

Woolcock Institute of Medical Research

BIENNIAL REPORT

2022-2023



Our work makes a difference to people's lives

www.woolcock.org.au

WOOLCOCK 
LEADERS IN BREATHING & SLEEP RESEARCH



The Woolcock's home for almost 17 years - 431 Glebe Point Road, Glebe.

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Front Cover: (L-R) Macquarie University’s Deputy Vice-Chancellor (Research) Professor Sakkie Pretorius, Vice-Chancellor Professor S. Bruce Dowton and Deputy Vice-Chancellor (Medicine and Health) Professor Patrick McNeil with the Woolcock’s Board Chair Robert Estcourt, Executive Director Professor Emerita Carol Armour and Board Members Simon Blackburn and Julie Osborne.

ABOUT US

WHO WE ARE

The Woolcock Institute of Medical Research aims to improve the quality of life for people affected by sleep and breathing disorders.

The Woolcock is the leading respiratory and sleep research organisation in Australia. We have been ranked by the influential Times Higher Education as the top specialist sleep and respiratory health research centre in the world.

We are determined that our work creates a better life for people living with respiratory conditions and sleep disorders.

Our dedication to wellbeing is at the very heart of what we do.

WOOLCOCK RESEARCH

Our team of more than 200 medical researchers is committed to investigating the causes of disease, finding better treatments and translating discoveries into clinical practice. Our main areas of research are:

- Respiratory disease including asthma, emphysema, cystic fibrosis, allergies, pneumonia, and tuberculosis
- Sleep disorders such as obstructive sleep apnea, narcolepsy and insomnia, and other sleep-related issues such as ageing, shift work and obesity
- Lung cancer
- Cognitive decline and relationship to sleep and respiratory disorders.

THE WOOLCOCK CLINIC

We also have a clinic in Sydney, known as the Woolcock Clinic, which offers specialised treatment and healthcare support for people with sleep and respiratory disorders.

Our expert clinical team provides patients with the best possible care and treatment plans. Patients benefit from our world-leading research discoveries.

The clinic also runs comprehensive sleep studies.

THE WOOLCOCK IN VIETNAM

The Woolcock Institute of Medical Research also leads a team of researchers who are working in Vietnam to tackle important health challenges including tuberculosis, COPD, asthma, tobacco control and antimicrobial resistance.

Since 2010, the Woolcock in Vietnam has implemented a series of multi-centre clinical trials together with leading Vietnamese public healthcare and tertiary institutions. This work has an impact not only upon

the people of Vietnam, but also much more broadly through the evidence generated from our trials.

The Vietnam centre contributes to the Woolcock's vision to have a global impact upon lung health.

OUR HISTORY

The late Professor Ann Woolcock (1937-2001) established the institute in Sydney in 1981 to become Australia's centre of excellence for respiratory research.

Originally called the Institute of Respiratory Medicine, the institute was renamed in 2002 in honour of its founder.

These days, the Woolcock is structured as a not-for-profit company with strong campus partnerships throughout Sydney and throughout NSW, and has a branch office in Vietnam.

OUR VISION

Improved quality of life for individuals and families affected by sleep, breathing and lung disorders.

OUR ASPIRATION

The Woolcock Institute of Medical Research aspires to maintain our world-leading research impact by the translation of sleep, respiratory and lung cancer research into better clinical outcomes globally.

OUR VALUES

RESPECT

We support open, respectful discussion, effective communication, transparent decision-making and productive internal governance practices. In particular, we show respect at all times for staff, patients, families and carers as well as referring clinicians.

EXCELLENCE

We strive for excellence and innovation in research, research translation, clinical care and patient outcomes.

PARTNERSHIP

We actively seek mutually-beneficial internal and external partnerships. We strive to obtain the best possible outcomes with our multidisciplinary and multifaceted approach to addressing respiratory and sleep disorders.

SUPPORT

We support and, where possible, resource individuals and teams to achieve their goals and potential.

OPPORTUNITY

We explore creative ways of providing quality career and learning opportunities for researchers, students, associates and staff.

OUR PARTNERSHIPS AND AFFILIATIONS

Our researchers work side-by-side with doctors, academics and researchers from some of Australia’s most esteemed universities and hospitals.

In 2023 we changed our primary affiliation from the University of Sydney to Macquarie Univesrity . We also have strong partnerships with University of Technology Sydney and University of NSW.

The Woolcock is a member of Sydney Research, a cooperative alliance between 11 leading medical research institutes, Sydney Local Health District and The University of Sydney. We are also a member of the advanced health research and translational centre, Sydney Health Partners.

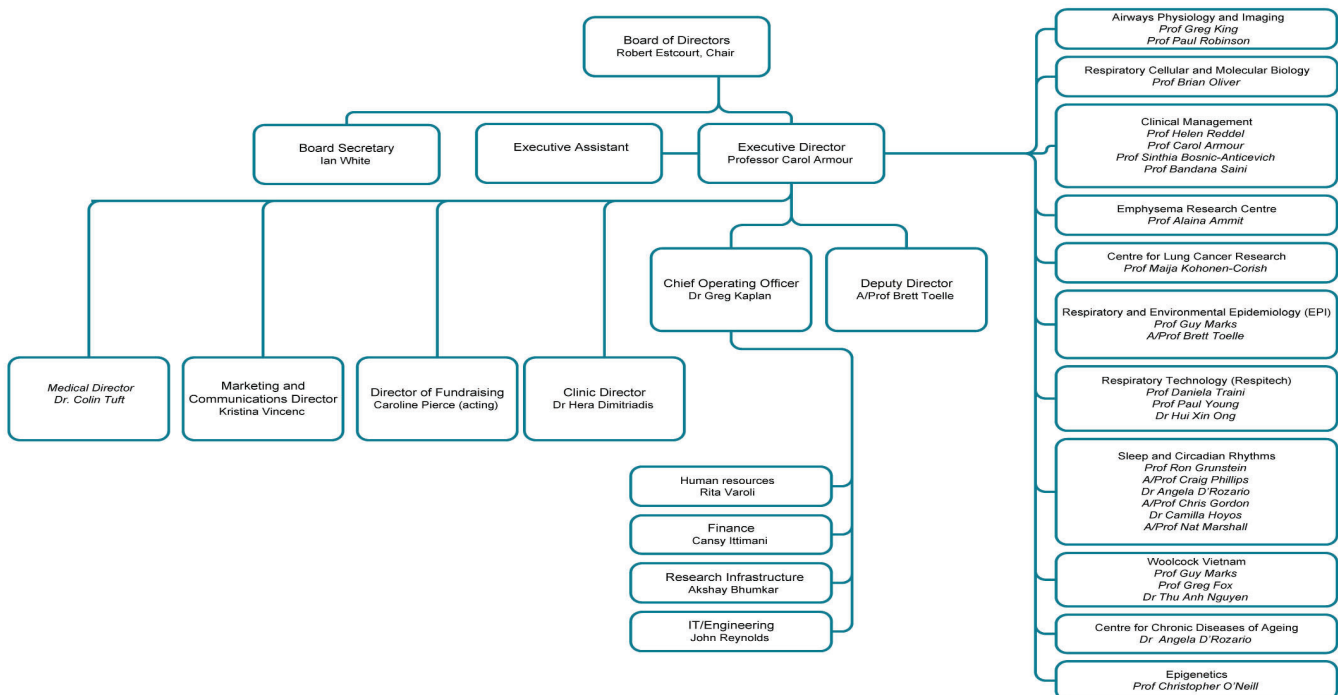
The Woolcock has strong affiliations with the National Lung Hospital in Hanoi, Vietnam and several other major health districts, healthcare provider networks, professional bodies, commercial companies and research-funding organisations.

In addition, the Woolcock’s scientists and clinicians collaborate with colleagues across Australia, Asia, Europe and North America.

KEY PRIORITIES

- Strengthening our world-class position by broadening and deepening our range of research into sleep and respiratory disorders
- Building on progress with lung cancer and emphysema initiatives to change the life of patients
- Expanding the work of the clinics and improve the patient voice
- Establishing a new physical home for the Woolcock
- Developing a program for recruitment of PhD students
- Increasing the contribution of philanthropy to the Woolcock’s sustainability and success
- Improving our profile by increasing our media and social media presence
- Establishing new clinical research networks in NSW, nationally and internationally
- Exploring ways to build our impact in Asia, particularly in Vietnam

OUR ORGANISATION



BOARD CHAIR'S REPORT

ROBERT ESTCOURT, AM



The past two years have been an extremely busy and momentous time for the Woolcock Institute of Medical Research. They started with the work to restore all research and clinical services to pre-COVID19 pandemic levels. With that under way, complete attention turned to ensuring the long-term future of the Woolcock.

These were huge tasks, but the extraordinary efforts of Professor Carol Armour, supported by her management team and all at the Woolcock, have ensured the activities of the Woolcock did not miss a beat. Rather, they have entered into new areas of research. So I can confirm that despite all the stress and disruption of the past few years, the Woolcock has remained true to its vision of creating a better life for people living with respiratory conditions and sleep disorders, and maintained its pre-eminent position as a global leader of research in its chosen fields.

With the restoration of more normal working activities, it was necessary for the Board and senior management to consider the long-term future of the Woolcock. This was in the light of the University of Sydney selling our Glebe building which necessitated us looking for a new home and possibly a new affiliation.

A number of alternatives were considered before we entered into conversations with Macquarie University. These discussions quickly led us to believe that moving our affiliation to Macquarie University and our activities to that campus were a viable alternative. But it did take a year of discussions before final agreements were entered into. It was a lot of work, with many different people being involved at various times. On the Woolcock side, special mention and thanks to Professor Armour, Julie Osborne and Simon Blackburn for their work and contribution. On the Macquarie University side, I must in particular thank the Macquarie University Vice-Chancellor Professor Bruce Dowton, Professor Patrick McNeil, Deputy Vice-Chancellor Medicine and Health and Professor Sakkie Pretorius, Deputy Vice-Chancellor Research, for their approach to our negotiations. Their patience and consideration solved all problems and made us feel really welcome.

The next major task was the huge project of organising and implementing the physical move to our new premises on Macquarie University campus. Once again, the organisation and responsibility fell primarily on

Professor Armour's shoulders. She rose magnificently to the task. She was supported by an excellent team which included Akshay Bhumkar (Facilities Manager) and Associate Professor Brett Toelle (Deputy Executive Director). They did an incredible job, but I must also thank Macquarie University and the builders for the wonderful work that they have done in developing our superb world-class facilities. It is a testimony to the success and dedication of everybody involved that while the move took months of planning, when it came to implementation, the Woolcock was up and running again within a week of closing at Glebe.

The Board had one further task, finding a successor to the wonderful leadership of Professor Carol Armour. Carol has led and built the Woolcock through difficult times, in difficult circumstances. I do not know of anyone else who could have achieved what she has. The survival and now attractive future of the Woolcock is a wonderful legacy. Unsurprisingly, the search for a successor was not easy and took time. Thankfully, it was successful and Professor Paul Foster from the Hunter Medical Research Institute will assume the role of Executive Director in August 2024. With a new affiliation agreement, new facilities and new leadership, the Woolcock can look to the future with confidence.

To this positive mix can be added the knowledge of the friends and supporters that the Woolcock already has. This starts with Macquarie University who have made the Woolcock so welcome, but it also includes the Federal and State governments, the University of Sydney, with whom we have worked for more than 40 years and continue to have an ongoing relationship with, and, UTS, UNSW, Sydney Local Health District, other Local Health Districts, Sydney Health Partners, Perpetual Limited and all our wonderful donors. Without all your support we would not exist, my thanks to all concerned.

This is my last report as I will stand down as Chair later in the year, with Julie Osborne taking over in October. Although I will stay on the Board. So to all my colleagues currently on the Board and those who have served with me but are no longer on the Board, I would like to thank you for your voluntary service to the Woolcock and for your support of me as Chair. All of my Board colleagues have shown exceptional dedication to the job required.

Finally, my thanks go to Professor Carol Armour for the years we have worked together. I have found them very rewarding. And my thanks also to all those who work at the Woolcock. It is a privilege to be associated with them. I, the Board and whole community cannot thank them enough for their dedication and work.

EXECUTIVE DIRECTOR'S REPORT

PROFESSOR CAROL ARMOUR, AM



The Woolcock Institute of Medical Research has undergone a major transformation in 2022 and 2023. After so many years primarily affiliated with the University of Sydney, our premises were sold by the University. We have been extremely fortunate to enact a new primary affiliation with Macquarie University. As part of this, a detailed refurbishment of a building

on the Macquarie University campus was undertaken.

The refurbishment and upgrade project will facilitate closer ties between the Woolcock and Macquarie University's integrated medical research, teaching and clinical hub, MQ Health, providing joint opportunities for multidisciplinary research from basic discovery through to innovations in clinical practice, leading to better outcomes for patients.

Many of our research leaders commenced or continued their fellowships in 2022 and 2023, Macquarie University has become a partner in their support and success. Working with our new partners at Macquarie has been a really pleasant and helpful experience. The Board Chair has already thanked the Vice Chancellor and Deputy Vice Chancellors, as do I, however Professor Patrick McNeil, in particular, not only made our negotiations about a new affiliation very straightforward and beneficial for both parties but also guided and helped me through a range of issues that needed to be addressed as we moved our affiliation and location. I am very grateful for his help.

We have been involved with the refurbishment at every stage so that our world-class research can be facilitated and we can build on our substantial achievements. So, despite the upheaval of packing up a building after 15 years and transferring to a new location, our research continues to be world leading.

