his research and opportunities for an international collaboration with our very own Ear, Nose and Throat Department at the BHI.

"In my lab we have 20 people including 15 researchers who are looking at various aspects of the biofilm formation in human infections," Prof Coenye explained.

"More specifically we look at the interactions between different micro-organisms and how they build complex structures and communicate with each other. We investigate how these interactions affect diseases and how we can use this knowledge to develop novel therapies.

"For example one of the strategies we are currently looking at is interfering with the communication system between bacteria to see if this makes infections easier to treat.

"The overall aim of the research we do in our lab is to first gain a fundamental understanding of biological processes and then see how we can use that knowledge to develop novel treatment strategies."

With a focus on chronic wound infections and respiratory tract infections in patients with cystic fibrosis, Prof Coenye is confident an international collaboration with the BHI will be on the horizon!

Top: Professor Tom Coenye speaking at the 'Pint of Science Festival'.
Main image: 'Pint of Science Festival', Wheatsheaf Hotel, Thebarton.

Peter from G-Fresh, Karla one of our lovely patients, Simon and Theo from G-Fresh and THRF's CEO Paul Flynn.

G-Fresh Bringing Joy to Families in Need

Families staying at THRF's Under Our Roof homes will be cooking up a storm thanks to the generosity of local South Australian organisation, G-Fresh.

Donating two brand new barbecues and spice racks, the amazing team at G-Fresh are making a difficult time a little easier for cancer patients and families staying in the Under Our Roof homes.

Currently in high demand, the homes are now providing a sanctuary for country cancer patients who are travelling to Adelaide for treatment. Karla, a lovely patient staying in one of the homes was thrilled to receive the gift on behalf of future families who will stay in the homes.

Ladies Day Supports Local Research!

The Rosewater Football club held their annual Ladies Day once again in 2016, donating $1,000 of their proceeds to support local research and patient care through THRF. Thank you to all the ladies who got involved and we look forward to having you back on board in 2017!

John Reardon from the Rosewater Football Club with THRF's CEO Paul Flynn.

Alex Vakitsidis (bottom right) pictured with Olympic Spirit Greek Friends who are passionate supporters of THRF.

A Special Christmas Celebration

On Sunday December 4 2016, Alexandra (Alex) Vakitsidis, Ambassador and long-time supporter of THRF hosted a very special fundraiser in partnership with the City of Charles Sturt and the Ethnic Schools Association of SA.

The Multicultural Children's Christmas Celebration was held at the Woodville Town Hall and attended by over 100 people. The wonderful evening raised over $2,500 for medical research at the BHI!

This fundraiser helped purchase a specific piece of equipment called an AutoMACS which will be used at the BHI. AutoMACS will allow researchers, including those in the Ear, Nose and Throat research group (ENT Surgery), to separate and sort particular cells from within a large complex population. It works by 'tagging' the specific cell type of interest and then uses magnets to isolate those cells.

Thank you to all of the wonderful performers and attendees who came along and donated on the night and a big thank you to Alex and event partners City Of Charles Sturt and the Ethnic Schools Association of SA!

BHI Research Equipment

Having access to the most advanced equipment ensures research undertaken in the lab can be translated into treatments that benefit the community as soon as possible.

THRF is proud to support researchers at the BHI by funding vital equipment that will assist in finding treatments and cures for all cancers, cardiovascular disease and other health conditions affecting our community.

In 2016 THRF contributed funds to purchase the following:

- **BioRad iMark Absorbance Plate Reader** – The BioRad plate reader is an integral item of core equipment at the BHI and is used in a variety of different experiments to investigate disease progression. It can be used to monitor multiple measures. For example, it is used to measure the number of bacteria present in a solution and to monitor how fast these bacteria are growing. It is also used to measure proteins produced by human cells, either in the cultured medium used to grow the cells in the laboratory, or by directly measuring protein concentration in blood samples from patients. The proteins can indicate how healthy cells are, and whether they are producing factors associated with certain diseases.
- **Ratek Shaking Bath** – The shaking water bath is an integral item of core equipment at the BHI and is used in a variety of different experiments to culture microorganisms used in genetic experiments and production of DNA for further studies, and assessment of bacterial growth.
- **Thermofisher Tissue Processor and Embedding station** - This piece of equipment expands the ability for researchers to study cells and tissues and complements the BHI's 'state of the art' microscopy equipment. Having the tissue processor onsite allows for specialised protocols for different tissues, such as mammary tissue (in breast cancer research) which can be notoriously difficult to fix and cut neat tissue sections in a research setting.

- **AutoMACS Pro Separator** - a sophisticated and versatile platform that allows separation of virtually any cell types in 30 minutes. The AutoMACS Pro Separator allows researchers to separate and sort particular cells from within a large complex population. It works by 'tagging' the specific cell type of interest and then using magnets to isolate those cells. Those cells can then be analysed or cultured further without the 'background noise' from the other cell types found within tissue.
- **Four Refrigerated Centrifuges** – essential equipment for any laboratory, these refrigerated centrifuges are used in the preparation of small molecular samples including protein and DNA.

PhD student Zenab Dudhwala, Department of Gastroenterology & Hepatology.

THRF Fundraising Events and Activities

Mercer SuperCycle
The Longest Table
Under Our Roof
Hospital Research Home Lottery
Community Awareness Program
Basil Hetzel Society Luncheon
Media Appearances
Sponsorships
Professional Memberships

BHI researchers Bill Panagopolous, Dr Irene Zinonos & Associate Professor Joanne Young.

MERCER SUPERCYCLE THE RIDE OF A LIFETIME

It was a record year for Mercer SuperCycle 2016 with 69 cyclists and 22 support crew participating in a cycling challenge across some of the most stunning parts of rural South Australia.

Incredibly they raised over $465,000 to support country cancer patients and their families through THRF's Under Our Roof project, providing accommodation for country cancer patients and their families in Adelaide.

Rider Anton Marrone from Bendigo Bank described the Mercer SuperCycle experience as one that "exceeds every expectation."

"The SuperCycle experience extends beyond the seven days you're on the road. The experience includes the months of preparation and training and the camaraderie of the team environment," Anton said.

"Over and above the cycling experience, SuperCycle gives you a great sense of achievement, particularly because you're making a tangible contribution to something much bigger than yourself. When you're all 'on the front pulling' for such a fantastic cause, it really brings the entire week into perspective. If you're considering signing up I can assure you that SuperCycle is worth EVERY little bit of effort you put in."

Sincerest thanks must go to Mercer SuperCycle major event sponsors Mercer and Bendigo Bank, and every rider, support crew member, donor and the tireless SuperCycle Inc. volunteer committee for their incredible achievement of a record fundraising total.

FUN. SIMPLE. LIFESAVING!

The Longest Table (TLT) came alive across the country on Saturday June 18, 2016 – the official date to #forkcancer and raise money for vital cancer research.

In a successful year, TLT raised over $156,000 to be directed to cancer research through THRF and our disease specific affiliates Australian Breast Cancer Research and Australian Prostate Cancer.

If hosts couldn't hold their Longest Table on the official night they were encouraged to choose any date in June or July. From eight course meals, to burger nights and unique themes TLT has seen it all!

All funds raised through TLT will support research into better diagnosis, improved treatments and ultimately finding cures for some of the most devastating cancers affecting our loved one.

Hosting a Longest Table in 2016, Delia Matthew is hopeful to one day see a future free of cancer.

"The Longest Table is so much fun! If there is a cure for most cancers within the next 10-15 years due to our fundraising efforts, wouldn't that be amazing? I personally don't need to lose too many more friends to this horrible disease."

Thank you to the fabulous hosts who held their own Longest Table dinners this year – we are so grateful to you and the money you helped raise! Remember 100 per cent of funds raised go directly to our cancer researchers! Thank you for helping us beat this heartbreaking disease.

Main image: BHI Researchers held a TLT lunch and raised over $1,600.

Above: Hosts across Australia had a ball hosting their own Longest Table events.

Below: Thank you to our amazing TLT Ambassadors Bree May and Jenni Eyles!

A HOME AWAY FROM HOME

Being loving mothers isn't the only thing Francesca Kenchington (pictured left) and Karla O'Neill (pictured right) have in common. They both have been diagnosed with breast cancer and needed to travel to Adelaide for treatment. Fortunately, both Francesca and Karla have been able to find a safe haven in the Under Our Roof homes. With your support, these houses have become homes for country cancer patients and their families. Thank you!

