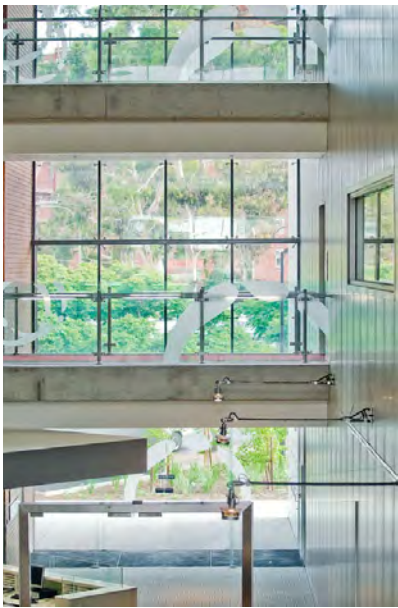




The Institute

## BASIL HETZEL INSTITUTE RESEARCH REPORT 2022



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Translational health research  
at The Queen Elizabeth Hospital

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The Hospital Research  
Foundation Group



# BHI RESEARCH REPORT 2022



## ON THE COVER

Alongside the BHI a new hospital has risen from the site of the old nurses' home and car park. This building process is encapsulated on the cover and again emphasises the close and intertwined relationship of the research activities at The Queen Elizabeth Hospital and the Basil Hetzel Institute.

### Photography

Travis Crawford, Icarus Design  
Andrew Beveridge, asbCreative  
► [asbprophoto.com](http://asbprophoto.com)

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Icarus Design  
► [icarus.com.au](http://icarus.com.au)

## BASIL HETZEL INSTITUTE FOR TRANSLATIONAL HEALTH RESEARCH

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The Basil Hetzel Institute, TQEH,  
forms part of the Central Adelaide  
Local Health Network (CALHN), one  
of ten local health networks within  
SA Health.



## VISION

To be a premier  
institute for  
Translational  
Health Research.



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## MISSION

The BHI is the productive research arm of The Queen Elizabeth Hospital (TQEH) with a 'bench to bedside' approach.

At the forefront of an emerging area of medical science, it aims to improve public health through collaborative discoveries and innovations in patient care, education and research.



**GUY MADDERN**

Director of Research

Basil Hetzel Institute for Translational  
Health Research  
THE QUEEN ELIZABETH HOSPITAL



**The BHI continues to deliver high quality research outputs with overall external research funding being maintained.**

**T**here can be no doubt that research in Australia is becoming fiercely competitive, difficult to obtain and challenging to maintain. The BHI has had to deal with the overall contraction in research funding being directed towards South Australia, particularly through the NHMRC, and has found itself somewhat forgotten by the Central Adelaide Local Health Network in its support for research infrastructure and salary support.

Despite these pressures, the BHI continues to deliver high quality research outputs with overall external research funding being maintained through the extraordinary success of the research groups working within the BHI facility and The Queen Elizabeth Hospital.

South Australia continues to struggle to set up a rational and sustainable research direction and Government support and an articulation for its direction continues to be largely lacking. If our State is to enjoy the profile it had in past years, it would seem that greater efforts need to be made where there are deficiencies in the research landscape rather than behaving as a "me too" organisation and attempting to compete with large, well-funded structures on the eastern seaboard.

Health services research is an area that has enormous potential to generate not only meaningful improvements in the care delivered to patients and our community, but also attract millions of dollars of support from government and hospital agencies. Serious evaluation of how various healthcare services are delivered and deployed leads to substantial savings in the health budget and often generates innovative and important improvements to health care.

As an example of this success, the BHI has been closely associated with a \$2 million MRFF grant looking at the use of mobile radiology services within Australia and this project, as it comes to its completion, has demonstrated important new initiatives that could be developed to incentivise its appropriate use and extend it to reduce presentations to Emergency Departments

around the nation, save morbidity from unnecessary admissions of nursing home patients to hospital requiring radiological imaging, and provide more timely and comfortable care to the older patients presenting to the public hospital system. It is but one example of many innovative ideas that could be explored by South Australia and, in particular, the BHI.

Another area which has the potential to generate enormous impact at almost no cost is a critical appraisal of how services are delivered within the hospital, in particular operating theatres, outpatient clinics and ward rounds. Early research from within the BHI has demonstrated 30% of important information is not documented reliably in the electronic health record. This leads to long length of stay and avoidable incidents requiring, on occasions, re-operation for patients. Developing national coaching programs potentially built into the clinical professional development programs mandated by AHPRA could transform this significant problem into an advantage not only in lowering the cost of health care but also improving the outcomes for hospitalised patients and those attending outpatient clinics.

The BHI continues to challenge and build on these and other initiatives and we look forward to being a source of great pride to not only South Australia but the larger Australian healthcare community.



# RESEARCH METRICS

## FROM THE ANNUAL ASSESSMENT OF RESEARCH PRODUCTIVITY (2021-2022)

At the end of each financial year the Director of Research, BHI, TQEH engages with the research leaders at the precinct to assess productivity and progress. This involves collecting data on research inputs (staff, students and grants) and on the research outputs generated by the institute (including papers, patents, policies, products and graduates). Over the 25 years that this process has been happening TQEH has collected a rich, longitudinal data set of research indicators that track research productivity at the precinct. Below is a summary of the 2021-2022 Annual Assessment of Research Productivity. Detailed information on grants and publications can be found on the BHI website.

► [www.basilhetzelinstitute.com.au/latest-news/research-reports](http://www.basilhetzelinstitute.com.au/latest-news/research-reports)



**\$24M+**  
**REVENUE**

Grants, clinical academic salaries, contracts, scholarships and infrastructure support



**\$4.5M+**  
Peer-reviewed grants



**\$18.2M+**  
Other research support



**\$1.2M+**  
Scholarship funding



**\$0.6M+**  
Infrastructure support



**121**  
New and continuing grants



**90+**  
FTE Clinical and Research Staff



**100+**  
Research students



**540+**  
Journal articles, books and abstracts



**25+**  
Research groups



# BHI NATIONAL AND INTERNATIONAL COLLABORATORS 2022

## EUROPE

Graz, Austria  
Ghent, Belgium  
Brittany, France  
Paris, France  
Berlin, Germany  
Dueren, Germany  
Frankfurt, Germany

Halle-Wittenberg, Germany  
Münster, Germany  
Milan, Italy  
Pisa, Italy  
Lisbon, Portugal  
Moscow, Russia

Barcelona, Spain  
Elche, Spain  
Uppsala, Sweden  
Geneva, Switzerland  
Zürich, Switzerland  
Groningen, The Netherlands

## UK

Aberdeen, UK  
Abingdon, UK  
Bristol, UK  
Cambridge, UK  
Guildford, UK  
Leeds, UK  
Leicester, UK  
Manchester, UK  
Oxford, UK  
Sheffield, UK

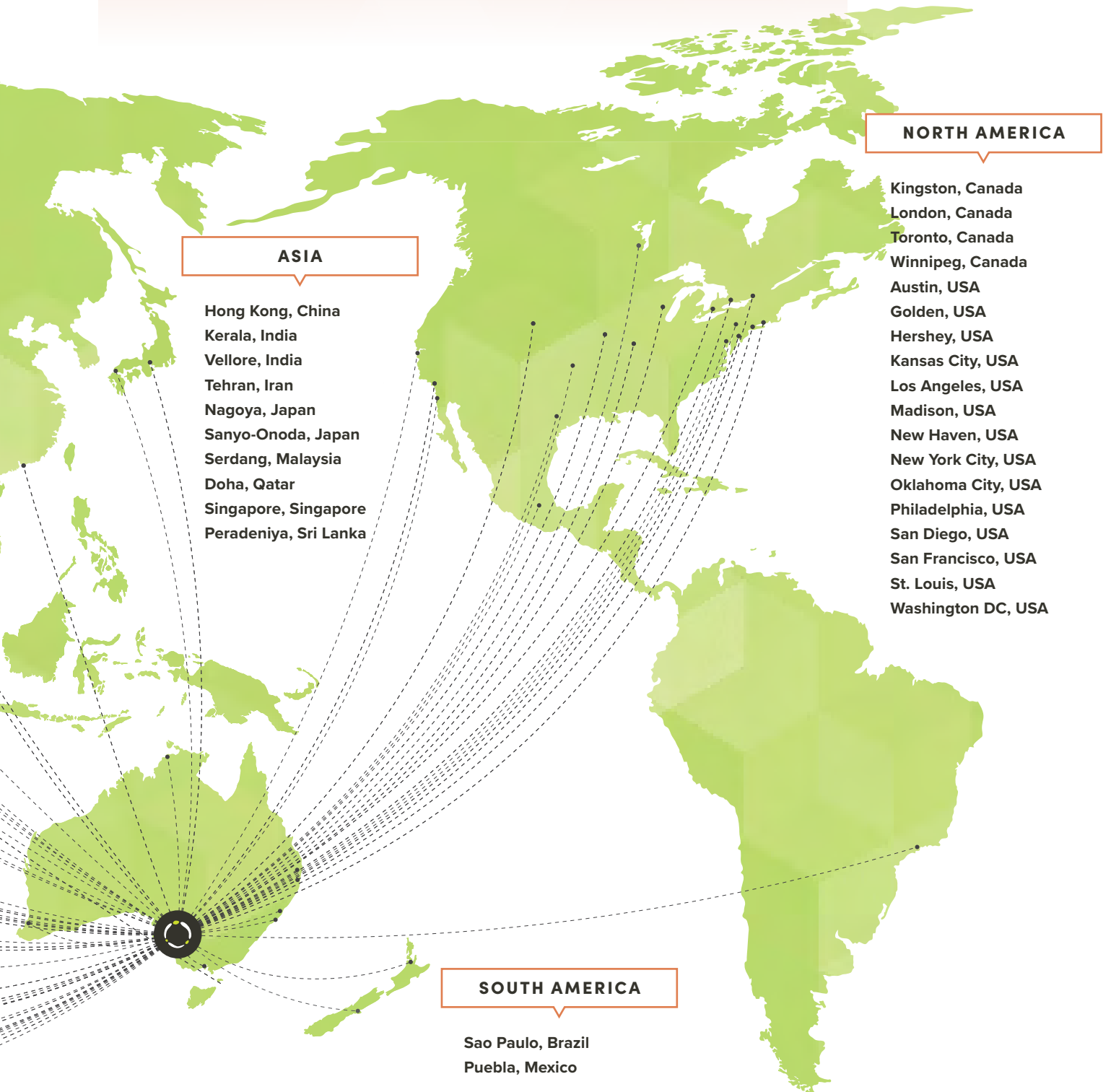
## OCEANIA

Adelaide, Australia  
Brisbane, Australia  
Canberra, Australia  
Melbourne, Australia  
Newcastle, Australia  
Perth, Australia  
Gold Coast, Australia  
Sydney, Australia  
Christchurch, New Zealand  
Hamilton, New Zealand

**26**  
COUNTRIES

**69**  
CITIES

**380+**  
EXTERNAL  
COLLABORATORS



# SUPPORT STRUCTURES 2022

The translational health research program of the Basil Hetzel Institute, TQEH, is underpinned by a well-established Committee structure. The BHI Policy Committee, chaired by the Director of Research, BHI, TQEH, has a membership drawn from the research leadership of the BHI, the BHI research community and key stakeholders.

The committee provides strategic counsel for the operation of the BHI, support for the Director of Research and advice on available support for the BHI's research programs.

The BHI Policy Committee is assisted by a number of sub-committees, with membership drawn from the BHI and stakeholders, and with defined areas of expertise:

- the BHI Research Advisory Committee
- the BHI Management Committee
- BHI Scholarship Selection Committee
- the TQEH Research Expo Organising Committee.



## BHI POLICY COMMITTEE REPORT

2022 has provided no shortage of challenges for the Policy Committee. Meetings have continued to be conducted by Zoom and face-to-face.

During 2022 our Scientific Director, Associate Professor Joy Rathjen, has moved her support of research in South Australia to SA Pathology. While this is a great loss to the BHI which she had served with great distinction over the last three years, it is reassuring to know that her expertise and enthusiasm remains within South Australia, and more particularly, CALHN.

The BHI was delighted to be able to attract Carmela Sergi as the new Director of Innovation and Research and she commenced just prior to Research Day in October 2022 and has already made an important and dynamic contribution to the direction of the Institute. She brings a legal and commercialisation focus which is something that is intended to build on in future years.

At the same time as our lead scientific support has changed, alongside the BHI a new hospital has risen from the site of the old nurses' home and car park. This building process is encapsulated on the cover of this year's Annual Report and again emphasises the close and intertwined relationship of the research activities at The Queen Elizabeth Hospital and the Basil Hetzel Institute.

**Professor Guy Maddern**  
Chair



## BHI RESEARCH ADVISORY COMMITTEE REPORT

The BHI Research Advisory Committee is tasked with providing strategic advice and input on all issues pertaining to research within the BHI and TQEH to the Director of Research, the Director of Innovation and Research Translation (formerly the BHI Scientific Director), and the BHI Policy Committee. In 2022, Dr Eric Smith assumed the position of chair, succeeding Professor Sarah Vreudge, while Carmela Sergi was appointed as the new Director of Innovation and Research Translation, succeeding Dr Joy Rathjen.

Substantial progress has been made in optimising the portfolio of Undergraduate and Higher Degree by Research Scholarships offered by BHI/TQEH, in response to recent shifts in University policies. These adjustments are geared towards maximizing the scholarship opportunities while attracting exceptional candidates who embody the core values of the BHI/TQEH. These values are centred on conducting and translating top-tier health and medical research, with the overarching aim of improving the health of individuals in South Australia, Australia, and worldwide.

The committee recognized the continuous need for professional development, especially to aid early and mid-career researchers at BHI/TQEH. A set of workshops was organized and received enthusiastic participation, with generous support from the THRF group.

**Dr Eric Smith**  
Chair





### BHI MANAGEMENT COMMITTEE REPORT

In 2022, the BHI Management Committee working maintained the smooth operation of facilities for staff and students with a few challenges. With the start of year continuing as CoSTAT5 from end of 2021, the population student activity “Off the Clock” was on hold.

Throughout the year, a number of aging equipment items were struggling, needing replacement or major repairs. With minimal disruption to work, these tasks were mastered by Imogen who also co-ordinated replacement of freezers and fridges with The University of Adelaide. A big thank you to many staff and students who assisted after hours and with the relocation of samples and supplies throughout the year.

The Committee also funded 4 new items of equipment, totalling \$130,000, generously supported by The Hospital Research Foundation Group. In July, Associate Professor Joy Rathjen announced she moving to a new and exciting role in SA Pathology. Myself, like many other BHI researchers, thoroughly enjoyed working with Joy with her invigorating spirit and enthusiasm for BHI research, staff and students.

The Committee also thank Professor Eric Gowans who stepped in and provided support to BHI as the Interim Scientific Director. Lastly, the Committee welcomed Dr Carmela Sergi who commenced as her role as the Director of Innovation and Research Translation in October. The Committee very much look forward to working with Carmela in advancing research and innovation at the BHI.

**Associate Professor Rosanna Tavella**  
Chair



### BHI SCHOLARSHIP SELECTION COMMITTEE REPORT

In 2022 two calls for applications to THRF Group BHI TQEH Research Scholarships were made to coincide with the mid-year and October calls by the Universities. The Scholarship Selection Committee considered in all 29 applications for funding in 2022, and recommended for funding 1 PhD student, 2 Masters students, and 7 Vacation students.

Our thanks go to those who support this important program at the BHI, TQEH. The awards were generously supported by a \$130,577 allocation from THRF Group, and co-funded with support from The University of Adelaide, the University of South Australia and TQEH researchers.

**Professor Guy Maddern**  
Chair



### TQEH RESEARCH EXPO ORGANISING COMMITTEE REPORT

The 31<sup>st</sup> TQEH Research Expo was held on 20<sup>th</sup> and 21<sup>st</sup> October 2022. This was a year of change; Associate Professor Joy Rathjen led the Research Expo Organising Committee in beginning the arrangements for the event. However, Joy's departure from the BHI in July 2022 left a large hole indeed and I was asked to return briefly from retirement to take on Joy's role as Chair of the Organising Committee. After many years in this role, I was happy to help out once again! A full report of the event can be found on page 23.

► [TQEH Research Expo 2022](#)

**Dr Prue Cowled**  
Interim Chair



## RESEARCH SUPPORT SERVICES

Operations at the BHI are supported and enriched by the following services.

### Statistical support

Dr Suzanne Edwards of the Data, Design and Statistics Service, Adelaide Health Technology Assessment (AHTA), School of Public Health at The University of Adelaide provides support and training to staff and students in statistical methods. This support, of one day a week, is co-funded by the BHI and the Faculty of Health and Medical Sciences at The University of Adelaide.

### Library support

Anna Holasek and Rachel Davey from the SA Health Library Service help staff and students at the BHI, TQEH with literature and database searches and accessing relevant material from libraries and publishers. They also provide training in the use of online resources and bibliographic tools. The librarians provide the research support team at the BHI with publication lists that document the outputs of TQEH-based researchers which are used in all our reporting processes.

### TQEH Institutional Biosafety Committee

TQEH Institutional Biosafety Committee, chaired by Dr Eric Smith, ensured that the PC2 laboratory spaces of the BHI Research Facility comply with the Office of the Gene Technology Regulator PC2 licence requirements.

### Operational Support

Many people give of their time to support the researchers and the BHI Facility Manager with procedural compliance, research services and grant applications. Their service to our community is greatly appreciated.

- Mr Serge Stebellini and Ms Linda Knobben, Faculty Health, Safety and Wellbeing (HSW) Coordinator, Faculty of Health and Medical Sciences, The University of Adelaide.
- Dr Tony Cambareri, Faculty Executive Director, Faculty of Health and Medical Sciences, The University of Adelaide and his team.
- Dr Cadence Haynes, MRFF Opportunities Manager, Office of the Deputy Vice-Chancellor (Research), The University of Adelaide and Nicole Moore, Strategic Development Manager, Innovation and Commercialisation Service, Division of Research and Innovation, The University of Adelaide.

- Professor Amanda Page, Director of Research Education, Faculty of Health and Medical Sciences, The University of Adelaide.
- Mr Martin Hutchens, Team Leader Main Campus/LHN East Precinct, Faculty of Health and Medical Sciences, The University of Adelaide.
- Mr Vus Andrushenko and the TQEH Biomedical Engineering team.
- Mr Matthew Smith, Mrs Bronwyn Hutchens and Mrs Michelle Slawinski from TQEH Experimental Surgical Suite.

### CALHN HREC and Research Office Support

The BHI has a dedicated office for use by CALHN Research Services. Research Services staff members provide essential ethics and governance support to all researchers working at TQEH. The office is continually seeking ways to streamline and simplify the provision of this support to BHI, and all sites of CALHN. Research Services staff members also provide help with grant submissions and post-approval and reporting requirements. Many thanks to Bernadette Swart (CALHN Research Office Manager) and Ian Tindall (CALHN HREC Chair), and their teams, for their ongoing support of BHI staff and students.

**In 2022, we were pleased to support a range of grants and fellowships at the BHI and TQEH.**

Excitingly, the prestigious Michell-McGrath Fellowship was awarded in 2022 to gastroenterologist Associate Professor Robert Bryant, to advance novel treatments in inflammatory bowel disease.

The \$1.8 million five-year Fellowship is being undertaken at the BHI and is focused on “microbial manipulation” – using both diet strategies and FMT to improve the diversity and quality of a patient’s gut microbiome.

The BHI-created COVID-19 vaccine also started human trials in 2022, with cutting-edge needle free technology targeting the highly transmissible Omicron variant.

Led by Associate Professor Branka Grubor-Bauk and Professor Eric Gowans and their collaborators, we are thrilled to see their long-term work in DNA vaccines reach this monumental stage.

In addition to this world-leading work in virology and inflammatory bowel disease, we are proud to also provide ongoing support for the BHI’s streams in cardiovascular disease, breast cancer, nuclear medicine, healthy ageing, rheumatology, kidney disease, ENT and improving surgical outcomes.

We also enjoy supporting young up-and-coming staff and students with Honours Scholarships, as well as Conference and Travel Scholarships, to ensure researchers get the exposure and collaborations they need to offer a fully rounded research career.

Congratulations to all the research groups on your outstanding efforts. We are extremely proud to help facilitate your work, with the generous support of our donors, fundraisers, lottery ticket buyers, community, and corporate partners.



**PAUL FLYNN**  
CEO

THE HOSPITAL RESEARCH FOUNDATION GROUP



Dr Makutiro Masavuli, from the Viral Immunology Group, working on the Omicron booster vaccine.

**—**  
**Congratulations to all the research groups on your outstanding efforts.**

## A/Professor Robert BRYANT

### Inflammatory Bowel Disease Research Group

- Microbial manipulation in inflammatory bowel diseases: a novel therapeutic paradigm.
- The 4-SURE (4-Sulphide-Reducing) project: pioneering a new diet paradigm in the management of ulcerative colitis.

## Professor Renuka VISVANATHAN

### Adelaide Geriatrics Training and Research with Aged Care (GTRAC) Centre

- Frailty to achieve healthy ageing.

## Dr Sivabaskari PASUPATHY

### Translational Vascular Function Research Collaboration (TVFRC)

- The Anti-Anginal Benefits of Zinc in Angina with Non Obstructive Coronary Arteries (ANOCA) Patients.

## Dr Clementine LABROSCIANO

### Translational Vascular Function Research Collaboration (TVFRC)

- Readmission Risk Prediction Following Acute Myocardial Infarction.

## Dr Amy HOLMES

### Therapeutics Research Centre

- Development of novel prevention and treatment strategies for postpartum vaginal and perineal infections.

## Dr Katharina RICHTER

### Surgical Science Research Group

- Improving the effectiveness of infection control after surgery.
- A new implant to stop infections in hernia surgery.

## Professor Catherine HILL

### Rheumatology Research Group

- The Australian arthritis and autoimmune biobank collaborative (A3BC) research grant

## Professor Andreas EVDOKIOU

### Breast Cancer Research Group

- Liposomal-based delivery of phosphoantigens as sensitisers for adoptive gd T cell anticancer immunotherapy.

## Dr Makutiro MASAVULI

### Viral Immunology Group

- Hepatitis C virus (HCV) challenge in vaccinated HCV-permissive transgenic mice.

## A/Professor Branka GRUBOR-BAUK

### Viral Immunology Group

- The protective efficacy of a cytolytic DNA vaccine for HCV in marmosets: a step towards human clinical trials.
- Neutralizing the menace of Zika virus.
- COVID-19 SA: Understanding South Australia's unique and diverse COVID experiences to inform future management strategies.