We were extremely proud to announce that seven of our current Research Leaders have been listed in the world's top two percent according to leading scientific publisher Elsevier's recent ranking of the world's most cited researchers. It's well-deserved recognition of years of work to improve the lives of people living with sleep disorders and respiratory disease.

The Centre for Chronic Diseases of Ageing has now commenced its first clinical trial with philanthropic funding from the Ernest Heine Foundation and a

private donor. The trial is investigating the early markers of cognitive impairment and dementia risk in people with chronic diseases of ageing. The Centre is funded for three years and will work on the discovery of new approaches for early diagnosis and treatment of age-related sleep and respiratory disorders associated with cognitive decline and translate those discoveries into world-best clinical practice.

The Lung Cancer Research Network held a successful symposium which included researchers working on all aspects on lung cancer. The exciting news is that lung cancer screening will be available in future, potentially reducing mortality rates for all Australians.

Please read further in this document to hear highlights from each research group and to look at the rich collection of publications led by our Research Leaders and produced at the Woolcock. This collection will inform you of the research questions we are tackling.

Our external associations with our partners are valued and result in research collaboration for mutual benefit. UNSW and UTS are valued partners as is the Sydney Local Health District. We have a new and changed relationship with the University of Sydney which will enable future research. This includes their development of the Sydney Vietnam Institute which will be responsible for much of the work in Vietnam that we previously managed. All the researchers involved have been supported during this transition.

Our sleep and respiratory clinic continued to provide this essential service to the community during 2022 and 2023. We are proud of the team who not only support our valued patients but also our groundbreaking research and research translation.

Finally this is my last report as I leave the Woolcock in 2024. I have been so lucky to work with researchers who are at the forefront of their field and continue to push hard for new discoveries to make life better for people suffering with respiratory and sleep disorders. It has been a very stimulating experience and I will treasure this as I move to the next challenge. I wish my successor, Professor Paul Foster success as he takes the Woolcock to new heights. Paul will be ably supported by some very special people. Akshay Bhumkar and Associate Professor Brett Toelle, who guided us as we moved to a new location where our research can thrive. Dr Greg Kaplan, our COO, who made sure all our operations continued during major upheaval. The operational, communications, clinic and sleep staff who all worked under challenging conditions during the transition. All of you are special people who have secured a bright future for the Woolcock.

RESEARCH LEADERS



DISTINGUISHED PROFESSOR ALAINA AMMIT

Distinguished Professor Alaina Ammit is a biomedical scientist with an international reputation for her research elucidating the mechanistic basis of inflammation in respiratory diseases. In 2016, she was recruited to the Woolcock Institute of Medical Research as the Director of the Woolcock Emphysema Centre in collaboration with UTS where she has a continuing research-intensive role as Professor of Respiratory Pharmacology. Distinguished Professor Ammit has earned an international reputation for her research, demonstrated by > 115 publications with citations > 4,800, a h-index of 35, and a career total of > \$10 million from a range of funding bodies (including NH&MRC, ARC and infrastructure and equipment grant funders) and has attracted ~ \$3 million in philanthropic funding. Alaina has served as Associate Dean (Research) in the Faculty of Science at UTS since 2018 and was appointed Distinguished Professor in 2022. She has demonstrated research leadership through national and international research contributions and high-level engagement with the research community and the peak societies. Her current appointments include ARC Medical Research Advisory Group and NHMRC Grant Review Panel membership.



PROFESSOR CAROL ARMOUR AM

Professor Carol Armour is the Executive Director of the Woolcock Institute of Medical Research. She has worked in asthma research at a basic scientific and clinical level. Her investigations span the breadth of asthma research from the cellular mechanisms to the translation of new ways to treat asthma within the health system. She is on the Australian Respiratory Council, The National Asthma Council and has chaired the National Asthma Monitoring Advisory Committee, worked on the National Therapeutic Guidelines and the Australian Medicines Handbook. From 2003 to 2006 she was a member of the NHMRC Research Committee and was the Chair of the Training Awards Committee. She was Pro Vice Chancellor, Research, at The University of Sydney, from 2006 to 2009. In 2005, she was made a Fellow of the Pharmaceutical Society for her services to the profession and awarded the Australasian Pharmaceutical Science Association (APSA) medal for research in 2007. She was made a Payne-Scott Professor by The University of Sydney in 2018. She is the Executive Director of the Woolcock Institute of Medical Research. She was made a Member of the Order of Australia for significant services to medical education in the 2019 Honours list. In 2020, she was awarded the prestigious Eureka Prize for Outstanding Mentor of Young Researchers, in recognition of her lifelong passion for mentoring and career development of staff and students.



PROFESSOR SINTHIA BOSNIC-ANTICEVICH

Professor Bosnic-Anticevich is a medical researcher and respiratory pharmacist internationally recognised as an expert in respiratory medicines use. She is founder and Head of the Quality Use of Respiratory Medicines Group at the Woolcock Institute of Medical Research. Professor Anticevich's research has led to the development of the "gold standards" in the use of inhalers, impacting on national and international treatment guidelines for asthma, COPD and allergic rhinitis. Her research with different patient populations, health care professionals and health care settings is key to our understanding of how to optimise the use of respiratory medicines for improved health outcomes. In collaboration with her network of multidisciplinary, global collaborators, Synthia has over 200 research publications, has been awarded over \$20m in research funding, and has a reputation for her innovative and a pragmatic approach to solving health care problems associated with medicines use. Professor Anticevich is President of the Respiratory Effectiveness Group (REG), Executive Director of ARIA (Allergic Rhinitis in Asthma), Chair of Pharmacy ARIA, and Chair of the Primary Care SIG of the Thoracic Society of Australia and New Zealand. She sits on several global pharmaceutical industry advisory boards associated with the use of medicines in the management of respiratory diseases and continues to mentor clinicians and research students.



DR ANGELA D'ROZARIO

Dr Angela D'Rozario is an NHMRC Emerging Leadership Fellow and Senior Lecturer, School of Psychological Sciences, Macquarie University. She is also a Research Leader, Sleep and Circadian Research Group and Director of the Centre for Chronic Disease of Ageing at the Woolcock Institute. She established and heads a world-class high-density electroencephalography (EEG) facility for sleep neuroscience research. Dr D'Rozario is a Chief Investigator on the NHMRC Centre of Research Excellence to Optimise Sleep in Brain Ageing and Neurodegeneration (CogSleep CRE, 2019-23) where she leads the EEG Biomarker Discovery Program. She was awarded an NHMRC-ARC Dementia Research Development Fellowship (2016-20) and a NHMRC EL2 Investigator Grant (2022-26) to investigate links between abnormal brain activity during sleep and cognitive impairment, and to improve cognitive outcomes through targeted sleep interventions in adults at risk for dementia. She trained as a sleep technologist at St Thomas' Hospital (London, UK), and later commenced her PhD in Sleep Medicine at The University of Sydney. She was a recipient of the prestigious NHMRC Dora Lush Priority PhD Scholarship to examine novel brain biomarkers of cognitive dysfunction and sleepiness in obstructive sleep apnea and received the Helen Bearpark Memorial Scholarship from the Australasian Sleep Association (ASA), the peak national body for sleep health and sleep medicine. She is an active member of the ASA Research Committee and serves on the Board of the Australia and New Zealand Sleep Science Association.



PROFESSOR GREG FOX

Professor Greg Fox is a Pulmonologist and Epidemiologist from the Woolcock Institute of Medical Research and The University of Sydney. His research primarily focuses upon active case-finding for tuberculosis (TB), control of drug-resistant TB and the use of technology to enhance TB control. He lived in Vietnam for four years, during which time he helped to establish a multi-centre, randomised, controlled trial of contact investigation for TB. He subsequently completed a post-doctoral fellowship at McGill University in Canada. Professor Fox collaborates closely with the Vietnam National TB Program to undertake multi-centre studies focused upon strengthening global TB control policies. He leads the V-QUIN MDR-Trial, a clinical trial evaluating the effectiveness of levofloxacin to treat latent TB infection among contacts of patients with MDR-TB, in partnership with the Vietnam National TB Program.



ASSOCIATE PROFESSOR CHRISTOPHER GORDON

Associate Professor Christopher Gordon is a Research Leader of Insomnia and Chronobiology in the Sleep and Circadian Research Group at the Woolcock Institute of Medical Research and a nurse academic in the Department of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University. He leads a multidisciplinary Insomnia research program focusing on understanding the pathophysiology of Insomnia and developing and conducting randomised controlled trials of new digital insomnia therapies and non-pharmacological chronotherapies for treatment of circadian rhythm disruptions. Associate Professor Gordon worked as clinical nurse specialist for 11 years in Intensive Care at Royal Prince Alfred Hospital. He completed his PhD in 2010 examining thermal and cardiovascular mechanistic physiology. He has developed the largest insomnia database in Australia with the most comprehensive collection of clinical, psychophysiological and treatment measures. He also has extensive experience in fostering and developing industry-academic partnerships across a range of research areas.



PROFESSOR RON GRUNSTEIN AM

Professor Ron Grunstein has been a consultant physician in sleep disorders for more than 30 years and a pioneer in improving patient care in sleep medicine in Australia and internationally. He currently holds an Investigator Leadership Level 3 award from the National Health and Medical Research Council (NHMRC's highest level research appointment). Ron is a Senior Staff Specialist at Royal Prince Alfred Hospital and Professor of Sleep Medicine at the University of Sydney. He heads the Sleep and Circadian Research Group at the Woolcock Institute and was Chief Investigator A on three successive NHMRC Centres of Research Excellence (2004-2018). Professor Grunstein served as President of the World Sleep Federation (2007-2011), the roof body for sleep researchers and clinicians internationally organising successful world congresses in Cairns and Kyoto. He was awarded the Australasian Sleep Association Distinguished Achievement Award in 2010; the Kleitman Award, the premier award of the American Academy of Sleep Medicine in 2011; and the Royal Prince Alfred Foundation Medal for Excellence in Medical Research in 2012. In 2014, he received the Distinguished Professor Award from the Sydney Medical School. Professor Grunstein was named a Fellow of the Australian Academy of Health and Medical Sciences in October 2021, and Fellow of the Thoracic Society of Australia and New Zealand in April 2022. Professor Grunstein is the most published sleep researcher in Australia with more than 414 publications (including book chapters). He has a Bachelor of Medicine and Surgery and MD degrees from The University of Sydney and a PhD from the University of Gothenburg in Sweden. He was made a Member of the Order of Australia for significant services to medical research and education in the 2019 Honours list.



DR CAMILLA HOYOS

Dr Camilla Hoyos graduated is a Research Leader within the Centre for Sleep and Chronobiology at the Woolcock Institute of Medical Research and is a National Heart Foundation Future Leader Fellow within the Faculty of Medicine, Health and Human Sciences at the Macquarie University. Dr Hoyos is passionate about generating new knowledge on how sleep disorders, insufficient sleep and poorly timed sleep impact on health. Her work is determining whether reversing sleep problems with various therapies leads to reduced risk and impact of diabetes, heart disease and dementia. Dr Hoyos has worked in clinical research for 20 years beginning as a clinical trial co-ordinator, and later clinical trial manager, at the Woolcock Institute of Medical Research, from 2002-2009. She then completed her PhD focusing on understanding whether treating sleep apnea reduced body fat and insulin resistance, both important risk factors for the development of diabetes in 2012. Her current research focusses on further understanding the role disturbed sleep and metabolic dysfunction in cognitive decline and investigating new interventions which target disturbed sleep before cognitive decline begins.



PROFESSOR GREG KING

Professor King is a clinician-researcher at the Woolcock Institute of Medical Research. He is the research leader of the Airway Physiology and Imaging Group at the Woolcock, and is staff specialist in the Department of Respiratory Medicine at Royal North Shore Hospital, where he directs the asthma service and is the Medical Director of the Respiratory Investigation Unit. He is a member of the American Thoracic Society, the American Physiological Society, Thoracic Society of Australia and New Zealand and Asia Pacific Society of Respiriology. He has served on committees of the ATS Structure and Function Assembly, National and NSW bodies of the TSANZ, and Grant Review Panels of the National Health & Medical Research Council and Health Research Council of NZ. He is currently the Chair of the Programming Committee of the Respiratory Structure and Function Assembly of the ATS. He is past President of the NSW Branch of the TSANZ. His current research interests include the pathophysiology of asthma, chronic obstructive pulmonary disease, bronchiolitis in haemopoietic stem cell transplantation, cystic fibrosis and airway hyperresponsiveness. He and his group have particular expertise in complex measurements using 3-dimensional lung imaging (including SPECT, CT and MRI), complex lung function tests (including forced oscillation technique and multiple breath nitrogen washout), and time-series analysis of variations in respiratory function.



PROFESSOR MAIJA KOHONEN-CORISH

Professor Maija Kohonen-Corish is a Research Leader at the Woolcock Institute of Medical Research and Professor at Macquarie University. She was appointed head of the Woolcock Centre for Lung Cancer in 2019. She leads the Lung Cancer Network and a research program on harnessing the microbiome in the treatment of lung cancer, in collaboration with Microbiome Research Centre UNSW, Chris O'Brien Lifehouse, Royal Prince Alfred and other hospitals. Professor Kohonen-Corish completed a BSc and MSc at the University of Helsinki in Finland, followed by a PhD at John Curtin School of Medical Research in Canberra. There she established one of the first laboratories in Australia to identify inherited gene defects in Lynch Syndrome. Subsequently, she was a Cancer Institute NSW Fellow and the head of lung and colon cancer research at the Garvan Institute of Medical Research until 2017. Professor Kohonen-Corish is a Human Genetics Society of Australasia-certified molecular geneticist (MHGSA) with a track record of discovery in basic and translational research in lung and colorectal cancer. Her team has identified new biomarkers of prognosis and therapeutic responsiveness, which have improved the clinical management of patients. She is a member of the Variant Interpretation Committee of the International Society for Gastrointestinal Hereditary Tumours, which produces international guidelines on how to interpret the pathogenicity of Lynch Syndrome gene variants.