"Being around my family was so important to me. Having my husband and mum here has been what's kept me positive. It's allowed me to keep that sense of normality and routine as if I was still at home.

Knowing my family was safe here while I went to hospital meant I could focus on me and I knew that they would be okay. It's given me the opportunity to have more time with my little girl, and for me that's been such a positive experience. What everyone involved has provided us is stability and a sense of normality in a place that feels like home. Thank you to everyone who made this possible and who donated along the way. You may not see the rewards, but it's huge for us. It's a joy, and that's what you've been able to give people going through a very hard time."

"During the five weeks we were able to spend some quality time as a family together which was really important, especially for our kids who are 15, 10 and 4. My husband and kids were able to travel here from Whyalla on weekends, as the kids had school and kindergarten during the week.

The kids loved it because they were able to do more here than in Whyalla! We've been able to take them to play cafés and down to Henley Beach because the house is so central and close to the city and the beach. The Under Our Roof home has made this experience much more comfortable and it's given me an opportunity to heal and focus on myself. It's been hard being away from my family but staying here has helped me cope. I can't thank everyone enough who made this possible. I couldn't imagine having to do this anywhere else."

HOSPITAL RESEARCH HOME LOTTERY

It was an incredible year for the Hospital Research Home Lottery. With two lotteries each year, in 2016 THRF were blown away with two complete sell-outs!

Thanks to the overwhelming public support for the Hospital Research Home Lottery we are able to fund more life-changing medical research and help improve patient care in South Australia.

SOMERTON PARK

In January 2016 we launched our first lottery of 2016 and the Grand Prize was worth over $1.6million – a beautiful Somerton Park home along with $250,000 cash.

Selling out in record time in just five weeks, the winner S.Guerra (Ticket Number #03357) really had his dreams come true being able to live just a short stroll from the beach.

As well as the main home lottery with over 5,600 prizes up for grabs, this was our first lottery with a 1 in 12 chance of winning a prize!

HENLEY BEACH

The second Hospital Research Home Lottery of 2016 was our best yet, selling out in only two weeks! With the grand prize a $1.6 million home in stunning Henley Beach and $250,000 cash it is not surprising it was so popular.

Grand prize winners Catherine and Mario De Cristofaro from Seaton (Ticket #12034) were ecstatic to take away the prize!

COMMUNITY AWARENESS PROGRAM

Engaging with the people who make the health and medical research that THRF supports a reality is an integral part of our year! This year's Community Awareness Program saw the local community learn about a variety of research areas they support through speaking engagements and public tours of the BHI research facility.

Community groups throughout the state were given the exciting opportunity to hear from their local researchers. In 2016 THRF hosted 16 speaking engagements visiting local groups including University of the 3rd Age (U3A) Flinders University, Adelaide Hills and Port Adelaide along with Charles Sturt Rotary, Elizabeth Town Centre Weight Watchers and Active over 50's Largs Bay Regional Group. At each community event researchers are invited to speak about their work, with topics ranging from heart disease to arthritis and diabetes.

The annual tours of the BHI are also an exciting highlight of the year, where the public are invited to come and see where the medical research magic takes place. Guests were treated

to a variety of research topics this year including bowel cancer, breast cancer, healthy ageing and prostate cancer.

If you are interested in coming along to a public tour or a community group presentation, please visit our website for more information **www.hospitalresearch.com.au**

BASIL HETZEL SOCIETY LUNCHEON

On November 3, 2016 THRF shared a 'Thank You' lunch with our Basil Hetzel Society, a group of our very special donors who provide much needed support to medical research at the BHI and patient care at TQEH!

A big thank you to everyone who attended, the Kooyonga Golf Club for having us and De Bortoli Wines for being our wine sponsor for the day! A special mention to our panel of speakers from the BHI - Associate Professor Wendy Ingman, Dr Doan Ngo and Dr Nicky Thomas.

Thank you to these very special people who make it possible for THRF to fund vital research at the BHI!

PhD candidate Khamis Tomusange
Image courtesy of BrettWilliamson.

MEDIA APPEARANCES

In 2016 a number of exciting research breakthroughs appeared on both national and local media.

In April, PhD candidate Khamis Tomusange from the BHI was featured on ABC Adelaide News online in an article on his research into a potential vaccine for HIV.

Chairman of the Department of Otolaryngology, Head and Neck Surgery and Professor of Skull Base Surgery at The University of Adelaide, Professor Peter-John Wormald and one of his PhD candidates, Dr Mian Li Ooi, were featured on the ABC's national science program Catalyst in June talking about their research into bacteriophage and the role it plays in the fight against chronic sinusitis. Their research is undertaken at the BHI, TQEH in the ENT Surgery research group.

In November 2016, in collaboration with the University of Adelaide, THRF announced exciting research coordinated by the BHI's Virology Group. This story was featured in many media outlets including The Advertiser and ABC online.

We also enjoy a monthly segment with community radio station Coast FM, which gives a variety of researchers the opportunity to share their research with presenter David Hearn.

SPONSORSHIPS

Each year THRF is pleased to direct funds to provide ancillary support for a range of significant activities and projects that enhance and extend educational endeavour or have a direct and measurable benefit to the community.

THRF is a proud sponsor of a number of important events at the BHI including the 'Talking Heads' seminar series for staff and students and the annual TQEH Research Day each October.

In 2016 THRF also supported the Vaccination Café to mark World Immunology Day on April 29. An initiative of the Australasian Society for Immunology (ASI) the event was designed to encourage the public to have a flu vaccination prior to winter. THRF was also thrilled to sponsor Adelaide's Pint of Science Festival, which was held in May. In addition, THRF also supported the annual ASI Retreat for students and scientists working in the field of immunology and the Australian Society for Medical Research (ASMR). ASMR sponsorship from THRF contributed to a range of activities held during Medical Research Week in early June and attended by many of the postgraduate students based at the Basil Hetzel Institute, TQEH.

THRF also partnered with SA Health and the Central Adelaide Local Health Network (CALHN) to hold two GP Health Forums aimed at improving healthcare pathways and services for outpatients and the broader community.

To mark the 10th anniversary of South Australia's first islet cell transplant to treat type 1-diabetes, THRF supported an event to celebrate this significant medical milestone with clinicians, nursing staff and islet cell recipients and their families.

PROFESSIONAL MEMBERSHIPS

THRF has been a long-standing Foundation member of Brand SA and is proud to help showcase the state's growth and success in the field of translational medical research and innovation in treatments and delivery of patient care.

THRF is also proud to be a nominated charity partner of both the American Chamber of Commerce (AMCHAM) and the Israeli Chamber of Commerce (AICC). These affiliations give THRF opportunities to engage and build positive relationships with the South Australian corporate community and showcase the health benefits and outcomes made possible through local medical research.

APPENDIX A: RESEARCH GROUP MEMBERS

AGEING

Adelaide Geriatrics Training and Research with Aged Care (G-TRAC) Centre

TQEH DEPARTMENT **AGED AND EXTENDED CARE SERVICES**

Research Leader
Renuka Visvanathan

Senior Medical Scientists
Solomon Yu, Pradeep Pithadia

Postdoctoral Research Fellows
Joanne Dollard, Ivanka Hendrix

Advanced Trainees
Kareann Khow, Michelle Kee, Thanuja Jayaweera,
Anupam Gupta

Postgraduate Students
Agathe Jadczak, Ruth Teh, Neha Mahajan, David Yu, Mark Thompson, Beatriz Martins, Clare McNally

Research Manager - CRE Frailty and Healthy Ageing
Leonie Baker

G-TRAC Administration Support Officer
Nina Wiltshire

Senior Lecturer - G-TRAC, SA Health
Neha Mahajan, David Yu

Consultants
Jason Ng, Pazhvoor Shibu, Faizal Ibrahim, Shailaja Nair, Khai Tham, Kandiah Parasivam, Fin Cai, James Smyth, Khai Tam, Stephen Hoskins

Nurse practitioner- SA Health, G-TRAC, CRE Frailty and Healthy Ageing
Donna Preston