## Professor John BELTRAME

### Translational Vascular Function Research Collaboration (TVFRC)

- Value-based healthcare in elective coronary stenting.

## A/Professor Anne HAMILTON-BRUCE

### Stroke Research Programme

- FAST-IT - Find A Simple Test In TIA (Transient Ischaemic Attack)
- DOgSS - Dogs Offering Support after Stroke

## Professor Robert FITRIDGE

### Vascular Research Group

- An Evaluation of the association between High Density Lipoprotein (HDL) levels and functionality with the rate of wound healing in diabetic and non-diabetic patients

## Dr Isuru RANASINGHE

### Adelaide Geriatrics Training and Research with Aged Care (GTRAC) Centre

- Safety, effectiveness of care and resource use among Australian hospitals (SAFER Hospitals).

## Professor Michael ROBERTS

### Therapeutics Research Centre

- Addressing potentially life-threatening ketoacidosis associated with key antidiabetic medicines.

## A/Professor Gabby CEHIC

### Molecular Imaging and Therapy Unit

- Implementation and maintenance of a database of South Australia Peptide Receptor Radionuclide Therapy (SA PRRT) service.

## Dr Sam COSTELLO

### Inflammatory Bowel Disease Research Group

- "Investigator led study exploring the role of Microbiome in Parkinson's Disease".

## A/Professor Rosanna TAVELLA

### Translational Vascular Function Research Collaborative (TVFRC)

- Gender Matters: Coronary Heart Disease – An Old Disease with New Problems.

## A/Professor Wendy INGMAN

### Breast Biology and Cancer Unit

- Towards zero deaths from breast cancer.

Each year, THRF Group proudly funds the purchase of state-of-the-art medical research equipment to enable BHI researchers to remain at the forefront of translational research. In 2022, THRF Group provided over \$160,000 in funding.



## VevoStrain Analysis Suite

The VevoStrain Analysis Suite software is used in conjunction with the pre-clinical Vevo3100 ultrasound equipment at Adelaide Microscopy, The University of Adelaide. The VevoStrain software, in conjunction with ultrasound, will make it possible to detect early and subtle cardiac wall deformation or cardiac “strain” in pre-clinical models.

This software will allow Professor John Horowitz and the Cardiovascular Pathophysiology & Therapeutics Group to detect strain up to 5 weeks earlier. Early diagnosis of cardiac strain allows for better timing of therapy for example in diabetes-induced cardiac dysfunction. This capability will also build research collaborations

to investigate cardiac dysfunction in postpartum mothers and their offspring following pregnancy complications.

## Essential Equipment

THRF Group have also funded several other essential pieces of equipment which will support all laboratory research groups at BHI. These include a Nanodrop OneC Spectrophotometer to quantify biological material in small sample volumes, TissueLyser II and Microcentrifuge for sample preparation and processing, I3300 Industrial Label Printer to generate high throughput clinical sample labels of lasting integrity, Fridges and Ultracold Freezer.

## GridION

The Oxford Nanopore Technologies GridION Mk1 Sequencing Device is a high throughput nanopore sequencer delivering real-time data for multiple samples, simultaneously. This technology can be used to sequence RNA, bacterial 16S, bacteriophages, whole genomes, and metagenomes.

Over the next two years and while sequencing technology develops rapidly, the GridION will allow Professor PJ Wormald and the ENT Surgery team to carry out in depth characterisation of bacteria and viruses which cause clinical inflammatory disease, such as Chronic Rhinosinusitis. It has also allowed RNA characterisation of head and neck cancers in addition to the intra-tumoural microbiome.

George Bouras and Dr Gohar Shaghayegh using the GridION.



**The Basil Hetzel Institute, TQEH, has provided basic and clinical research training to undergraduate and Higher Degree by Research (HDR) students for more than 30 years through its teaching and research affiliations with the South Australian universities.**

In 2022, over 100 research students undertook their Honours, Masters or PhD research projects with BHI, TQEH research supervisors. Over 85% of these students conducted their research within the BHI, TQEH precinct. In 2022, 27 students were awarded a PhD or Master's Degree. In addition, all 5 students who completed their Honours degrees through The University of Adelaide were awarded First Class Honours. For those students completing their research training we congratulate them on their achievements and wish them well in their future careers.

The BHI plays a central role in Adelaide in training the clinical researchers of the future. Of the total student cohort of 2022, over 60% of our trainees were clinically-trained or allied health practitioners. TQEH Clinical Researchers take an active role in student supervision of clinically-trained and scientifically-trained students providing valuable insights into unmet needs in healthcare. Through our student training we provide real-life opportunities to make a difference to health and medical outcomes.

BHI, TQEH based research students enrolled through the Faculty of Health and Medical Sciences at The University of Adelaide were expertly assisted by Honours and Postgraduate Coordinator Dr Peter Zalewski, and Postgraduate Coordinators Associate Professor Sarah Vreugde and Professor Betty Sallustio.

### **Work Experience Students**

The BHI work experience program continues to be a popular window into medical science for secondary school students. In 2022, 6 students from Heathfield High School, Marryatville High School, Our Lady of the Sacred Heart College, Glenunga International High School, Roma Mitchell Secondary College and Brighton Secondary School completed a placement. Each student spent a few days with BHI research groups, observing laboratory and clinical research and contributing to general lab duties.

### **UniSA Design Students**

BHI, TQEH researchers were again fortunate to be partnered with UniSA Creative Bachelor of Design (Communication Design) students. In small groups, students created animations with voice over to simplify 8 medical concepts or studies for the researchers' intended audience. All animations were intended for patient or potential participant use, with some animations doubling as educational tools.

# RESEARCH STUDENTS 2022

## COMPLETED HIGHER RESEARCH DEGREES & HONOURS

Listed alphabetically by surname; BHI, TQEH based supervisors are underlined; \*indicates students with BHI, TQEH supervisors who undertake their research at other precincts.

### THE UNIVERSITY OF ADELAIDE

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#### PHD AWARDED

**Bimala DHAKAL** BSc MSc

*Perhexiline as a potential treatment for colorectal cancer*

Supervisors: Maddern G, Hauben E, Fenix K, Voelcker N (Monash University)

**Surgical Science Research Group**

Schlumberger Foundation Faculty for the Future Fellowship

The University of Adelaide, awarded October 2022

**Thomas ELDREDGE** MBBS

*Bile reflux after Bariatric surgery*

Supervisors: Kiroff G, Shenfine J, Myers J

**Oesophageal Physiology Group**

Richard Jepson Research Scholarship, Royal Australasian College of Surgeons (RACS)

The University of Adelaide, Doctor of Philosophy (PhD) awarded June 2022

**Sholeh FEIZI** MSc

*The Role of Colloidal Silver Synthesized from *Corymbia Maculata* in Eradicating Infection in Chronic Rhinosinusitis*

Supervisors: Wormald PJ, Vreugde S, Psaltis AJ

**ENT Surgery**

The University of Adelaide, PhD awarded February 2022

The Hospital Research Foundation Postgraduate Research Scholarship/ Adelaide ENT Research Institute Scholarship

**Jannatul (Tuli) FERDOUSH** BSc MSc

*Effect of bacterial exotoxin on mucosal barrier in Chronic Rhinosinusitis*

Supervisors: Wormald PJ, Ramezanzpour M

**ENT Surgery**

The University of Adelaide, PhD awarded July 2022

The University of Adelaide Research Training Program Stipend

**Giri KRISHNAN** MBBS MCLinSc

*Evaluating the accuracy of lymphotropic iron tracers for sentinel lymph node mapping in an orthotopic VX2 rabbit head and neck cancer model*

Supervisors: Wormald PJ, Foreman A

**ENT Surgery**

The University of Adelaide, PhD awarded July 2022

The University of Adelaide Faculty of Health and Medical Sciences Divisional Scholarship/ Garnett Passe and Rodney Williams Research Scientist Scholarship (from March 2018)

**Zahra LOTFOLLAHI** PhD BPod

*Investigating the Wound Healing Properties of Reconstituted High-Density Lipoprotein (rHDL) in Diabetes*

Supervisors: Bursill C (SAHMRI), Fitridge R, Dawson J

**Vascular Surgery Research Group**

The University of Adelaide, PhD awarded Dec 2022

**Martha MENBERU** MSc

*Investigating Microbiome – Targeted Treatments for Chronic Rhinosinusitis: A novel approach to combat dysbiosis in the nasal microbiome*

Supervisors: Vreugde S, Wormald PJ, Psaltis A

**ENT Surgery**

The University of Adelaide, PhD awarded February 2022

The University of Adelaide International Scholarship

**Andrew OLAGUNJU** MBBS MSc FWACP FMCPsych

*Cognitive deficits, functioning and quality of life in individuals with schizophrenia and major depression*

Supervisors: Baune BT (University of Münster, Germany), Clark SR  
**Psychiatry Research Group**

The University of Adelaide International Scholarship

The University of Adelaide, PhD awarded September 2022

**Gao-Jing ONG** MBChB FRACP

*TakoTsubo Syndrome: Precipitants, Clinical Course and Emerging Treatments*

Supervisors: Horowitz JD, Chirkov Y

**Cardiovascular Pathophysiology and Therapeutics Group**

The University of Adelaide Faculty of Health & Medical Sciences Divisional Scholarship

The University of Adelaide, PhD awarded June 2022

**Gohar SHAGHADEYEGH** BSc MSc

*Investigating the relationship between exoprotein production and inflammation in Chronic Rhinosinusitis*

Supervisors: Wormald PJ, Cooksley C, Psaltis A

**ENT Surgery**

The University of Adelaide, PhD awarded July 2022

The Hospital Research Foundation Postgraduate Research Scholarship; The University of Adelaide Fee scholarship

**Tim SURMAN\*** MBBS

*The structural apparatus of the aortic valve and patient outcomes for transapical and open aortic valve surgery*

Supervisors: Beltrame J, Worthington M

**Translational Vascular Function Research Collaborative**

The Hospital Research Foundation Postgraduate Research Scholarship PhD awarded July 2022

**Joanna TIEU** MBBS BMedSc FRACP

*Optimising therapy in ANCA-associated Vasculitis*

Supervisors: Hill C, Proudman S, Jayne D (University of Cambridge)

**Rheumatology Research Group**

NHMRC Postgraduate Research Scholarship

The University of Adelaide, PhD awarded September 2022

**Joseph WRIN** BSc

*Development of a C1q monoclonal antibody for pre-clinical applications in breast cancer*

Supervisors: Ingman W, Evdokiou A

**Breast Biology and Cancer Unit**

The University of Adelaide, PhD awarded August 2022

### THE UNIVERSITY OF ADELAIDE

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#### MASTER OF BIOTECHNOLOGY (BIOMEDICAL) AWARDED

**Hashan DILENDRA** BBioMedSc

*Association between mucosal barrier disruption by *Staphylococcus lugdunensis* exoproteins in patients with chronic rhinosinusitis*

Supervisors: Vreugde S, Ramezanzpour M

**ENT Surgery**

The University of Adelaide, Masters awarded July 2022

## RESEARCH STUDENTS 2022 COMPLETED HIGHER RESEARCH DEGREES & HONOURS

### Fangmeinuo (Mona) WU B.Biotechnology

*Repurposing the anti-anginal drug perhexiline for the treatment of head and neck squamous cell carcinoma*

Supervisors: [Smith E](#), [Fenix K](#)

**Solid Tumor Group**

The University of Adelaide, awarded December 2022

## THE UNIVERSITY OF ADELAIDE

### MASTER OF PHILOSOPHY (SURGERY) AWARDED

#### Nelson GRANCHI MBBS

*Improving the non-technical skills of surgeons in the outpatient clinic*

Supervisors: [Maddern G](#), [Trochsler M](#)

**Surgical Science Research Group**

The University of Adelaide, awarded May 2022

#### Li Lian KUA MBChB FRACS

*Studies on benign hepatic and pancreatic pathology*

Supervisors: [Maddern G](#), [Trochsler M](#)

**Surgical Science Research Group**

The University of Adelaide, awarded October 2022

#### Beatrice KUANG MPhil MBBS

*Technological Developments in the Assessment and Management of Diabetic Foot Ulcers*

Supervisors: [Fitridge R](#), [Cowled P](#), [Dawson J](#)

**Vascular Surgery Research Group**

The University of Adelaide, MPhil awarded March 2022

#### Paul PATINIOT MBBS

*Aspects of hernia repair*

Supervisors: [Maddern G](#), [Karatassas A](#)

**Surgical Science Research Group**

The Hospital Research Foundation Postgraduate Scholarship

The University of Adelaide, awarded February 2022

#### Edward YOUNG MBBS

*Emergency surgery deaths in Australia: Transfers and appendectomies*

Supervisors: [Maddern G](#), [Trochsler M](#)

**Surgical Science Research Group**

The University of Adelaide, awarded December 2022

## THE UNIVERSITY OF ADELAIDE

### HONOURS AWARDED

#### Ecaterina ELTAHIR Psychology (Hons)

*Child Maltreatment and Risk of Psychosis: A Network Analysis Approach*

Supervisors: [Hartmann S](#), [Clark SR](#)

**Psychiatry Research Group**

The University of Adelaide, First Class Honours awarded November 2022

#### Jeffrey SUNG MBBS

*Navigating the Dark Side of the Skull: An endoscopic technique for localising structures of the infratemporal fossa*

Supervisors: [Valentine R](#), [Psaltis A](#), [Wormald PJ](#)

**ENT Surgery**

The University of Adelaide, First Class Honours awarded December 2022

#### Wei Ching Shawn YONG BHMS (Hons)

*Identifying Abnormal Cortical Structure Patterns Using Variational Autoencoders to Predict First Episode Psychosis Transition*

Supervisors: [Hartmann S](#), [Clark SR](#)

**Psychiatry Research Group**

The University of Adelaide, First Class Honours awarded November 2022

## THE UNIVERSITY OF ADELAIDE

### BACHELOR OF HEALTH & MEDICAL SCIENCES (HONOURS) AWARDED

#### Jesse EY

*The surgeon said what? The effect of a question prompt list on patient engagement and information recall in the surgical outpatient setting, a randomised control trial*

Supervisors: [Maddern G](#), [Bruening M](#)

**Surgical Science Research Group**

The University of Adelaide, First Class Honours awarded November 2022

## THE UNIVERSITY OF ADELAIDE

### BACHELOR OF MEDICAL SCIENCES (HONOURS) AWARDED

#### Ellie TRELOAR BHlthMedSc

*A randomised controlled pilot study to assess the effects of a Question Prompt List on patient engagement, anxiety and recall in a surgical outpatient consultation*

Supervisors: [Maddern G](#), [Wichmann M](#) (Flinders University)

**Surgical Science Research Group**

Flinders University, First Class Honours awarded November 2022

## THE UNIVERSITY OF ADELAIDE

### MASTER OF MINIMALLY INVASIVE SURGERY (MMIS) AWARDED

#### Magda HALT BSc(Hons) BMBS FRANZCOG

Supervisors: [Hewett P](#)

**Peritoneal Cancer Research Group**

The University of Adelaide, awarded December 2022

#### Mathew JACOB

Supervisors: [Hewett P](#)

**Peritoneal Cancer Research Group**

The University of Adelaide, awarded December 2022



## RESEARCH STUDENTS 2022

### COMPLETED HIGHER RESEARCH DEGREES & HONOURS

**Shalvin PRASAD** MBChB FRACS

Supervisors: [Hewett P](#)

**Peritoneal Cancer Research Group**

The University of Adelaide, awarded December 2022

**Simon WHITCHER** BMedSci MBBS FRACS

Supervisors: [Hewett P](#)

**Peritoneal Cancer Research Group**

The University of Adelaide, awarded December 2022

## THE UNIVERSITY OF SOUTH AUSTRALIA

### PhD AWARDED

**Victor KRAWCZYK** BSocSc(Hum Serv) BA(Hons) GDipArtHist PhD

*Compassion for Animals in Culture and Organizational Life: Exploring and Actualizing Compassion for Suffering Animals*

Supervisors: Walton S (University of South Australia), Higgins-Desbiolles F (University of South Australia), [Hamilton-Bruce MA](#), Caluya G (Deakin University)

**Stroke Research Programme**

UniSA Creative Scholarship

University of South Australia, PhD awarded May 2022

## CHARLES STURT UNIVERSITY, NSW

### MASTER OF MEDICAL SCIENCE AWARDED

**Donna KEATLEY** BSc(Biomed) (Hons) GradCertRespSci

*Comparison of a Step Test to the Six Minute Walk Test in patients with Exercise induced dyspnoea: a validation trial*

Supervisors: Micalos P (Charles Sturt University), Pak S (Charles Sturt University), [Jurisevic M](#), Kopsaftis Z (University of South Australia, The University of Adelaide)

**Respiratory Research Group**

Charles Sturt University, Masters awarded August 2022

## UNIVERSITY OF QUEENSLAND

### PhD AWARDED

**Mohammad Suleman KHAN** PharmD MSc MPhil

*Pharmacotherapy consideration in older people with cardiovascular diseases and diabetes- focus on prescribing complication and pharmacokinetics*

Supervisors: [Roberts M](#), [Mackenzie L](#), Lui X (University of Queensland), Grice J (University of Queensland)

**Therapeutics Research Centre**

University of South Australia Research Training Program Stipend

University of Queensland, PhD awarded 25 March 2022

## RESEARCH STUDENTS 2022

# CONTINUING RESEARCH HIGHER DEGREE & HONOURS STUDENTS

Listed alphabetically by surname; BHI, TQEH based supervisors are underlined; \*indicates students with BHI, TQEH supervisors who undertake their research at other precincts; \*\*indicates students based at the BHI, TQEH but who do not have supervisors there.

## THE UNIVERSITY OF ADELAIDE

### PHD STUDENTS

**Sally Suriani AHIP** MBBS Doctor of Family Medicine.

*The Malaysian Pictorial Fit-Frail Scale (M-PFFS): Development and Testing of Feasibility, Validity and Reliability In Malaysia*

Supervisors: Visvanathan R, Theou O (Dalhousie University), A/Prof Dr Sazlina Shariff (Universiti Putra Malaysia)

**Adelaide GTRAC Centre**

Government of Malaysia Scholarship

**Mirabel ALONGE** BHlthMSc(Hons)

*Using Pharmacokinetic Principles to Improve the Safety of Tacrolimus in Kidney Transplant Recipients*

Supervisors: Sallustio B, Collier J (The University of Adelaide), Jesudason S (CALHN, The University of Adelaide), Reuter-Lange S (University of South Australia)

**Clinical Pharmacology Research Group**

The University of Adelaide Faculty of Health & Medical Sciences Divisional Scholarship and The Hospital Research Foundation Top-up Scholarship

**Stephen BACCHI** MBBS

*Deep learning in the prediction of clinically significant outcomes in Stroke and General Medicine patients*

Supervisors: Koblar S, Kleinig T, Jannes J

**Stroke Research Programme**

**Avisak BHATTACHARJEE** MBBS FCPS FMAS MPH

*Mammographic density: optimising communication and clinical care*

Supervisors: Ingman W, Turnbull D, White S

**Breast Biology and Cancer Unit**

The Hospital Research Foundation Group Scholarship

**James Thomas CONNELL** MBBS

*Ecological interactions between fungal and bacterial elements in chronic rhinosinusitis*

Supervisors: Wormald PJ, Psaltis A, Vreugde S

**ENT Surgery**

The University of Adelaide Research Training Program Stipend

**Anupam DATTA GUPTA** MBBS, MD, Clin Dip Pall Med, Grad Dip Musc Med, FAFRM (RACP)

*Lower limb spasticity and dystonia*

Supervisors: Visvanathan R, Koblar S (The University of Adelaide, SAHMRI), Cameron I (University of Sydney)

**Adelaide GTRAC Centre**

The University of Adelaide

**Andrew FON** MBBS FRACP

*Endoscopic Lung volume reduction and Physiological Changes*

Supervisors: Reynolds P (CALHN), Jersmann H (CALHN), Nguyen P (CALHN)

**Respiratory Research Group**

**Olivia GIROLAMO** BAAppSci BHlthMSc (Hons)

*Clinical Considerations in Coronary Vasomotor Disorders*

Supervisors: Beltrame J, Tavella R, Zeitz C

**Translational Vascular Function Research Collaborative**

The University of Adelaide Research Training Program Stipend

**Thomas GOODSALL** MBBS

*Intestinal ultrasound in Crohn's disease*

Supervisors: Prof Jane Andrews J (The University of Adelaide), Bryant R, Ma C (University of Calgary)

**Inflammatory Bowel Disease Research Group**

The University of Adelaide Scholarship

**Chelsea GRAHAM** BSc(Animal Sc)(Hons)

*Developing a Schwann cell line from Tasmanian devil (*Sarcophilus harrisii*) dental pulp stem cells*

Supervisors: Hamilton-Bruce MA, Pyecroft SB (The University of Adelaide), Kremer KL (The University of Adelaide)

**Stroke Research Programme**

**Aashray GUPTA** BMBS MS(Cardiothoracic Surgery) GDipSurgAnat GDipClinUS

*Evidence supporting strategies for coronary artery revascularisation*

Supervisors: Maddern G, Bennetts J (Flinders Medical Centre, Flinders University)

**Surgical Science Research Group**

**Hanieh HEYDARLOU**

*The role of TLR4 in mammographic density and breast cancer risk*

Supervisors: Ingman W, Smith E

**Breast Biology and Cancer Unit**

International student scholarship

**Ghais HOUTAK** BMed, MNeurosc (Research), MMed

*Development of a personalised therapeutic protocol for *S. aureus* recalcitrant CRS*

Supervisors: Vreugde S, Wormald PJ

**ENT Surgery**

The University of Adelaide Divisional and Fee scholarship; The Hospital Research Foundation Postgraduate Research Top-Up Scholarship

**Unyime JASPER** BMR(PT) MSc

*A pre-post, feasibility and acceptability study investigating the effects of a goal-setting coaching intervention using accelerometer guided objective feedback on real time feedback on sedentary behaviour and physical activity in hip fracture patient.*

Supervisors: Visvanathan R, Yu S, Jadczak A, Dollard J

**Adelaide GTRAC Centre**

International Wildcard Scholarship; CRE Frailty in Healthy Ageing Top-up Scholarship The University of Adelaide

**Laurine KAUL\*** MPharm & PharmSci

*Novel treatments with antibacterial and wound-healing properties*

Supervisors: Richter K, Zannettino A (The University of Adelaide), Suess R (Freiburg University)