PROFESSOR GUY MARKS

Professor Guy Marks is a respiratory and public health physician and environmental epidemiologist. His main research interests are in chronic respiratory disease (asthma and COPD), tuberculosis and the adverse health effects of exposure to air pollution. He is Scientia Professor in the School of Clinical Medicine, Discipline of Medicine, South Western Sydney Campus at UNSW Sydney and a physician in the Department of Respiratory Medicine at Liverpool Hospital. He is currently an NHMRC Senior Principal Research Fellow. He is head of the Respiratory and Environmental Epidemiology group at the Woolcock Institute of Medical Research, co-leader of Woolcock Vietnam, and an Honorary Professor at The University of Sydney (Sydney Medical School). His other major role is as President (and interim Executive Director) of the International Union Against Tuberculosis and Lung Disease (The Union). In 2020 Professor Marks was elected to Fellowship of the Australian Academy of Health and Medical Sciences. In 2022 he was awarded an Officer of the Order of Australia (AO) for distinguished service to respiratory medicine and research, and to tertiary education.



ASSOCIATE PROFESSOR NATHANIEL MARSHALL

Associate Professor Nathaniel Marshall is a clinical trialist and epidemiologist specialising in sleep and sleep disorders at the Woolcock Institute for Medical Research and Macquarie University. He uses a wide variety of epidemiological research methods and designs, including randomised controlled trials and population-based cohorts, including the Busselton Health Study. With his colleagues, he is attempting to measure the impact of disease, the effectiveness of a variety of treatments, and investigate health system activity related to sleep. He provides high-quality evidence-based information of direct and immediate utility to both practicing clinicians and policy-makers. Associate Professor Marshall has over 15 years' practical experience in designing, running, analysing, reporting and reviewing both pharmacological and non-pharmacological studies in sleep medicine. He has undergraduate degrees in psychology and accounting and a postgraduate diploma in health sciences from the University of Otago. His PhD in public health focused on clinical trials and related methodology (Massey University in New Zealand). Associate Professor Marshall is a Deputy Editor of the Journal of Sleep Research, an Associate Editor of the journal SLEEP and serves on the Editorial Boards of the European Respiratory Journal and Sleep Health.



DISTINGUISHED PROFESSOR BRIAN OLIVER

Distinguished Professor Oliver is a translational researcher whose research programs span basic to clinical research. His scientific training began at the National Heart and Lung Institute, UK, with Professor Peter Barnes. He then had further training in respiratory virology at Professor Sebastian Johnston's laboratory at Imperial College, UK before commencing his PhD (awarded in 2005) at The University of Sydney (supervised by Professor Judith Black). He leads a productive team of researchers investigating the pathophysiology of respiratory diseases with a particular emphasis on understanding why people have respiratory diseases and, when people have a respiratory disease, what makes their disease worse. He is head of the Respiratory Cellular and Molecular Biology Group at the Woolcock Institute of Medical Research, co-director of the Respiratory, Sleep, Environmental and Occupational Health Clinical academic group of SPHERE, immediate past president of the TSANZ NSW branch, and Associate Head of School (Research) at the University of Technology Sydney, in the School of Life Sciences.



PROFESSOR CHRIS O'NEILL

Professor Chris O'Neill is a physiologist by training. He received his PhD from the University of Newcastle (NSW). After undertaking brief post-doctoral training posts in the School of Veterinary Science, University of Sydney and the Institute of Zoology, London, he took on the direction of the Human Reproduction Unit at Royal North Shore Hospital, Sydney. There, he pioneered many of the current techniques in assisted reproductive technologies and developed one of the world's leading treatment centres for infertility. He was until recently the Professor for Reproductive and Developmental Medicine at the University of Sydney, and Head of the Centre for Regenerative and Developmental Medicine within the Kolling Institute for Medical Research. He is Professor of Epigenetics within the School of Life Sciences at the University of Technology, Sydney, and is a member of the Charles Perkins Centre. His current research focusses on the impacts that the intrauterine environment experienced by the embryo and foetus have on an individual's whole-of-life health trajectory. In particular, he studies how these events change the pattern of expression of genes that influence the predisposition of individuals to developing chronic diseases, including respiratory, cardiac, and metabolic diseases. Professor O'Neill has held generous continuous competitive research funding throughout his career, and has a record of extensive collaboration with industry, philanthropic and advocacy groups. He has held many consultative and advisory posts with government agencies and industry and is a Fellow of the Society for Reproductive Biology.



DR HUI XIN ONG

Dr Hui Xin Ong holds a Bachelor of Pharmacy (Hons) and a PhD in Pharmaceutical Science from The University of Sydney. Her research is focused on developing pharmaceutical and medical device technologies that can be used for the treatment of respiratory and infectious diseases, and methodological platforms that can help promote the translation of new discoveries to clinical practice. Dr Ong's expertise lies in the study of the dynamic interactions between the different biological barriers in the respiratory tract and aerosol particles in a representative manner that captures the true nature of aerosol interactions in the lung. Her research is currently a blend of basic, applied and clinical disciplines. Dr Ong's work with diverse renowned experts from academia and industry partners has led to the development of various state-of-the-art pharmaceutical formulations and an outstanding publication record in leading journals in the field. In 2014, she was awarded the prestigious European Respiratory Society-European Lung Foundation Fellow to work at the University of Southampton (UK). As an emerging leader in the field, she has secured approximately \$3 million for research projects, infrastructure and education with competitive national and international grants since 2015. Dr Ong's well-rounded experience in industry-focused research and education, applied and clinical research aims to translate her research into commercial outcomes that will benefit the healthcare sector and community.



ASSOCIATE PROFESSOR CRAIG PHILLIPS

Associate Professor Craig Phillips (Macquarie University - Faculty of Medicine, Health and Human Sciences, Macquarie Medical School) is an NHMRC Research Fellow at the Woolcock Institute of Medical Research. Most of his research has focussed on understanding how obstructive sleep apnea (OSA) treatment impacts cardio-metabolic health using rigorously-designed randomised controlled trials. New clinical trial work is focussing on weight loss as an alternative treatment for OSA and whether CPAP treatment reduces the risk for Type 2 diabetes. Other mechanistic studies are exploring how OSA impacts brain vascular function and cognition. A new NHMRC-funded study is also exploring how OSA might inhibit the clearance from the brain of toxic waste products that cause dementia. Associate Professor Phillips is ranked in the top 0.081% of authors globally, for expertise in OSA, based on the quality of his papers since 2010 (Expertscape.com). In other work, he was the first in the world to evaluate the impact of OSA on arterial stiffness and with other collaborators, the first to use a CPAP withdrawal paradigm to better understand the health consequences of OSA and the first to explore pharmacological weight loss in OSA.



PROFESSOR HELEN REDDEL AM

Professor Reddel is a Research Leader at the Woolcock Institute of Medical Research, Macquarie University, Director of the Australian Centre for Airways disease Monitoring (ACAM), and a respiratory physician at Royal Prince Alfred Hospital in Sydney. She is a Professor in the Faculty of Medicine, Health and Human Sciences at Macquarie University and an Adjunct Professor in the Sydney School of Public Health, Faculty of Medicine and Health at The University of Sydney. As Chair of the Global Initiative for Asthma (GINA) Science Committee, Professor Reddel has led major evidence-based changes in clinical recommendations for asthma management, with a strong focus on making guidelines not only evidence-based, but also patient-centred and practical. Professor Reddel's current research includes population monitoring of asthma and COPD, a large multinational observational study investigating features and underlying mechanisms of airways disease, and qualitative research about patient perspectives in mild and severe asthma.



CONJOINT PROFESSOR PAUL ROBINSON

Conjoint Professor Paul Robinson is a clinician-researcher and Research Leader within the Airway Physiology and Imaging Group. He is the Deputy Director of the Children's Health Environment Program within the Child Health Research Centre (CHRC) at the University of Queensland and Senior Staff Specialist in Respiratory and Sleep Medicine at the Queensland Children's Hospital in Brisbane. He is a medical graduate of Manchester University, England and completed his Respiratory and Sleep medicine training at the Children's Hospital at Westmead, Sydney. His PhD, awarded by the University of Sydney focused on the "Utility of Peripheral Lung Function Tests in Paediatric Respiratory Disease". His current research is on the role of peripheral airway function tests – specifically multiple breath washout and oscillometry – in early lung disease detection and ongoing monitoring of established disease. His work focuses on important obstructive lung diseases and understanding the impacts of environmental exposures. These tests have been adapted for use outside hospital settings to enable field studies examining the impact of air pollution, strategies to address important health inequities in indigenous populations and the development of a parent-supervised remote monitoring strategy for asthma. Conjoint Professor Robinson has led the development and standardisation of novel measures of lung function across the entire ranges from infancy onwards, facilitating the development of commercial equipment available for widespread use. His standing as and international expert, both in terms of clinical and research experience, has led to broader leadership roles at national and international levels.



PROFESSOR BANDANA SAINI

Professor Bandana Saini's expertise lies in the implementation of clinical practice models focussed on respiratory and sleep health within Australian primary care. She has led and collaborated in implementing and evaluating several successful community pharmacy-based service trials in projects involving: screening/case detection; patient self-management support; clinical audits; pharmacovigilance; pharmacy education; as well as community health education program research. Her skills include trial design and implementation, stakeholder engagement, pedagogical inquiry, and qualitative methodologies. Her research provides a link between public health and health economic concepts as well as clinical aspects of community pharmacy roles in chronic respiratory/sleep disorders. She is currently the Chair of the Medicines Committee of the Australasian Sleep Association (ASA), a member of the ASA's Clinical Committee, on the Pharmacists Advisory Group (National Asthma Council) and the Primary Care Advisory Committee (Lung Health Foundation).



ASSOCIATE PROFESSOR BRETT TOELLE

Associate Professor Brett Toelle is the Deputy Director of the Woolcock Institute of Medical Research. He is also a Principal Research Fellow working within the Respiratory and Environmental Epidemiology Group. For over 30 years he has been involved in the population studies of lung disease which have included studies of pre-school children, schoolchildren, twins, community based adults and occupational work groups. His recent work has focussed on asthma as the participants in the Childhood Asthma Prevention Study (CAPS) transition through puberty and on COPD as part of the Australian Burden of Lung Disease (BOLD) project of adults aged 40+ years from six sites around the country. He is also a psychologist and undertook a PhD investigating "Factors associated with non-adherence to prescribed asthma medication". During his psychology internship he worked with psychologists in the sleep research group and clinicians at the Royal Prince Alfred Insomnia Clinic.



PROFESSOR DANIELA TRAINI

Professor Daniela Traini is a Professor in Respiratory Science and NHMRC Investigator (2020-2024) at the Faculty of Medicine, Health and Human Sciences (Department of Biomedical Sciences), Macquarie University, based at the Respiratory Technology Group, Woolcock Institute of Medical Research. She is an international leader in pulmonary drug delivery and her research portfolio covers all areas of respiratory research, from bench to bedside. Professor Traini leads the Respiratory Technology group at the Woolcock Institute of Medical Research and works in collaboration with Professor Young. Professor Traini has over 20 years of experience in inhalation drug development, with a focus on particle engineering and drug delivery. She completed her PhD in Pharmaceutics in 2005 and has since led a research team at the University of Sydney (2005-2021) and at Macquarie University since 2021. She has published over 200 full peer-reviewed manuscripts, has six patents and has attracted more than \$12m in competitive funding.



PROFESSOR PAUL YOUNG

Professor Paul Young is Respiratory Technology Research Leader at the Woolcock Medical Research Institute and has over 25 years' experience in the area of respiratory product characterisation, formulation, development and commercialisation. Additionally, he is Professor of Commercialisation at Macquarie Business School, where he specialises in commercialisation, entrepreneurship, pharmaceutical, MedTech and deep-tech business creation. He has held academic roles as the Inaugural Chair of commercialisation at the University of Sydney and Deputy Executive Director of the Woolcock Institute of Medical Research. Professor Young is on the Executive Board of Accelerating Australia, a Director of Biodesign.Sydney and co-director of Sydney SPARK, two multidisciplinary training programs that support the development of innovative medical devices and therapeutics. He has established, or is on the board of directors of, numerous small-medium enterprises, including Nanopharm UK Ltd, OzUK Ltd and Pivot Innovations (Director 2021-). Paul is Chief Executive officer of Ab Initio Pharma Pty Ltd, a pharmaceutical research and development company specialising in the formulation and good manufacturing practice (GMP) production of pharmaceutical products in Australia.

DISTINGUISHED ALUMNI



PROFESSOR SANDRA ANDERSON AM

Professor Sandra Anderson is a world-renowned respiratory scientist. Her research passions lie in the areas of exercise-induced asthma, mucociliary clearance and innovative therapies. The culmination of Professor Anderson's passion for science has led to a diagnostic product and formulations for the treatment of Cystic Fibrosis (CF) and non-CF bronchiectasis. In honour of Professor Anderson's commitment to the field, she has received numerous awards. Her commitment to science, mentorship, collaboration and engaging people to undertake robust and translational science is a key driver for people at the Woolcock Institute of Medical Research and we are proud to have her as a Woolcock Distinguished Alumna.