Manager Aged Care Alternatives Regional Assessment Service G-TRAC
Grant Edwards

International Observers
Sally Suriani, Padeep Pithadia

BHI Collaborators
Robert Adams, The Health Observatory

External Collaborators
John Morley , St Louis University (USA); Matteo Cesari, Centre Hospitalier Universitaire de Toulouse (France); Ken Rockwood, Olga Theou, Dalhousie University (Canada); Jean Woo, The Chinese University of Hong Kong (Hong Kong); Masafumi Kuzuya, Nagoya University (Japan); Natalie Luscombe-Marsh, CSIRO; Keith Hill, Curtin University; Simon Bell, Maarit Jaana Korhonen, Monash University; Rachel Ambagtsheer, Justin Beilby, Torrens University; Len Gray, University of Queensland; Ian Cameron, University of Sydney; Leon Flicker, University of Western Australia; Derek Frewin, Independent Chair Management Committee - CRE Frailty and Healthy Ageing; Kylie Lange, University of Adelaide / Royal Adelaide Hospital; Jonathan Karnon, Alison Kitson, Mellick Chehade, Helen Barrie (Feist), Tim Schultz, Danielle Taylor, Tiffany Gill, Mandy Archibald, Damith Ranasinghe, Anne Wilson, David Wilson, Ian Chapman, Karen Jones, Michael Horowitz, Hossein Afzali, Veronica Soebarto, University of Adelaide

CANCER

Acute Myeloid Leukaemia Research Group

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

Research Leader
James Gray

Postgraduate Student
Kyaw Ze Ya Maung

External Collaborators
Richard D'Andrea, Sarah Bray, University of South Australia; Debora Casolari, University of South Australia; Thomas Gonda, University of Queensland

Breast Biology and Cancer Unit

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

Research Leader
Wendy Ingman

Postdoctoral Researchers
Pallave Dasari, Danielle Glynn, Sally Sun

Research Assistant
Leigh Hodson

Research Nurse
Kathryn Mildren

Postgraduate Students
Vahid Atashgaran, Maddison Archer, Joseph Wrin, Sarah Bernhardt

BHI Collaborators
Andreas Evdokiou, Mark DeNichilo, Breast Cancer Research Unit

External Collaborators
Simon Barry, Mark Hutchinson, Lucy Woolford, University of Adelaide; Sanjay Garg, University of South Australia; Kara Britt, Peter MacCallum Cancer Centre; Erik Thompson, Queensland University of Technology

Breast Cancer Research Unit

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader
Andreas Evdokiou

Postdoctoral Researchers
Mark De Nichilo, Irene Zinonos

Research Assistants
Shelley Hay, Bill Panagopoulos

Postgraduate Students
Vasilios Liapis, Aneta Zysk, Alexandra Shoubridge, Christopher Defelice, Bill Panagopoulos

BHI Collaborators
Benedetta Sallustio, Clinical Pharmacology Research Group; Andrew Foreman, Therapeutics Research Centre; Wendy Ingman, Breast Biology and Cancer Unit; Jenny Hardingham, Colorectal Cancer Research Group; Ehud Hauben, Liver Metastasis Research Group

External Collaborators
Dusan Losic, David Findlay, Gerald Atkins, University of Adelaide; Andrew Zannettino, Lisa Butler, SAHMRI; Vladimir Ponomarev, Memorial Sloan Kettering Cancer Centre (USA); Andreani Odysseos, University of Cyprus (Cyprus); H2Care (Netherlands)

Colorectal Cancer Research Group

TQEH DEPARTMENT **HAEMATOLOGY AND MEDICAL ONCOLOGY**

Research Leader
Tim J Price

Consultant
Amanda Townsend

Chief Medical Scientist
Joanne P Young

Principal Medical Scientist
Jennifer E Hardingham

Postdoctoral Researcher
Eric Smith

Research Scientists
Hilary Dorward, Wendy Uylaki

Postgraduate Student
Yoko Tomita

BHI Collaborators
Andreas Evdokiou, Breast Cancer Research Unit; Lorraine MacKenzie, Therapeutics Research Centre; Betty Sallustio, Clinical Pharmacology Research Group; Wendy Ingman, Breast Biology and Cancer Unit; Paul Drew, Solid Cancer Regulation Group

External Collaborators
Andrea Yool, University of Adelaide; Dan Worthley, SAHMRI; Graeme Young, Flinders University; Peter Hewett, Ilmars Lidums, The Queen Elizabeth Hospital; Andrew Ruszkiewicz, Hamish Scott, SA Pathology; Benjamin Thierry, University of South Australia; Christophe Rosty, Envoi Pathology; Aung Ko Win, University of Melbourne; Chris O'Callaghan, Canadian Cancer Trials Group (Canada); Susan Parry, Auckland City Hospital (New Zealand)

Liver Metastasis Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leaders
Ehud Hauben, Guy Maddern

Research Officer
Chandra Kirana

Postdoctoral Researcher
Miriam Canavese

Vacation Student
Paris Kollis

BHI Collaborators
Jenny Hardingham, Colorectal Cancer Group; Doan Ngo, Cardiovascular Pathophysiology and Therapeutics Group; Markus Trochsler, Surgical Science Research Group; Peter Hewett, Colorectal Cancer Research Group; Guy Maddern, Surgical Science Research Group

External Collaborators
Liefeng Peng, Victoria University of Wellington (New Zealand); Nicolas Voelcker, University of South Australia; Richard Stubbs, University of Otago (New Zealand); Nicole Packer, Macquarie University

Northern Network Colorectal Surgical Service

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Consultants

Peter Hewett, Darren Tonkin, Alex Karatassas

External Collaborators

Andrew Stevenson, Andrew Clouston, University of Queensland; Michael Soloman, Wendy Hague, University of Sydney; John Lumley, Wesley Hospital

Solid Cancer Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader

Paul Drew

Research Scientist

Eric Smith

Postgraduate Students

Helen Palethorpe, Jannatul Tuli, Mau Nam Wee

BHI Collaborators

Joanne Young, Colorectal Cancer Research Group

External Collaborators

Johan Gustafsson, University of South Australia; Jun-Feng Liu, Hebei Medical University (China); Tim Underwood, University of Southampton (UK); Jamie Kelly, Southampton General Hospital (UK)

South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC)

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader

Kim Moretti

External Collaborators

David Roder, Kerri Beckmann, University of South Australia; Sue Evans, Monash University; Michael O'Callaghan, SA Health, Repatriation General Hospital; Andrew Vincent, Zumin Shi, University of Adelaide; Ganessan Kichenadasse, Flinders Medical Centre; Martin Borg, Adelaide Radiotherapy Centre

CARDIOVASCULAR DISEASE

Cardiovascular Pathophysiology and Therapeutics Group

TQEH DEPARTMENT **CARDIOLOGY UNIT**

Research Leader
John Horowitz

Senior Medical Scientists
Yuliy Chirkov, Doan Ngo, Aaron Sverdlov, Thanh H Nguyen, Saifei Lui

Laboratory Manager
Irene Stafford

Research Assistant
Tamila Heresztyn

Clinical Trials Coordinators
Marilyn Black, Jeanette Stansborough, Greer Dymmott, Joanne McIntyre, Peter Cheung

Postgraduate Students
Vincent Goh, Chuks Ajaero, Ranjit Shah,Cher-Rin Chong, Vivek Nooney, Sven Surikow, Gao Ong, Hasan Imam, Gnanadevan Mahadavan, Matthew Chapman

BHI Collaborators
Betty Sallustio, Clinical Pharmacology Research Group; Andreas Evdokiou, Breast Cancer Research Unit

External Collaborators
Michael Frenneaux, University of East Anglia (UK); Raffaele de Caterina, Universita degli Studi “G.D’Annunzio” (Italy); Wilson Colucci, University of Boston (USA)

Clinical Pharmacology Research Group

TQEH DEPARTMENT **CLINICAL PHARMACOLOGY UNIT**

Principal Medical Scientist
Benedetta Sallustio

Research Officer
John Licari

Postgraduate Student
Cher-Rin Chong

BHI Collaborators
Andreas Evdokiou, Breast Cancer Research Unit; John Horowitz, Cardiovascular Disease, Pathogenesis and Therapeutics Group

External Collaborators
Melanie Madhani, University of Birmingham (UK); Michael Frenneaux, University of East Anglia (UK)