**Surgical Science Research Group**

Joint Postgraduate Research Scholarship (The University of Adelaide & Freiburg University, Germany)

**Adeel Akbar KHOJA** MBBS MSc (Epidemiology & Biostatistics)

*Assessing the Influence of Pregnancy and its Complications on Cardiovascular Disease Risk*

Supervisors: Arstall M (NAHLN), Tavella R, Andraweera P

**Translational Vascular Function Research Collaborative**

Northern Cardiovascular Research Group/Translational Vascular Function Research Collaborative; Adelaide Scholarship International, The University of Adelaide

# RESEARCH STUDENTS 2022

## CONTINUING RESEARCH HIGHER DEGREE & HONOURS STUDENTS

**Kareeann KHOW** MBChB

*Lower limb spasticity and dystonia*

Supervisors: [Visvanathan R](#), [Yu S](#), Shibu P (SA Health)

Adelaide GTRAC Centre

NHMRC Postgraduate Scholarship

**Tanja KLOTZ** BOccTherapy MCLinSc

*Hypertrophic scar measures relationship to transepidermal water loss, and the effect of generic moisturisers on transepidermal water loss model*

Supervisors: [Maddern G](#), [Wagstaff M](#) (RAH)

Surgical Science Research Group

**Joshua KOVOOR** BHlth MSc(Hons) MBBS

*Characterisation of gastrointestinal recovery after general surgery*

Supervisors: [Maddern G](#), Jones K (The University of Adelaide)

Surgical Science Research Group

The Hospital Research Foundation/Basil Hetzel Institute/The Queen Elizabeth Hospital Postgraduate Research Scholarship

**Sarena LA** BHlthMSc (Advanced) (Hons)

*Clinical insights into patients with chest pain and NOCA (non-obstructive coronary arteries) syndromes*

Supervisors: [Tavella R](#), [Pasupathy S](#), [Beltrame J](#)

Translational Vascular Function Research Collaborative

The University of Adelaide Research Training Program Stipend

**Man Ying (Celine) LI** BSc BHlthMSc(Hons)

*Investigation on the cytokine induced killer cells (CIK) in the treatment of colorectal cancer liver metastasis*

Supervisors: [Maddern G](#), [Fenix K](#), [Drew P](#)

Surgical Science Research Group

The University of Adelaide Divisional Scholarship

**Runhao LI** BSc (Biotechnology), MBiotechnology (Biomedical)

*Over-expression of SFRP5 in hepatocytes: a novel treatment strategy for colorectal cancer liver metastases*

Supervisors: [Smith E](#), [Fenix K](#), [Price T](#)

Solid Tumor Group

The University of Adelaide International Research Scholarship

**Suellen LYNE** MBBS FRACP

*Epidemiology, Clinical Phenotype and Treatment Implications of Giant Cell Arteritis in Australia and New Zealand*

Supervisors: [Hill C](#), [Ruediger C](#), Shanahan EM (Flinders University)

Rheumatology Research Group

**James MARTIN** MAPS

*Investigating the substrate processes underlying the relationship between cognitive functioning and Anomalous Self-Experience, in adolescents with first-episode psychosis*

Supervisors: [Schubert O](#), [Clark SR](#)

Psychiatry Research Group

**Annika MASCARENHAS** MBBS

*An endoscopic bovine model of small vessel intracranial arterial haemorrhage control*

Supervisors: [Wormald PJ](#), [Psaltis A](#)

ENT Surgery

**Ryan MATHIAS** MBBS

*Intestinal ultrasound to identify gastrointestinal contents*

Supervisors: [Bryant R](#), [Costello S](#), [Day A](#)

Inflammatory Bowel Disease Research Group

The University of Adelaide Scholarship

**Anna MEGOW** MBBS

*The protective role of Corynebacterium species in chronic rhinosinusitis*

Supervisors: [Wormald PJ](#), [Psaltis A](#), [Vreugde S](#)

ENT Surgery

The University of Adelaide Divisional Scholarship

**Reger MIKAEEL** MSc

*Towards an Understanding of the Growing Incidence of Colorectal Cancer and Appendiceal Neoplasms in Young Adults*

Supervisors: [Price T](#), [Young J](#)

Solid Tumor Group

The University of Adelaide, awarded February 2022

The University of Adelaide Wild Card International Postgraduate Scholarship

**Alex Tony MINOPOULOS** BHlthSc BHlthMSc(Hons)

*The role of endothelial dysfunction and the expression of rho-kinase in coronary artery spasm*

Supervisors: [Beltrame J](#), [Tavella R](#), [Sallustio B](#)

Translational Vascular Function Research Collaborative

THRf Group BHI TQEH Research Scholarship

**William Mark MURPHY** BHSci, MD

*Use of mesalazine in chronic rhinosinusitis*

Supervisors: [Wormald PJ](#), [Psaltis A](#), [Vreugde S](#)

ENT Surgery

**Roshan NEPAL** BSc, MSc (Biotech)

*Synthetic phage and phage lysins as potential antibacterial agents against multi-drug resistant pathogens*

Supervisors: [Vreugde S](#), [Wormald PJ](#)

ENT Surgery

The Hospital Research Foundation Postgraduate Research Scholarship; The University of Adelaide Fee Scholarship

**Jem NINAN** MBBS MD FRACP FACF CCPU

*Giant Cell Arteritis - understanding mechanisms of disease, improving the diagnostic certainty, and optimising management through Fast Track Clinics*

Supervisors: [Hill C](#), [McNeil J](#)

Rheumatology Research Group

Modbury Hospital Foundation Research Grant

**Andrew PEEL** MBBS

*The relationship of diet, obesity and male fertility*

Supervisors: [McPherson N](#) (The University of Adelaide), [Wittert G](#) (The University of Adelaide), [Jesudason D](#)

Endocrinology Unit

**Huai Leng (Jessica) PISANIELLO** MBBS FRACP

*The Role of Mobile Health Application in Real-Time Capture of Self Reported Pain Symptoms, and The Use of Intensive Longitudinal Data Analysis in Examining Day-to-Day Pain Variability in Rheumatic and Musculoskeletal Disorders*

Supervisors: [Hill C](#), [Beltrame J](#), [Dixon W](#) (University of Manchester), [Whittle S](#)

Rheumatology Research Group

Arthritis Australia Ken Muirden Travelling Scholarship 2018; The University of Adelaide Faculty of Health and Medical Sciences Divisional Scholarship

## RESEARCH STUDENTS 2022

### CONTINUING RESEARCH HIGHER DEGREE & HONOURS STUDENTS

#### **Samantha PLUSH** APD

*Dietitian First clinic in Functional Gastrointestinal Disorders*

Supervisors: [Bryant R](#), [Day A](#), Kumar S (University South Australia)

**Inflammatory Bowel Disease Research Group**

The University of Adelaide Scholarship

#### **Sima RAD** BSc, MMedSc

*The Biology of Triple Negative Breast Cancer*

Supervisors: [Smith E](#), [Townsend A](#), [Ingman W](#)

**Solid Tumor Group**

The University of Adelaide International Research Scholarship

#### **Karen ROYALS** RN

*PhD Nurse Practitioner in COPD management*

Supervisors: Carson-Chahhoud K (University of South Australia), [Yeale A](#)

**Respiratory Research Group**

#### **Oscar RUSSELL** MBBS

*The impact of socioeconomic factors on medication use and health outcomes in Australians with rheumatoid arthritis*

Supervisors: [Hill C](#), [Black R](#)

**Rheumatology Research Group**

#### **Tomomichi SAKAI** MD

*The validation Study of FRAIL-NH in Japanese Nursing Homes and the Comparison Study with Australia*

Supervisors: [Visvanathan R](#), Masafumi K (Department of Community Healthcare and Geriatrics, Nagoya University), [Jadczak AD](#)

**Adelaide GTRAC Centre**

The University of Adelaide

#### **Jonathon SCHUBERT** MBBS

*Helicobacter pylori resistance patterns in Australia*

Supervisors: Rayner C (The University of Adelaide), [Bryant R](#), [Roberts-Thompson I](#)

**Inflammatory Bowel Disease Research Group**

The University of Adelaide Scholarship

#### **Deeksha SHARMA** BHlthSc (Hons)

*Find A Simple Test for TIA (FAST-IT)*

Supervisors: [Hamilton-Bruce MA](#), [Koblar SA](#), [Rao S](#)

**Stroke Research Programme**

#### **James SMYTH** FFSEM, FRCEM, FACEM, DCH, FRCSI, MB, BCh, BA(Mod)

*Roles of assessment activities of daily living (ADL's) and frailty for transfers of nursing home (NH) residents to the emergency department*

Supervisors: [Visvanathan R](#), Arendts G (The University of Western Australia), Grantham H (Curtin University/Flinders Medical Centre)

**Adelaide GTRAC Centre**

#### **Kai Tit TAN** BHMS

*Exploring The Relationship between Electroencephalography Aperiodic Slope, Neuroinflammation, Cognition and Function in Posttraumatic Stress Disorder*

Supervisors: [Schubert O](#), [Clark SR](#), [Goldsworthy M](#)

**Psychiatry Research Group**

The Hospital Research Foundation Postgraduate Research Scholarship;  
The University of Adelaide International Scholarship

#### **Sintayehu WONDEMAGEGN** BSc MSc

*The effect of bacterial exoproteins on the mucosal barrier of human nasal epithelial cells (HNECs)*

Supervisors: [Vreugde S](#), [Fenix K](#), [Psaltis A](#)

**ENT Surgery**

The University of Adelaide Research Scholarship

#### **Kenny Ker Li YEO** BSc (Hons)

*The Interplay Between Tumour-associated Microbiota, Tertiary Lymphoid Organ Development and Oral Cancer Carcinogenesis*

Supervisors: [Vreugde S](#), [Fenix K](#)

**ENT Surgery**

Adelaide University-Nottingham scholarship

## THE UNIVERSITY OF ADELAIDE

### MASTER OF CLINICAL SCIENCE STUDENTS

#### **Matipaishe MASHAYAMOMBE** MBChB MMed

*Identification of bacterial resistance to silver-based wound dressings*

Supervisors: [Fitridge R](#), Kidd S

**Vascular Surgery Research Group**

#### **Suhanya SEIMON** MBBS

*The impact of treatment patterns on quality of life in individuals with critical limb ischaemia*

Supervisors: [McMillan N](#), [Fitridge R](#)

**Vascular Surgery Research Group**

## THE UNIVERSITY OF ADELAIDE

### MASTERS OF PHILOSOPHY (CLINICAL SCIENCE) STUDENTS

#### **Madeleine BRYANT** MBBS

*Patient Reported Experience Measures in Australian outpatient rheumatology care*

Supervisors: [Hill C](#), [Black R](#)

**Rheumatology Research Group**

#### **Julia NEW-TOLLEY** MBBS

*Rheumatoid Arthritis and Exercise in Australia*

Supervisors: [Hill C](#), [Proudman S](#)

**Rheumatology Research Group**

Arthritis Australia Scholarship

## THE UNIVERSITY OF ADELAIDE

### MASTER OF PHILOSOPHY (MEDICAL SCIENCE) STUDENTS

#### **Matthew CHU** MBBS

*Exclusive enteral nutrition in Inflammatory Bowel Disease*

Supervisors: [Bryant R](#), [Day A](#)

**Inflammatory Bowel Disease Research Group**

Basil Hetzel Institute Scholarship

## RESEARCH STUDENTS 2022

### CONTINUING RESEARCH HIGHER DEGREE & HONOURS STUDENTS

#### Nikolaos FILIPPATOS

*Liposomal-based delivery of phosphoantigens as sensitizers for  $\gamma\delta$  T cell immunotherapy in breast cancer*

Supervisors: [Licari J](#), [Panagopoulos B](#) (The University of Adelaide/SAHMR)  
Breast Cancer Research Group

#### Sreecanth RAJA MBBS

*Faecal microbiota transplantation for refractory ulcerative proctitis*

Supervisors: [Rayner C](#) (The University of Adelaide), [Bryant R](#), [Costello S](#)  
Inflammatory Bowel Disease Research Group  
The University of Adelaide Scholarship

#### Karmen TELFER MBBS

*Faecal microbiota transplantation for maintenance of remission of Crohn's disease*

Supervisors: [Weinstein P](#) (The University of Adelaide), [Costello S](#)  
Inflammatory Bowel Disease Research Group  
The University of Adelaide Scholarship

#### Reena TEWARI MD

*Dementia diagnosis in residential care settings*

Supervisors: [Visvanathan R](#), [Jadczak AD](#)  
Adelaide GTRAC Centre

## THE UNIVERSITY OF ADELAIDE

### MASTER OF PHILOSOPHY (SURGERY) STUDENTS

#### Victor AGUIRRE GUTIERREZ MBBS

*Novel video recording systems in surgery: A new era in surgical education, safety and medico-legal documentation*

Supervisors: [Fitridge R](#), [Maddern G](#)  
Vascular Surgery Research Group

#### Sean BRIEN MBBS AFRACMA

*Surgical perioperative mortality for urological oncological procedures performed in Australia*

Supervisors: [Maddern G](#), [Catterwell R](#)  
Surgical Science Research Group

#### Harrison BOLT MD

*Understanding the immunoepigenetic function of mucosal epithelial cell FOXP3 expression in chronic inflammatory sinonasal disease*

Supervisors: [Psaltis A](#), [Vreugde S](#), [Wormald PJ](#), [Ramezanpour M](#)  
ENT Surgery

#### Matheesha HERATH MBBS

*POWER to the people – Improving communication in surgery*

Supervisors: [Maddern G](#), [Bruening M](#)  
Surgical Science Research Group

THRF Group BHI TQEH Research Scholarship

#### Kay HON MD

*Evaluating musculoskeletal effects in diabetes-related foot disease*

Supervisors: [Fitridge R](#), [Loughry C](#), [Thewlis D](#)  
Vascular Surgery Research Group

#### Jianliang (Laurence) LIU MBBS

*An analysis of rural general surgical departments' caseload and patient outcomes in South Australia*

Supervisors: [Maddern G](#), [Bruening M](#)  
Surgical Science Research Group

#### Richard SMITH FRACS

*Optimising post-operative interventions on musculoskeletal disorders in surgeons*

Supervisors: [Maddern G](#), [Neuhaus S](#)  
Surgical Science Research Group

#### Brandon STRETTON MBBS

*Perioperative haemostasis and anticoagulation*

Supervisors: [Boyd M](#) (The University of Adelaide), [Maddern G](#)  
Surgical Science Research Group

#### Ying Yang TING MBBS

*Coaching in surgical ward rounds*

Supervisors: [Maddern G](#), [Bruening M](#)  
Surgical Science Research Group

THRF Group BHI TQEH Research Scholarship / The University of Adelaide

## THE UNIVERSITY OF ADELAIDE

### HONOURS STUDENTS

#### Madison DAVIS BHlthMSc

*Erythrocyte FKBP12 expression and tacrolimus distribution: Could Erythrocyte FKBP12 expression be the missing link in pharmacokinetic variability in plasma and whole blood tacrolimus concentrations of kidney transplant recipients?*

Supervisors: [Sallustio B](#), [Coller J](#) (The University of Adelaide)  
Clinical Pharmacology Research Group  
The University of Adelaide

#### Dray HARRISON BSc

*The Effect of Respiratory Virus Infection on IL-33 Mediated Type II Inflammatory Response in Airway Epithelial Cells of Chronic Rhinosinusitis patients*

Supervisors: [Vreugde S](#), [Ramezanpour M](#)  
ENT Surgery

#### Ethan ARTHURS BHMS

*EEG markers of symptoms, cognition and function in mood disorders*

Supervisors: [Clark SR](#), [Goldsworthy M](#)  
Psychiatry Research Group

## FLINDERS UNIVERSITY OF SOUTH AUSTRALIA

### PhD STUDENT

#### Tom ALTREE MBBS FRACP

*Novel Pharmacology in Airway disease during sleep*

Supervisors: [Eckert D](#) (Flinders Medical Centre), [Murherjee S](#) (Flinders Medical Centre), [Catcheside P](#) (Flinders Medical Centre)

Respiratory Research Group

The Flinders Health and Medical Research Institute Scholarship

# RESEARCH STUDENTS 2022

## CONTINUING RESEARCH HIGHER DEGREE & HONOURS STUDENTS

### FLINDERS UNIVERSITY OF SOUTH AUSTRALIA

#### MASTER OF PHILOSOPHY (MS) STUDENTS

##### Rippan SHUKLA MBBS

*Best predictors for a good outcome after laparoscopic fundoplication in patients with gastro-oesophageal reflux*

Supervisors: Thompson S (Flinders University), Watson D (Flinders University), Myers J, Bright T (Flinders University)

Oesophageal Physiology Group

##### Matthew MARSHALL-WEBB MBBS

*Validation of a simple and practical method to monitor the efficacy of medical vs. surgical therapy for patients with Barrett's oesophagus*

Supervisors: Thompson S (Flinders University), Watson D (Flinders University), Myers J, Omari T (Flinders University), Cock C (Flinders University)

Oesophageal Physiology Group

Flinders Foundation Scholarship

##### Shuping QIANG\* BSc MSc

*Quantification, pharmacokinetics and efficacy of drug poisoning treatment*

Supervisors: Mackenzie L, Roberts M, Liu X (University of Queensland), Isbister G (University of Newcastle), Buckley N (University of Sydney)

Therapeutics Research Centre

University of South Australia Research Training Program Stipend; University of South Australia President's Scholarship (UPS); UniSA Postgraduate Research Award (USAPA)

##### Joshua Kane DALTON\* BSc Hon

*Pathways of small molecule xenobiotics in health and disease following exposure – implications for human health*

Supervisors: Mackenzie L, Weise M, Roberts M, Venkatesh B (The George Institute for Global Health), Roberts D (UNSW Sydney, NSW Poisons Centre), Cader MFA (University of Sydney), Mikkonen A (EPA Victoria), Famulari S (ACS Laboratories)

Therapeutics Research Centre

The Hospital Research Foundation (THRF) Postgraduate Scholarship and Therapeutics Research Centre University of South Australia Research Training Program Stipend

### LA TROBE UNIVERSITY

#### PHD STUDENT

##### Sonya McDOWALL BVetTechnol

*A quantitative study to evaluate the current standards and guidelines of Therapy and Service dogs within Australia*

Supervisors: Howell I, Hazel S (The University of Adelaide); Hamilton-Bruce MA (The University of Adelaide)

Stroke Research Programme

School of Psychology and Public Health

### UNIVERSITY OF SOUTH AUSTRALIA

#### PHD STUDENTS

##### Sean MANGION\* BHlthSc(Adv) BBiomed Research(Hons) GradCert (Innov&Enterp)

*Exploring the hair follicles as targets to improve the effectiveness of antidandruff therapies*

Supervisors: Mackenzie L, Roberts M, Holmes A, Grice J (University of Queensland), Kempson I, Alinaghi A, Weightman W (TQEH)

Therapeutics Research Centre

University of South Australia Research Training Program Stipend

##### Antti Tapani MIKKONEN\* BSc

*Investigation of the toxicokinetics of per- and polyfluoroalkyl substances (PFAS) in cattle and application to risk assessment*

Supervisors: Mackenzie L, Roberts M, Martin J (Environmental Protection Authority, Victoria), Upton R

Therapeutics Research Centre

University of South Australia Research Training Program Stipend



**After many years in this role, I was happy to help out once again!**

**T**he 31<sup>st</sup> TQEH Research Expo was held on 20<sup>th</sup> and 21<sup>st</sup> October 2022. This was a year of change; Associate Professor Joy Rathjen led the Research Expo Organising Committee in beginning the arrangements for the event. However, Joy's departure from the BHI in July 2022 left a large hole indeed and I was asked to return briefly from retirement to take on Joy's role as Chair of the Organising Committee. After many years in this role, I was happy to help out once again!

This year, the Committee received 31 Abstracts. Six students took part in the mini-oral presentation session held on the afternoon of Thursday 20 October and 20 students gave their oral presentations on Friday 21 October.

This year we were pleased to introduce a new session for clinicians in training who are not currently enrolled in a Higher Degree and this session was also held on the afternoon of Thursday 20 October where 4 clinicians presented their research.

Congratulations to all the presenters who highlighted their research at the 31<sup>st</sup> TQEH Research Expo! Awards were presented by Lesley Dwyer, CEO, Central Adelaide Local Health Network.

The 31<sup>st</sup> TQEH Research Expo Plenary Lecture was given by **Professor Caroline McMillen**, Chief Scientist for South Australia, in a session chaired by Professor Guy Maddern, Director of Research at the BHI, TQEH.

This event does not happen without the contribution of a great many people. Firstly, we must thank our major sponsor, The Hospital Research Foundation Group and all our other sponsors for their generous support, without which the event would not be possible.

Thanks also to all our senior researchers and clinicians who take the time out of their busy schedules to act as judges, both for Abstracts and for the Oral presentations at the event.

Finally, thanks must go to all the Research Expo Organising Committee members for their hard work and support in making the event such a success!



**DR PRUE COWLED**  
Interim Chair

TQEH Research Expo  
Organising Committee  
BASIL HETZEL INSTITUTE



## 31<sup>ST</sup> TQEH RESEARCH EXPO 2022 AWARD WINNERS



AWARD CATEGORY	VALUE AWARD SPONSOR	WINNER	BHI RESEARCH GROUP
Best Lay Description	<b>\$300</b> John Morris Group	<b>Dr Madeleine Bryant</b> The University of Adelaide	Rheumatology Research Group
Best Mini-Oral Presentation	<b>\$500</b> Southern Cross Science	<b>Dr Matheesha Herath</b> The University of Adelaide	Surgical Science Research Group
Best Clinical Trainee Research Presentation	<b>\$1,000</b> The Hospital Research Foundation Group	<b>Dr Matthew Tunbridge</b> CALHN	Central and Northern Adelaide Renal and Transplant Service
Best Oral Presentation: Honours	<b>\$1,000</b> The Hospital Research Foundation Group	<b>Ellie Treloar</b> The University of Adelaide	Surgical Science Research Group
Best Oral Presentation: Junior Laboratory Research	<b>\$1,000</b> University of South Australia, Clinical & Health Sciences	<b>Ryan Santos</b> The University of Adelaide	Viral Immunology Group
Best Oral Presentation: Senior Laboratory Research	<b>\$1,000</b> The University of Adelaide, Faculty of Health & Medical Sciences	<b>Laurine Kaul</b> The University of Adelaide	Surgical Science Research Group
Best Oral Presentation: Junior Clinical Research	<b>\$1,000</b> The Hospital Research Foundation Group	<b>Olivia Girolamo</b> The University of Adelaide	Translational Vascular Function Research Collaborative
Best Oral Presentation: Senior Clinical Research	<b>\$1,000</b> AusHealth	<b>Dr Madeleine Bryant</b> The University of Adelaide	Rheumatology Research Group

L-R: 31<sup>st</sup> TQEH Research Expo award winners **Ellie Treloar, Dr Matthew Tunbridge, Dr Madeleine Bryant, Laurine Kaul, Ryan Santos, and Olivia Girolamo.**



**RESEARCH GROUPS**

**Adelaide Geriatrics Training  
and Research with Aged Care  
(GTRAC) Centre**

**Rehabilitation Medicine**

# AGEING



**T**he Adelaide Geriatrics Training and Research with Aged Care (GTRAC) Centre collaborates with research groups globally and is associated with The University of Adelaide and the Aged and Extended Care Services (Geriatric Medicine) at The Queen Elizabeth Hospital.