PROFESSOR MARIE BASHIR AD

Professor Marie Bashir has invested time and energy in the Woolcock Institute of Medical Research over many years. As a medical practitioner herself, she supports the Woolcock model of care for respiratory and sleep patients as well as investigation of their disease in order to improve their lives. Professor Bashir has supported our international visitors, attended all our alumni events and donated her time to support the Woolcock. In 2013, the Woolcock leaders and supporters enjoyed her hospitality at Government House. On every occasion, when asked for help, she has been willing to give of herself. She is a warm and generous supporter and we thank her for all she has done.



EMERITUS PROFESSOR NORBERT BEREND AM

Professor Norbert Berend retired from his Chair of Thoracic Medicine and as Director of the Woolcock Institute of Medical Research on 30 June 2012. Professor Berend led the Woolcock through a time of great change, had oversight of the negotiations to house the Woolcock in one building, sought funding and achieved the dream. At the time he became Director, the Woolcock had fewer than 20 employees in temporary homes on the University and RPA Hospital grounds. In 2012, the Woolcock had more than 150 employees and associate staff and 55 postgraduate students working in a state-of-the-art research institute. During this period, he also led the development of respiratory research within the Asia-Pacific. Professor Berend made us what we are today.



PROFESSOR EMERITA JUDY BLACK AO

Professor Judy Black's leadership and research achievements in the field of airway smooth muscle, her role in the career development of the next generation of research leaders and her outstanding service have been a model for all of us. Professor Black has changed the thinking around the role of the airway smooth muscle in asthma. Leading by example and generously helping others to achieve success in their careers, Professor Black has been instrumental in fostering a unique environment within the Woolcock Institute of Medical Research. She has encouraged a culture of giving back and helping others to succeed. She has created a legacy that will foster success within the biomedical research community for years to come. Professor Black is unique and very special to us here at the Woolcock.



PROFESSOR RUTHVEN BLACKBURN AO

Professor Ruthven Blackburn had the vision to see that Sydney needed a clinical research institute – preferably associated with The University of Sydney. At the time there was very little research being undertaken in respiratory medicine. A group of like-minded individuals led by him and Professor Ann Woolcock started the Institute of Respiratory Medicine. From there, the Woolcock Institute of Medical Research started to nurture national and international stars and his vision and leadership has led to its existence today. The Woolcock remains extremely grateful to Professor Blackburn and his passing is mourned by the many in the Woolcock who knew him.



PROFESSOR JEFFREY DRAZEN

Professor Drazen, M.D. is a senior physician at the Brigham and Women's Hospital, Distinguished Parker B. Francis Professor of Medicine at Harvard Medical School, Professor of Physiology at the Harvard School of Public Health, and Adjunct Professor of Medicine at the Boston University School of Medicine. Professor Drazen has been the editor-in-chief of the New England Journal of Medicine since July of 2000. A specialist in pulmonology, Professor Drazen maintains an active research program and has published hundreds of articles on topics such as lung physiology and the mechanisms involved in asthma. His research has had a profound influence on the treatment of asthma. Professor Drazen has been a powerful supporter of the Woolcock Institute of Medical Research. On previous visits to Australia, he has worked with our Board to talk to senior politicians at the State and Federal level – the result of which was infrastructure funding for us which has given us our world-class edge. At every visit, he is happy to talk about the way respiratory research from the Woolcock is featured at the New England Journal. We welcome Professor Drazen as a member of our distinguished alumni and thank him for his ongoing contribution to respiratory research.



PROFESSOR CHRISTINE JENKINS AM

Professor Christine Jenkins worked tirelessly with the other research leaders as a team and led them as they considered their strategy at a time of great change. Professor Jenkins ran the education program for the Woolcock Institute of Medical Research especially the Think Tank program which has considerably enriched our research and scientific interchange, as well as the professional development program for healthcare practitioners. Internationally-renowned speakers were invited to the Woolcock and the facilitation of interaction with research leaders has been highly productive. Her guidance has led to new research directions, collaborations and grants.



PROFESSOR CHERYL SALOME

Professor Cheryl Salome has had more than 25 years' experience in respiratory research, particularly in the causes and mechanisms of asthma. Professor Salome worked very closely with Professor Ann Woolcock during her career and was responsible for leading and facilitating epidemiology, cell biology and lung physiology. Professor Salome nurtured the lung physiology group, recruited PhD students, had oversight of all projects, made sure the research experience was a valuable one and then mentored these rising stars until they became independent research leaders. Her students have gone on to lead the world in lung physiology. Meanwhile, never one to step into the limelight, Professor Salome worked at the Woolcock Institute of Medical Research facilitating the Friday research seminars, the Think Tank and continued to write manuscripts and successful grant applications which changed the way we think about airway disease. Professor Salome was and continues to be a star at the Woolcock.



PROFESSOR PAUL SEALE AM

Over the years Professor Paul Seale nurtured many of us, provided advice when asked, opened doors and facilitated pathways to success. He was involved in a multitude of clinical trials and fostered the next generation of medical and science students in terms of clinical pharmacology. At the Woolcock Institute of Medical Research, he was particularly valued as the leader of the clinical trials unit for 10 years. Professor Seale ensured that the unit was successful, safe and governed appropriately. Professor Seale served as our deputy director and in this role he provided sage advice for the management team on all matters of governance.



ASSOCIATE PROFESSOR EUAN TOVEY

Over the many years of his scientific career, Associate Professor Euan Tovey focused on allergy research, particularly the house dust mite. He has worked on measurements of aeroallergens, investigated personal exposure to allergens and ways to minimise these. He has also investigated the role of viruses in asthma exacerbations and how these viruses are transmitted. He was a senior research fellow of the NHMRC. He has been inducted into the Asthma NSW Hall of Fame. His inquisitive and innovative mind is evident by his long list of patents. He invented many novel mechanisms and devices which he also followed through with development. The Woolcock Institute of Medical Research would like to thank Associate Professor Tovey for his passion and commitment to research and our institute.



CLINICAL PROFESSOR IVEN YOUNG AM

Professor Iven Young is a senior honorary physician in the Department of Respiratory and Sleep Medicine, Royal Prince Alfred Hospital, Sydney, after being Head of Department from 1991 to 2009. He has been in respiratory consultant practice since 1978 after he returned from a post-doctoral research fellowship at the University of California where he developed his interest in pulmonary gas exchange physiology. His major interests are the investigation and management of respiratory failure and all aspects of pulmonary function testing, occupational lung disease, asthma, chronic obstructive lung disease and interstitial lung diseases. In 2016, he was awarded the Society Medal of the Thoracic Society of Australia and New Zealand (TSANZ) and also appointed as a Member of the Order of Australia "For significant service to respiratory and sleep medicine as a clinician, administrator, researcher and mentor, and to professional societies". He serves on the Board of Directors of the Australian Respiratory Council and retired from the Board of Directors of the Woolcock Institute of Medical Research in 2017 after 20 years of service.

OUR RESEARCH GROUPS



CLINICAL MANAGEMENT

GROUP LEADERS: Professor Carol Armour, Professor Helen Reddel, Professor Sinthia Bosnic-Anticevich and Professor Bandana Saini.

The Clinical Management Group investigates the care of people with asthma and COPD in the community, clinic and hospital environment. We design models of care, perform clinical trials and work in practice to improve the daily care of these diseases by healthcare professionals. Our research is patient-centred, ensuring care involves the patient in decision-making about their health and in day-to-day management of their respiratory condition. The group collaborates with GPs, pharmacists, nurses, research psychologists, asthma educators, physiotherapists, speech pathologists and specialist respiratory physicians to provide better respiratory care for patients in the future. In order to better understand implementation of our research findings into clinical care, we investigate new methods for research translation and better health care.

GRANTS

Perpetual, IMPACT Philanthropy. Effect of cost on adherence in asthma: a pharmacy-based intervention – awarded 2018-2022. Professor Helen Reddel. (\$84,000).

GlaxoSmithKline Australia Pty Ltd, Investigator-initiated Grant. Addressing the burden of respiratory disease in general practice: A real-life implementation study focusing on high risk asthma and COPD patients – awarded 2020-2022. Professor Sinthia Bosnic-Anticevich. (\$600,000).

GlaxoSmithKline Australia Pty Ltd, Investigator-initiated Grant. Raising the rate of referral: A novel approach to screening and referring patients at risk of severe asthma in the community pharmacy – awarded 2020-2022. Professor Sinthia Bosnic-Anticevich. (\$377,000).

Viatrix, Industry sponsorship. The Pharmacy AR Study: Implementation and elevation of a pragmatic AR management service (AR clinic) in community pharmacy – awarded 2021-2022. Professor Sinthia Bosnic-Anticevich, Dr Biljana Cvetkovski, Dr Rachel Tan. (\$175,841).

GlaxoSmithKline Australia Pty Ltd, Investigator-initiated Grant. ACAM – Funding respiratory monitoring in Australia – awarded 2018-2020. Professor Helen Reddel, Professor Guy Marks. (\$300,000).

AstraZeneca, Sponsorship for investigator-initiated project. Proposal for funding respiratory monitoring



in Australia – awarded 2019-2021. Professor Helen Reddel, Professor Guy Marks. (\$300,000).

AstraZeneca, Investigator-initiated sponsored clinical research. ESCR-19-20122 External validation of NOVELTY. Demonstration project using Australian data – awarded 2021. Professor Helen Reddel. (\$243,000).

Teva Pty Ltd, Investigator-initiated Grant. Methods for measuring medication adherence and addressing adherence in asthma and COPD care – awarded 2020-2022. Professor Sinthia Bosnic-Anticevich, on behalf of the REG Adherence Group. (\$113,800).

Boehringer Ingelheim, Investigator-initiated Grant. Real-world observational study of peak inspiratory flow rate, inhalation technique and medication adherence (PIFotal COPD Study) – awarded 2021-2022. Professor Sinthia Bosnic-Anticevich and others. (\$732,000).

Boehringer Ingelheim, Investigator Initiated Grant. Assessing the utility of peak inspiratory flow as predictor for COPD exacerbations – awarded 2020-2022. Professor Sinthia Bosnic-Anticevich and others. (\$405,000).

PhDs AWARDED

Dr Sarah Serhal (2022), Reducing gaps in asthma primary care by harnessing the skills of trained community pharmacists – an implementation study Supervisors: Professor Carol Armour, Professor Bandana Saini and Professor Sinthia Bosnic-Anticevich.

PRESENTATIONS

Scientific Conference Presentations:

Professor Sinthia Bosnic-Anticevich

Blakey J., Bosnic-Anticevich S., ... Chapman K. (2022). Real-world treatment of asthma: Inhaler prescriptions and use in Australia. TSANZSRS 2022 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Virtual, Australia – 31 Mar-2 Apr. *Respirology*. 2022 Mar 1;27:91-2

Bosnic-Anticevich S., ... Chapman K. (2022). Discordance between patient perceptions of asthma status and symptom burden. TSANZSRS 2022 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Virtual, Australia – 31 Mar-2 Apr. *Respirology*. 2022 Mar 1;27:29-30

Cvetkovski B., ... Bosnic-Anticevich S. (2022). Medication management and referral pathways for people with severe asthma: The search for more effective referral. TSANZSRS 2022 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Virtual, Australia – 31 Mar-2 Apr. *Respirology*. 2022 Mar 1; 27:83

Price D., Hancock K., Bosnic-Anticevich S., et al., (2022) Asthma exacerbation and steroid burden in Australian primary care. TSANZSRS 2022 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Virtual, Australia – 31 Mar-2 Apr. The Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science 2022 2022 Jan 18 (TSANZ abstract)

Serhal S., Saini B., Bosnic-Anticevich S., ... Armour C. (2022). Pharmacy asthma service offers new insights to health services research. TSANZSRS 2022 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Virtual, Australia – 31 Mar-2 Apr. *Respirology*. 2022 Mar 1; 27:148

Kocks J., Bosnic-Anticevich S, Leving M. (2022). Evaluation of critical inhalation technique errors in patients with COPD on Dry Powder Inhaler maintenance therapy based on their association with

health status: findings from the PIFotal study. Abstract from 11th International Primary Care Respiratory Group (IPCRG) World Conference, Malaga, Spain – 5-7 May

Leving M., van Boven J., Bosnic-Anticevich S., ... Kocks J. (2022). Suboptimal peak inspiratory flow and inhalation technique errors are associated with higher COPD-related healthcare costs: results from the PIFotal COPD study. Abstract from 11th International Primary Care Respiratory Group (IPCRG) World Conference, Málaga, Spain – 5-7 May

Chapman K., Bosnic-Anticevich S., Cano M., PG A. (2022). Exploring Use of Regular ICS/LABA Dosing in Moderate to Severe Asthma Among Physicians: Results from the Asthma Patients' and Physicians' perspectives on the burden and management of asthma studies (APPaRENT 1 & 2). C31. Late Breaking Abstract in Allergy, Immunology and Inflammation. American Thoracic Society 2022 International Conference, San Francisco, USA – 13-18 May. *Am J Respir Crit Care Med* 2022;205:A5696

Burkill S., ... Bosnic-Anticevich S., ... Price D. (2022). Real-life biomarker response to anti-IL5 and anti-IgE therapies in severe asthma patients. European Respiratory Society (ERS) International Congress 2022 – Barcelona, Spain, 4-6 Sept. *European Respiratory Journal* 60(66) (ERS abstract)

Leving M., Bosnic-Anticevich S., van Cooten J., Correia de Sousa J., Cvetkovski B., ... Kocks J. (2022). Sufficient inspiratory effort for a dry powder inhaler - do we have to measure it, or can we observe it? Post hoc analysis of the PIFotal study. European Respiratory Society (ERS) International Congress 2022 - Barcelona, Spain – 4-6 Sept. *European Respiratory Journal* 60(66) (ERS Abstract)

Price D., Jenkins C., Hancock K., Heraud F., Le Cheng P., Murray RB., Bosnic-Anticevich S., Botini F., Carter V., Catanzariti A., Doan J. (2022). The association of short acting β_2 -agonist overuse with asthma control and severe exacerbations: an Australian perspective. APSR 2022: The 26th Congress of the Asian Pacific Society of Respirology 2022 –19 Sep (APSR abstract)

Evans A., ... Bosnic-Anticevich S., et al., (2023). Identifying opportunities for optimising the management of high-risk COPD patients in Australia: an observational study. 8th REG (Respiratory Effectiveness Group) Summit, Lisbon, Portugal –16-18 Mar. (Abstract)

Kerkhof M., Driessen M., Gerritsma Y., Bosnic-Anticevich S., de Sousa J. C., Dekhuijzen R., et al.