Translational Vascular Function Research Collaborative

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Molecular Physiology

Research Leader
John Beltrame

Senior Medical Scientists
Peter Zalewski, David Wilson

Research Assistants
Amenah Jaghoori, Rachel Jacobczak, Matthew Hay

Postgraduate Student
Victor Lamin

External Collaborators
Michael Worthington, James Edwards, Fabiano Viana, Robert Stuklis, CTSU, Royal Adelaide Hospital

Clinical Physiology

Consultants
John Beltrame, Christopher Zeitz, Sharmalar Rajendran, Margaret Arstall

Postgraduate Students
David DiFiore, Abdul Sheikh, Sivabaskari Pasupathy

External Collaborators
Noel Bairey Merz, University of California (Los Angeles USA); Hiroaki Shimokawa, Tohoku University, Sendai (Japan)

Health Outcomes

Consultants
John Beltrame, Margaret Arstall. Matthew Worthley, Christopher Zeitz

Postdoctoral Researcher
Rosanna Tavella

Postdoctoral Research Fellow
Isuru Ranasinghe

Postgraduate Students
Sivabaskari Pasupathy, Clementine Labrosciano

Research Officers
Bang Hoang, Carly Cilento, Alexandra Burdakova, Michael Contibas, Amenah Jaghoori, Rachel Jakobczak, Ellen Rees, Laura Simeone, Sophia Tan, Natasa Damjanic, Corrado Tavella, Tracy Air

BHI Collaborators
Peter Zalewski, Zinc and Cardiovascular Research Group; Prue Cowled, Vascular Surgery Research Group

External Collaborators
Chris Reid, Monash University; John Spertus, Washington University (USA); John Rumseld, American College of Cardiology (USA); Harlan Krumholz, Yale University (USA)

Vascular Surgery Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader
Robert Fitridge

Principal Medical Scientist
Prue Cowled

Consultant
Joe Dawson

Postgraduate Student
Guilherme Pena

Trainees
Ben Thurston, Chris Delaney, Guilherme Pena

Clinical Trials Coordinator
Ruth Battersby

BHI Collaborators
John Beltrame, Translational Vascular Function Research Collaborative

External Collaborators
Michelle Miller, Peter Speck, Flinders University; Jonathan Golledge, James Cook University

Zinc and Cardiovascular Disease Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Consultant
John Beltrame

Postdoctoral Research Fellow
Peter Zalewski

Research Assistant
Rachel Jakobczak

External Collaborators
Sandra Hodge, Royal Adelaide Hospital and Hanson Centre; Chiara Murgia, Monash University

CHRONIC DISEASE

Clinical Pharmacology Research Group

TQEH DEPARTMENT **CLINICAL PHARMACOLOGY UNIT**

Research Leader
Benedetta Sallustio

Medical Scientist
Shane Spencer

Postgraduate Students
Zaipul MD Dom, Rong Hu

External Collaborators
Andrew Somogyi, Janet Coller, Daniel Barrat, University of Adelaide; Robert Carroll, Royal Adelaide Hospital

Endocrinology Unit

TQEH DEPARTMENT **ENDOCRINOLOGY UNIT**

Consultants
David Jesudason, Narsing Laddipeerla, Kirsten Campbell, Lucy Gagliardi

Senior Registrars
Usman Mushtaq, Brigette Clarke

Senior Medical Scientists
Jim Wang, Chris Seaborn

Research Scientist
Erica Robinson

External Collaborator
Gary Wittert, Adelaide Medical School, University of Adelaide

Department of Gastroenterology & Hepatology

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

Consultant
Dep Huynh

Advanced Trainee
Stephanie Wong

External Collaborators
Nam Nguyen, Mark Schoeman, Department of Nuclear Medicine, Royal Adelaide Hospital; Animal, Food and Health Sciences, CSIRO

Stroke Research Programme

TQEH DEPARTMENT **NEUROLOGY UNIT**

Research Leader
Simon A Koblar

Principal Medical Scientist
Anne Hamilton-Bruce

Consultant
Jim Jannes

Postdoctoral Research Fellows
Karlea L Kremer, FongChan Choy

Senior Medical Scientist
Austin G Milton

Postgraduate Students
Anjali Nagpal, Maria R Gancheva, Jenny Sutton, Chelsea Graham, Kendall Goldsmith, Anupam Gupta

Honours Student
Alistair D Young

External Collaborators
Stan Gronthos, Paul Thomas, Susan Hazel, Janette Young, Mike Ridding, Jon Karnon, Ann-Maree Vallence, Nicolette Hodyl, Stephen Pyecroft, Darren Trott, University of Adelaide; Richard McGrath, Caroline Adams, Jack Junyu Liang, Susan Hiller, Svetlana Bogomolova, Michelle McDonnell, University of South Australia: Lisel O'Dwyer, Flinders University; Tim Kleinig, Royal Adelaide Hospital; James Fawcett, Jessica Kwok, University of Cambridge (UK); Luke Vale, Newcastle University (UK)

The Health Observatory

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Research Leader
Robert Adams

Postdoctoral Research Fellows
Sarah Appleton, Carol Lang, Tiffany Gill

Postgraduate Students
Graham Tucker, Clare McNally, Rohan Dhillon, Hannah Newell, Yohannes Melaku

BHI Collaborators
Catherine Hill, Rheumatology Research Group; Renuka Visvanathan, Solomon Yu, Adelaide Geriatrics Training and Research with Aged Care Centre; Scott Clark, Psychiatry Research Group; John Beltrame, Translational Vascular Function Research Collaborative; Isuru Ranasinghe, Health Performance and Policy Research Unit

External Collaborators
Doug McEvoy, Nick Antic, Peter Catcheside, Andrew Vakulin, Mark Mackay, Flinders University of South Australia; Angela D'Rozario, Jong-Won Kim, Patrick Hanly, University of Sydney; Nigel Bean, Campbell Thompson, Gary Wittert, University of Adelaide; Don Campbell, Keith Stockman, Monash University; Shyamali Dharmage, University of Melbourne; Anne Taylor, Zumin Shi, Cherrie Galletly, Nigel Stocks, David Gonzales, The University of Adelaide

CLINICAL SCIENCES, HEALTH SERVICES AND POPULATION HEALTH

Anaesthesia Research Group

TQEH DEPARTMENT **ANAESTHESIA**

Research Leader
Roelof Van Wijk

Consultants
Anand Rajbhoj, Vasanth Rao Kadam, Rajesh Sethi,Venkatesan Thiruvenkatarajan,Thavarajah Visvanathan, Richard Watts

Gastrointestinal Health and Disease

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

Research Associate
Adrian Cummins

Postgraduate Student
Zenab Dudhwala

Senior Medical Scientist
Wendy Uylaki

BHI Collaborator
Paul Drew, Solid Cancer Regulation Group

External Collaborators
David Moore, Women's and Children's Hosptial; Gordon Howarth, University of Adelaide

Health Performance and Policy Research Unit

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Research Leader
Isuru Ranasinghe

Postgraduate Student
Clementine Labrosciano

Research Officers
Tracy Air, Dennis Horton

BHI Collaborators
John Beltrame, Rosanna Tavella, Translational Vascular Function Research Collaboration; Robert Adams, The Health Observatory

External Collaborators
Harlan Krumholz, Jeptha Curtis, Center for Outcomes Research and Evaluation, Yale University (USA); Sanjay Mazumdar, Data 2 Decisions CRC; Gustavo Carneiro, School of Computer Science, University of Adelaide

Intensive Care Medicine Research Group

TQEH DEPARTMENT **INTENSIVE CARE MEDICINE**

1. ADRENAL STUDY

Research Leaders
Bala Venkatesh, Sandra Peake

Research Coordinator
Patricia Williams

External Collaborators
ANZICS –CTG and The George Institute of Global Health

2. TARGET NUTRITION STUDY

Research Leaders
Sandra Peake, Marianne Chapman

Research Coordinator
Patricia Williams

External Collaborators
ANZICS-CTG and The Australian & New Zealand Intensive Care Research Centre, Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University

3. SMARRT STUDY

Research Leaders
Sandra Peake, Jason Roberts

Research Coordinator
Patricia Williams

4. TRANSFUSE STUDY

Research Leaders
Jamie Cooper, Sandra Peake

Research Coordinator
Patricia Williams

External Collaborators
ANZICS-CTG; The Australian & New Zealand Intensive Care Research Centre, Department of Epidemiology and Preventive Medicine; School of Public Health and Preventive Medicine, Monash University; ANZIC Clinical trials group.