**Our research focus includes healthy ageing, frailty, sarcopenia, gerontechnology, aged care, dementia assessment and management and falls prevention.**

**The team is committed to building the next generation of clinician and research leaders in the field of geriatric medicine and gerontology.**

## RESEARCH HIGHLIGHT OF 2022

Professor Visvanathan was recognised in the United Nations' first ever *Healthy Ageing 50: leaders transforming the world to be a better place to grow older* initiative. She was recognised for her contribution in strengthening clinical services for older people to the western suburbs of Adelaide, establishing a strong geriatric medicine and gerontology research program at The University of Adelaide and contributing to the training and mentorship of clinicians and academics in neighbouring countries.

2022 saw the conclusion of our National Health and Medical Research Council funded Centre of Research Excellence (CRE) in Frailty and Healthy Ageing, a project that has not only delivered on high quality research outcomes but contributed also to the training and mentorship of the next generation of frailty and healthy ageing research experts.

Dr Danielle Taylor, health geographer with our CRE, created a novel Healthy Ageing/Vulnerable Environment (HAVEN) Index and published in the highest ranked clinical geriatric medicine journal that a favourable residential environment was associated with a lower risk of mortality and delayed entry into permanent residential aged care. This research aligns to the World Health Organisation's concept that Healthy Ageing is influenced not only by health characteristics but also the environment people live in.

Dr Azmeraw Amare having been granted a National Health and Medical Research Council Investigator Grant has now established his own research group, GENomics of mental wellBeing and healthy age-ING-ENABLING research group and is collaborating with us on our project related to the genetics of intrinsic capacity.

CRE fellow Dr Rachel Ambagthsheer from Torrens University collaborated with members of our team (Professor Visvanathan, Dr Taylor and Dr Thompson) and was awarded a Medical Research Future Fund grant in 2022 to improve the participation of older Australians in policy decision-making on ageing related conditions, including ageing.



## A favourable residential environment was associated with a lower risk of mortality and delayed entry into permanent residential aged care.

### 2022 research

- Associate Professor Solomon Yu (President of the ANZSFFR) and Professor Renuka Visvanathan were members of the Australia and New Zealand Society for Sarcopenia and Frailty research (ANZSFFR) diagnosis and management taskforce which published consensus guidelines for sarcopenia prevention, diagnosis and management in Australia and New Zealand.
- Post-doctoral fellows Dr Agathe Daria Jadczyk and Dr Mark Thompson, Associate Professor Graeme Tucker (statistician) and Professor Visvanathan identified that a 6.3% change in frailty was the minimally important difference for nursing home residents and 13.7% of residents improved their frailty levels over a period of one year whilst 32.3% remained stable.
- A cost-effectiveness and value of information analyses suggests the wearable sensor-alarm sensor system developed at The Queen Elizabeth Hospital and The University of Adelaide and trialled (led by Professor Visvanathan and Dr Dollard trial coordinator) could be implemented in Geriatric Evaluation and Management Units following a broader analysis of options.
- PhD Candidate Dr Sally Ahip with Professor Visvanathan and Dr Olga Theou (from Canada) established that the Malay version of the Pictorial Fit-Frail Scale-Malay version was valid and reliable as a screening tool. Dr Ahip has established publicly funded primary care community geriatric clinics to intervene where risk is identified.
- Emergency Physician and PhD candidate Dr James Smyth published a scoping review identifying a lack of current research relating to frailty screening or assessment within the Emergency Department setting, identifying a need for further research which is the focus of his PhD.
- Professor Visvanathan continues to collaborate with the Registry of Senior Australians (ROSA), where she was founding chief investigator and steering committee member till 2021, with 43 academic publications and eight reports of the Australia Government Royal Commission into Aged Care Quality and Safety using the ROSA data between 2018 and 2022.

### GROUP MEMBERS

**Professor and Head of Department**  
Renuka Visvanathan

**Clinical Associate Professor and Deputy Head of Department**  
Solomon Yu

**Professor of Epidemiology**  
David Wilson

**Senior Lecturers**  
Bavand Biddelli  
Kareann Khaw  
Neha Mahajan  
Graeme Tucker

**Clinical Senior Lecturers**  
Fin Cai  
Zanatt Fatema  
Faizal Ibrahim  
Shailajar Nair  
Jason Ng  
Pazhvoor Shibu  
Shasti Smith  
Khai Tam

**Manager Aged Care Alternatives Regional Assessment Service**  
Grant Edwards

**General Practitioners**  
Barbara Allan  
Sorayya Martin

**Geriatric Evaluation & Management Liaison Team**  
Kathy Bray

**Postdoctoral Research Fellows**  
Azmeraw Amare  
Joanne Dollard  
Agathe Jadczyk  
Danielle Taylor  
Mark Thompson

**Research Officer**  
Lalit Yadav

**Research Assistants - Casual**  
Jane Edwards

**CRE Manager**  
Leonie Baker

**Postgraduate Students**  
Sally Suriani Ahip  
Anupam Datta Gupta  
Unyime Jasper  
Kareann Khaw  
Tomomichi Sakai  
James Smyth  
Reena Tewari

### BHI COLLABORATOR

Guy Maddern  
*Surgical Science Research Group*

### EXTERNAL COLLABORATORS

Mellick Chehade  
David Gonzalez-Chicca  
Kylie Lange  
Damith Ranasinghe  
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Nigel Stocks  
*The University of Adelaide, Adelaide, Australia*

Ian Chapman  
Michael Horowitz  
*The University of Adelaide & RAH, Adelaide, Australia*

Jon Karnon  
Alison Kitson  
Shin Liau  
Michael Lawless  
Aubyn Pincombe  
Alejandro Pinero De Plaza  
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Julie Ratcliffe  
*University of South Australia, Australia*

Rachel Ambagtsheer  
Justin Beilby  
Elsa Dent  
*Torrens University, Adelaide, Australia*

Simon Bell  
Keith Hill  
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*Monash University, Melbourne, Australia*

Mandy Archibald  
*University of Manitoba and The Children's Hospital Research, Institute of Manitoba (CHRIM), Winnipeg, Canada*

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Sandra Iuliano  
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*University of Melbourne, Australia*

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Vasi Naganathan  
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Jothee Swaran Thiagarajan  
*WHO, Geneva, Switzerland*

John Beard  
*University of NSW, Sydney, Australia*

John Morley  
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Isuru Ranasinghe  
*The Prince Charles Hospital & The University Queensland, Brisbane, Australia*

Olivia Wright  
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Tina Cooper  
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Leonie Robson  
*Resthaven Inc., Adelaide, Australia*

Michael Headland  
Meera Verma  
*Adelaide University Judo Club Inc, Adelaide, Australia*

Maria Inacio  
Jyoti Khadka  
Steve Wesselingh  
*SAHMRI & SA Academic Science and Health Translation Centre, Adelaide, Australia*

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Kate Fetterplace  
Andrea Maier  
*Royal Melbourne Hospital, Melbourne, Australia*

## GROUP MEMBERS

**Research Leader**  
Anupam Datta Gupta

**Senior Registrar**  
Rosemarie Eyre

**Registrar**  
Yang Loong Wayne Lee

## BHI COLLABORATORS

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*Translational Vascular Function  
Research Collaborative*

Graeme Tucker  
Renuka Visvanathan  
*Adelaide Geriatrics Training and  
Research with Aged Care (GTRAC)  
Centre*

## EXTERNAL COLLABORATOR

Shriram Nath  
*Ashford Hospital, Adelaide,  
Australia*



**A**ssociate Professor Anupam Datta Gupta leads the research group in Rehabilitation Medicine in Central Adelaide Local Health Network (CALHN) in the areas of Stroke Rehabilitation, Neuropathic Pain and in Cancer Rehabilitation. The focus for 2022 was to look for evidence in treating neuropathic pain with botulinum toxin A. We also conducted a study of cancer related fatigue (CRF) amongst a large group of cancer survivors.

In 2022, we collaborated with the different clinical units under Neuroscience and Rehab, Aged and Extended Care. Our other important collaborators were Adelaide Haematology and the Day Rehabilitation Unit of the Memorial Hospital.

### 2022 research

Our paper on the use of botulinum toxin A for neuropathic pain was covered by the local newspaper The Advertiser on the 13 Jan 2022 (Botox boost for pain).

► [adelaidenow.com.au/news/south-australia/a-toxin-linked-to-cosmetic-care-may-cure-common-nerve-pain/news-story/354f62290d0a758126755e51d234a5ab](https://adelaidenow.com.au/news/south-australia/a-toxin-linked-to-cosmetic-care-may-cure-common-nerve-pain/news-story/354f62290d0a758126755e51d234a5ab)

## RESEARCH HIGHLIGHT OF 2022

The main research highlights for 2022 were our study (systematic review and meta-analysis on the efficacy of botulinum toxin A for neuropathic pain and our study on the effects of an outpatient exercise programme for Australians with cancer-related fatigue.

Neuropathic pain (NP) is common and estimated to be 7-10% in general population. The treatment response with currently available pharmacological therapy is inadequate. Botulinum toxin A is a versatile therapeutic agent which in some trials has demonstrated a positive effect on neuropathic pain. Our study (systematic review and meta-analysis) showed consistent improvement in pain relief and the use of Botulinum toxin A was safe and without notable side effects. This study called for a properly designed RCT to establish botulinum toxin A as front line agent for treatment of NP.

Datta Gupta A, Edwards S, Smith J, Snow J, Visvanathan R, Tucker G, Wilson D. A Systematic Review and Meta-Analysis of Efficacy of Botulinum Toxin A for Neuropathic Pain. *Toxins* (Basel). 2022 Jan 3;14(1):36. doi: 10.3390/toxins14010036. ► <https://pubmed.ncbi.nlm.nih.gov/35051013/>

The second highlight of our research in 2022 was on effects of exercise in cancer related fatigue. Cancer Related Fatigue (CRF) is defined as a distressing persistent subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer and/or cancer treatment that is not proportional to recent activity and interferes with usual functioning. CRF is not relieved by adequate rest or sleep. CRF is common affecting up to 60% cases with advanced cancer. CRF is a critical unmet need of cancer survivors disrupting quality of life, relationships, and employment. In this paper we analysed the effects of supervised exercise program on self-reported fatigue, wellbeing & quality of life, and functional outcomes such as 6 minute walk test and instrumental activities of daily living. We noted significant improvements in all the outcomes outlined. This paper provides exercise guidelines for CRF.

Datta Gupta A, Wilson D, Tucker G, Albanese D, Berrigan S, Nath S. Effects of an outpatient exercise programme for Australians with cancer-related fatigue: an unmet need. *Intern Med J*. 2022 Aug 31. doi: 10.1111/imj.15909. Epub ahead of print. ► <https://pubmed.ncbi.nlm.nih.gov/36043994/>



**Our study showed consistent improvement in pain relief and the use of Botulinum toxin A was safe and without notable side effects.**

**RESEARCH GROUPS**

**Breast Biology and Cancer Unit**

**Breast Cancer Research Unit**

**Molecular Imaging and Therapy  
Unit**

**Peritoneal Cancer Research Group**

**Solid Tumour Group**

# CANCER

## GROUP MEMBERS

### Research Leader

Wendy Ingman

### Postdoctoral Researchers

Pallave Dasari

Ali Farajpour

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Amanda Townsend

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Adelaide, Australia

David Walsh

Breast/Endocrine Unit, CALHN,  
The University of Adelaide



**T**he Breast Biology and Cancer Unit investigates development and function of the breast across puberty, lactation and ageing to understand how disease states occur. Our research integrates basic biology model systems together with clinical and public health research to improve breast health across the life course.

We research breast cancer risk factors, including breast density and menstrual cycling, to better understand the underlying biology of the disease with a view to developing new ways to prevent the disease. We also research a common lactation condition known as mastitis, investigating why some women are more susceptible than others.

With a focus on community-driven outcomes, we work alongside clinicians within the Breast-Endocrine Surgical Unit, the Oncology Unit and Radiology Unit at TQEH, with pathologists at SA Pathology, and with lactation consultants.

## RESEARCH HIGHLIGHT OF 2022

Elastography is a cutting-edge biomedical imaging technique currently used as a non-invasive tool to assess the severity of liver fibrosis. Acoustic waves, induced by the radiation force of a focussed ultrasonic beam, are used to image and characterise tissue structures, providing a quantitative measure and dynamic visual display of tissue stiffness. Until now, elastography for cancer detection has not been accurate enough to be used widely in the clinic.

We have established a new cell-sensitive elastography mathematical model that is the first step in enabling us to use elastography to detect early breast cancer. This is the first biomedical application for elastography that incorporates size and fluid effects into the mathematical model and is a major advance in how elastography can be used in the clinic. This research has been patented and was presented by Dr Ali Farajpour at the Australasian Breast Congress in October 2022.

## 2022 research

- A/Prof Wendy Ingman was part of an expert panel to update Australian Breastfeeding Association advice on mastitis management.
- Dr Joseph Wrin developed new therapeutics that have potential in breast cancer treatment, and was awarded a PhD degree for his thesis titled “Development of a C1q monoclonal antibody for pre-clinical applications in breast cancer”.
- A/Prof Wendy Ingman investigated the impact of the COVID pandemic on community engagement in breast density research. The study concluded that online conferencing enabled a wider diversity of people to participate, and that in returning to in-person meetings, it will be important not to ‘shut the door’ on those whose participation was enabled by the online format. Bray HJ, Stone J, Litchfield L, Britt KL, Hopper JL, Ingman WV. Together alone: How COVID-19 is changing scientific conferences. Challenges 2022 13(1):7-1-7-13.

► [mdpi.com/2078-1547/13/1/7](https://mdpi.com/2078-1547/13/1/7)

**GROUP MEMBERS****Head of Unit**

Andreas Evdokiou

**Postdoctoral Fellow**

John Licari

**Research Assistant**

Romana Panagopoulos

**Postgraduate Student**

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**Postgraduate Student**

Namfon Pantarat

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Benedetta Sallustio

*Clinical Pharmacology*

Eric Smith

*Solid Cancer Research Group***EXTERNAL COLLABORATORS**

Clive Prestidge

Matt Sykes

*University of South Australia,  
Adelaide, Australia*

Gerald Atkins

Chunxia Zhao

*The University of Adelaide,  
Adelaide, Australia*

Bill Panagopoulos

*The University of Adelaide/  
SAHMRI, Adelaide, Australia*

Andrew Zannettino

*SAHMRI, Adelaide, Australia*

Vladimir Ponomarev

*Memorial Sloan Kettering Cancer  
Center NY, New York City, USA***RESEARCH HIGHLIGHT OF 2022**

HER2 is a protein found on the surface of cells in normal breast tissue, where it functions to regulate tissue growth and repair. HER2 can be found at higher than normal levels on the surface of breast cancer cells (Her2-positive breast cancer), and when this happens it promotes abnormal growth. HER2-positive breast cancer is a more aggressive form of breast cancer and is more likely to come back after treatment.

We have developed a new technology that has the potential to significantly improve the therapeutic efficacy of T cell-based adoptive immunotherapy of HER2-positive breast cancer. This technology is able to recruit a specialised subunit of T cells referred to as gamma-delta T cells, to attack HER2 breast cancers specifically whilst significantly limiting damage to non-cancerous cells.

**2022 research****Protecting the heart from chemotherapy induced cytotoxicity**

Chemotherapy has many unwanted side effects particularly causing heart damage. We have recently shown that mice genetically deficient in a protein known as TRAIL (TNF-related apoptosis inducing ligand) are protected from the toxic effects of chemotherapy, demonstrating for the first time that TRAIL is a major protein responsible for causing heart failure in cancer patients. As a prelude to therapeutic development, we showed that intravenous administration of the TRAIL blocking drug, sDR5-Fc, in mice protected the heart from dox-induced damage and consequently improved cardiac function.

We are continuing our drug development program and in collaboration with Dr Matt Sykes, from Pharmaceutical Sciences, University of SA, we used molecular modelling approaches to successfully identify existing drugs used for other purposes that may be re-purposed in this setting.

**T**he aim of the Breast Cancer Research unit is to find novel treatments for breast cancer. We are focusing on using the patient's own immune system and instructing it to recognize, attack and eliminate primary and metastatic breast cancer.

We have developed a world first approach of delivering therapies directly into cancer cells. We have packaged chemical sensitizers, known as phosphoantigens, in lipid carriers for transportation into the cancer cells. The patient's own circulating cancer fighting T-cells recognize the chemical sensors and bind to and eliminate cancer cells selectively, leaving normal cells unharmed.

This research provides robust preclinical data that will facilitate the translation of novel therapeutic drugs and approaches to clinical trials for breast cancer and its spread.



**We are focusing on using the patient's own immune system and instructing it to recognize, attack and eliminate primary and metastatic breast cancer.**



**RESEARCH HIGHLIGHT OF 2022**

Neuroendocrine tumours (NETs) occur in many different organs of the body with no common set of symptoms, often leading to delayed diagnosis. NETs affect men, women and children of all ages.

Our department coordinates the state-wide NET multi-disciplinary meeting to provide individualised management plans for NET patients. Peptide Receptor Radionuclide Therapy (PRRT) is a form of systemic targeted radiotherapy that can stabilise the disease, often improving quality of life by reducing the impact of hormones and controlling patients' symptoms. TQEH is the only SA site to provide this service to SA/NT patients with metastatic NET.

We are leading an international study (Commonwealth NET Society) to understand how PRRT affects quality of life.

**Our focus in 2022**

- Development and implementation of an Electronic Data Registry (REDCAP™) to capture data for South Australian patients with NETs being treated with PRRT. The registry will enable auditing, quality improvement activities, write-up of case series and manuscript development.
- This SA Registry is also part of a larger National Registry (PLANET registry) which has, and will continue, to provide a large cohort for clinical trials.
- Along with the other National PRRT centres, we are part of a 3-year MRFF study (AUSNET) which will develop and evaluate a shared care model to support Australian patients with NETs.
- “Evaluation of Therapy Response using <sup>177</sup>LuTate imaging with semi-quantitation of SPECT/CT and Intensity Normalised WB analysis of the post-treatment images”. This data may be an important tool for evaluating therapy response *during* the course of the Lutate therapy period, as well as more accurately quantify treatment effect to guide future management.
- Working with Clinical Oncology Society of Australia (COSA) to develop consensus guidelines for the management of patients with Neuroendocrine Cancer. Chapter leads PRRT (Gabrielle Cehic) and Liver directed therapy (Michael Kitchener).

**T**QEH Molecular Imaging and Therapy Department conducts clinical research in 2 main areas:

1. **Molecular imaging and therapy (Theranostics) including:**
  - a. Neuroendocrine Tumours (NETs)
  - b. CNS disorders
2. **Medical and health physics:**
  - a. Modelling of radiation scatter
  - b. Radiation safety- Improvement to written discharge precautions for patients undergoing treatment with radioactive substances
  - c. Improving the process for radiation dose and risk estimation for research studies
  - d. Modelling the distribution and dose effects of daughters in therapy with radionuclides with decay chains.





## We are leading an international study (Commonwealth NET Society) to understand how PRRT affects quality of life.

### 2022 research

- Commencement of 99m-Tc Trodat-1 (an analog of cocaine that selectively binds the presynaptic dopamine transporters) trial to successfully label the complex to assist in the diagnosis of Parkinson's Disease (Leads Dr Rey Casse and Technologist George Pandos).
- A case series on the value of Ceretec dynamic flow and SPECT perfusion cerebral imaging for the diagnosis and characterisation of Postural Orthostatic Tachycardia Syndrome (POTS), (Leads Dr Rey Casse, Technologists Tess Smith, Clair Coat and Physicist Kevin Hickman).

### Medical Physics Team

- Monte Carlo models for scatter of radiation from building materials were validated and then used to predict tertiary radiation scatter over a shielded barrier for a standard room with different radiation qualities including CT and common clinically used radioactive materials.
- Patients undergoing treatment with radioactive substances may require precaution information as they are still radioactive on discharge. Currently used generic precautions can place excessive restrictions on patients. The team has conducted an extensive literature review and are building a system to give appropriate and individualised precautions based on sound principles
- Prostate cancer treatment with radionuclide therapy: Medical physics have been providing radiation safety and other physics support for clinical trials into Lu-177 PSMA treatment.
- Improving the process for radiation dose and risk estimation for research studies: Any research involving the exposure of participants to ionising radiation must provide a radiation dose and risk assessment to the HREC. Medical Physicists produce these reports, but the process and requirements are not consistently followed. The medical physics team have been implementing an improved process to gather information and producing a template and clear guidelines for the reports.
- Modelling the distribution and dose effects of daughters in therapy with radionuclides with decay chains.: Current dose models assume that the daughters of radionuclides deposit their radiation dose at the location of the parent. This research shows the effects on the dose of off-target organs of transport in the body of these radioactive daughters.