(2023). The influence of mixing inhaler devices on inhaler technique in COPD. IPCRG (International Primary Care Respiratory Group) 7th Scientific Meeting, Munich, Germany – 15-16 May

Denton E., Hew M., Murray R., Bulathsinhala L., Trung T. N., Martin N., Al-Ahmad M., Altraja .A, Celis-Preciado C. A., Al-Lehebi R. O., Bergeron C., Bosnic-Anticevich S., et al. (2023). Biologic Responders and Super-responders in the International Severe Asthma Registry. American Thoracic Society 2023 International Conference, Washington, USA – 19-24 May. ATS Journals. C31 - Biologic Want To Rule The (Asthma World). 2023 May:A4753

Professor Helen Reddel

American Academy of Allergy, Asthma and Immunology; Phoenix, USA – Severe asthma: a global perspective, Feb 2022

International Union Against TB and Lung Diseases stakeholder meeting – Addressing access to affordable WHO essential inhaled medicines for chronic respiratory diseases in low and middle income countries: the GINA perspective, Feb 2022

Philippines Asthma Assembly with major professional organisations and government – GINA strategy 2021: rationale for key changes, Feb 2022

Thailand Thoracic Society – GINA 2021: key changes for asthma management and rationale, March 2022

Hong Kong Thoracic Society – Has the time come to end use of the blue inhaler? Pros and Cons, March 2022.

University of Hong Kong – Advances in Medicine 2022, May 2022

Webinar about GINA 2022 update for approx. 5000 doctors and nurses in Pakistan, Kenya and Vietnam, May 2022

Webinar for middle eastern countries about GINA 2022, May 2022

Caribbean Thoracic Society webinar for Caribbean region clinicians – What’s new in GINA 2022?, May 2022

International Conference of Respiratory Leaders – Population health management: assessment, awareness and actioning against the burden of respiratory diseases, June 2022

Three webinars with total 150 clinicians in Singapore – OCS and SABA: where to draw the line?

Continuing Medical Education webinar for approx. 400 clinicians in Indonesia, Thailand, Vietnam, Singapore, Hong Kong – Optimising asthma management: new evidence and recommendations

Two global webinars about GINA 2022 update, with an audience of 10,864 doctors, June 2022

Two global webinars about GINA 2022 update, audience 10,864 doctors, June 2022

Symposium – The importance of NOVELTY, Sept 2022

Thoracic Society of Australia and New Zealand Education Hub – Mild Asthma, Oct 2022

National Respiratory Leadership Forum, Sydney – Real World Evidence: What can we learn from NOVELTY and other recent studies?

Singapore Healthy Lung meeting – NOVELTY: why it is novel, and why it is needed, Nov 2022

International Conference on Asthma and COPD, Florence, Italy – GINA 2022 update, Nov 2022

Vietnam Respiratory Society conference – Update on diagnosis and management of asthma

European Respiratory Society webinar for World Asthma Day – What’s new in GINA 2023?, May 2023

Egyptian symposium for World Asthma Day, May 2023

Webcast to >1000 Indian clinicians about asthma management

ATS (American Thoracic Society) 2023 International Conference – Applicability of GINA to Low-Income Settings, May 2023

ATS (American Thoracic Society) 2023 International Conference: hot topic presentation about choice of asthma relievers, May 2023

International Symposium, Prague University Faculty of Medicine – GINA Track 1 vs Track 2

Singapore General Hospital – Management of asthma in the Emergency Department

Interasma World Congress, Vancouver – Three keynote presentations including management of difficult to treat and severe asthma, and end of short-acting beta2-agonists, July 2023

Philippine Thoracic Society – plenaries about asthma management and 90-minute Q&A session answering doctors’ questions

European Respiratory Society International Congress – Chaired roundtable, symposium on environmental issues in management of respiratory conditions, Sept 2023

British Thoracic Society Guest Lecture – Population health and precision medicine: can we have both?, Dec 2023. This lecture is awarded to someone who is regarded as a visionary in respiratory medicine

Invited presentation about heterogeneity of asthma at an international conference in Florence, Italy, Dec 2023

RESPIRATORY AND ENVIRONMENTAL EPIDEMIOLOGY

GROUP LEADERS: Professor Guy Marks and Associate Professor Brett Toelle

The Respiratory and Environmental Epidemiology Group conducts research to investigate the prevalence of and risk factors for respiratory disease in different population groups. They also investigate community-based public health interventions to manage chronic respiratory diseases. Active areas of research include the impact of air quality and other environmental exposures such as wind turbine-generated infrasound on health, and characterising asthma and COPD in the community. They also have an interest in the symptom of breathlessness in the Australian community. The group uses epidemiological and public health methods to answer research questions.

The group has three main areas of activity:

Respiratory and Environmental Epidemiology (R&EE) – this programme covers several areas including the impact of air quality on respiratory health, ongoing analyses of data collected as part of a primary prevention of asthma study and a national research project to quantify COPD. They are also working in the areas of tuberculosis treatment and case finding.

The Australian Centre for Airways disease Monitoring (ACAM) was initially established at the Woolcock Institute of Medical Research in 2002 as a collaborating unit with the Australian Institute of Health and Welfare, and since 2018 it has been an independent centre within the Woolcock. It aims to assist in reducing the burden of chronic airways disease, including asthma and COPD, in Australia by developing, collating, and interpreting data relevant to prevention, management and health policy for chronic airways disease. ACAM has amassed a rich source of patient-reported data from approximately 25,000 Australian adults collected from their web-based National Breathlessness Surveys and Difficult-to-Treat Asthma survey.

Air quality research through Centres of Research Excellence. The Centre for Air pollution, energy, and health Research (CAR) – a Centre of Research Excellence funded by the National Health and Medical Research Council ran from 2017-2022. This group focussed on research into the impact of air pollution and energy transitions on human health and translated research into contributions to policy with the aim of mitigating that impact. CAR provided an opportunity to build the capacity for early career researchers by offering post-doctoral fellowships, travel grants, PhD top-ups, seed funding grants and research-specific

training. CAR engaged its partner organisations and the public through organising workshops, symposiums, and public lectures. The Centre for Safe Air (CSA) which continues and extends the work of CAR, has three priority areas of research into air quality and health in Australia: safer air in buildings, cleaner transport that supports safer air and airborne hazards due to climate change including bushfire hazards. Professor Guy Marks was and is a CI and Dr Christine Cowie an affiliate, with CAR and now also with CSA. The CSA fosters training of researchers by supporting PhD students and post-doctoral research fellows. It prioritises communication by developing tools and resources to inform policy and practice; collaborating with research, government, industry and other partners; and sharing data with partners to enable better research outcomes. The CSA engages its partner organisations and the public through organising workshops, symposiums and public lectures.

GRANTS

Canadian Institutes of Health Research. Tackling the two greatest obstacles to tuberculosis elimination: Treatment of latent infection and drug resistant disease – awarded 2015-2022. Professor Greg Fox, Professor Guy Marks and others (CAD\$8,400,000).

NHMRC Targeted Research. Targeted call for research into wind farms and human health. Multidimensional assessment of the health impacts of infrasound: Two randomised controlled trials – awarded 2016-2022. Professor Guy Marks, Professor Ron Grunstein, Associate Professor Nathaniel Marshall, Associate Professor Craig Phillips, Associate Professor Brett Toelle, Associate Professor Delwyn Bartlett, Dr Christine Cowie and others. (\$1,943,934).

NHMRC/GACD Request for Applications. An integrated health-sector strategy to combat COPD and asthma in Vietnam: A pragmatic stepped intervention cluster randomised trial – awarded 2017-2022. Professor Greg Fox, Professor Guy Marks and others. (\$1,894,349).

NHMRC Project Grant. Prevention of multi-drug resistant tuberculosis in a high prevalence setting: Connecting the DOTS in Vietnam – awarded 2017-2022. Professor Greg Fox, Professor Guy Marks and others. (\$3,234,544).

NHMRC Centre of Research Excellence. Energy transitions, air pollution and health in Australia. Centre for Air pollution, energy and health Research (CAR) – awarded 2017-2022. Professor Guy Marks and others. (\$2,491,229).

NHMRC Centre of Research Excellence. Centre of Research Excellence in Tuberculosis Control on both sides of our border – awarded 2018-2022. Professor Greg Fox, Professor Guy Marks and others. (\$2,497,939).

NHMRC Project Grant. Air pollution and mortality and morbidity in adult Australians (APMMA Study): a large population-based cohort study – awarded 2018-2022. Professor Guy Marks, Dr Christine Cowie and others. (\$1,041,409).

NHMRC Research Fellowship. A world that breathes more easily: research for improving global lung health – awarded 2019-2023. Professor Guy Marks. (\$963,270).

NHMRC Project Grant. Ending Tuberculosis: A cluster RCT of community-wide universal testing and treatment for latent TB infection in high prevalence settings – awarded 2019-2023. (\$6,458,049).

NHMRC/NAFOSTED Joint Call for Collaborative Research Projects. Harnessing new mHealth technologies to Strengthen the Management of Multidrug-Resistant Tuberculosis in Vietnam: The V-SMART Trial – awarded 2019-2024. Professor Greg Fox and Professor Guy Marks. (\$496,103).

Perpetual IMPACT Philanthropy. Emotional wellbeing in adults who have COPD: Development, implementation and evaluation of a brief intervention to address this unmet need – awarded 2019-2022. Associate Professor Brett Toelle. (\$84,000).

NHMRC Centre of Research Excellence. BREATHE – mitigating airborne threats to health – awarded 2021-2026. Professor Guy Marks and others. (\$2,500,000).

ARC Discovery. Multi-country study on health effects of bushfire air pollution – awarded 2021-2023. Professor Guy Marks (\$466,000).

NHMRC Centre of Research Excellence. Centre for Safe Air – awarded 2022-2026. Professor Guy Marks and others. (\$2,500,000).

Perpetual IMPACT Philanthropy. Rapid response surveys to investigate respiratory threats such as thunderstorm asthma and bushfire smoke – awarded 2022. Professor Helen Reddel and Professor Guy Marks. (\$118,644).

NHMRC. The FLIRT-TB study: A fluoroquinolone-based regimen to treat the INH-resistant TB – awarded 2022-2026. Professor Greg Fox, Professor Guy Marks and others. (\$4,773,515).

MRFF. The breathlessness rapid evaluation and therapy (BREATHE) project – awarded 2023-2028. Professor Guy Marks and others. (\$1,878,739).

NHMRC Centre of Research Excellence. Stronger Investments for Infectious Diseases (STRIDE) – awarded 2023-2027. Professor Guy Marks and others. (\$2,500,000).

HEAL Innovation Fund Seeding Grants. Can portable air cleaners reduce exposure to volatile emissions from wood heater smoke? – awarded 2023. Dr Christine Cowie and others. (\$49,961).

Centre for Safe Air Seed Funding Grant. Characterising differences in urban black carbon and ultrafine particles to inform urban policy making – awarded 2023. Dr Christine Cowie, Professor Guy Marks. (\$20,000).



Perpetual IMPACT Philanthropy. Characterising differences in near roadside air quality to inform urban policy making – awarded 2023. Dr Christine Cowie and Professor Guy Marks (\$75,000).

NHMRC Research Fellowship. Innovation for Global Lung Health – awarded 2023-2027. Professor Guy Marks. (\$2,649,688).

AWARDS AND PRIZES

2022 – Professor Guy Marks appointed an Officer of the Order of Australia for distinguished service to respiratory medicine and research, and to tertiary education.

2022 – Professor Guy Marks, Professor Greg Fox, Professor Thu Anh Nguyen and others awarded the Ho Chi Minh Prize for Science and Technology, Government of Vietnam.

HIGHLIGHTS 2022-2023

The research team continued their work in breathlessness, difficult to treat asthma, air quality and tuberculosis.

The group was joined by visiting fellows who chose to undertake sabbatical research during this period.

- Professor Yue-Liang Leon Guo, Distinguished Professor in Medicine, National Taiwan University College of Medicine.
- Associate Professor Taehoon Lee, Ulsan University Hospital, University of Ulsan College of Medicine, Korea.