Psychiatry Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF PSYCHIATRY**

Research Leaders
Bernhard Baune, Scott Clark, Natalie Mills, Oliver Schubert

Research Assistant
Ellen Lyrtzis

Postgraduate Student
Andrew Olagunju

External Collaborators
Paul Amminger, Pat McGorry, Barnaby Nelson, University of Melbourne; Thomas G Schulze, ConLiGen Consortium, Ludwig-Maximilans-University of Munich (Germany); Oliver Shubert, NALHN

Respiratory Medicine Unit & Clinical Practice Unit

TQEH DEPARTMENT **RESPIRATORY MEDICINE UNIT & CLINICAL PRACTICE UNIT**

Research Leaders
Brian Smith, Kristin Carson

Chief Medical Scientist
Mark Jurisevic

Research Scientist
Joep Van Agteren

Research Officers
Melissa Kluge, Binh Truong

Postgraduate Students
Harshani Jayasinghe, Zoe Kopsaftis, Justyna Pollok, Zafar Usmani, Karen Royals, Kathy Lawton

Honours Student
Charmaine King

Advanced Trainees
Nur Sulaiman, Michelle Tan

Consultants
Antony Veale, Jonathon Polasek, Anil Roy, Dion Grosser

Laboratory Manager
Donna Keatley

Laboratory Technicians
Xiao Liu, Daniel Cotsaris, Pamela Kidd

Sleep Laboratory Technicians
Vanessa Tee, Nathan Elgar

Clinical Trials Coordinator
Karen Boath

Clinical Trials Nurses
Pamela Gluyas, Natalie Harrop

BHI Collaborators
Michael Roberts, Lorraine MacKenzie, Therapeutics Research Centre; John Licari, Clinical Pharmacology Research Group

External Collaborators
Kyi S Tin, Alice Springs Hospital; Matthew Peters, Concord Hospital; Heather Powell, John Hunter Hospital; Anne Chang, Charles Darwin University; Vicki Clifton, Mater Research; E. Haydn Walters, Menzies Research Institute; Christian Osadnik, Monash University; Tim Schultz, University of Adelaide; Richard Wood-Baker, University of Tasmania; Philippa Poole, Westmead Hospital; Khin Hnin, Hooi Shan Yap, Flinders Medical Centre; Faisal Ameer, Nick Antic, Royal Adelaide Hospital; Peter Gibson, Dr Shyamala Pradeepan, John Hunter Hospital; Gillian Gould, Alan Clough, James Cook University; Amanda Wilson, Michael Hensley, Vanessa McDonald, Maree Gruppetta Joerg Mattes, Chris Doran, Peter O'Mara, Chris Oldmeadow, Roger Smith, University of Newcastle; Katherine Boydell, University of New South Wales; Adrian Esterman, University of South Australia; Syeda Naqvi, Lyell McEwin Health Service; David Bedson, Asthma Foundation of South Australia; Julio Licinio, SAHMRI; Marjolein Verbeist, Mathilde Crone, Leiden University Medical Centre (Netherlands); Willem J J Assendelft, Radbound University Nijmegen Medical Centre (Netherlands); John White, York District Hospital (Netherlands); John Wright, Bradford Royal Infirmary (UK); Karen Heslop, Anthony DeSoyza, Newcastle University (UK); Joanna Picot, University of Southampton (UK); David J Evans, Hemel Hampstead Hospital (UK); Michael Greenstone, Castle Hill Hospital (UK); Fiona Campbell, University of Sheffield (UK); Christine Bond, University of Aberdeen (UK); Josephine Lightowler, Saint James's University Hospital (UK); Jadwiga Wedzicha, Royal Free and University College Medical School (UK); Lindsay Stead, Monaz Mehta, Nicola Lindson-Hawley, University of Oxford (UK); Brian Rowe, University of Alberta (Canada); Kourosh Sayemhiri, Fatemeh Sayemhiri, Milad Nazarzadeh, Ilam University of Medical Sciences (Iran); Abel Wakai, Grianne McCabe, Royal College of Surgeons in Ireland (Ireland); Ronan O'Sullivan, Cork University Hospital (Ireland)

Rheumatology Research Group

TQEH DEPARTMENT **RHEUMATOLOGY UNIT**

Research Leader
Catherine Hill

Consultants
Maureen Rischmueller, Samuel Whittle, Simon Burnet

Chief Medical Scientist
Sue Lester

Clinical Trials Manager
Sarah Downie Doyle

Postdoctoral Researcher
Carlee Ruediger

Postgraduate Students
Rachel Black, Jem Ninan

External Collaborators
Elizabeth Hoon, University of Adelaide; Sarah Mackie, University of Leeds (UK); Susan Goodman, Hospital for Special Surgery, New York (USA); Joanna Robson, University of Bristol (UK); Tiffany Gill, University of Adelaide; Hylton Menz, La Trobe University

Surgical Science Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader
Guy Maddern

Postgraduate Students
Hannah Gostlow, Scott Ellis, Jaewook Oh

BHI Collaborators
PJ Wormald, ENT Surgery; Peter Hewett, Northern Network Colorectal Surgical Service

External Collaborators
ASERNIP-S, Royal Australasian College of Surgeons; Ed Truitt, Lubris Pty Ltd (USA); Ashley Dennison, Wen Chung, University Hospital of Leicester (UK)

DRUG AND VACCINE DEVELOPMENT

Therapeutics Research Centre

UNIVERSITY OF SOUTH AUSTRALIA **THERAPEUTICS RESEARCH CENTRE**

Research Leader
Michael Roberts

Centre Manager
Lorraine Mackenzie

Postdoctoral Researchers
Amy Holmes, Hauke Studier

Research Assistant
Azadeh Alinaghi

Senior Analyst
Tom Robertson

Technical Officer
Kushari Burns

Pharmaceutical Technologist
Ahmed Abdalla

Visiting lecturer
Maryam Nakhjavani

Postgraduate Students
Michael Pastore, Ana Macedo, Rachada To-a-nan, Mahipal Sinnollareddy, Vivek Nooney

5th Year Pharmacy Interns
Marine Caiou, Marine Castrec

BHI Collaborators
Guy Maddern, Surgical Science Research Group; Sandra Peake, Intensive Care Medicine Research Group; John Horowitz, Cardiovascular Pathophysiology and Therapeutics Group

External Collaborators
Nicholas Buckley, University of Sydney; Andrew Dawson, Royal Prince Alfred Hospital, Sydney; Geoff Isbister, University of Newcastle; Howard Maibach, Universtiy of California San Francisco (USA); Maike Windbergs, Goethe University, Frankfurt (Germany); USA FDA, Washington DC (USA); Therapeutics Research Centre, University of Queensland; Gordon Xu, University of Queensland; Gabriel Wittum, Goethe University, Frankfurt (Germany)

Virology Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader
Eric Gowans

Research Officer
Branka Grubor-Bauk

Postdoctoral Research Fellow
Danushka Wijesundara

Postgraduate Students
Khamis Tomusange, Jason Gummow, Makatiro Masavuli, Zelalem Mekonnen

External Collaborators
Joseph Torresi, Doherty Institute, University of Melbourne; Melissa Churchill, Lachlan Gray, Burnet Institute; Steve Wesselingh, SAHMRI; Andreas Suhrbier, Berghofer QIMR; Saumitra Das, Indian Institute of Science (India); Charani Ranasingh, Benjamin Qhah, John Curtin School of Medical Research; Ilia Voskoboinik, Peter Macallum Institute

INFLAMMATORY DISEASE

ENT Surgery

UNIVERSITY OF ADELAIDE **DISCIPLINE OF SURGERY** / TQEH

Research Leader
Peter-John Wormald

Consultants
Peter-John Wormald, Alkis J Psaltis, Guy Rees, Steve Floreani, Suresh Rajapaksa, John Ling, Kien Ha, Harshita Pant