### GROUP MEMBERS

#### Director PRRT Service, Chair SA GEPNET MDT

Gabrielle Cehic

#### Head of Unit TQEH Nuclear Medicine

Steven Unger

#### Senior Nuclear Medicine Physicians

Paola Averbuj

Rey Casse

Michael Kitchener

Nicholas Liu

Martin Tan

Anke Warner

#### Nuclear Medicine Registrar

James McNeil

#### NET Research Fellow

Liesl Altus

#### NET Fellows

Marne Nenke

Vaishali Padhye

#### NET Therapy Nurse

Jessica Mercurio

#### Medical Physicist

Daniel Badger

#### Head of Medical Physics, SAMI

Kevin Hickson

#### Medical Physicists

Ben Crouch

Jake Forster

#### Graduate Physicists

Mitchell Herrick

Erin Lucas

Stephen Tronchin

#### Nuclear Medicine Technologists

Alessandra Caretti

Clair Coat

Elyse Connole

Nicholas Farnham

Jacy Lawrie

Dai Nguyen

Peow Ong

George Pandos

Amanda Ranchodhrai

Tess Smith

#### Nuclear Medicine Nurses

Tracy Coulthard

Davina Nicholls

#### MDT and Nuclear Medicine Clerical Staff

Aleli Rigori

Kay Smith

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Timothy Price

*Solid Tumour Group*

Joy Rathjen

*Scientific Director, BHI*

### EXTERNAL COLLABORATORS

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*Cancer Research Institute, University of South Australia, Adelaide, Australia*

Cristina Blefari

Katherine Guerrero

*University of South Australia, Adelaide, Australia*

Ganessan Kichenadasse

*Statewide Cancer Clinical Network, Adelaide, Australia*

Tzen Koh

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Georgina England

David Moffat

*SA Pathology, Adelaide, Australia*

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Yang Du

Ian Kirkwood

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Peter Eu

Annette Hogg

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Meredith Cummins

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Kristin Linke

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*TQEH, CALHN, Adelaide, Australia*

## GROUP MEMBERS

### Research Leader

Peter Hewett

### Consultant

Markus Troschler

## EXTERNAL COLLABORATOR

Susan Woods

SAHMRI, Adelaide, Australia



**A collaboration with Dr Susan Woods from SAHMRI was established to grow organoids from peritoneal cancers to investigate the best chemotherapy regime for individual patients.**

**T**he research focus of the Peritoneal Cancer Research Group at TQEH continues to be on effective clinical treatment of peritoneal cancer.

There are a variety of cancers that can spread to the lining of the abdomen (the peritoneum). They can be difficult to treat because they grow into the cavity (the peritoneal cavity) surrounding the abdominal organs and chemotherapy given into the blood stream may not effectively penetrate the peritoneum and the cavity to treat peritoneal cancers.

## 2022 research

- In 2020, a collaboration with Dr Susan Woods from SAHMRI was established to grow organoids from peritoneal cancers to investigate the best chemotherapy regime for individual patients. This program continued in a reduced form in 2022.
- The close link that the Peritoneal Cancer Research Group has with the Upper GI Surgical Unit and the Colorectal Surgical Unit is indispensable in delivering these innovative treatments.

## RESEARCH HIGHLIGHT OF 2022

The Pressurised intraperitoneal chemotherapy (PIPAC) program has continued with initial results presented at the GSA ASM in October 2022 and also ELSA Dubai conference.





**T**he Solid Tumour Group is a large, multidisciplinary group, led by Professor Tim Price, that brings together researchers and clinicians from the BHI, TQEH and collaborators from across the state.

The group has a comprehensive research program that works towards improved prevention strategies, better diagnostics and new therapeutics for a range of solid tumours, notably colorectal, appendix, upper gastrointestinal tract, neuroendocrine, breast, head and neck. The group links directly with the clinical services at TQEH, a link which facilitates the clinical trials program and enables an opportunity to translate pre-clinical findings into improved patient care.

The group comprises three parts:

- Young Onset Colorectal and Appendiceal Cancer Section
- Clinical Trials Section
- Molecular Oncology Section

### YOUNG ONSET COLORECTAL AND APPENDICEAL CANCER SECTION

In young adults, cancers of the bowel and the appendix are rising in incidence. The purpose of our registry is to highlight the risk factors which may be contributing to this observation with a view to approaches aimed at prevention and early detection.

### RESEARCH HIGHLIGHT OF 2022

Population screening for colorectal (bowel) cancer has been successful in decreasing the incidence and mortality from this malignancy. Prevention is most effective when directed to that sector of the population that is most at risk. In Australia bowel cancer screening is carried out on members of the population aged 50 years and over, as increasing age is the best known of risk factors. However, the incidence in younger adults is rising in Australia, and elsewhere.

The South Australian Young Onset Colorectal Polyp and Cancer Study (SAYO) is a multidisciplinary state-wide consortium which seeks to identify the risk factors and warning signs for bowel cancer in young adults. In 2020 we extended SAYO to understand why appendiceal cancers are also on the rise in our population.

We have previously reported that young adults developing colorectal cancer under 55 years of age were four times more likely to have a personal history of type 2 diabetes. We then looked at the polyps in young adults in a pilot study and found that precancerous polyps of the bowel are also more frequently observed in younger adults with type 2 diabetes. Though not all young adults with bowel cancer have this condition, our findings have the potential to prevent bowel cancer in young adults who are diagnosed with type 2 diabetes.

This coming year we will approach community groups and others involved in the support of bowel screening to determine feasibility of including young type 2 diabetics in population screening.

## 2022 research

- In 2022, there has been recognition of our findings by an invitation to present at the 4<sup>th</sup> International Meeting on Early Onset Colorectal Cancer and serve on a panel to address questions.
- Our graduating PhD student has been appointed as a postdoctoral fellow at Yale University (New Haven USA).
- We are the TQEH hub for two clinical trials which use blood tests 1) to predict early relapse in colorectal and upper gastrointestinal cancer patients and 2) as a non-invasive test to predict findings at colonoscopy.

## CLINICAL TRIALS GROUP

There are over 30 clinical trials open within the TQEH Cancer trials unit. The focus has shifted of late to early phase trials investigating novel targeted agents building on the successful work in the KRAS G12C space which saw 2 NEJM publications. Later phase trials in most tumour types complement the Phase 1 trials with a particular focus on gastrointestinal, lung and melanoma Phase 3 trials. In addition to Pharma sponsored trials the group continues to be involved in national cooperative group trials including those from AGITG and ALTG. In addition, trials initiated within the group, such as the PIT trial, have been successful with the final results of the PIT trial being submitted to the ESMO ASIA meeting.

## MOLECULAR ONCOLOGY GROUP

The Molecular Oncology team form part of the Solid Tumour Group headed by Professor Tim Price, Dr Amanda Townsend, and Dr Yoko Tomita, Medical Oncology Unit, TQEH. Research is focused on identification of biomarkers, drug repurposing, and development of novel therapeutics for the treatment of solid tumours including colorectal and breast cancer.


### RESEARCH HIGHLIGHT OF 2022

Colorectal (bowel) cancer is the third most common cancer worldwide and a leading cause of cancer related deaths. Deaths from colorectal cancer are frequently the result of metastases to distant organs including the liver.

With generous support from our commercialization partner, AusHealth, we have been evaluating the potential of circulating secreted frizzled related protein 5 (SFRP5) as a blood biomarker for early detection and prognosis of progression of colorectal cancer in a cohort of more than 1000 patients and healthy donors. Ongoing research in the group is developing novel delivery methods for SFRP5 and assessing its therapeutic potential.

## 2022 research

- Fangmeino (Mona) Wu was awarded a Master of Biotechnology (Biomedical), with a GPA of 6.2/7, for her thesis entitled "Repurposing the anti-anginal drug perhexiline for the treatment of head and neck squamous cell carcinoma" and received an International PhD Scholarship from The University of Adelaide which will commence in 2023.

 We have previously reported that young adults developing colorectal cancer under 55 years of age were four times more likely to have a personal history of type 2 diabetes.

### GROUP MEMBERS

#### Research Leader

Timothy Price

#### Chief Medical Scientist

Joanne Young

#### Clinical Research Lead

Yoko Tomita

Amanda Townsend

#### Principal Medical Scientist

Eric Smith

#### Research Nurses

Mehgan Horsnell

Esme Jasko

#### Clinical Trials Team

Pam Cooper

Nada Cvijanovic

Elizabeth Eagan

Aleksandra Kuruni

Stella Papacharisiou

Sasha Sequeira

Kiddki Tran

#### Postgraduate Students

Runhao Li

Sima Rad

Fangmeino (Mona) Wu

### BHI COLLABORATORS

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Guy Maddern

*Surgical Science Research Group*

Wendy Ingman

*Breast Biology and Cancer Unit*

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*Viral Immunology Group*

Sarah Vreugde

*ENT Surgery*

Peter Hewitt

*Colorectal Cancer Research Group*

*Group*

### EXTERNAL COLLABORATORS

Susan Woods

*SAHMRI, Adelaide, Australia*

Ehud Hauben

*Business SA, Adelaide, Australia*

Erin Symonds

*Flinders Medical Centre, Adelaide, Australia*

James Kimber

*The University of Adelaide, Adelaide, Australia*



**Sima Kianpour Rad**  
PhD Student  
*Solid Tumour Group,  
The University of Adelaide*



# CARDIOVASCULAR DISEASE

## RESEARCH GROUPS

Cardiovascular Pathophysiology  
and Therapeutics Group

Clinical Pharmacology Research  
Group

Translational Vascular Function  
Research Collaborative (TVFRC)

Vascular Surgery Research Group

Zinc and Cardiovascular Disease  
Research Group



**T**he Cardiovascular Pathophysiology and Therapeutics Group explores the causes of various forms of heart disease and then develops matched therapies.

**In 2022, good examples of this type of activity included coronary artery spasm and Takotsubo Syndrome, and the problem of heart disease caused by cancer chemotherapy.**

**Coronary artery narrowing, while remaining a cause of heart attacks, contributes very little to the development of cardiac chest pain (“angina pectoris”), so that insertion of coronary stents for such patients is nearly useless. We are developing new treatments, focussing on the smaller coronary vessels.**

### RESEARCH HIGHLIGHT OF 2022

**Prostacyclin**, together with nitric oxide, is critical for keeping small coronary arteries from going into spasm and/or clotting. We evaluated the recent literature, revealing some evidence that tissue responses to prostacyclin are sometimes impaired in patients with heart disease: this was published in the International Journal of Molecular Sciences  
 ▶ [See Publications](#)

Furthermore, Kate Spuler, a medical student, demonstrated that normal ageing is associated with loss of the anti-clotting effects of both nitric oxide and prostacyclin. This finding goes a long way towards explaining why old age is an independent risk factor for heart attacks and strokes. Remarkably, in patients with coronary artery spasm this “ageing” was complete once patients reached 30 years. This makes it even more important that coronary artery spasm be diagnosed and treated properly as at present the diagnosis is often missed.

The work was presented at the BHI Research Expo and at the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists conference.

Our future research will include searching for ways to protect blood vessels from loss of sensitivity to prostacyclin with ageing.



## 2022 research

### TakoTsubo Syndrome

- We continue our collaboration with the Inter-Tak group (Zurich), exploring ways to improve diagnosis of TakoTsubo Syndrome. Independently, we published data supporting the concept that TakoTsubo Syndrome consists of an early phase of vascular inflammation followed by prolonged inflammation of the heart. Treatment measures for this are exemplified by our ongoing NACRAM trial, which is nearing completion. Dr Gao-Jing Ong was awarded his PhD degree for research in this area: an outstanding effort!

### Diabetic Cardiomyopathy

- This is a primary interest of Dr Cher-Rin Chong. We are working on a model of diabetes-associated cardiac dysfunction in order to determine whether treatments beyond glucose lowering might reverse this abnormality. We welcomed a new PhD student, Getandale Negera, who will be primarily supervised by Dr Cher-Rin Chong. He will be working on a project to investigate novel therapy for the prevention of cardiovascular complication of diabetes, funded by Diabetes SA.

### Perhexiline

- The most effective treatment for angina pectoris is perhexiline, which we have previously shown to increase the efficiency of the heart. However, this year we pursued studies to investigate its utility in people with combinations of diabetes and angina. Dr Cher-Rin Chong showed that perhexiline improves the effect of nitric oxide, which is essential to prevent clotting or spasm within small vessels.
- We also contributed to the growing literature suggesting that perhexiline may improve the safety and effectiveness of cancer chemotherapy, as well as participating in a controlled trial of perhexiline to improve cardiac structure in patients with hypertrophic cardiomyopathy (RESOLVE-HCM).

### Bushfires

- It has been suspected that stressful events such as fires and floods may increase the risk of “heart attacks”. We evaluated the impact of the 2019-20 bushfires on the risk of heart attacks, which turned out to be doubled by the combination of fires, high temperature, and resultant air pollution. There were too few cases of TakoTsubo Syndrome to draw firm conclusions. Hospitals should designate bushfire days as “high risk” days for cardiac emergencies.

### Nitroxyl cardioprotection

- This work has been performed in the Melbourne laboratory of Prof Rebecca Ritchie. The central concept is that nitric oxide can be converted to peroxynitrite under stress conditions, thus damaging the heart. However, nitroxyl duplicates the beneficial effects of nitric oxide, and therefore may be a safer cardiac treatment.

### Achievements/Awards

- Dr Chong was elected as one of the research experts of Research Advisory Committee for Diabetes SA and co-organised the South Australian Cardiovascular Research Showcase, with Hon Chris Picton as keynote speaker. In addition, Dr Chong was awarded research grants from the Foundation for High Blood Pressure Research and from the BHI/TQEH Equipment Fund: this will advance her research on diabetes and cardiomyopathy.

### Publications

- In 2022, members of our group published 17 papers in leading Cardiology journals, with a total of 6 publications on TakoTsubo Syndrome and 3 related to diabetes.

► [See Publications](#)

○  
Our future research will include searching for ways to protect blood vessels from loss of sensitivity to prostacyclin with ageing.

### GROUP MEMBERS

#### Research Leader

John Horowitz

#### Principal Medical Scientist

Yuliy Chirkov

#### NHMRC Peter Doherty Early Career and NHF Postdoctoral Fellow

Cher-Rin Chong

#### Senior Medical Scientist (part-time)

Thanh Ha Nguyen

#### Laboratory Manager

Irene Stafford

#### Postgraduate Student

Getandale Zeleke Negera

#### Vacation Student

Kate Spuler

### BHI COLLABORATORS

Benedetta Sallustio

*Clinical Pharmacology Research Group*

Sandra Peake

*Intensive Care Medicine Research Group*

### EXTERNAL COLLABORATORS

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Angela Kucia

*University of South Australia, Adelaide, Australia*

Sven Surikow

*NALHN, Adelaide, Australia*

Lisa Butler

*SAHMRI, The University of Adelaide, Adelaide, Australia*

Rustem Dautov

*The Prince Charles Hospital, University of Queensland, Brisbane, Australia*

Joseph Selvanayagam

*Flinders University, Adelaide, Australia*

Rebecca Ritchie

*Monash University, Melbourne, Australia*

Natasha Rogers

*Westmead Hospital, University of Sydney, Sydney, Australia*

Kuljit Singh

*Gold Coast University Hospital, Griffith University, Gold Coast, Australia*

Michael Frenneaux

*University of Qatar, Hamad Medical Corporation, Doha, Qatar*

Raffaele DeCaterina

*University of Pisa, Pisa, Italy*

Hideo Kimura

*Sanyo-Onoda City University, Sanyo-Onoda, Japan*

Dana Dawson

*University of Aberdeen, Aberdeen, UK*

Christian Templin

*University Hospital Zurich, Zurich, Switzerland*

## GROUP MEMBERS

**Research Leader and  
Principal Medical Scientist**  
Benedetta Sallustio

**Senior Medical Scientist**  
Shane Spencer

## BHI COLLABORATORS

Andreas Evdokiou  
John Licari  
*Breast Cancer Research Unit,  
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Kevin Fenix  
*Surgical Science and ENT Surgery*

Cher-Rin Chong  
John Horowitz  
*Cardiovascular Pathophysiology  
and Therapeutics Group*

## EXTERNAL COLLABORATOR

Joseph Selvanayagam  
*Flinders Medical Centre, Adelaide,  
Australia*

**T**he Clinical Pharmacology Research Group aims to improve the effectiveness and safety of medicines by better understanding how they work within the body.

**We have had a long-term interest in developing better therapies for the treatment of heart disease. We have focused on precision medicine tools, such as therapeutic drug monitoring, that are used to individualise therapy for patients with heart disease. This has expanded to developing new therapies to treat heart disease, particularly heart disease caused by cancer chemotherapy.**

## RESEARCH HIGHLIGHT OF 2022

We have had a long-term interest in perhexiline, an older medicine used to treat angina, and whether its clinical use may be expanded to the treatment of other types of heart diseases or even for the prevention of heart damage caused by cancer chemotherapy agents. We have previously shown that, in animals, perhexiline was able to reduce measures of heart damage caused by a chemotherapy used to treat breast cancers. Interestingly it also enhanced the cancer killing effect of the chemotherapy.

This work with perhexiline has most recently resulted in a collaboration led by Dr K Fenix, Department of Surgery, to discover potential new treatments for advanced colorectal cancer that has spread to the liver. Using cancer cells isolated from the livers of patients with advanced colorectal cancer, we have found that perhexiline can kill cancer cells without damaging healthy liver cells.

This work was published in 2022 and supports our observations that perhexiline may not only be able to protect the heart from damage during chemotherapy without compromising the cancer killing effect. But that it may also contribute to cancer killing.

Dhakal B, Li CMY, Li R, Yeo KKL, Wright JA, Gieniec KA, Vrbanc L, Sammour T, Lawrence M, Thomas M, Lewis M, Perry J, Worthley DL, Woods SL, Drew P, Sallustio BC, Smith E, Horowitz JD, Maddern GJ, Licari G, Fenix K. Perhexiline cytotoxicity against colorectal cancer in vitro. *Cancers* 2022, 14, 1043.

► <https://doi.org/10.3390/cancers14041043>

## 2022 research

- Professor Sallustio's expertise in therapeutic drug monitoring has resulted in a collaboration in a multicentre clinical trial, led by Professor J Selvanayagam (Flinders Medical Centre), investigating whether perhexiline may be an effective new treatment for hypertrophic cardiomyopathy, a genetic disorder that leads to dysfunction of the heart muscle.
- Our research demonstrating the long-term safety of perhexiline in patients with type 2 diabetes was published in 2022. The work, led by Dr C-R Chong (Cardiovascular Pathophysiology and Therapeutics), showed that perhexiline had no effect on fasting sugar levels and a beneficial effect of increasing responsiveness to the body's protective anti-clotting mechanisms.

► See also [Clinical Pharmacology Research Group - Chronic Disease](#)



**We have previously shown that, in animals, perhexiline was able to reduce measures of heart damage caused by a chemotherapy used to treat breast cancers.**



**George Bouras**  
*Statistician and  
Bioinformatician  
ENT Surgery, University  
of South Australia*



**V**ascular diseases remain a major cause of death and poor health in Australia. Vascular diseases can be largely attributed to abnormalities within blood vessels and compromised blood supply to the organs, including the heart. The Translational Vascular Function Research Collaborative (TVFRC) undertakes interdisciplinary discovery, clinical and epidemiological research into vascular diseases aimed at improving our understanding of these disorders, optimising healthcare management and developing new and effective therapies.

The TVFRC comprises clinicians and medical scientists working at the BHI, The University of Adelaide, the Cardiology Departments of the Heart and Lung Unit, Central Adelaide Local Health Network and the Cardiology Department of Northern Adelaide Local Health Network, who together form a large, multidisciplinary collaborative group that prioritises interdisciplinary input to the development of clinically relevant solutions for the treatment of vascular disease.

The group is arranged around 3 themes:

- Translational Vascular Molecular Physiology
- Translational Vascular Clinical Physiology
- South Australian Cardiovascular Outcomes Registry (SACOR)

## TRANSLATIONAL VASCULAR MOLECULAR PHYSIOLOGY

The Molecular Physiology group focuses on the pathophysiology and molecular signalling of vascular disorders including coronary artery spasm, coronary microvascular 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.

## TRANSLATIONAL VASCULAR CLINICAL PHYSIOLOGY

The Clinical Physiology research team uses invasive and non-invasive techniques to identify the presence of vascular dysfunction in patients with vascular symptoms including angina (chest pain due to insufficient blood supply to the heart) and intermittent claudication (pain and/or cramping in the lower leg due to inadequate blood flow to the muscles). Techniques include the assessment of coronary artery spasm, coronary blood flow, cardiac magnetic resonance imaging, subcutaneous blood flow and endothelial function.

## SOUTH AUSTRALIAN CARDIOVASCULAR OUTCOMES REGISTRY (SACOR)

The SACOR group is focused on health service delivery and patient health outcome improvement through healthcare quality assessment and evaluation of the health status of patients including symptoms, physical limitations and quality of life. Consistent with the changing environment in medicine, this group adopts a 'patient-orientated' approach to the delivery of health care by evaluating patient health status and quality of care delivered. The group has developed large databases and clinical quality registries from patients with coronary artery disease, microvascular disease, coronary spasm and peripheral artery disease. Most of these databases have international links thereby providing collaborative opportunities.

## RESEARCH HIGHLIGHT OF 2022

### Cardiac Society of Australia and New Zealand (CSANZ) – Coronary Vasomotor Working Group Inaugural Annual Report

The CSANZ Coronary Vasomotor Working Group, established and chaired by Professor John Beltrame, is the first and only, national collaboration of clinicians and researchers dedicated to improving the diagnosis and treatment of patients with coronary vascular disorders, and in 2022, this group made rapid progress towards this goal.

In a tremendous inaugural year, this group achieved the following:

- Establishment as the national authority of coronary vascular disorders under the auspices of the Cardiac Society of Australia and New Zealand
- Membership of over 30 clinicians and scientists (early to senior researchers) across Australia and New Zealand
- Development of a functional coronary angiography protocol to be adopted in Australian institutions
- National survey of clinicians to identify clinical standing and uptake of functional angiography across Australia

This Working Group underscores the national leadership of the Translational Vascular Function Research Collaborative in improving the recognition and understanding of patients with coronary vascular disorders.

These patients present with under-recognised conditions, some of which were first characterised in Adelaide by this group, including MINOCA (Myocardial Infarction with Non-Obstructive Coronary Arteries) or INOCA (Ischaemia with Non-Obstructive Coronary Arteries) and have underlying coronary artery spasm or coronary microvascular dysfunction which can be diagnosed with functional angiography.

Underscoring this leadership and research excellence, Professor John Beltrame, Associate Professor Chris Zeitz and Associate Professor Rosanna Tavella, representing The Queen Elizabeth Hospital Cardiology Department, were selected as finalists in the 2022 Minister for Health Research and Innovation Award (as part of the annual SA Health Awards) for their work in implementing functional angiography protocols in the cardiac cath lab.