INPUT INTO POLICY

Professor Marks and Dr Christine Cowie have contributed to the following submissions to government, on behalf of the Centre for Safe Air:

- Morawska L, Marks GB, Johnston F, Dodd B. Submission to the Commonwealth Government COVID-19 Response Inquiry – 15 Dec 2023
- Cowie C., Campbell S., Dodd B., Perret J., Zosky G., Johnston F.. Submission on the National Health and Climate Strategy – 24 July 2023

Dr Christine Cowie contributions to Centre for Safe Air:

- Translation Sub-Committee member, 2023.
- Exposure Science Sub-Committee member 2019-.

Dr Christine Cowie is a co-author on:

- CSA publication – Safer Air, Healthier Communities: Ten reasons for investment in Australia. Centre for Safe Air. (2023) Pillay D. G., Dodd B., Cartwright A., Borchers Arriagada N., Jones P., Cowie C., Norman

R., and Johnston F. H. https://safeair.org.au/safer_air_healthier_communities.

- Asthma in Pregnancy Toolkit, CRC for Severe Asthma (2023), a web based resource for pregnant women and families <https://asthmapregnancytoolkit.org.au/>.

Dr Christine Cowie serves on these external committees:

- NSW Government Fluoridation of Public Water Supplies Advisory Committee, 2023-.
- NHMRC Recreational Water Quality Advisory Committee member; 2018-

PRESENTATIONS

Scientific Conference Presentations:

Reddel H. K., Ampon R. D., Poulos L. M., Toelle B. G., GB Marks G. B., Guo L., Davis S. (2022). Mental Health of People with Difficult to Treat Asthma in a Large National Population Survey. ATS 2022 International Conference, San Francisco, USA – 13-18 May. Am J Respir Crit Care Med 2022;205:A1310

Reddel H. K., Ampon R. D., Poulos L. M., Toelle B. G., Marks G. B., Guo L., Davis S. (2022). Characteristics of People with Difficult to Treat Asthma in a Large National Population Survey. ATS 2022 International Conference, San Francisco, USA – 13-18 May. Am J Respir Crit Care Med 2022;205:A1332.

AP Sunjaya, L Poulos, GL Di Tanna, G Marks, H Reddel, C Jenkins. (2022). Impact of breathlessness on



Quality of Life and Healthcare Use in Australia. ERS International Congress 2022, Barcelona, Spain – 4-6 Sept. European Respiratory Journal 60:Suppl 66;2251

CT Cowie, A Workman, G Morgan, R Tham, S Dharmage, G Marks. (2022). A Scoping Review of Health in Energy Transition Policies: An Australian Case Study. International Conference of Clean Air Society of Australia & NZ, Adelaide – 12-14 Sept. Environ. Res. Commun. 2;065003

Lee T., Davis S. R., Ampon R. D., Marks G. B., Poulos L. M., Toelle B. G., Reddel H. K. (2023). Asthma Outcomes in Australia – Changes from 2012-2021. TSANZSRS 2023 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Christchurch, New Zealand – 25-28 March. Respirology 2023;28:TP027

Reddel H. K., Ampon R. D., Poulos L. M., Lee T., Toelle B. G., Marks G. B., Davis S. R. (2023). Difficult to Treat Asthma Burden in an Australian Population Sample. TSANZSRS 2023 – The Australia & New Zealand Society of Respiratory Science and The Thoracic Society of Australia and New Zealand (ANZSRS/TSANZ), Annual Scientific Meeting for Leaders in Lung Health & Respiratory Science, Christchurch, New Zealand – 25-28 March. Respirology 2023;28:TP026

Reddel H. K., Davis S. R., Ampon R. D., Marks G. B., Poulos L. M., Toelle B. G., Lee T. (2023). Changes in Asthma Medications, Symptom Control and Urgent Health Care for Asthma in Australia Between 2012 and 2021, from Nationally Representative Web Surveys. International Conference of the American Thoracic Society, Washington, USA – 18-24 May. Am J Respir Crit Care Med 2023;207:A6646

Sunjaya A. P., Martin A., Arnott C., Marks G., Jenkins C. (2023). Development of Patient Resources for Chronic Breathlessness: Needs Analysis. ERS International Congress 2023, Milan, Italy – 9-13 Sept. European Respiratory Journal 62:Suppl 67;PA3522

Sunjaya A. P., Martin A., Di Tanna G. L., Gianacas C., Arnott C., Marks G., Jenkins C. (2023). Developing a Clinical Pathway for Breathlessness in Primary Care Based on Analysis of Routine Primary Care Data. ERS International Congress 2023, Milan, Italy – 9-13 Sept. European Respiratory Journal 62:Suppl 67;OA762

Invited Presentations:
Professor Guy Marks

Plenary Presentation – Improving Access to Effective Medicines for Asthma in Low-Middle Income

Countries. Asia-Pacific Regional Conference of the International Union Against TB & Lung Disease, Hong Kong (virtual) – 27 May 2022

Webinar on respiratory disease in the era of COVID – Effective Prevention and Treatment: Global Coverage, Barriers and Key Gaps. WHO/Federation of International Respiratory Societies – 22 Sept 2022

Ending Tuberculosis in Vietnam. Vietnam Respiratory Society Symposium on Respiratory Infection, Haiphong, Vietnam – 5 Nov 2022

Game Changers in TB Management: Year-in-Review. Annual meeting of the Philippines College of Chest Physicians (PCCP), online – 9 Dec 2022

Union Symposium – Approach to ENDING TB in India. NATCON (National Tuberculosis Conference), Agra, India – 1 March 2023

Harry Farhan Lecture – The Past, Present and Future of Tuberculosis: A Story of Global Health Inequity. International Society of ThoracoLumbar Spine Surgeons, SpineWeek, Melbourne – 3 May 2023

Symposium Presentation – Epidemiology, Emerging Science, Eradication of TB. International Society of ThoracoLumbar Spine Surgeons, SpineWeek, Melbourne – 4 May 2023

Associate Professor Brett Toelle

Macquarie Medical School Researcher Showcase – Epidemiology of Chronic Obstructive Pulmonary Disease (COPD) – 28 Sept 2023

Macquarie Medical School Webinar – Introducing the Woolcock Institute of Medical Research – 29 Nov 2023

Dr Christine Cowie

Air pollution and air quality standards. Thoracic Society ANZ & ANZ Society of Respiratory Science Education Hub, Sydney – 15 Oct 2022

Woolcock Institute of Medical Research Seminar Series – Air Pollution & Energy Transitions Research: Projects in Urban Wood Heater Emissions and Health Effects of Waste to Energy Facilities Projects – 2022

CASANZ (Clean Air Society of Australia & New Zealand) Airtalks – The Sydney Spatial Woodsmoke Pilot Study – 2022

CASANZ (Clean Air Society of Australia & New Zealand) Airtalks – Health Impacts Associated with Waste to Energy Emissions – a systematic review – 2022

UNSW – Co-convenor of the Environmental Health subject in the Master in Public Health, 2022-2023

RESPIRATORY CELLULAR AND MOLECULAR BIOLOGY

GROUP LEADER: Professor Brian Oliver

The group aims to uncover the molecular and cellular mechanisms underlying chronic respiratory diseases encompassing basic to clinical research.

Initially, the group's expertise was centred around smooth muscle cell biology in diseases such as asthma and COPD, mainly focusing upon respiratory pharmacology and understanding important disease mechanisms such as virus-induced exacerbations.

Over time, the group's expertise has expanded, and in 2016 our research evolved to develop novel models to address contemporary health issues, such as obese asthma, e-cigarettes and more recently, the health effects of air pollution.

In many of these areas, the research is world leading. For example, Scival ranked the group's e-cigarette research to be in the in the top 0.1 percent of programs globally.

During 2022-2023 the group produced 92 publications, covering research topics such as using organoids to understand the effects of COVID-19 (SARS-CoV-2) infection, clinical studies to better phenotype asthma, exploring the adverse effects of e-cigarettes in pregnancy. One common theme emerged, centred around understanding the effects of air pollution. Our experiments have shown that even the low levels of air pollution in Australia are deleterious for lung health.

GRANTS

NHMRC Project Grant. Understanding why in-utero exposure to inhaled oxidants predispose people to develop asthma and COPD – awarded 2019-2023. Professor Brian Oliver. (\$1,043,742).

CSC, PhD Scholarship, Min Feng. (\$160,000).

CSC, PhD Scholarship, Xu Bia. (\$160,000).

CSC, PhD Scholarship, Meng Feng. (\$160,000).

UTS President's Scholarship, Rashad Mahbub. (\$30,000/year).





HIGHLIGHTS 2022-2023

These were the years of the students – who won a long list of prizes and grants (some are listed below).

PHD STUDENT-LED GRANTS

2022 RSEOH CAG PhD Support Grant from the Maridulu Budyari Gumal SPHERE awarded to Xu Bai. (\$10,000).

2022 RSEOH CAG PhD Support Grant from the Maridulu Budyari Gumal SPHERE awarded to Min Feng. (\$10,000).

2022 UTS Vice Chancellor's Conference Fund award to attend the TSANZ conference awarded to Senani Rathnayake.

2023 UTS Vice Chancellor's Conference Fund award to present research at the European Respiratory Society's International Congress awarded to Xu Bai. (\$5,000).

2023 European Respiratory Society (ERS) short-term research fellowship awarded to Senani Rathnayake.

2023 Thoracic Society of Australia and New Zealand Past President's Scholarship Award for Respiratory Research Excellence 2023 awarded to Senani Rathnayake.

2024 Thoracic Society of Australia and New Zealand Travel Award to attend the TSANZ 2024 conference on Gold Coast, Queensland awarded to Senani Rathnayake.

PRIZES

2022 – Best Oral Presentation – TSANZSRS Annual

Scientific Meeting – Rashad Mahbub

2022 – HDR Paper of the Month, University of Technology Sydney – Senani Rathnayake

2023 – HDR Paper of the Month, University of Technology Sydney – Rashad Mahbub

2023 – ERS Young Scientist (including a travel grant valued at 1500€) from the European Respiratory Society – Rashad Mahbub

2023 – Session 1 Winner Oral Abstract Presentation Thoracic Society of Australia & New Zealand NSW/ACT Annual Scientific Meeting, Concord Hospital NSW – Andi Thorpe

2024 – TSANZ Ann Woolcock New Investigator Award Finalist – Min Feng

PhDs AWARDED

Behjat Sheikholeslamibourghanifarahani, PhD 2022, University of Technology Sydney.

Diren Reddy, PhD 2023, University of Technology Sydney.

PRESENTATIONS

Collectively, members of the Respiratory Cellular and Molecular Biology research group made over 50 national and international presentations over 2022-2023; including presentations at the two premier respiratory conferences, the American Thoracic Society International Conference and The European Respiratory Society Annual Congress.

RESPIRATORY TECHNOLOGY

GROUP LEADERS: Professor Daniela Traini, Professor Paul Young and Dr Hui Xin Ong

The Respiratory Technology Group was established in 2012 to bridge the gap between fundamental respiratory science (molecular pharmacology and cell biology) and clinical research (physiology, epidemiology and clinical management). The Group is a leader in the areas of aerosol drug formulation and delivery, device development, and physiologically relevant in vitro models to enhance in vitro-in vivo correlations.

GRANTS

Revolutionizing Nose-to-Brain Drug Targeting: Development of a 3D-Bioprinted Nasal Cell-Axon Model for Aerosol-Brain Interactions – awarded 2023-2024. Dr Jerry Wong, Professor Daniela Traini, Dr Hui Xin Ong and others, Macquarie University. (A\$50,000).

Development of a nasal integrated model for targeted drug delivery testing – awarded 2023. Dr Hui Xin Ong and Professor Daniela Traini, Aptar France SAS. (A\$230,800).

Advanced Integrated Respiratory (AIR2) Model – second generation – awarded 2023. Dr Hui Xin Ong, Professor Daniela Traini, Professor Paul Young and others, Defence Science and Technology Group. (\$161,000).

Unravelling inhaled Treprostinil Palmitil mechanism of interactions with the respiratory tract – awarded 2023. Dr Hui Xin Ong and Professor Daniela Traini, Insmad. (A\$157,000).

Intranasal delivery of therapeutic peptides: optimisation of formulation using nanotechnology for diabetes-associated cognitive deficits – awarded 2023. Dr Jerry Wong, Professor Daniela Traini, Dr Hui Xin Ong, Macquarie University Research Fellowships. (A\$390,000).

COVID-19 TechVoucher Program Application TV00184. The nasal delivery of a nanoparticle elaborated siRNA for the prevention and treatment of COVID-19 infections from the SARS-CoV-2 virus – awarded 2022. Professor Daniela Traini and others. (\$100,000).

Macquarie University, Research Acceleration Scheme. Artificial Respiratory Models to Study the Mechanisms of Airborne Hazards Exposure and Toxicity – awarded 2022. Dr Hui Xin Ong, Professor Daniela Traini, Professor Paul Young and others. (\$50,000).

Macquarie University, Research Acceleration Scheme.



Breathing Probiotics: Formulation and Characterisation of stable inhaled Probiotics for improved lung microbiome in respiratory infections – awarded 2022. Professor Paul Young, Professor Brian Oliver and other. (\$49,635).

NSW RNA Production and Research Network – awarded 2021-2024. Professor Daniela Traini, Dr Hui Xin Ong and Trisha Juhura Almazi. (\$278,368).