Advanced Trainees
Luis Macias, Joshua Jervis-Bardy

Chief Medical Scientist
Sarah Vreugde

Postdoctoral Researchers
Clare Cooksley, Mahnaz Ramezanpour

Research Assistant
Sophia Moraitis

Postgraduate Students
Judy Ou, Dijana Miljkovic, Katharina Richter, Chun Chan, Jae Murphy, Mian Li Ooi, Alistair Jukes, Lisa Marie Cherian, Sakiko Oue, Ho Yin Lau, Sathish Paramasivan, Jake Jervis-Bardy, Stephanie Anne Fong

Honours student
Arvind Jothin

Postdoctoral Research Fellows
Masanobu Suzuki, Jian Li, Zhang Guimin, Zhao Yin

BHI Collaborators
Ehud Hauben, Colorectal Cancer Research Group; Susan Lester, Maureen Rischmueller, Rheumatology Research Group

External Collaborators
Tom Coenye, Ghent University (Belgium); J Gregory Caporaso, Northern Arizona University (USA); Shaun McColl, Stephen Kidd, The University of Adelaide; Clive Prestidge, Benjamin Thierry, Nicky Thomas, University of South Australia; Peter Hwang, Stanford University (USA); Ben Bleier, Harvard University (USA); Amber Luong, University of Texas (USA); Marc Tewfik, McGill University (Canada); Christos Georgalas, Amsterdam Medical Center (The Netherlands); M. Javed Ali, L.V.Prasad Eye Institute (India); Richard Douglas, University of Auckland (New Zealand); Richard Harvery, Macquarie University; Claudio Callejas, Pontifica University (Chile); Rodney Schlosser, Medica University of South Carolina (USA)

Gastroenterology & Hepatology

TQEH DEPARTMENT **GASTROENTEROLOGY AND HEPATOLOGY**

Consultants
Sam Costello, Ian Roberts-Thomson

External Collaborators
Jane Andrews, Royal Adelaide Hospital; Michael Conlon, CSIRO; Patrick Hughes, SAHMRI; Robert Bryant, Royal Adelaide Hospital; Oliver Waters, Fiona Stanley Hospital; Lito Papanicolous, Flinders Medical Centre; Rob Knight, University of California, San Diego (USA)

Zinc and Inflammatory Disease Research Group

UNIVERSITY OF ADELAIDE **DISCIPLINE OF MEDICINE** / TQEH

Research Leader
Peter Zalewski

BHI Collaborators
Sue Lester, Rheumatology Research Group

External Collaborators
Sandra Hodge, Eugene Roscioli, Royal Adelaide Hospital, Hanson Centre

APPENDIX B: COMMUNITY ENGAGEMENT ACTIVITIES 2016

COMMUNITY ENGAGEMENT ACTIVITIES 2016

This listing of 2016 Community Engagement Activities undertaken by researchers based at the Basil Hetzel Institute, TQEH, complements the 2016 BHI Research Report. Activities listed here do not include research presentations, or participation in activities that are directly related to research.

BHI staff and students are regularly involved in community talks, held at various locations around Adelaide, and tours of the BHI laboratories that are organised and hosted by The Hospital Research Foundation (THRF). THRF also coordinate media releases for BHI researchers and follow-up media opportunities, while liaising with the universities and SA Health. BHI researchers are also invited to participate in THRF's regular radio segments on Coast FM. Articles for THRF and related brand newsletters and websites about BHI researchers and their research are written by THRF staff. In addition to this wide range of THRF led interactions with the general public, BHI researchers also participate in a range of other community engagement activities including hosting work experience students.

Presenter's name	Topic/Title	Delivered to	Media format
AGEING: Adelaide G-TRAC			
JANUARY			
Prof Reunka Visvanathan, Dr Solomon Yu	Solving a global problem	THRF Newsletter, 1st edition	newsletter article printed/ online
Agathe Jadczak	Raising awareness of frailty	THRF Newsletter, 1st edition	newsletter article printed/ online
MAY			
Mark Thompson	Frailty and reducing the risk of fractures	Elizabeth Town Centre Weight Watchers group	community talk
Agathe Jadczak	Exercise and Older People	Active Over 50s Largs Bay Regional Group	community talk
Dr Joanne Dollard	Preventing in-hospital falls amongst older patients	Sharon Forrester Jones Racing Group	community talk and tour
Prof Renuka Visvanathan	Healthy Ageing	THRF General Public	community talk and tour
JUNE			
Agathe Jadczak	Frailty & Depression- How mood can influence the perception of being frail	G-TRAC Consumer Day	public presentation
Donna Preston	The Joy of Living Life to the Fullest as we Age	G-TRAC Consumer Day	public presentation
Agathe Jadczak	Seeking volunteers for study	Coast FM Radio	radio interview
JULY			
Dr Shailaja Nair	Healthy Ageing research	Pooraka Ladies Probus Club	community talk and tour
Agathe Jadczak	Healthy Ageing research	Largs Bay Combined Probus Club	community talk
AUGUST			
Pazhvoor Shibu	Parkinson's Disease: an Overview	G-TRAC Public Lecture series	public presentation
Mark Thompson	You're helping our ageing population	THRF Newsletter, 3rd edition	newsletter article printed/ online

Presenter's name	Topic/Title	Delivered to	Media format
AGEING: Adelaide G-TRAC			
SEPTEMBER			
Prof Renuka Visvanathan, Dr Beatriz Martins	Health Ageing	U3A Port Adelaide	community talk
Mark Thompson	Frailty - Opportunities in Primary Care	G-TRAC Public Lecture	public presentation
Prof Renuka Visvanathan	CRE Frailty and Healthy Ageing Launch	CRE Frailty and Healthy Ageing Launch	public presentation
OCTOBER			
David Yu	Sleep in Ageing	G-TRAC Public Lecture series	public presentation
Ivanka Hendrix	Pharmacological Management of Sleep Disorders	G-TRAC Public Lecture series	public presentation
Prof Renuka Visvanathan, Agathe Jadczak	Express Study and CRE Frailty and Healthy Ageing	Channel 9 news	TV show
NOVEMBER			
Dr Solomon Yu, Dr Kareeann Khow	Frailty and Healthy Ageing	Positive Ageing Centre, Adelaide Hills Council	community talk and tour
CANCER: Breast Biology and Cancer Unit			
FEBRUARY			
Vahid Atashgaran	Young mind working towards breast cancer prevention	ABCR Newsletter, 1st edition	newsletter article printed/ online
Dr Pallave Dasari	Sciences Meets Parliament	EMCR Newsletter, edition 6, Australian Academy of Sciences	newsletter article printed/online
MARCH			
Dr Pallave Dasari	Science in the Pub	India Link Magazine	news interview printed/online
APRIL			
Dr Pallave Dasari	Science in the Pub	SBS Hindi Radio	radio interview
MAY			
Dr Pallave Dasari	THRF Longest Table Fundraiser	ABC 891 Radio	radio interview
JUNE			
Dr Pallave Dasari	THRF Longest Table Fundraiser	Today Show, Channel 9	TV show
AUGUST			
Vahid Atashgaran	Cancer research: it will save lives!	THRF Newsletter, 3rd edition	newsletter article printed/online
Joseph Wrin	Shooting for the moon: A future free of breast cancer	THRF Newsletter, 3rd edition	newsletter article printed/online
OCTOBER			
A/Prof Wendy Ingman, Dr Pallave Dasari, Aneta Zysk	Breast Density Matters INFORMD - Information forum on mammographic density www.informd.org.au	General Public	public media campaign, radio interviews, newspaper articles, online articles, website launch
Dr Pallave Dasari	Breast Cancer Awareness Month	CoastFM Radio	radio interview
A/Prof Wendy Ingman	Breast Cancer Research	5AA Radio	radio interview
Dr Pallave Dasari	Resistance and Persistence	Festival of Ideas discussion forum	online