### TRANSLATIONAL VASCULAR MOLECULAR PHYSIOLOGY

#### GROUP MEMBERS

**Research Leader and Consultant  
Cardiologist**  
John Beltrame

**Senior Medical Scientists**  
David Wilson  
Peter Zalewski

**Consultant Cardiologists**  
Sharmalar Rajendran  
Matthew Worthley  
Christopher Zeitz

**Research Officers**  
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Mei Ling Soo

**Postgraduate Students**  
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#### BHI COLLABORATORS

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Anna Wawer  
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*Zinc and Cardiovascular Disease  
Research Group*

#### EXTERNAL COLLABORATORS

Peter Psaltis  
*SAHMRI, Vascular Research  
Centre, Heart Health, Adelaide,  
Australia*  
Hugh Cullen  
James Edwards  
Fabiano Viana  
*Cardiothoracic Surgery Unit  
(CTS), RAH, Adelaide, Australia*

### TRANSLATIONAL VASCULAR CLINICAL PHYSIOLOGY

#### GROUP MEMBERS

**Research Leads**  
John Beltrame  
Chris Zeitz

**Consultant Cardiologists**  
Sharmalar Rajendran  
Matthew Worthley

**Postdoctoral Researchers**  
Sivabaskari (Tharshy) Pasupathy  
Rosanna Tavella

#### BHI COLLABORATORS

Jessica Marathe  
*CALHN Heart and Lung or Heart  
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#### EXTERNAL COLLABORATORS

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*Uppsala University Hospital,  
Uppsala, Sweden*  
C. Noel Bairey Merz  
*Cedars Sinai Medical Centre,  
Los Angeles, USA*  
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*Gosford Public Hospital, NSW  
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Andy Yong  
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Hospital, Macquarie University,  
University of Sydney, Sydney,  
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*Gold Coast Hospital, Gold Coast,  
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Adil Rajwani  
Jon Spiro  
*Royal Perth Hospital, Perth,  
Australia*

Stuart Turner  
*John Hunter Hospital, Newcastle,  
Australia*

Cindy McCall  
*Consumer Representative,  
Brisbane, Australia*

### SOUTH AUSTRALIAN CARDIOVASCULAR OUTCOMES REGISTRY (SACOR)

#### GROUP MEMBERS

**Research Leads**  
John Beltrame  
Rosanna Tavella

**Senior Medical Scientist**  
Prue Cowled

**Consultant Cardiologists**  
Matthew Worthley  
Christopher Zeitz

**Postdoctoral Researchers**  
Sivabaskari (Tharshy) Pasupathy  
Clementine Labrosciano

**Statistician**  
Jing Wu

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Natasa Damjanic  
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Kleo Georgiadis  
Cheyenne Gronthos  
Maxine Hallows  
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#### Postgraduate Students

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Adeel Akbar Khoja  
Sarena La

#### BHI COLLABORATORS

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Robert Fitridge  
*Vascular Surgery Research Group*

#### EXTERNAL COLLABORATORS

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*Saint Luke's Mid America Heart  
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Kansas City, USA*

Bertil Lindahl  
*Uppsala University Hospital,  
Uppsala, Sweden*

Margaret Arstall  
*Lyell McEwin Hospital, NALHN,  
Adelaide, Australia*

## 2022 research

In 2022, Translational Vascular Function Research Collaborative contributed important publications which continue to produce a clinical and scientific spotlight for patients with coronary vasomotor disorders. Selected below are Invited Editorial publications which underscore international excellence of the TVFRC in this research field:

**Shortcomings in Managing Patients With Ischemia With Nonobstructed Coronary Arteries.** This commentary related to a patient who has published her unpleasant and frustrating journey with INOCA (Ischaemia with Non-Obstructive Coronary Arteries) and highlights the shortcomings in relation to INOCA pathophysiology, diagnosis, therapeutics, and education.<sup>1</sup>

**Beyond Structural Angiography: The Emergence of Functional Coronary Angiography.** This commentary highlights both the clinical importance and safety of undertaking functional angiography to diagnose potential underlying coronary vasomotor dysfunction in patients with INOCA.<sup>2</sup>

1. Shortcomings in Managing Patients With Ischemia With Nonobstructed Coronary Arteries. *Circ Cardiovasc Qual Outcomes*. 2022 Jul;15(7):e008746. doi: 10.1161/CIRCOUTCOMES.122.008746. Rosanna Tavella, John F Beltrame. [▶ https://pubmed.ncbi.nlm.nih.gov/35861783/](https://pubmed.ncbi.nlm.nih.gov/35861783/)
2. Beyond Structural Angiography: The Emergence of Functional Coronary Angiography. *J Am Coll Cardiol*. 2022 Jun 21;79(24):2379-2382. doi: 10.1016/j.jacc.2022.04.014. John F Beltrame JF, Rosanna Tavella, Christopher Zeitz. [▶ https://pubmed.ncbi.nlm.nih.gov/35710188/](https://pubmed.ncbi.nlm.nih.gov/35710188/)



**Our group is affiliated with CALHN Vascular and Endovascular Services and operates across The Queen Elizabeth Hospital and The Royal Adelaide Hospital precincts. Our research is focused on interventions and outcomes studies for peripheral arterial disease and diabetes-related foot complications.**

**This program has a special focus on culturally-safe approaches for addressing gaps in care, service delivery via telehealth, and cross-disciplinary collaboration. Our goal is to reduce amputations and improve quality of life for patients with lower-limb disease.**

### RESEARCH HIGHLIGHT OF 2022

In 2022 we officially convened the CALHN High-Risk Foot Telehealth Service and its companion Multidisciplinary Telehealth Research Program. A joint venture between CALHN Vascular and Podiatry, this service will demonstrate the capacity of a bespoke multidisciplinary telehealth service to reduce delays (and thus to reduce amputations) among people with diabetes at high risk of foot disease. This program is the culmination of collaborative endeavours between many CALHN departments, along with The University of Adelaide, University of South Australia, SAHMRI (SA Aboriginal Chronic Disease Consortium), Insight Via Artificial Intelligence Pty Ltd, and community partners across country SA.

Built on funding from the SAHMRI Aboriginal Diabetic Foot Program, the Commonwealth Department of Health, and a CALHN CEO Rapid Implementation Scheme grant in 2022, this implementation science program will provide high-quality telehealth with a multi-disciplinary specialist care team liaising with rural professionals with patients and their families. A core component of this service is rural worker upskilling through a virtual reality toolkit for assessing and triage for Aboriginal people with diabetes-related foot complications. This program will demonstrate the impact of telehealth delivery for addressing gaps in continuity-of-care and outcomes for people living in rural and remote communities in SA.



**This program will demonstrate the impact of telehealth delivery for addressing gaps in continuity-of-care and outcomes for people living in rural and remote communities in SA.**

## 2022 research

- Professor Fitridge's contributions to international clinical practice and research have been recognised by a prestigious *ad hominem* Fellowship of the College of Surgeons in Edinburgh.
- Professor Fitridge is a core partner of the new Australian Centre for Accelerating Diabetes Innovations (ACADI), funded by the Medical Research Futures Fund (MRFF). Headquartered at the University of Melbourne with collaborators around Australia, we will be seeking to understand and limit the impact of infections for diabetes-related foot wounds.
- Professor Fitridge is clinical investigator on an NHMRC Ideas Grant (CIA Professor Allison Cowin) to collect patient data and samples to pilot a newly-developed "early warning" platform for risk of chronic foot wounds.
- Dr Prue Cowled retired from her position as Principal Medical Scientist with our group after 47 years at TQEH. Her career was capped off with a Basil Hetzel Institute Award for exceptional contribution. Dr Neil McMillan has now stepped into the role after two years as a THRF-funded research coordinator.
- Vascular Registrar Kay Hon collaborated with Dr McMillan and Professor Fitridge to deliver a report to Diabetes Feet Australia examining the impact and services for diabetes-related foot complications in the Pacific Islands. This report highlighted the gaps in service delivery and outcomes for people with diabetes in this region.
- Professor Fitridge, Kay Hon, and wound research nurse Li Lao are leading a new Phase I clinical trial sponsored by Cynata Therapeutics Ltd to examine the safety and efficacy of a new wound dressing aimed at regenerating small vessels in foot wounds to improve healing.
- Professor Fitridge has completed the final draft of the International Working Group for the Diabetic Foot's Peripheral Arterial Disease guidelines. With Professor Viv Chuter and international collaborators and to be presented in 2023, this updated guideline will be used around the world in managing vascular complications for diabetes-related lower-limb disease.

## GROUP MEMBERS

**Professor of Vascular Surgery**  
Robert Fitridge

**Associate Professor**  
Joseph Dawson

**Principal Medical Scientist**  
Neil McMillan

**Clinical Research Nurse**  
Li Lao

**Senior Research Podiatrist**  
Hannah Snelling

**Research Podiatrist**  
Madeline Primavera

## BHI COLLABORATOR

Sha Liu  
Sarah Vreudge  
*ENT Surgery*

Katharina Richter  
*Surgical Science / Richter Lab*

## EXTERNAL COLLABORATORS

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Jiawen Li  
*The University of Adelaide, Adelaide, Australia*

Cathy Loughry  
*CALHN, Adelaide, Australia*

Allison Cowin  
Ancret Szpak  
*University of South Australia, Adelaide, Australia*

Christina Bursill  
Kim Morey  
Peter Psaltis  
*SAHMRI, Adelaide, Australia*

Zygmunt Szpak  
*Insight Via Artificial Intelligence Pty Ltd, Adelaide, Australia*

Nicolas Voelcker  
Elif Ekinci  
*Monash University, Melbourne, Australia*

Shirley Jansen  
*Sir Charles Gardner Hospital, Perth, Australia*

Manar Kashram  
*Waikato Hospital, Hamilton, New Zealand*

Kim Smolderen  
*Yale University, New Haven, USA*

## GROUP MEMBERS

### Research Leader and Consultant Cardiologist

John Beltrame

### Senior Medical Scientist

Peter Zalewski

### Consultant Cardiologist

Chris Zeitz

### Postdoctoral Researchers

Sivabaskari Pasupathy (Tharshy)

Rosanna Tavella

### Collaborating Postdoctoral Researcher

Adrian Abdo

### Collaborating Postdoctoral Researcher

Anna Wawer

### Technical Officers

Slawomir Dziemborowicz

Mei Ling Soo

## BHI COLLABORATORS

Susan Lester

*Rheumatology Research Group*

Yuliy Chirkov

Irene Stafford

*Cardiovascular Pathophysiology  
& Therapeutics Group*

## EXTERNAL COLLABORATORS

Peter Psaltis

*SAHMRI, Vascular Research  
Centre, Heart Health, Adelaide,  
Australia*

Sandra Hodge

Eugene Roscioli

Hai Tran

*The University of Adelaide,  
Adelaide, Australia*

Chiara Murgia

*University of Melbourne,  
Melbourne, Australia*

**T**he Zinc and Cardiovascular Disease Research Group investigate the role of the major dietary metal, zinc, in the blood vessels and in vascular diseases.

**Our work will enable us to directly relate endothelial zinc levels and zinc transporter expression with endothelial dysfunction, vasoconstriction, cigarette smoking and small and large artery disease in humans. It will provide the rationale for zinc interventional clinical trials.**

## RESEARCH HIGHLIGHT OF 2022

- **New clinical trial of zinc in treating treat heart disease**

Research into heart disease has come a long way in recent years but some unknowns still exist, particularly for people living with ANOCA (a type of angina where no blockage in the artery is found). But that could be about to change. Our group are investigating the role zinc supplements can play in managing chest pain symptoms in ANOCA. Recent research in our lab has shown that zinc may have an important role in maintaining normal function of blood vessels and that many patients with angina have zinc deficiency.

- **New technique to harvest vascular endothelial cells from patients with heart disease**

Now that access to the Catheterization laboratory is no longer suspended due to COVID, we are again collecting patient samples using our unique endothelial biopsy technique which isolates endothelial cells from the linings of human coronary arteries during coronary angiography at no harm to the patient. This technique enables us to study the molecular and genetic basis of vascular dysfunction and cardiovascular disease. This research infrastructure has demonstrated that there is a real potential for capture of biological data for personalised medicine. In particular, this biobank has been used to improve our understanding of zinc and its role in vascular disease.

## 2022 research

- **Presentation at a national cardiology conference**

Our Zinc and Cardiovascular studies were presented by Dr Zalewski in a poster at the Annual Scientific Meeting of the Cardiac Society of Australia and New Zealand (CSANZ) in August 2022.

- **Publication in a Nature Springer series journal and journal front cover display**

Our identification and characterization of a family of zinc uptake proteins in human arterial endothelium (Tran H, Jakobczak R, Abdo A, Asare P, Reynolds P, Beltrame J, Hodge S and Zalewski P. 2022 Immunolocalization of zinc transporters and metallothioneins reveals links to microvascular morphology and functions. *Histochem Cell Biol* [ ► <https://doi.org/10.1007/s00418-022-02138-5> ] featured on the front cover of the journal and in an editorial article. These ZIP proteins are the gate-keepers for maintaining healthy zinc levels in our vasculature.



**Our lab has shown that zinc may have an important role in maintaining normal function of blood vessels and that many patients with angina have zinc deficiency.**



RESEARCH GROUPS

Clinical Pharmacology Research  
Group

Endocrinology Unit

Stroke Research Programme

# CHRONIC DISEASE

## GROUP MEMBERS

**Research Leader and Principal Medical Scientist**  
Benedetta Sallustio

**Senior Medical Scientist**  
Shane Spencer

**PhD Student**  
Mirabel Alonge

**Honours Student**  
Madison Davis

## EXTERNAL COLLABORATORS

Shilpa Jesudason  
*CALHN, Adelaide, Australia*

Janet Collier  
*The University of Adelaide, Adelaide, Australia*

Stephanie Reuter-Lange  
*University of South Australia, Adelaide, Australia*



**Our laboratory is investigating new monitoring methods to better predict rejection and adverse effects, and tailor doses to improve the health of the patient and their transplanted kidney.**

**T**he Clinical Pharmacology Research Group aims to improve the effectiveness and safety of medicines used to prevent rejection following kidney transplantation.

**These immunosuppressant medicines must be used with careful monitoring as too much immunosuppression can cause adverse side effects, including damaging the new kidney, whilst too little can lead to rejection of the new kidney. Monitoring immunosuppressant blood levels allows transplant physicians to tailor doses for each transplant patient to minimise both the risk of rejection and adverse effects.**

### RESEARCH HIGHLIGHT OF 2022

Even with careful monitoring rejection and immunosuppressant toxicity can still occur. Our laboratory is investigating new monitoring methods to better predict rejection and adverse effects, and tailor doses to improve the health of the patient and their transplanted kidney.

Our PhD student, Ms Mirabel Alonge is completing clinical studies in kidney transplant recipients suggesting that the current use of blood tacrolimus levels to individualise tacrolimus doses may not be optimal due to the large changes in red blood cell numbers that occur following transplantation. Most of the tacrolimus in blood is inside the red cells and is not available to enter the immune cells (to stop rejection) or the kidneys (where it can cause damage).

Measuring tacrolimus in plasma (collected after centrifuging the blood to remove the red cells) may improve tacrolimus dosage individualisation in transplant patients. Ms Alonge has shown that although different patients may have the same levels of tacrolimus in blood, their levels of tacrolimus in plasma can be significantly different, and that adjusting for differences in red blood cell numbers does not adequately account for these differences. Thus, monitoring blood tacrolimus may potentially lead to inappropriate dosage and risk of adverse outcomes in some patients.

In 2022 Ms Madison Davis joined our research group, contributing to the development of new methods to measure the binding site of tacrolimus within red blood cells. Our long-term aim is to better understand how the distribution of tacrolimus in blood is controlled, and whether adjusting blood tacrolimus levels for both the number of red blood cells and the availability of binding sites can improve the current monitoring in blood. Ms Davis successfully submitted her research thesis and completed her Honours degree in Health and Medical Sciences.

▶ [See also Clinical Pharmacology Research Group - Cancer](#)

**The Endocrinology Unit in TQEH, CALHN, focuses research in the areas relating to diabetes treatment and care, and osteoporosis. The aim is to gain clinical endocrine knowledge through clinical studies and other research. We also conduct translational research and patient quality improvement studies to improve patient care.**

## RESEARCH HIGHLIGHT OF 2022

Following the research led by Drs David Jesudason and Emily Meyer on sodium-glucose co-transporter-2 inhibitors and euglycaemic diabetic ketoacidosis in the perioperative setting, a further study has been carried out and published on setting a threshold to quantify the small but critical risk of diabetic ketoacidosis for peri-operative patients in collaboration with TQEH Anaesthetist.

Our retrospective study found that the colonoscopy and its preparation may predispose to low grade ketosis in patients with T2D while treating with sodium-glucose co-transporter-2 inhibitors did not increase the risk of hyperketonemia (18% and 15.7%, ns). Since 2021 the Unit has participated the CALHN REMIT\_2D study and recruited 86 patients. The recruitment stage of the study has been completed.

## 2022 research

Dr Lucy Gagliardi has continued the international collaboration on the molecular mechanisms by which mutations in armadillo repeat containing 5 (ARMC5) drive adrenal tumorigenesis, and to identify new ARMC5 mutations with a publication on Nucleic Acids Research (impact factor 19). The work on the risk of peri-operative DKA and the quantitative relationships between this risk, and the choice of SGLT2i, plasma drug levels, patient factors and other precipitating factors has been continuing with the support of a research grant from TQEH Research Foundation.



**Our retrospective study found that the colonoscopy and its preparation may predispose to low grade ketosis in patients with T2D while treating with sodium-glucose co-transporter-2 inhibitors did not increase the risk of hyperketonemia.**

## GROUP MEMBERS

**Research Leader**  
David Jesudason

**Senior Medical Scientist**  
Jim Wang

**Senior Medical Scientists**  
Erica Robinson  
Chris Seaborn

**Consultants**  
Kirsten Campbell  
Lucy Gagliardi  
Narsing Laddipeerla  
Emily Meyer  
Marni Nenke

**Registrars**  
Lisa Bichard  
Faran Khalili  
Ramesh Ranjan  
Nisha Venkatesh

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Emily Meyer  
*RAH, The University of Adelaide,  
Adelaide, Australia*

Venkatesan Thiruvengatarajan  
*TQEH, CALHN, Adelaide, Australia*

## GROUP MEMBERS

**Director, Stroke Research Programme (SRP)**

Anne Hamilton-Bruce

**Co-Director, Stroke Research Programme**

Simon Koblar

**Senior Consultant Neurologist**

Jim Jannes

**Research Affiliate**

Karlea Kremer

**Senior Medical Scientist**

Austin Milton

**Postgraduate Students**

Stephen Bacchi  
Chelsea Graham  
Anupam Datta Gupta  
Victor Krawczyk  
Sonya McDowall  
Deeksha Sharma

## BHI COLLABORATORS

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Adelaide GTRAC Centre

John Beltrame  
Translational Vascular Function Research Collaborative

Suzanne Edwards  
Statistician, The University of Adelaide

## EXTERNAL COLLABORATORS

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Mark Jenkinson  
Tim Kleinig  
Stephan Lau  
The University of Adelaide, Australia

Suzanne Edwards  
The University of Adelaide, Australia and Oxford University, London, UK

Roman Kostecki  
The University of Adelaide and TQEH, Adelaide, Australia

Anupam Gupta  
The University of Adelaide and RAH, Adelaide, Australia

Susan Hazel  
Erik Noschka  
Stephen Pyecroft  
The University of Adelaide, Roseworthy, Australia

Chris Proud  
The University of Adelaide, SAHMRI, Adelaide, Australia

Jessica Kwok  
University of Cambridge, UK

Liz Holliday  
Chris Levi  
Tom Lillicrap  
University of Newcastle, Newcastle, Australia

Carmel Nottl  
Janette Young  
University of South Australia

Ben Mani  
Sonya McDowall  
University of South Australia and The University of Adelaide, Australia

Tiffani Howell  
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Martin Lewis  
Sushma Rao  
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Paul Trim  
SAHMRI, Adelaide, Australia

Shohreh Majd  
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Sam Darvishi  
Rehabswift, Adelaide, Australia

Emilie Mas  
Tomas Rozek  
SA Pathology, Women's & Children's Hospital, Adelaide, Australia

Our research group, the Stroke Research Programme (SRP), investigates genetic, protein and lipid factors that affect the risk of stroke and also Transient Ischaemic Attack (TIA), an early marker of stroke that impacts the progress of stroke.

Through TQEH and RAH, the SRP links internationally for stroke-related research on genetic investigations via collaborations with the International Stroke Genetics Collaborative and the Australian Stroke Genetics Collaborative.

We are also investigating the effect of dog-visiting to the Stroke Unit at the RAH, to see if there is a change in the mood of patients, formal and informal supports, as well as monitoring the effect on the dog, in an Action Research project 'DOgSS' – Dogs Offering Support after Stroke.

## RESEARCH HIGHLIGHT OF 2022

TIA's may be a warning sign of stroke and differentiating TIA from TIA-mimics and minor stroke is difficult. Urgent diagnosis is important, because treating TIA early on can prevent subsequent strokes.

State-of-the-art mass spectrometer technology allows quantification of hundreds of plasma proteins, lipids and metabolites, and results in large data sets that machine learning can help with. Using proteomics, lipidomics, metabolomics and radiological biomarkers, we aim to develop predictive algorithms to differentiate TIA from TIA-mimics and minor stroke.

As a first step, we have published a protocol in the prestigious journal BMJ Open.<sup>1</sup>

1. Milton AG, Lau S, Kremer KL, Rao SR, Mas E, Snel MF, Trim PJ, Sharma D, Edwards S, Jenkinson M, Kleinig T, Noschka E, Hamilton-Bruce MA and Koblar SA (2022). "FAST-IT: Find A Simple Test — In TIA (transient ischaemic attack): a prospective cohort study to develop a multivariable prediction model for diagnosis of TIA through proteomic discovery and candidate lipid mass spectrometry, neuroimaging and machine learning—study protocol." *BMJ Open* 12(4): e045908.