Project ID: MOSTI.D (S) 600-4/12/1. Design and development of pulmonary N-methylated peptide liganded chitosan-5 fluorouracil-folate nanoparticles for lung cancer treatment – awarded 2020-2022. Professor Daniela Traini and other. (RM420,358).

Macquarie University, COVID Recovery Fellowship. Development of integrated real-time sensors for high-throughput monitoring of drug response – awarded 2021-2022. Dr Hanieh Gholizadeh. (\$98,000).

ARC Linkage Project. Plant plasters: Efficient spray micro-coatings for plant delivery to retention – awarded 2021-2023. Professor Paul Young and other. (\$410,000).

ARC Linkage Project. Enabling precise droplet control in hydrofluorocarbon free sprays – awarded 2021-2024. Professor Paul Young and others. (\$690,000).

AWARDS AND PRIZES

Drug Delivery to the Lung: Career Award (2023) – Professor Daniela Traini

ISAM Young Investigator Award, International Society for Aerosols in Medicines (2023) – Dr Hui Xin Ong

HIGHLIGHTS 2022-2023

Established spin-off pharmaceutical company – Ab Initio Pharma with Professor Paul Young, Professor Daniela Traini and Dr Hui Xin Ong.

Ab Initio Pharma is a pharmaceutical formulation R&D and GMP manufacturing company based in Sydney, Australia. Established as a spin-off from The University of Sydney in partnership with Sydney Local Health District and the peak industry body, ARCS. The company provides innovators across Australia and globally, with a flexible platform to rapidly translate bench-top discoveries to clinical trial products and fully-fledged commercial pharmaceuticals. The company is headquartered in Camperdown and Macquarie Park with the new R&D laboratories and currently has 15 personnel.

PhDs AWARDED

Dr Ye Zhang, Doctor of Philosophy (Macquarie University), 2023. Understanding Biofilm Development on diverse interfaces and controlled

environments using novel microfluidic devices. Lead Supervisor: Associate Professor Shaokoon Cheng. Supervisor: Dr Hui Xin Ong.

PRESENTATIONS

Mahmodi H., Bradbury P., Cidem A., Ong H. X., Traini D., Kabakova I. (2023). Emerging Technologies for Cell and Tissue Characterization. SPIE - The International Society for Optics and Engineering, Washington, USA – 28 June. SPIE, p. 1-2 2 p. 1262900. vol. 12629

Professor Daniela Traini

Of mice and man: Correlation and Clinical Relevance of Animal Models for Inhaled Pharmaceuticals. DDL2023, Drug Delivery to the Lung Conference, Edinburgh. Scotland – 6-8 Dec

Dr Hui Xin Ong

Physiologically Relevant Microfluidic Platforms for High Throughput Preclinical Development. RDD 2022. Respiratory Drug Delivery conference, Orlando, USA – 1-5 May

Do in-vitro dissolution rates differ between beclomethasone dipropionate particles generated from solution-based pMDIs formulated with HFA134a, HFA152a and HFO1234ze(E) propellants? DDL2023, Drug Delivery to the Lung Conference, Edinburgh. Scotland – 6-8 Dec



SLEEP AND CIRCADIAN RESEARCH GROUP

GROUP LEADER: Professor Ron Grunstein

During the depths of the COVID-19 pandemic, much of the Sleep and Circadian Research Group's activities were put on hold with nearly all face-to-face research studies being paused during Sydney lockdowns. The 2022-2023 period which followed, however, became a time of rejuvenation and fast-paced growth for the group. All projects previously put on hold were recommenced and many new studies also started. Australia again became a sought-after location for international clinical trials with the group approached on numerous occasions to undertake sponsored research. Additionally, staff and student numbers grew rapidly and the group embarked on an expansion of its suite of specialised equipment purchasing functional near infrared spectroscopy, pupilometer and neuromodulation devices.

Within this same period, the Woolcock's affiliation transitioned from the University of Sydney to Macquarie University. Sleep Group Research Leaders Associate Professor Nathaniel Marshall, Dr Camilla Hoyos, Associate Professor Craig Phillips, Dr Angela D'Rozario, Associate Professor Christopher Gordon and early career researcher Dr Rick Wassing all successfully commenced academic appointments at Macquarie University.

The final months of 2023 saw the group commence preparation for the move to the new building on the Macquarie University campus. It is clear that the relocation will provide a wealth of new opportunities and collaborations. In particular, we look forward to having close access to Macquarie University's research facilities and expertise.

Insomnia Physiology, Health Psychology and Circadian Science

Research Leader: Associate Professor Christopher Gordon

Health Psychology Lead: Associate Professor Delwyn Bartlett

Insomnia stands as the most prevalent sleep disorder, impacting up to 30 percent of adults. The insomnia physiology research theme seeks to deepen our comprehension of the disorder's pathophysiological mechanisms which have long posed challenges, severely limiting treatment options for affected individuals. Through a variety of research endeavours conducted both in sleep laboratory settings and online, the team aims to uncover novel insights into the physiological changes occurring during sleep and

wakefulness among insomnia patients. Furthermore, the team are actively evaluating advanced digital treatment modalities such as our SleepFix app across diverse population groups experiencing co-morbid insomnia, such as patients with back pain and those with mild cognitive impairment.

Neurobiology

Research Leader: Doctor Angela D'Rozario

The research undertaken by the Sleep Neurobiology Research Team provides neurophysiology and neuroimaging insights into cognitive deficits and daytime sleepiness in people with sleep disorders, severe mental illness and neurodegenerative disease. Their work encompasses a broad program of research undertaken as part of the NHMRC Centre of Research Excellence to Optimise Sleep in Brain Ageing and Neurodegeneration (CogSleep CRE) and includes several large trials funded by NHMRC grants. Technological advances in measuring brain wave activity using our high-density electroencephalography (HD-EEG) systems (funded in part by the NHMRC), together with neuroimaging expertise provide a powerful platform for the growing research program. The team uses these tools to discover new biomarkers for identifying patients at greater risk of cognitive impairment, both in terms of next day functioning, (i.e. vigilance failure and motor vehicle accidents) but also over the longer term (i.e. accelerated cognitive decline with ageing). They examine the mechanisms of how altered brain wave activity during sleep impairs learning and memory processes and leads to poor brain health. The team also evaluates innovative novel treatment approaches to restore normal sleeping patterns and improve cognition and clinical outcomes. Recently, they enhanced their suite of technological capabilities to support their innovative sleep neuroscience research program including a high-definition neuromodulation device to boost brain activity during sleep and the expansion of the high-density EEG facility, supported by competitive grants and philanthropic donations.

Epidemiology

Research Leader: Associate Professor Nathaniel Marshall

The Sleep Epidemiology Team is dedicated to delving into the prevalence, root causes, risk factors, and repercussions of sleep disorders. Their mission extends to rigorously evaluating both established and emerging treatments for promoting better sleep health. They specialise in designing clinical trials and conducting



meticulous statistical analyses in collaboration with fellow research teams. Additionally, they routinely undertake systematic reviews and meta-analyses on critical clinical inquiries, consolidating high-quality global data into comprehensive documents. These efforts empower healthcare professionals and patients alike to make informed, evidence-based decisions regarding their treatment. Notably, in 2023, the results of the Federal government requested NHMRC-funded laboratory-based experiment into whether inaudible infrasound generated by wind turbines affects human physiological systems was published. The paper is now being cited in planning decisions and guidelines around wind turbines.

Clinical Trials

Research Leader: Doctor Camilla Hoyos

The Clinical Trials Team continued to expand throughout 2022-2023 with the greatest amount of investigator-initiated and industry-sponsored clinical trial activity in the Sleep Group's history. The well-established programme assessing the effectiveness of cannabinoids for insomnia and sleep disturbance continued to provide rigorous randomised controlled trial (RCT) evidence as an antidote to more common anecdotal reports. Of particular note, the Can-Rest Study (cannabidiol [CBD] for relief of short-term insomnia) enrolled 198 participants and due to its revolutionary remote clinical trial design these patients were able to be recruited from all across Australia in only 10 months. Two trials investigating different cannabinoid combinations in insomnia will provide key information on sleep architecture and next-day functioning in this population (CUPID study assessing cannabidiol [CBD], and CANSLEEP assessing combined CBD/THC).

The Clinical Trials Team built upon existing industry collaborations and created new ones to successfully

contribute to global trials including the groundbreaking SURMOUNT-OSA trial which investigated the efficacy and safety of tirzepatide to reduce weight and reduce sleep apnea in participants with obesity and obstructive sleep apnea (Sponsor: Eli Lilly, Professor Ron Grunstein on Global Steering Committee). The trials team led pioneering work evaluating novel orexin receptor agonists for narcolepsy and idiopathic hypersomnia including contributions as the primary site globally for a pioneering Phase 1b trial (Sponsor: Alkermes) and the sole Australian site for a Phase 2 trial (Sponsor: Takeda). The team's track record and reputation for excellence is outstanding, with growing global recognition of our clinical trial successes.

Cardiometabolic

Research Leader: Associate Professor Craig Phillips

The Sleep Cardiometabolic Research Program aims to understand the role of sleep in maintaining cardiovascular and metabolic health and how sleep and circadian disturbance such as occurs with obstructive sleep apnoea (OSA) and shift work, increases risk for diabetes and heart disease. Although obesity is the main driver of OSA and associated cardiometabolic conditions, evidence suggests that OSA, independent of obesity, promotes cardiometabolic disease and weight gain and hinders weight loss. The programme includes studies assessing whether CPAP treatment for OSA in the presence of weight loss provides additional benefit in reducing diabetic risk and blood pressure and whether exercise during weight loss in OSA patients prevents loss of healthy muscle tissue. The team are exploring how neurovascular dysfunction in OSA might promote cognitive decline and dementia and obtained an NHMRC Ideas Grant (9.9 percent success rate) to explore how the brain's toxin clearance system works during sleep and how this relates to vascular function. Functional near infrared spectroscopy (fNIRS) is a

new non-invasive technology that the group has recently incorporated in several studies. fNIRS provides measurements of brain tissue hypoxia and regional increases in blood flow that occur during cognitive tasks. The group is using fNIRS to explore mechanisms of cognitive dysfunction and how the brain cleaning process during sleep is disrupted in people with OSA.

Respiratory Failure

Theme Leader: Professor Brendon Yee

Respiratory disorders that increase the effort to breathe or are associated with weakness of the respiratory muscles affect the pattern and depth of breathing. During sleep, this can be exacerbated, potentially resulting in insufficient breathing characterised by elevated carbon dioxide levels and diminished oxygen levels both at night and during the day. If left unaddressed or managed ineffectively, this insufficient breathing can detrimentally impact quality of life, necessitate unnecessary hospitalisations, and even contribute to premature mortality. The application of positive airway pressure to support inspiratory efforts can significantly improve breathing during sleep. Identifying individuals at risk, determining optimal timing for therapy initiation, and selecting the most effective ventilation approach are pivotal in ensuring individuals with chronic respiratory disorders receive optimal evidence-based care. One aim of this research theme is to investigate the role of CPAP modalities in patients with obesity hypoventilation syndrome (OHS) and explore the cardiovascular effects of positive airway pressure in OHS. Additionally, the group is investigating the neurocognitive and cardiovascular effects of positive airway pressure in Overlap Syndrome, where patients have both obstructive sleep apnea (OSA) and chronic obstructive pulmonary disease (COPD).

GRANTS

Australian Research Council, Discovery Projects. Biophysics of the brain's waste disposal system: Understanding why we sleep – awarded 2023-2026. Associate Professor Svetlana Postnova, Professor Ron Grunstein and colleagues. (\$385,999).

American Academy of Sleep Foundation. A Novel Dietary Approach to Manage Symptoms of Narcolepsy and Idiopathic Hypersomnia – awarded 2023. Dr Elizabeth Cayanan, Professor Brendon Yee, Dr Sheila Sivam, Professor Ron Grunstein, Dr Julia Chapman, Professor Bandana Saini and colleagues. (\$US88,362).

Australasian Sleep Association, Rob Pierce Grant-in-Aid. The impact of treatment on dementia biomarkers in obstructive sleep apnea – awarded 2022. Dr Julia Chapman. (\$10,000).

Department of Industry, Innovation, Science, Research and Tertiary Education. CRC for Alertness and Productivity. Mobile App-delivered Sleep Retraining Therapy (SleepFix) to Improve Sleep in Individuals with Back Pain – awarded 2021-2022. Associate Professor Christopher Gordon and Professor Ron Grunstein. (\$133,806).

Heart Foundation, Future Leader Fellowship. Targeting the heart to optimise healthy brain ageing in different at-risk populations across adulthood – awarded 2021-2025. Dr Camilla Hoyos. (\$529,000).

Moyira Elizabeth Vine Fund, Research into Schizophrenia Program 2022. The impact of co-existing sleep disordered breathing on sleep spindle deficits in schizophrenia – awarded 2022. Dr Angela D'Rozario, Professor Ron Grunstein, Professor Brendon Yee, Associate Professor Nathaniel Marshall and colleagues. (\$95,220).

MRFF, Chronic Respiratory Conditions. A novel targeted approach to deliver treatable trait-based precision medicine for obstructive sleep apnoea – awarded 2023-2028. Professor Ron Grunstein, Dr Camilla Hoyos, Dr Angela D'Rozario, Associate Professor Craig Phillips, Professor Brendon Yee, Associate Professor Keith Wong and colleagues. (\$1,999,634).