Presenter's name	Topic/Title	Delivered to	Media format
CANCER: Breast Biology and Cancer Unit			
AUGUST			
Vahid Atashgaran	Cancer research: it will save lives!	THRF Newsletter, 3rd edition	newsletter article printed/online
Joseph Wrin	Shooting for the moon: A future free of breast cancer	THRF Newsletter, 3rd edition	newsletter article printed/online
OCTOBER			
A/Prof Wendy Ingman, Dr Pallave Dasari, Aneta Zysk	Breast Density Matters INFORMD - Information forum on mammographic density www.informd.org.au	General Public	public media campaign, radio interviews, newspaper articles, online articles, website launch
Dr Pallave Dasari	Breast Cancer Awareness Month	CoastFM Radio	radio interview
A/Prof Wendy Ingman	Breast Cancer Research	5AA Radio	radio interview
Dr Pallave Dasari	Resistance and Persistence	Festival of Ideas discussion forum	online
NOVEMBER			
A/Prof Wendy Ingman	Breast Cancer Research	THRF Basil Hetzel Society Thank You Luncheon (for donors)	Speaker panel
A/Prof Wendy Ingman	Breast cancer: fighting back	Mindfood Magazine	news interview printed/online
DECEMBER			
Sarah Bernhardt	World-First Study Investigating Breast Cancer in Young Women	ABCR Newsletter, 2nd edition	newsletter article printed/online
A/Prof Wendy Ingman	Breast Density Matters	ABCR Newsletter, 2nd edition	newsletter article printed/online
Joseph Wrin	Shooting for the moon	ABCR Newsletter, 2nd edition	newsletter article printed/online
CANCER: Breast Cancer Research Unit			
JANUARY			
Vasilios (Bill) Panagopoulos	Breast Cancer research finds new functions for old enzymes	THRF Newsletter, 1st edition	newsletter article printed/online
FEBRUARY			
Vasilios (Bill) Panagopoulos	Research finds new functions for old enzymes	ABCR Newsletter, 1st edition	newsletter article printed/online
APRIL			
Christopher DeFelice	Breast Cancer Research	Women in Agriculture an Business group	community talk
AUGUST			
Prof Andreas Evdokiou	Breast Cancer Research/THRF	5AA Radio	radio interview
Dr Irene Zinonos	Breast and Prostate Cancer Research	Adelaide Hills Prostate Cancer Support Group	community talk
OCTOBER			
Bill Panagopoulos	Breast Cancer Research/THRF	THRF General Public	community talk and tour
DECEMBER			
Prof Andreas Evdokiou	Breast Cancer Research will save lives	ABCR Newsletter, 2nd edition	newsletter article printed/online
Dr Irene Zinonos	World-first fight to beat prostate cancer	APC Newsletter, 2nd edition	newsletter article printed/online

Presenter's name	Topic/Title	Delivered to	Media format
CANCER: Colorectal Cancer Research Group			
JUNE			
A/Prof Joanne Young, Wendy Uylaki	Colorectal Cancer Research	THRF General Public	community talk and tour
AUGUST			
Dr Eric Smith	Bowel Cancer Research	Tea Tree Gully Probus Club	community talk
A/Prof Joanne Young	Bowel Cancer in Young Adults/THRF	5AA Radio	radio interview
CANCER: Liver Metastasis Research Group			
AUGUST			
Dr Ehud Hauben	Immune Checkpoints in Metastatic Colorectal Cancer Diagnosis and Prevention	THRF General Public	community talk
CANCER: Solid Cancer Regulation Group			
APRIL			
Helen Palethorpe	Improving treatment for oesophageal cancer	THRF Newsletter, 2nd edition	newsletter article printed/online
SEPTEMBER			
Helen Palethorpe	Prostate Cancer - its more than the cancer cell	U3A Flinders University	community talk
CANCER: South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC)			
NOVEMBER			
	Prostate Cancer Consumer Forum	General Public	public presentation
Michael O'Callaghan (SA Health, REPAT)	SA-PCCOC	Voice of Rotary	radio interview
CARDIOVASCULAR DISEASE: Cardiovascular Pathohysiology & Therapeutics Research Group			
MARCH			
Dr Cher-Rin Chong	Life-changing research into heart disease	The Beat Newsletter, 1st edition	newsletter article printed/ online
APRIL			
Dr Chuks Ajaero	Cardiology research	Mitcham Hills Probus Club	community talk
AUGUST			
Dr Nathan Procter	Taking heart research across the globe	The Beat Newsletter, 2nd edition	newsletter article printed/ online
SEPTEMBER			
Dr Doan Ngo	Cardiology, Obesity and Diabetes research	U3A Adelaide Hills	community talk
NOVEMBER			
Dr Doan Ngo	Cardiology Research	THRF Basil Hetzel Society Thank You Luncheon (for donors)	Speaker panel

Presenter's name	Topic/Title	Delivered to	Media format
CARDIOVASCULAR DISEASE: Translational Vascular Function Research Collaborative			
JANUARY			
Prof John Beltrame	Global guidelines set for heart spasm	THRF Newsletter, 1st edition	newsletter article printed/online
FEBRUARY			
Dr Rosanna Tavella	Insights from the Coronary Angiogram Database of South Australia	THRF General Public	community talk and tour
APRIL			
Prof David Wilson	Chronic Dehydration	ABC Riverland Radio	radio interview
MARCH			
Aashray Gupta	Aspiring doctor with a passion for research	The Beat Newsletter, 1st edition	newsletter article printed/online
Sivabaskari (Tharshy) Pasupathy	Understanding a heart attack mystery	The Beat Newsletter, 1st edition	newsletter article printed/online
AUGUST			
Prof John Beltrame	Improving treatments with your support	The Beat Newsletter, 2nd edition	newsletter article printed/online
NOVEMBER			
Dr Rosanna Tavella	What is the Coronary Angiogram Database of South Australia?	CoastFM Radio	radio interview
CHRONIC DISEASE: Stroke Research Programme			
APRIL			
Austin Milton	Stroke Research Programme	combined Rotary Clubs of Charles Sturt, Henley Beach, Port Adelaide and Glenelg	community talk
AUGUST			
Prof Simon Koblar	Stroke in 2016	Mitcham Rotary Club	community talk
A/Prof Anne Hamilton-Bruce	Stroke & Stem Cell Research Update	Stroke SA Incorporated	community talk
SEPTEMBER			
Austin Milton	Stroke Research and other BHI research	combined Rotary Clubs of Playford, Salisbury, Mawson Lakes and Elizabeth	community talk
OCTOBER			
Prof Simon Koblar	Update in Stroke Treatment	Our Time – Community TV, News	TV show
	Stem Cell Research	Australian Aphasia Association	community talk
	New developments in the medical intervention for stroke – stem cell research	Aphasiology Symposium of Australia, Flinders University	community talk
CHRONIC DISEASE: The Health Observatory			
JUNE			
Dr Sarah Appleton	Diabetes and Sleep Apnoea	U3A Flinders University	community talk

Presenter's name	Topic/Title	Delivered to	Media format
CHRONIC DISEASE: Health Performance and Policy Research Unit			
APRIL			
Clementine Labrosciano	Peripheral Vascular Disease	Mitcham Hills Probus Club	community talk
JULY			
Dr Isuru Ranasinghe	Hospital Readmissions	CoastFM Radio	radio interview
AUGUST			
Clementine Labrosciano	Australian first research - supported by you	The Beat Newsletter, 2nd edition	newsletter article printed/online
Dr Isuru Ranasinghe	Improving the quality of care for your heart	THRF Newsletter, 3rd edition	newsletter article printed/online
CHRONIC DISEASE: Intensive Care Medicine Research Group			
NOVEMBER			
Prof Sandra Peake	Translating Research	University of Adelaide	public presentation
CHRONIC DISEASE: Psychiatry Research Group			
MAY			
Dr Scott Clark	Prediction of the onset of major mental illness	U3A Flinders Univeristy	community talk
OCTOBER			
Dr Scott Clark	Early detection method hopes to prevent psychosis	University of Adelaide news	news interview printed/online
Dr Scott Clark	New Model Predicts Transition to First-Episode Psychosis	Reuters Health	news interview printed/online
NOVEMBER			
Dr Scott Clark	Multimodal Approach May Improve Ability to Predict Transition to Psychosis	Psychiatric News (American Psychiatric Association)	news interview printed/online
DECEMBER			
Dr Scott Clark	Model improves prediction of first episode psychosis	Medicine Today	news interview printed/online