► <https://pubmed.ncbi.nlm.nih.gov/35365506/>

## 2022 research

- SRP researchers continued collection of patient blood samples for our 'FAST-IT' – TIA Biomarker Study ('Find A Simple Test – In Transient Ischaemic Attack' (TIA), albeit with some COVID-19 related delays. Our study aims to find diagnostic markers to differentiate TIA from minor stroke and TIA mimics such as migraine and seizures. FAST-IT also includes lipidomics and is investigating lipidomics as well as oxidative stress biomarkers. Our doctoral student, Deeksha Sharma, is undertaking this potentially impactful research, as TIA may be a warning sign for stroke and is difficult to diagnose without expensive and time-consuming imaging tests, so finding a panel of biomarkers that can help with early detection would be significant. This work has been presented at the Stroke Society of Australasia's Annual Scientific Meeting 2022 in Christchurch, New Zealand by our doctoral student, Ms Deeksha Sharma, who won an Adelaide Medical School HDR Travel Award for this, and is published as "FAST-IT: Finding A Simple Test In TIA (Transient Ischaemic Attack): A pilot study at The Royal Adelaide Hospital."<sup>2</sup>

- Associate Professor Anne Hamilton-Bruce is also leading an exciting study 'DOgSS' – Dogs Offering Support after Stroke. DOgSS is a Royal Adelaide Hospital (RAH) Stroke Unit action research study to find out if, when following an action research protocol, dog-visits make a difference to the expressed mood of stroke patients, and will also monitor the dog's wellbeing. This multi-disciplinary research includes medical scientists, medical, nursing and allied health clinicians, academics from The University of Adelaide and University of South Australia, and the RAH volunteers and is supported by funding from The Hospital Research Foundation. Dog-visits by Ms Jody Morrish's Therapy Dog Services commenced on December 20<sup>th</sup> and will be ongoing in 2023.

2. Sharma D, Rao S, Snel M, Lau S, Edwards S, Mahadevan J, Kurunawai C, Milton A, Kleinig T, Jannes J, Hamilton-Bruce A, Koblar S (2022). "FAST-IT: Finding A Simple Test In TIA (Transient Ischaemic Attack): A pilot study at The Royal Adelaide Hospital." *International Journal of Stroke* 17(2S):33-34.

# CLINICAL SCIENCES, HEALTH SERVICES AND POPULATION HEALTH

## RESEARCH GROUPS

Anaesthesia Research Group

Intensive Care Medicine Research  
Group

Oesophageal Physiology Group

Psychiatry Research Group

Respiratory Research Group

Rheumatology Research Group

Surgical Science Research Group

## GROUP MEMBERS

### Director

Roelof Van Wijk

**Research Leader - High Flow Nasal Oxygen, SGLT2 inhibitors, and Opioid Sparing**

Venkatesan Thiruvankatarajan

**Research Leader - Regional Anaesthesia**

Vasanth Rao Kadam

**Research Leader - Anaesthesia Allergy**

Nagesh Nanjappa

### Clinical Researchers

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Rajesh Sethi

Thavarajah Visvanathan

Medhat Wahba

## BHI COLLABORATORS

Tim Semple

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David Jesudason

Emily Meyer

*Endocrinology Unit, TQEH*

Sue Waite

*Psychiatry, TQEH*

Anil Roy

*Respiratory, TQEH*

Peter Hewett

*Colorectal Surgery, TQEH*

Krishnaswamy Sundararajan

*Intensive Care Unit, RAH*

## EXTERNAL COLLABORATORS

Sanjib Adhikary

*Penn State Medical School, Pennsylvania, USA*

David Wong

*University of Toronto, Toronto, Canada*

**The Anaesthesia Research Group is linked to Critical Care & Perioperative Services: Anaesthesia at the TQEH. The primary research interests of our group are:**

- **To enhance the surgical outcome of patients with type 2 diabetes, especially those who are prescribed a new class of medications called Gliflozins**
- **To implement a strategy to minimise preoperative opioid use and long-term opioid use after surgery**
- **To implement a preoperative pathway to wean opioid medications for patients who require total knee replacements**
- **To explore the application of ultrasound guided nerve blocks for postoperative pain relief and opioid use**
- **Applications of high flow nasal oxygen for airway management and procedural sedation**
- **To assess the pattern and diagnostic utility of various tests for severe hypersensitivity reactions/anaphylaxis during anaesthesia**
- **To validate the diagnostic tools to screen sleep apnoea in patients presenting for surgery.**

## 2022 research

We published a systematic review paper that showed that the use of high flow nasal oxygen during procedural sedation improves the oxygenation parameters as compared to low flow nasal oxygen devices.

A review paper that explored the safety aspects of colonoscopy in patients with diabetes who are taking a new class of medications termed 'gliflozins'.



**Available evidence suggests that if a patient is taking opioid medication before knee replacement, it increases their risk of having a postoperative infection, long-standing pain after surgery, requirement for repeat knee replacements.**

## RESEARCH HIGHLIGHT OF 2022

Roughly one in three patients who present for total knee replacement in Australia are likely to be on an opioid related pain medication before surgery. Available evidence suggests that if a patient is taking opioid medication before knee replacement, it increases their risk of having a postoperative infection, long-standing pain after surgery, requirement for repeat knee replacements.

Our group was successful in securing a research grant from the Australian and New Zealand College of Anaesthetists to implement a pathway to wean opioid medications before knee replacement. The strategy is a collaboration across anaesthetists, orthopaedic surgeons, chronic pain specialists, clinical psychologists and general practitioners. This implementation strategy will help to improve the postoperative outcomes in patients who require knee replacements.





**T**he Queen Elizabeth Hospital (TQEH) Department of Intensive Care Medicine participates in, and conducts, research aimed at improving patient outcomes, particularly in the areas of sepsis and nutrition.

We seek to answer pragmatic, relevant clinical questions that are of importance to the ICU clinicians who provide patient care and deliver more efficient and effective treatments; treatments that will not only benefit critically ill patients but also decrease costs, preserve resources and increase access to scarce critical care beds. We are also dedicated to researching the early identification and management of the deteriorating patient to ensure timely and appropriate interventions for ward-based patients.

### 2022 research

The effect of augmented administration of enteral protein to critically ill adults on clinical outcomes: A cluster randomised, cross-sectional double cross-over, registry-embedded, pragmatic clinical trial commenced recruitment in 2022 in 8 Australian and New Zealand sites. This trial was funded by the NHMRC in 2021. Professor Peake is a chief investigator and both Professor Peake and Patricia Williams are members of the study management committee.

Professor Peake and colleagues were awarded the following funding in 2022:

- MRFF International Clinical Trial Collaborations - ICTC 21-2, 2015788\_Webb. **Adaptive platform trial for severe community acquired pneumonia: new interventions for severe CAP and influenza.** \$2,824,703; 2023-2027
- NHMRC Clinical Trials and Cohort Studies Grants 2021 (APP 2014960) **SODA-BIC: Sodium Bicarbonate For Decompensated Metabolic Acidosis in the Intensive Care Unit, A Multicentre, Randomised, Double-Blind Clinical Trial.** A Neto, R Bellomo, S Peake (CIC), M Bailey, J Cooper, A Udy, P Young, P Seacombe, A Higgins \$1,920,486.60



## RESEARCH HIGHLIGHT OF 2022

Professor Peake was inducted on to the Australian and New Zealand Intensive Care Society Honour Roll in April 2022 in recognition of her contribution to the practice and development of Intensive care Medicine. In particular, as a leader in the conduct of multi-centre multi-national clinical trials that have informed international practice and guidelines and for her role as Chair of the Australian and New Zealand Intensive Care Society Clinical Trials Group for the past four years.

In 2022 our team contributed to multiple publications in relation to COVID-19, resulting in the publication of high-level evidence and guidelines for the treatment of critically ill patients with COVID-19 in Australia and internationally.

Professor Peake is a member of the National Clinical Evidence Taskforce, a multi-disciplinary collaboration of Australia's medical colleges and peak health organisations aiming to provide national evidence-based treatment guidelines for urgent and emerging diseases. The Taskforce undertakes continuous evidence surveillance to identify and rapidly synthesise emerging research to develop and update recommendations to ensure Australian clinicians are up-to-date with the latest advice. This taskforce established the world's first 'living guidelines' for the care of people with COVID-19.

Professor Peake is also a member of the Management Committee for the Randomized, Embedded, Multifactorial Adaptive Platform trial for Community-Acquired Pneumonia (REMAP-CAP) and The Queen Elizabeth Hospital Intensive Care Unit is a participating site. The REMAP-CAP trial has been pivotal in the international response to the pandemic, generating high quality evidence relating to the most effective treatment options for critically ill patients with COVID-19 and contributing to changes in international practices.

1. Millard T, Elliott JH, Green S, Tendal B, Vogel JP, Norris S, Tate R, Turner T. Awareness, value and use of the Australian living guidelines for the clinical care of people with COVID-19: an impact evaluation. *Journal of Clinical Epidemiology* 2022 Mar 143: 11-21.  
▶ <https://pubmed.ncbi.nlm.nih.gov/34852274/>
2. Turner T, Elliott JH, Tendal B, Vogel JP, Norris S, Tate R, Green S, National COVID-19 Clinical Evidence Taskforce on behalf of the National. The Australian living guidelines for the clinical care of people with COVID-19: What worked, what didn't and why, a mixed methods process evaluation. 2022 Jan *PLOS ONE* 17(1): e0261479.  
▶ <https://pubmed.ncbi.nlm.nih.gov/34995312/>
3. Writing Committee for the REMAP-CAP Investigators. Effect of Antiplatelet Therapy on Survival and Organ Support-Free Days in Critically Ill Patients With COVID-19: A Randomized Clinical Trial. *JAMA*. 2022 Apr 5;327(13):1247-1259.  
▶ <https://pubmed.ncbi.nlm.nih.gov/35315874/>
4. Writing Committee for the REMAP-CAP Investigators. Long-term (180-Day) Outcomes in Critically Ill Patients With COVID-19 in the REMAP-CAP Randomized Clinical Trial. *JAMA*. 2023;329(1):39-51. doi:10.1001/jama.2022.23257  
▶ <https://pubmed.ncbi.nlm.nih.gov/36525245/>

## GROUP MEMBERS

## Director Research

Sandra Peake

## Consultants

James Malycha

John Moran

Nikki Yeo

## Research Coordinator

Patricia Williams

## Research Project Officer

Catherine Kurenda

## EXTERNAL COLLABORATORS

ANZICS-Clinical Trials Group,  
Melbourne, Australia

Steve Webb

(REMAP-CAP Trial), The Australian  
& New Zealand Intensive Care  
Research Centre, Department  
of Epidemiology and Preventive  
Medicine, School of Public Health  
and Preventive Medicine, Monash  
University, Melbourne, Australia

Adam Deane

(TARGET Protein Trial), Royal  
Melbourne Hospital, University of  
Melbourne, Melbourne, Australia



**In 2022 our team contributed to multiple publications in relation to COVID-19, resulting in the publication of high-level evidence and guidelines for the treatment of critically ill patients with COVID-19 in Australia and internationally.**

## GROUP MEMBERS

### Research Leaders

Vijay Abraham  
Jennifer Myers  
Markus Trochsler

### Postgraduate Students

Thomas Eldredge  
Matthew Marshall-Webb  
Rippan Shukla

### BHI COLLABORATORS

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*Department of Surgery, TQEH,  
CALHN*

### EXTERNAL COLLABORATORS

Dylan Bartholomeusz  
Madison Bills  
Mikayla Dimitri  
*Department of Nuclear Medicine,  
RAH, Adelaide, Australia*



**T**he Oesophageal Physiology Group explores abnormalities of swallowing function (oesophageal motility) for those experiencing swallowing discomfort or gastric reflux (symptoms of heartburn and regurgitation) that impacts the enjoyment of meals.

Studies of swallow pressures and bolus flow are complex, yet reveal subtle variations, like the interplay between swallow muscle vigour and impaired food passage in those struggling to eat or drink. This clinical research will help us better manage patients undergoing surgery for reflux disease, swallowing disorders or obesity at TQEH Upper GI & Bariatric Surgery Unit.

## RESEARCH HIGHLIGHT OF 2022

### Once in a Bile – the incidence of Bile reflux post-bariatric surgery

After obesity surgery, altered anatomy promotes weight loss however at the theoretical risk of higher bile reflux. Dr Tom Eldredge, a PhD candidate, evaluated patients after bariatric surgery (a gastric bypass, a gastric sleeve, or a single anastomosis bypass) to find out the prevalence and impact of bile reflux. He utilised tailored biliary scintigraphy and upper gastrointestinal endoscopy protocols in a prospective cohort study conducted over a three-year period. In his recent 2022 publication 'Once in a Bile – the incidence of Bile reflux post-bariatric surgery', reports that bile reflux into the stomach occurred often after one-anastomosis gastric bypass; moderately after sleeve gastrectomy; and seldom after traditional Roux-en-Y gastric bypass surgery. However, importantly bile reflux into the oesophagus was rare.

This important and timely research contribution in an era of increasing obesity and bariatric surgery, brings evidence where it was lacking (Publication award, The University of Adelaide, February 2022). This research was presented

by Dr Eldredge as an oral presentation at the International Federation of Surgery for Obesity and Metabolic disorders In Miami, Florida in August 2022. Dr Eldredge's dissertation was externally examined and awarded Doctor of Philosophy.

## 2022 research

- Causes of swallowing difficulty (dysphagia) are likely multifactorial, thus challenging for diagnosis and management. To date measures of swallow pressures (manometry) and flow (fluoroscopy) are helpful, but at times of limited value or modest at best. A new device, EndoFLIP, enables assessment of luminal diameter and cross-sectional area of the oesophagus and lower sphincter. Following exploratory measurements, we will evaluate the role of oesophageal lumen and sphincter distensibility in dysphagia.
- Value-adding to maximise oesophageal physiology diagnostics arises from the frequent clinical experience that small bolus swallows are often inadequate for manometric diagnostic certainty. Dr Jennifer Myers is exploring the clinical utility of additional swallow challenges during manometry, such as multiple rapid swallows, upright swallows and rapid drink challenge with regards to patient tolerance, test duration, data analysis and clarification of motility diagnosis.
- Outpatient consultation to evaluate and manage reflux disease includes an assessment of typical reflux symptoms, endoscopic or physiological evidence of pathological reflux and patient response to proton pump inhibitor (PPI) antireflux medication, as these are established indicators of good outcome to surgical treatment. An evaluation of PPI use by patients over a four-year period has revealed a risk of flawed pre-surgical assessment due to inadequate PPI use. Dr Jennifer Myers presented these findings at the Aust. & Aotearoa New Zealand Gastric & Oesophageal Surgery Association meeting in September 2022, which was selected as the best Upper GI Research Paper of fifteen presentations.



**This important and timely research contribution in an era of increasing obesity and bariatric surgery, brings evidence where it was lacking.**



**Gohar Shaghayegh**  
Postdoctoral Research  
Coordinator  
ENT Surgery, University  
of South Australia



## GROUP MEMBERS

### Discipline Head and Lead Investigator

Scott Clark

### TQEH Lead Investigator

Prashant Tibrewal

### NALHN and Adelaide

### Headspace Lead Investigator

Oliver Schubert

### Post Doctoral Fellows

Micah Cearns

Simon Hartmann

### Study Coordinators

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Ethan Arthurs

## EXTERNAL COLLABORATORS

Cherrie Galletly

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*The University of Adelaide,*

*Discipline of Psychiatry & NALHN,*

*Adelaide, Australia*

Bernhard Baune

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*San Diego, USA*

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*University of Queensland,*

*Brisbane, Australia*

Alexander McFarlane

*The University of Adelaide,*

*Adelaide, Australia*

Mitchell Goldsworthy

Nigel Rogasch

*The University of Adelaide &*

*SAHMRI, Adelaide, Australia*

**T**he Discipline of Psychiatry's research follows 6 main themes:

1. Personalised psychiatry and genomics of psychiatric disorders;
2. Psychiatric neuroscience and neuroimmunology of psychiatric disorders;
3. Neuropsychiatry and psychiatric and medical comorbidities;
4. Clinical phenotype research into the cognitive, emotional and behavioural underpinnings of psychiatric disorders;
5. The identification of electrophysiological markers of cognition and function in psychiatric disorders; and
6. The conduct of clinical trials, including pharmacological, psychological and neurostimulation interventions.



**We developed a novel approach to combine patient clinical features with genomic data to greatly improve the ability to predict which patients will respond to lithium.**

## RESEARCH HIGHLIGHT OF 2022

2022 was a significant year for expansion of our Discipline on the back of multiple NHMRC and Wellcome Trust Grants including: CogScreen – a trial of brief cognitive assessments in early psychosis; the SWIMS trial of metformin and Semaglutide to reduce obesity in patients with psychosis treated with Clozapine and the EU-Strata trial of early intervention for treatment resistance using ketamine for major depression, early Clozapine for schizophrenia and novel combination therapy for bipolar disorder.

Associate Professors Clark and Schubert are key contributors to two of Australia largest national mental health clinical trial networks: Mental Health Australia General Clinical Trial Network (MAGNET) and the Australian Early Psychosis Collaborative Consortium (AEPC) [[▶ https://magnetctn.com/](https://magnetctn.com/)]. Further funding to set up studies such as Hearts and Minds (Atorvastatin and Metformin for metabolic treatment of Major Depression) and KITE (Ketamine for bipolar depression) through these networks will place our team at the cutting edge of trials of promising treatments for severe mental illness.

We also welcomed the promotion of Associate Professor Prashant Tibrewal who will lead the implementation of novel transcranial magnetic stimulation (TMS) trials at The Queen Elizabeth Hospital.

Our publication highlight for 2022 builds upon our great track record in pharmacogenomics, the science of predicting medication responses based on genes. In Cearns et al. Using polygenic scores and clinical data for bipolar disorder patient stratification and lithium response prediction: machine learning approach. *The British Journal of Psychiatry* 220(4):219-228. [[▶ https://pubmed.ncbi.nlm.nih.gov/35225756/](https://pubmed.ncbi.nlm.nih.gov/35225756/)]. We developed a novel approach to combine patient clinical features with genomic data to greatly improve the ability to predict which patients will respond to lithium.

## 2022 research

Collaboration with Adelaide University Engineering to develop novel methods of speech acoustic analysis to identify and monitor mental illness. Almaghrabi SA, et al. The Reproducibility of Bio-Acoustic Features is Associated With Sample Duration, Speech Task, and Gender. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 30:167-175 01.

▶ <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9684313>

**T**he Respiratory Research Group has undergone considerable changes in the last year related to COVID and viability of the Clinical Trial Group. The group was completely restructured with shared research with the Gastroenterology Unit. The collaboration has been extremely successful and the CTG is involved in sponsored Clinical trials on interstitial lung disease and asthma.

In addition, there are a number of investigator led projects that are completed or continuing in the department; this includes exercise physiology related to endoscopic lung reduction in emphysema, depression and COPD, interstitial lung disease, asthma and smoking cessation.

The department continues to pursue higher degrees in Sleep and Lung Valve Reduction procedures, Physiology, and Nurse Practitioner out of hospital management of chronic lung disease patients. Our Principal Lung Function Scientist was awarded a Master of Science in 2022.

## 2022 research

- Karen Royals and Jonathan Polasek involved in the Interstitial Lung Disease Registry.
- Zafar Usmani continues to collaborate privately and with University of SA on translational research, asthma, and smoking cessation.
- Andrew Fon is pursuing research on measuring perfusion and ventilation in the lung and infections following the placement of endobronchial valves after endoscopic lung reduction procedures.
- Lung function laboratory continue work on an exercise test to assess physiological capacity (6 minute walk test).
- Karen Royals and Kathy Lawton, Respiratory Nursing, continue assessment of Telehealth in supporting existing clients with chronic respiratory disease. Telehealth was found to be a suitable tool to support and educate clients in their management of exacerbations and hospital avoidance.

## RESEARCH HIGHLIGHT OF 2022

- Editorial by Tom Altree in Sleep on Intranasal Oxytocin for OSA.
- Emily Lawton and Andrew Fon produced a project on the effects of snoring and deafness presented at the TSANZ suggesting snoring is involved in hearing loss.
- Donna Keatley and the Lung Function Laboratory presented data at the TSANZ on exercise physiology related to the 6 Minute Walk test.



**The collaboration has been extremely successful and the CTG is involved in sponsored Clinical trials on interstitial lung disease and asthma.**

## GROUP MEMBERS

### Research Leader

Antony Veale

### Research Coordinators

Lyndsay Bidd  
Pamela Kidd

### Head of Unit

Jonathan Polasek

### Respiratory Consultants

Andrew Fon  
Anil Roy  
Zafar Usmani

### Medical Scientists

Donna Keatley  
Pamela Kidd

### Respiratory Nurses

Kathy Lawton  
Karen Royals

### Registrars

Jared Anderson  
Emily Lawton

## EXTERNAL COLLABORATORS

Hubertus Jersmann  
Phan Nguyen  
Paul Reynolds  
*RAH, Adelaide, Australia*

Kristin Carson-Chahhoud  
Adrian Esterman  
*University of South Australia,  
Adelaide, Australia*



**T**he Rheumatology Unit research program use clinical data and biological samples from clinical cohorts with autoimmune and chronic inflammatory diseases to investigate the epidemiology, causation, clinical outcomes, to develop new treatments, and new models of disease monitoring that incorporate patient reported outcome measures.

The group has expertise in population epidemiology, randomised clinical trials, qualitative research, biobanking, laboratory science and quality improvement. It is the South Australian hub of Australian Arthritis and Autoimmune Biobank (A3BC), and incorporates the South Australian Primary Sjögren's Syndrome Research Clinic and Database and South Australian Giant Cell Arteritis Registry.

## RESEARCH HIGHLIGHT OF 2022

In 2022, Professor Catherine Hill was awarded the triennial Parr Prize by the Australian Rheumatology Association for the best contribution to rheumatology research in the preceding three years.

Catherine has made outstanding research contributions in terms of both quality and impact. Catherine has broad research interests with a particular focus on patient centred research and clinical practice in rheumatic diseases. She has an excellent publication track record (95 papers in 2019-2022) mostly in specialty clinical journals. Catherine has demonstrated leadership on papers (19 first or senior authorships 2019-2022) as well as multiple collaborative contributions both locally and internationally. She has had ongoing success as the Chief Investigator with obtaining competitive funding and establishing new research areas that enhance capacity for research in Australia.



## 2022 research

### Publications

- 44 peer reviewed publications in 2022

### Grants

- Dr Rachel Black: A Randomised Trial of a Novel Glucocorticoid Tapering Clinic for Rheumatology Patients. Arthritis Australia Project Grant \$43,000
- Dr Oscar Russell: 2022 Joint ARA / Arthritis SA Postgraduate Rheumatology Research Grant (value \$20,000)

### Awards

- Professor Catherine Hill: Parr Prize. Australian Rheumatology Association
- Dr Oscar Russell: “Best New Investigator Free Paper” Australian Rheumatology Association Annual Scientific Meeting, May 2022
- Dr Madeleine Bryant: “Best Clinical Free Paper” Australian Rheumatology Association Annual Scientific Meeting, May
- Dr Madeleine Bryant: Best junior clinical oral presentation at BHI Research Expo, October 2022
- Professor Maureen Rischmueller:
  - Invited Foundation member of APLAR Sjögren’s syndrome Special Interest Group
  - Invited presentation: Overview of Biologic Therapies in Sjögren’s Disease at the Janssen International Sjögren’s Advisory Board, Rome Sept 2022
  - International Task Force on Nomenclature and Classification for Sjögren
  - Member of Treatment Response Measure for Systemic Lupus Erythematosus (TRM-SLE) project
  - SA Principal Investigator (and NT AI): Identification of Molecular Signatures in Indigenous and Non-Indigenous Australian patients with Systemic Lupus Erythematosus- a Precision Medicine Approach
  - Industry Funding: Identification of Molecular Signatures in Indigenous and Non-Indigenous Australian patients with Sjögren’s Disease.