Presenter's name	Topic/Title	Delivered to	Media format
CLINICAL SCIENCES HEALTH SERVICES AND POPULATION HEALTH: Respiratory Medicine Unit and Clinical Practice Unit			
JANUARY			
Harshani Jayasinghe	Helping indigenous youth	THRF Newsletter, 1st edition	newsletter article printed/online
FEBRUARY			
Dr Kristin Carson	Various topics related to research and health	CoastFM Radio	radio interview
MARCH			
Dr Mark Jurisevic	Respiratory Illnesses	U3A Flinders University	community talk
Harshani Jayasinghe	Young Achiever Awards & her research	CoastFM Radio	radio interview
Dr Kristin Carson	Public policy initiatives in SA	CoastFM Radio	radio interview
APRIL			
Joseph van Agteren	Do you want to Kick it?	THRF Newsletter, 2nd edition	newsletter article printed/online
Dr Kristin Carson	My experience as a TAFE student	TAFE SA Forum	public presentation
JUNE			
Dr Kristin Carson	Various topics related to research and health	CoastFM Radio	radio interview
Dr Kristin Carson	How I became a scientist and the 7 things I wish I knew when I was still in high school	Blackwood High School	talk to high school students
JULY			
Dr Kristin Carson and Zoe Kopsaftis	Overview of research being done in Respiratory Medicine	West Lakes Probus Club	community talk
Dr Kristin Carson	Various topics related to research and health	CoastFM Radio	radio interview
AUGUST			
Justyna Pollok	Your support is helping to address depression	THRF Newsletter, 3rd edition	newsletter article printed/online
Dr Kristin Carson	TAFE SA Career Ambassador	Science Alive!	talk to high school students
Dr Kristin Carson	Various topics related to research and health	CoastFM Radio	radio interview
Dr Kristin Carson	New technology and asthma	Asthma Foundation of South Australia Annual General Meeting	community talk
SEPTEMBER			
Justyna Pollok	Depression in vulnerable populations	CoastFM Radio	radio interview
Dr Kristin Carson	Various topics related to research and health	CoastFM Radio	radio interview
OCTOBER			
Dr Kristin Carson	Asthma research and new technology in health	CoastFM Radio	radio interview
NOVEMBER			
Dr Kristin Carson	New technology and asthma	Asthma Foundation of South Australia Annual General Meeting	community talk

Presenter's name	Topic/Title	Delivered to	Media format
CLINICAL SCIENCES HEALTH SERVICES AND POPULATION HEALTH: Rheumatology Research Group			
JANUARY			
Dr Rachel Black	The side effects of steroiods	THRF Newsletter, 1st edition	newsletter article printed/online
MAY			
Dr Samuel Whittle	Joint Pain in Osteoarthritis	Global Year Against Pain in the Joints Public Forum, ARA ASM, Darwin	public presentation
AUGUST			
Prof Catherine Hill	Rheumatology Research/THRF	5AA Radio	radio interview
SEPTEMBER			
Dr Rachel Black	Arthritis SA - Consumers	General public	public presentation
Dr Samuel Whittle	Clinical trials not always benign for patients who volunteer	The Limbic	news interview printed/onlie
OCTOBER			
Sue Lester, Dr Carlee Ruediger	Rheumatology Research and Clinical Trials at TQEH	U3A Flinders University	community talk
NOVEMBER			
Dr Samuel Whittle	Joint Health	Magazine - Men's Health	article printed/ online
DRUG & VACCINE DEVELOPMENT: Therapeutics Research Centre			
AUGUST			
Dr Amy Holmes	Nanotechnology	U3A Flinders University	community talk
DECEMBER			
Dr Amy Holmes	Medical Wonders	Scope - TV show, Season 3 Episode 139, Channel 10	TV show
DRUG & VACCINE DEVELOPMENT: Virology Group			
JANUARY			
Jason Gummow	A future free of hepatitis C	THRF Newsletter, 1st edition	newsletter article printed/online
APRIL			
Dr Danushka Wijesundara	Vaccination STEM careers	RiAus Science Channel	
Khamis Tomusange	Changing the world through research	THRF Newsletter, 2nd edition	newsletter article printed/online
Khamis Tomusange	Adelaide's Ugandan warrior fighting for an HIV cure	ABC online	online publication
MAY			
Dr Danushka Wijesundara	HIV Vaccine Research	Positive Life SA	community talk
JULY			
Jason Gummow	Hepatitis C virus research	U3A Flinders University	community talk
AUGUST			
Dr Danushka Wijesundara	Vaccine Research	Science Alive!	talk to high school students
DECEMBER			
Prof Eric Gowans	HIV Research	Botswana High Commissioner to Australia	official visit

Presenter's name	Topic/Title	Delivered to	Media format
INFLAMMATORY DISEASE: ENT Surgery			
JANUARY			
Katharina Richter	New Non-Antibiotic Treatment Shows Promise Against S. aureus	ENT Today Magazine (USA)	news interview printed/online
FEBRUARY			
Assoc Prof Alikis Psaltis	Changes in the Sinonasal Microbiome and Chronic Rhinosinustisus Surgery	World Wide Webinar	online interview
MARCH			
Katharina Richter	Young Achiever Awards & her research	CoastFM Radio	radio interview
APRIL			
Dijana Miljkovic	World first finding in ENT research	THRF Newsletter, 2nd edition	newsletter article printed/online
Katharina Richter	Allergies	U3A Flinders University	community talk
Prof PJ Wormald, Dr Mian Ooi, Sophie Moriatis	Antibiotic Resistance	Catalyst, ABC	TV show
MAY			
Dijana Miljkovic	Rogue cells may hold key to chronic sinusitus	The Lead	online publication
Katharina Richter	Pint of Science Festival	ABC 891/ABC online	radio interview/ online publication
Katharina Richter	Pint of Science Festival Coordinator		3 nights of community talks
JUNE			
Prof PJ Wormald, Dr Mian Ooi	Unstoppable Superbugs	Today Tonight, Channel 7	TV show
Katharina Richter	A Trojan Horse to Clear a Stuffy Nose	Australasian Science Magazine	Newsletter article printed and/or published online
AUGUST			
Dr Nicky Thomas	Reinventing medication to tackle a global issue	THRF Newsletter, 3rd edition	newsletter article printed/ online

Presenter's name	Topic/Title	Delivered to	Media format
INFLAMMATORY DISEASE: ENT Surgery			
SEPTEMBER			
Assoc Prof Alikis Psaltis	Sinus Headaches	Frontiers	
Assoc Prof Alikis Psaltis	Mircrobiome and CRS	Frontiers	
Assoc Prof Alikis Psaltis	The Microbiology of CRS & debate	American Academy of Otolaryngology Head and Neck Surgery	public presentation
Dr Nicky Thomas	Super bugs and chewing gum	Channel 9 News	TV show
NOVEMBER			
Dr Nicky Thomas	ENT Research	THRF Basil Hetzel Society Thank You Luncheon (for donors)	Speaker panel
DECEMBER			
Katharina Richter	A legacy fighting the war on superbugs	Lumen, Alumni Magazine, University of Adelaide	Newsletter article printed/online
INFLAMMATORY DISEASE: Gastroenterology & Hepatology			
MAY			
Dr Sam Costello	Faecal microbiota transplant as therapy	Science in the Pub	Public presentation
DECEMBER			
Dr Sam Costello	Microbial manipulation as therapy	TechNet 2016	Public presentation
Dr Sam Costello	Faecal microbiota transplant and diet	Dieticians	Public presentation
BASIL HETZEL INSTITUTE			
APRIL			
Dr Basil Hetzel AC	Article on Nonogenarians, on Queen turning 90	The Advertiser	Newspaper
AUGUST			
Kathryn Hudson	Women in STEM Careers Evening	Flinders University of South Australia	panellist and mentor

Research Groups involved	School
WORK EXPERIENCE STUDENTS	
JUNE	
BBCU, Nuclear Medicine and ENT Surgery	St Ignatius' College
Cardiovascular Pathophysiology and Therapeutics Group	Portside Christian College
JULY	
Surgical Science Research Group Clinical Pharamcology Research Group, TQEH Pharmacy	Moonta Area School
AUGUST	
BCRU, Nuclear Medicine and Clinical Practice Unit	Hallet Cove Area School
SEPTEMBER	
Translational Vascular Function Research Collaborative	St Mary's College
Bridging the Gap Program (pre-service science teachers from Flinders Uni)	
OCTOBER	
Surgical Science Research Group, Translational Vascular Function Research Collaborative	

The Institute

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