## GROUP MEMBERS

### Head of Unit and Research Leader

Catherine Hill

### Consultant Rheumatologist and Principal Investigator

Maureen Rischmueller

### Consultant Rheumatologists

Rachel Black

Simon Burnet

Suellen Lyne

Joanna Tieu

Sam Whittle

### Rheumatology Registrar

Oscar Russell

### Clinical Research Manager

Sarah Downie-Doyle

### Senior Clinical Researcher

Carlee Ruediger

### Clinical Trials Nurses

Aimee Cayzer

Sara White

### Clinical Trial Co-ordinator

Janelle Harris

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Jannatul Ferdoush Tuli

Nerylee Watson

### Chief Medical Scientist

Sue Lester

### Senior Research Officer

Chandra Kirana

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Rachelle Buchbinder

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Eric Morand

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OMERACT Polymyalgia

Rheumatica (PMR) Working Group

OMERACT Remission in RA-patient  
perspective Working Group

OMERACT Glucocorticoid Adverse  
Events Working Group

OMERACT Sjögren’s Disease  
Working Group

Australian Scleroderma Interest  
Group (ASIG)

Australian Arthritis & Autoimmune  
Biobank Collaborative (A3BC)



**T**he Surgical Science Research Group is led by Professor Guy Maddern, the RP Jepson Professor of Surgery at The University of Adelaide and the Director of Research at the Basil Hetzel Institute for Translational Health Research (BHI), The Queen Elizabeth Hospital (TQEH).

The Surgical Science Research Group is a large, multidisciplinary group focused on clinical research, health service innovation and translational benchtop to bedside medicine in the surgical setting. The Surgical Science Research Group continues to produce high-quality research and publishes widely in critically acclaimed journals, in 2022 the group published >90 peer review publications.

The group is always looking for enthusiastic students who wish to challenge themselves and further their education through Honours or higher degree programs.

## RESEARCH HIGHLIGHT OF 2022

Dr Katharina Richter (CIA) and Dr Markus Trochsler (CID) were awarded a \$1M NHMRC Ideas Grant to research how plasma-activated water can help improve clinical outcomes for individuals who have antimicrobial-resistant infections. Dr Richter's research was highlighted in a Nature article, "Three ways to combat antimicrobial resistance"<sup>1</sup>. Unsurprisingly, Dr Richter was awarded the Channel 7 Children's Research Foundation Healthy Development Adelaide (HDA) 'Schools Communicator' for 2022 (Channel 7 Children's Research Foundation) and was also a finalist for the Prime Minister's Prize for Science & Eureka Award for Emerging Leader in Science 2022.

1. Plackett B. Three ways to combat antimicrobial resistance. Nature. 2022 Dec;612(7940):S33  
▶ <https://pubmed.ncbi.nlm.nih.gov/36517723/>



**2022 research**

- Ellie Treloar received 1<sup>st</sup> class Honours and won best Oral Presentation (Honours) at the 31<sup>st</sup> TQEH-BHI Research Expo. During her Honours year, Ellie published a systematic review in the World Journal of Surgery.<sup>2</sup>
- Jesse Ey received 1<sup>st</sup> class Honours and was awarded “The Bachelor of Health and Medical Sciences Honours Award for Medical Specialities”. During his Honours year, Jesse co-first authored a systematic review.<sup>3</sup>
- Dr Joshua Kovoov (PhD Student, The University of Adelaide) published >30 publications. Notably, Dr Kovoov published in The Medical Journal of Australia.<sup>4</sup>
- Laurine Kaul (Joint PhD candidate at The University of Adelaide (Australia) and University of Freiburg (Germany)) was awarded Best Oral Presentation: Senior Laboratory Research at the 31<sup>st</sup> TQEH-BHI Research Expo. Laurine also had 2 first author publications in 2022.
- Dr Matheesha Herath (Master of Philosophy (Surgery) student, The University of Adelaide) won Best Mini-Oral Presentation at the 31<sup>st</sup> TQEH-BHI Research Expo.
- Dr Ying Yang Ting (Master of Philosophy (Surgery) student, The University of Adelaide) presented his work at the 31<sup>st</sup> TQEH-BHI Research Expo and published 4 manuscripts in 2022.
- PhD student Bimala Dhakal was awarded the AMS/Biomedicine Publications Award for her research.<sup>5</sup>
- PhD student Celine Li presented her research at the 31<sup>st</sup> TQEH-BHI Research Expo and at the Australian and New Zealand Society for Immunology INC. (ASI) Clinical Translation School.
- Dr Kevin Fenix won a Beat Cancer SA Project Grant for \$75K.
- Grant Title: Towards the generation of high-quality Cytokine Induced Killer (CIK) cells for cancer immunotherapy.
- Dr Edward Young, Dr Paul Patiniott, Dr Li Lian Kuan, and Dr Nelson Granchi were awarded a MPhil (Surgery) from The University of Adelaide.
- Dr Markus Trochsler, in collaboration with UniSA Design Students, produced an educational video for patients enrolled in the PIPAC-O+ Clinical Trial.

► <https://youtu.be/0OCm6C5eZQA>

2. Treloar EC, Ting YY, Kovoov JG, Ey JD, Reid JL, Maddern GJ. Can checklists solve our ward round woes? A systematic review. World Journal of Surgery. 2022 Jul 3;1-0.  
► <https://pubmed.ncbi.nlm.nih.gov/35781840/>
3. Ting YY, Ey JD, Treloar EC, Reid JL, Bradshaw EL, Maddern GJ. Patient prompts in surgical consultations: A systematic review. Surgery. 2022 Sep 30.  
► <https://pubmed.ncbi.nlm.nih.gov/36184314/>
4. Kovoov JG, Jacobsen JH, Balogh ZJ, Group QI. Quality improvement strategies in trauma care: review and proposal of 31 novel quality indicators. The Medical Journal of Australia. 2022 Sep 11;217(7):331-5.  
► <https://pubmed.ncbi.nlm.nih.gov/36088604/>
5. Dhakal B et al. The Antianginal Drug Perhexiline Displays Cytotoxicity against Colorectal Cancer Cells In Vitro: A Potential for Drug Repurposing. Cancers. 2022 Feb 18;14(4):1043  
► <https://pubmed.ncbi.nlm.nih.gov/35205791/>

**GROUP MEMBERS****Research Leader**

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Harsh Kanhere  
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**NHMRC CJ Martin Fellow**

Katharina Richter

**Post-doctoral Research Fellow**

Adrian Abdo

**THRF Early Career Research Fellow**

Kevin Fenix

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Jessie Clarke  
Jessica Reid

**Administrative Support**

Sandra Ireland

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Matheesha Herath  
Laurine Kaul  
Tanja Klotz  
Joshua Kovoov  
Li Lian Kuan  
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Laurence (Jianliang) Liu  
Paul Patiniott  
Richard Smith  
Brandon Stretton  
Ying Yang Ting  
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Ellie Treloar

**Vacation Students**

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Phoebe Chong  
Scarlette Kulas  
Wei Shan Bobby Lee  
Laure Mansour  
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Amitesh Nagarantnam  
Vishak Senthil  
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Jeeng Yeeng Tee  
Anthony Tew  
Sam Yu

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Peter Hewett  
Colorectal Cancer Research Group

Tim Price  
Solid Tumour Group

PJ Wormald  
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Manuela Klinger Hoffman  
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Sarah Ellis  
Olivia Newton John Cancer  
Centre, Melbourne, Australia

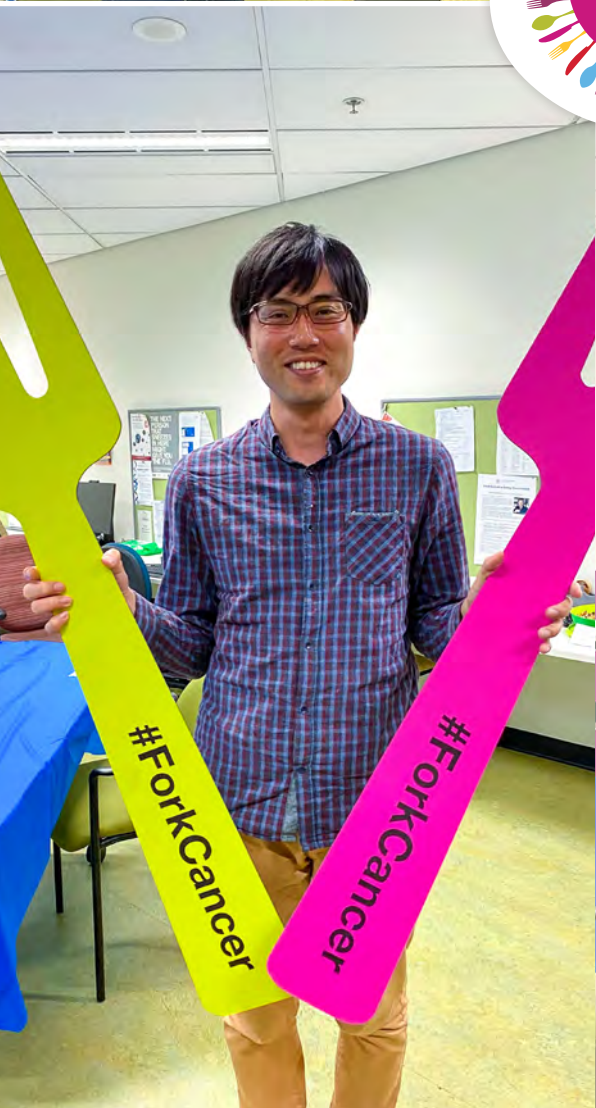
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Germany

Tom Coenye  
Ghent University, Ghent, Belgium

  
**Dr Katharina Richter (CIA) and Dr Markus Trochsler (CID) were awarded a \$1M NHMRC Ideas Grant to research how plasma-activated water can help improve clinical outcomes for individuals who have antimicrobial-resistant infections.**



RESEARCH GROUPS

Therapeutics Research Centre

Viral Immunology Group

# DRUG AND VACCINE DEVELOPMENT



**W**e have transitioned from an academic group led by Professor Mike Roberts (UQ and UniSA) to one led by Associate Professor Mackenzie (UniSA) with Emeritus Professor Roberts providing advice on an as needs basis.

A prime focus in our research that applies our where-with-all to help those who require help in drug and poison bioanalysis in support of therapeutic drug, ADMET (absorption, distribution, metabolism, excretion, toxicity), topical product bioavailability and therapeutic/toxicology clinical trials. Her focus is seeking to make a real difference by helping others through the quality of our work and effective teamwork.

### RESEARCH HIGHLIGHT OF 2022

Mike's research, which includes 35,502 citations and H-Index of 96, was named for the second year running as a 2022 Highly Cited Researcher in Pharmacology and Toxicology by ISI, ranking within the world's top 1% by citations for field and year in Web of Science™.

#### 2022 research

- Mike was also elected as a life member of the Australasian Pharmaceutical Science Association.
- Together with the University of Graz, Lorraine and Mike were awarded a 2022-2026 US Food and Drug Administration 1U01FD007669-01. USD \$1,500,000.
- 15 peer reviewed publications, including two invited in Adv Drug Del Rev (Impact factor 17.9)



○  
**Mike's research, which includes 35,502 citations and H-Index of 96, was named for the second year running as a 2022 Highly Cited Researcher in Pharmacology and Toxicology by ISI.**

**GROUP MEMBERS**

**Director and Research Leader**  
 Michael Roberts

**Associate Research Professor**  
 Lorraine Mackenzie

**THRF Early Career Research Fellow**  
 Amy Holmes

**Analyst**  
 Faye Whan

**Research Assistant**  
 Daniel Lewis

**BHI COLLABORATORS**

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 Emily Meyer  
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Thiruvankatarajan Venkatesan  
*Anaesthesia Research Group*

Warren Weightman  
*Dermatology, TQEH*

Morgyn Warner  
*Infectious Diseases, TQEH*

Guy Maddern  
*Surgical Science Research Group*

Sandra Peake  
*Intensive Care Medicine Research Group*

Eric Smith  
*Solid Tumour Group*

John Horowitz  
*Cardiovascular Pathophysiology and Therapeutics Group*

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 Fanfan Zou  
*University of Sydney, Sydney, Australia*

Geoffrey Isbister  
*University of Newcastle, Newcastle, Australia*

Darren Roberts  
*St Vincent's Health Australia, Canberra, Australia*

Jen Martin  
*Environmental Protection Agency, Melbourne, Australia*

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*Princess Alexandra Hospital, Brisbane, Australia*

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 Jeff Grice

Isha Haridass  
 Xiaoling Liang

Jeffrey Lipman  
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Sarika Namjoshi  
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Yuri Anissimov  
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 John van der Hoek  
 Ivan Kempson  
*University of South Australia, Adelaide, Australia*

Kenneth Pope  
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Andreas Suhrbier  
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*University of Peradeniya and Uni Sydney, Peradeniya, Sri Lanka and Australia*

Tao Chen  
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Hauke Studier  
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*Shahid Beheshti University of Medical Sciences, Tehran, Iran*

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Frank Sinner  
*University of Graz, Graz, Austria*

Maike Windberg  
*Goethe University Frankfurt, Frankfurt, Germany*

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Anna Macedo  
*Universidade Lusófona de Humanidades e Tecnologias, Lisbon, Portugal*

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 Andrei Zvyagin  
*Macquarie University, Sydney, Australia*

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*University of Rennes, Brittany, France*

## GROUP MEMBERS

### Research Leader

Branka Grubor-Bauk

### Senior Scientist

Eric Gowans

### THRF Early Career Research Fellow

Makutiro Masavuli

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Morgan Skinner

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**V**iruses pose significant challenges to human health. Our history is replete with references to plagues, pestilence, and contagions, yet today we seem to have relegated these events to history and down-played the threat pandemics pose.

The enormous human and economic toll of the rapidly spreading COVID-19 pandemic demonstrated that infectious disease pandemics remain one of the greatest existential threats to humanity. We are again reminded that harnessing the body's defence system through immunisation is the most effective approach to control pandemics we have.

Our group is focussed on developing novel vaccines for viruses for which no effective immunisation regimens exist, including Zika virus and hepatitis C virus. Since 2020 we incorporated the SARS-CoV-2 virus into our approach and are started a large Phase I Human Clinical Trial of our novel vaccine in 2022 in South Australia.

## 2022 research

- In 2022 we continued and expanded our state-wide clinical study, COVID-19 SA, in partnership with collaborators at The University of Adelaide, The Royal Adelaide Hospital, South Australian Health and Medical Research Institute and international and national colleagues to evaluate immunity and host-virus interplay in COVID-19 active and convalescent patients, vaccinated individuals and severely ill patients. This work, funded by THRF is providing as yet unappreciated insights into the impact of the virus on patients.

- Associate Professor Branka Grubor-Bauk was re-elected Vice-President of the Australian Centre for Hepatitis Virology (ACHV) .
- Associate Professor Grubor-Bauk and Dr Zelalem Mekonnen received a grant from ACH4 for development of novel HCV mRNA vaccines.
- Associate Professor Branka Grubor-Bauk and Dr Makutiro Masavuli received Fame Strategy grants from the The University of Adelaide.

## RESEARCH HIGHLIGHT OF 2022

In 2022 we commenced a large (100 participants) Phase I clinical trial of our novel COVID19 vaccine in South Australia. This trial was enabled by funding from The Hospital Research Foundation, manufacturing support by BioCina (Thebarton) and was conducted with support by PARC Clinical Research at The University of Adelaide and The Royal Adelaide Hospital.

In addition to vaccine development our team also focuses on investigations of immune responses to different vaccine development, treatments and therapies. With this in mind early in the pandemic we established COVID19-SA as a collaboration of SA researchers to understand how patient immune system respond to COVID-19 infection – *an area about which nothing was known*. Initially the team has followed SA patients from the first pandemic wave through their convalescence, adding patients from quarantine to the study. The initiative was funded through philanthropy – THRF and WCHF. In 2022 the COVID-SA group was awarded funding by THRF to continue the studies for 2 more years.

RESEARCH GROUPS

ENT Surgery

Inflammatory Bowel Disease  
Research Group

# INFLAMMATORY DISEASE



**O**ur research team of clinical academic surgeons, research scientists, bio-informaticians and engineers is focused on improving treatment outcomes for patients suffering from chronic relapsing infections of the nose and sinuses (Chronic Rhinosinusitis, CRS) and wound-healing after surgery. We have a translational medicine approach where novel therapeutic candidates discovered in our laboratory undergo extensive testing before treatment of patients.

In addition, we started a novel research node looking at bacteriophage biology and treatments for chronic relapsing infections. Lastly, we implement a surgical training program aimed at educating the next generation of surgeons and surgeon scientists in advanced surgical techniques of the sinuses and skull base with the Department of Otolaryngology Head and Neck Surgery at The Queen Elizabeth Hospital.

**2022 research**

- Bacteria are social and they like to grow in groups, so called biofilms. Our research shows that biofilms from patients that have severe disease are much thicker than biofilms from patients that have a healthy nose.
- We have found that bacteria that are isolated from severe patients are infected with viruses that carry harmful toxins. Our next step will be to see if the bacteria become less harmful if we remove those bacterial viruses
- We have started a new research project on head and neck cancer and how the bacteria that are present within those tumours might play a role in the disease. More to come on this.





## RESEARCH HIGHLIGHT OF 2022

This year our team has made substantial progress with towards developing bacteriophage treatments for patients. Bacteriophage (phage) is a virus that infects and kills bacteria including bacteria that are resistant to all antibiotics (“superbugs”) and phage therapy has regained interest in the last 10 years due to the emergent superbug epidemic. Phages can be isolated from the environment, however, extensive testing has to be conducted to enable the selection of those phages that are both effective and safe to be used in patients.

Supported by a strong interest and investments by Aushealth and patient organisations (e.g. CFSA and Cure4CF), we have established the “Adelaide Phage Therapy and Research Centre-APTC” within the premises of the Basil Hetzel Institute. The Centre has successfully sourced more than 200 therapeutic phages targeting various pathogens that can be used for the treatment of patients infected with antibiotic resistant strains where all other therapies fail.

Supported by AusHealth and a grant from the Medical Research Future Fund, the APTC now aims to use their own phages to conduct the first randomised controlled trial to evaluate not only the safety and effectiveness, but also the time required to achieve eradication of infection in therapy refractory chronic rhinosinusitis patients. The long-term objective of the Centre is to make Phage treatments available for patients in Australia and beyond.

**We have found that bacteria that are isolated from severe patients are infected with viruses that carry harmful toxins.**

### GROUP MEMBERS

**Chair, Department of ENT**  
Peter-John Wormald

**Head, Department of ENT**  
Alkis James Psaltis

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Sarah Vreugde

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Clare Cooksley

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Kevin Fenix  
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## GROUP MEMBERS

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### Head of Research

Samuel Costello

### Head of Clinical Trials

James Fon

### Post-doctoral Academic Dietitian

Alice Day

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### Clinical Trials Nurses

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Our research focuses on the role of the gut microbiome and diet in inflammatory bowel disease (IBD) and other gut disorders with the overarching aim of improving patient outcomes and quality of life. We are investigating interventional approaches to manipulate the gut microbiome for therapeutic effect, in particular using dietary therapies and faecal microbiota transplantation (FMT); and undertaking clinical research in the area of IBD and gastrointestinal ultrasound.

## 2022 research

- **Shedding light on rising local rates of *Helicobacter pylori* resistance.** Our research group has explored rising rates of local *H. pylori* resistance over a 20-year period, revealing alarming rates of emergent clarithromycin resistance. These findings have identified that first-line *H. pylori* eradication may fail to achieve adequate eradication rates and the optimal first-line therapy in Australia should be revisited. We have also published a novel geospatial analysis of *H. pylori* prevalence in South Australia, drawing a link between suburb, migrant pattern, and prevalence of infection. Our group has also postulated that eradication of *H. pylori* may not be universally beneficial, describing the overlooked potential benefits of *H. pylori* in an opinion piece.
- **Microbial manipulation in primary sclerosing cholangitis (PSC).** Our group has published a seminal systematic review on the role of microbial manipulation as therapy for PSC.
- **Intestinal ultrasound in IBD.** Our group has been involved in several large international consensus statements on the use of intestinal ultrasound to monitor response to therapy in IBD.

## RESEARCH HIGHLIGHT OF 2022

### Pioneering a novel dietary strategy in ulcerative colitis

Our research group published a pilot dietary intervention study, testing a novel dietary strategy which has the potential to influence management paradigms for patients with inflammatory bowel disease.

The 4-SURE diet (4-Strategies-to-Sulfide-Reduction) was prospectively trialled in 28 patients with mild to moderate ulcerative colitis. The diet was well-tolerated and led to clinical and endoscopic response in 46% and 36% of participants, respectively.

Changes in functional microbial composition were observed, alongside alterations in volatile organic compounds and short chain fatty acids. This study has informed the rationale and methodology for a high-impact randomised controlled trial (RCT) exploring the efficacy of the 4-SURE diet in patients with ulcerative colitis, which is currently underway at BHI/TQEH.

The current RCT has attracted competitive grant funding from multiple sources, including The Hospital Research Foundation, European Crohn's and Colitis Organisation, and the Gutsy Foundation. The outcome of the current RCT is expected not only to influence clinical practice but to shed light on the pathogenesis of ulcerative colitis, through deep exploration of the functional microbial impacts of diet in inflammatory bowel disease.

Day AS, Yao CK, Costello SP, Ruszkiewicz, Andrews JM, Gibson PR, Bryant RV. Therapeutic potential of the 4 strategies to sulfide reduction (4-sure) diet in adults with mild to moderately active ulcerative colitis: an open-label feasibility study. *J Nutrition* 2022;152(7):1690-1701

► <https://pubmed.ncbi.nlm.nih.gov/35451489/>



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