NHMRC, Boosting Dementia Research Initiative. REducing Sleep Apnoea for the PrEvention of Dementia (RESHAPED): a multi-site feasibility RCT – awarded 2019-2023. Professor Ron Grunstein, Associate Professor Craig Phillips, Dr Camilla Hoyos, Associate Professor Nathaniel Marshall and colleagues. (\$1,468,685).

NHMRC, Centre of Research Excellence. The Centre of Research Excellence to Optimise Sleep in Brain Ageing and Neurodegeneration (CogSleep) – awarded 2018-2022. Professor Ron Grunstein, Associate Professor Craig Phillips, Dr Angela D'Rozario, Dr Camilla Hoyos and colleagues. (\$2,499,557).

NHMRC, Centre of Excellence. The Centre of Research Excellence to Optimise Sleep in Brain Ageing and Neurodegeneration (CogSleep) seed funding. Novel biomarkers to understand the links between sleep and neurodegeneration in at-risk populations – awarded 2021-2023. Dr Julia Chapman. (\$50,000).

NHMRC, Ideas Grant. Optimising sleep quality inside insecticide treated mosquito nets in hot overnight environments – awarded 2023-2025. Associate Professor Delwyn Bartlett, Dr Elizabeth Cayanan and colleagues. (\$1,244,248).

NHMRC, Ideas Grant. Understanding Brain Cleaning in Obstructive Sleep Apnea – awarded 2022-2024. Associate Professor Craig Phillips, Associate Professor

Svetlana Postnova, Associate Professor Keith Wong and colleague. (\$658,233).

NHMRC, Investigator Grant. Innovative Neuroscience to Improve Treatment of Sleep Disturbances for Prevention of Depression and Anxiety – awarded 2021-2025. Dr Rick Wassing. (\$645,205).

NHMRC, Investigator Grant. Investigating sleep biomarkers of cognitive impairment and improving cognitive outcomes through targeted sleep interventions in adults at risk for dementia – awarded 2022-2026. Dr Angela D’Rozario. (\$1,570,120).

NHMRC, Investigator Grant. Targeting Challenges in Sleep Health – awarded 2021-2025. Professor Ron Grunstein. (\$2,414,215).

NHMRC, Synergy Grant. Synergise, Integrate and Enhance Sleep Research to Transform Brain Ageing (SIESTA) – awarded 2023-2027. Professor Ron Grunstein, Associate Professor Christopher Gordon, Dr Camilla Hoyos, Dr Angela D’Rozario and colleagues. (\$5,000,000).

Oracle for Research, Unlocking the Mysteries of Insomnia: Personalized Diagnosis and Treatment with Oracle’s Cutting-Edge Technology – awarded 2023-2024. Dr Tancy Kao, Associate Professor Christopher Gordon. (\$40,000 USD).

Royal Australasian College of Physician, Specialist Training Program. Clinical Sleep Fellow Training Position. Professor Ron Grunstein and Professor Brendon Yee. (\$130,000 per annum, continuing).

Sydney Health Partners Clinical Academic Groups, Sleep Health Clinical Academic Group (development funding) – awarded 2022. Professor Brendon Yee, Dr Angela D’Rozario, Associate Professor Christopher Gordon, Dr Sheila Sivam, Professor Ron Grunstein, Dr Camilla Hoyos, Dr Elie Matar, Dr Chris Seton, Associate Professor Keith Wong and colleagues. (\$10,000).

Sydney Health Partners Clinical Academic Groups, Sleep Health Clinical Academic Group – awarded 2023. Professor Brendon Yee, Dr Sheila Sivam, Dr Angela D’Rozario, Professor Andrew Chan, Professor Ron Grunstein, Dr Elie Matar, Dr Chris Seton, Dr Elizabeth Machan, Associate Professor Keith Wong, Professor Bandana Saini and colleagues. (\$50,000).

The University of Sydney BMC Development Grant. Digital sleep therapy to enhance psychological outcomes in older adults with subjective cognitive impairment and insomnia disorder – awarded 2020. Dr Camilla Hoyos. (\$20,000).

The University of Sydney Lambert Initiative, Research Grant. A randomised placebo-controlled trial to examine the safety and efficacy of cannabinal (CBN)

for the treatment of insomnia disorder – awarded 2021-2023. Dr Camilla Hoyos, Professor Ron Grunstein, Professor Brendon Yee, Dr Anastasia Suraev, Isobel Lavender and colleagues. (\$205,000).

The University of Sydney Lambert Initiative, Research Grant. Cannabinoids and sleep: a randomised placebo-controlled crossover pilot study of 20:1 CBD:THC for insomnia – awarded 2021-2022. Professor Ron Grunstein, Dr Camilla Hoyos and colleagues. (\$255,712).

Wellcome Trust, Sleep and circadian rhythms and treatment of mental disorders – awarded 2023-2028. Dr Rick Wassing and colleagues. (\$1,337,275).

Wellcome Trust, Testing a casual model of sleep and circadian rhythm disturbances and youth-onset mood disorders – awarded 2023-2028. Professor Ron Grunstein and colleagues. (\$5,424,845).

AWARDS AND PRIZES

AASM Trainee Investigator Award (Honourable Mention) (2023), Anastasia Suraev

Australasian Sleep Association New Investigator Award (2022), Anastasia Suraev

Best Poster Presentation: Sleep in Specialist Populations, Sleep DownUnder (2023), Jack Anderson

Best Poster in Category, Sleep DownUnder (2022), Zoe Schrire

Best Oral Presentation – International Cannabinoid Research Society (2022), Anastasia Suraev

Brain and Mind Centre Emerging Researcher Award (2023), Aaron Lam

CogSleep Travel Award (2023), Zoe Schrire

Ethan Russo Trainee Award – International Cannabinoid Research Society Conference, Ireland (2023), Anastasia Suraev

Lambert Initiative of Cannabinoids Therapeutics PhD Scholarship (2021-2023), Isobel Lavender

Postgraduate Research Support Scheme (2023), The University of Sydney, Isobel Lavender

Runner up, People’s Choice Presentation, CogSleep Conference (2022), Zoe Schrire

School of Psychology Publication Prize (2023), The University of Sydney, Isobel Lavender

University Postgraduate Award (2023-2024), The University of Sydney, Isobel Lavender

University of Sydney 2022 HDR Publication Prize, Zoe Schrire

HIGHLIGHTS 2022-2023

Professor Ron Grunstein was named a 2022 Fellow of the Thoracic Society of Australia and New Zealand.

Establishment of the Woolcock Consumer Advisory Panel in 2023. The Panel consists of 17 individuals with lived experience of various sleep and respiratory disorders.

Dr Camilla Hoyos was elected to the Board of the Australasian Sleep Association in 2023.

Dr Rick Wassing was a Panellist for the Australasian Sleep Association Actigraphy Round Table in 2023.

Professor Ron Grunstein and Dr Julia Chapman attended the Obstructive Sleep Apnoea Stakeholder Roundtable with MRFF by invitation in 2023.

Visit from distinguished international clinician academic Professor Ruth Benca from University of California, Irvine in 2023.

PhDs AWARDED

Aaron Lam (The University of Sydney)

Anastasia Suraev (The University of Sydney)

Andrea Ricciardiello (The University of Sydney)

Carla Haroutonian (The University of Sydney)

Dexiao (Shawn) Kong (The University of Sydney)

Jun Teh (The University of Sydney)

Keith Johnson (The University of Sydney)

Zoe Schrire (The University of Sydney)

MASTERS THESES PASSED

Arina Ridha (University of Sydney)

Maria Florencia Petrelli (University of Sydney)

PRESENTATIONS

Jack Anderson

Insights from a 10-year Australasian Idiopathic Hypersomnia Patient Data Registry Study; Poster, Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Associate Professor Delwyn Bartlett

Snapshot – Assessing Clinical Data, Actigraphy Masterclass; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Data Interpretation – Considerations, Tips and Tricks; Actigraphy Masterclass, Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Dr Mariam Bashedi

Improving Sleep Health Management in Primary Care: A Potential Role for Community Nurses? Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Evaluating the Effectiveness of an Interactive Educational Intervention on Sleep Health for Second-Year Pharmacy Students; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Dr Julia Chapman

What Next? Integrating Brain Health Assessments into the Sleep Lab; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Health and QoL Consequences of SDB, Dental Sleep Course; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Tirzepatide for the Treatment of OSA: Rationale and Design of the SURMOUNT-OSA Phase 3 Trial; XVII Symposium on Sleep and Breathing, Auckland, New Zealand – 12-15 March 2023.

Preliminary Results from a Phase 1 Study of ALKS 2680, an Orexin 2 Receptor Agonist, in Healthy Participants and Patients with Narcolepsy or Idiopathic Hypersomnia; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Slow Wave Dynamics in Mild Cognitive Impairment Compared with Age Matched Controls: A high-density EEG Study; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Garry Cho

The effects of wind turbine noise on human sleep and health: Results of the NHMRC targeted call for research into wind farms and human health; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Dr James Di Michiel

Update on Management of RLS in Australia/NZ in 2023 Regarding First-Line Treatments; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Dr Angela D'Rozario

Sleep in Predementia Stages; Australian Dementia Research Forum – May 2022.

Daytime Neurobehavioral Impairments in OSA and Their Relationship to Neurophysiological Mechanisms of Sleep; Sleep Europe 2022, the European Sleep Research Society conference, Athens, Greece – 27-29 Sept.

Sleep and Wake Neurophysiology in OSA Before and After CPAP Treatment: Linking Brain Profiles and Cognition Using Routine and High-Density EEG; Sleep

DownUnder 2022, Brisbane – 8-11 Nov.

Wake Up to Grey Matters? Expert Exposé on Brain Health Opportunity for Sleep Labs: Introduction and Overview; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Oral Presentation: The Effects of Continuous Positive Airway Pressure Therapy in Moderate to Severe Obstructive Sleep Apnea: A High-density EEG Study; XVII Symposium on Sleep and Breathing, Auckland, New Zealand – 12-15 March 2023.

Developing Topics Session Title: Sleep and Electrophysiological Changes During the Progression of Alzheimer's and Related Dementia, Presentation Title: "Sleep Microarchitecture in Mild Cognitive Impairment: A High-Density EEG Study"; 2023 Alzheimer's Association International Conference, Amsterdam, Netherlands – 16-20 July.

Colloquium Sleep, Cognition and Ageing, School of Psychological Sciences, Macquarie University – Nov 2023.

Symposium Session Title: The Ripple Effect: Understanding the Role of Abnormal Sleep Brain Waves and Dementia in At-Risk Populations, Presentation Title: Regional Patterns of Brain Activity and Memory Consolidation in Older Adults at Risk for Dementia"; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Associate Professor Christopher Gordon

Symposium Leader: Re-examining Relationships Between Sleep, Circadian Rhythms and Body Temperatures, Presentation: Skin Temperature and Vigilance Performance Relationships; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Principles and Practice of Actigraphy; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Exploring the 'Pharmacist Role' in Insomnia Management and Care Provision: A Scoping Review; Poster, Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Professor Ron Grunstein

Comparative Safety and Efficacy of Hypnotics: A Quantitative Risk-Benefit Analysis; SLEEP 2022, American Academy of Sleep Medicine, Charlotte, USA – 4-8 June.

Bench to Bedside: Translational Science Success Stories from Respiratory and Sleep Physicians; Australasian Sleep Association – July 2022.

Sleep Medicine, Clinical Translation from Cinderella Science to Mainstream Healthcare; Australasian Sleep

Association Webinar, July 2022.

Insomnia Toolkit for GPs; CogSleep Workshop – Aug 2022.

Obesity and OSA: What Sleep Providers Should Know; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA – 3-7 June.

Pharmacotherapy for Obesity; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA – 3-7 June.

Cannabinoids and Sleep Disorders; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA, 3-7 June.

Sleep and Severe Mental Illness; Living Well, Living Longer Symposium, Sydney Local Health District – Nov 2023.

Carla Haroutonian

Overnight Consolidation of Spatial Navigation Memories is Impaired in Mild Cognitive Impairment and is Associated with Loss of Sleep Spindles and Hippocampal Subfield Volumes; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Dr Camilla Hoyos

Year in Review, Clinical Trials Advancement and Methods Personal Interest Group, Alzheimer's Association; ISTAART (International Society to Advance Alzheimer's Research and Treatment) Community – Jan 2022.

Early Cognitive Decline and Dementia: A New Target for Sleep Apnea Therapy?; American Thoracic Society 2022 International Conference, San Francisco, USA – 13-18 May 2022.

CPAP for Cognition in OSA and Mild Cognitive Impairment; American Thoracic Society 2022 International Conference, San Francisco, USA – 13-18 May.

Reducing Sleep Apnoea for the Prevention of Dementia (Reshaped): the Protocol of a Multisite Feasibility Randomised Controlled Trial; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Acute Effects of Cannabinoids in Insomnia Disorder: A Randomised, Placebo-Controlled Trial Using High-Density EEG; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA – 3-7 June.

Cannabinol (CBN) Effects in Insomnia Disorder: A Randomised Double-Blind, Placebo-Controlled, Cross-over, Clinical Trial Protocol, SLEEP 2023,

American Academy of Sleep Medicine, Indianapolis, USA, 3-7 June.

Cardio-metabolic Health Effects of CPAP Treatment for Sleep Apnoea During Weight Loss: A Randomised Controlled Pilot Trial; Sleep DownUnder 2023, Adelaide, 8-11 Nov.

Dr Roo Killick

An Overview of RLS Diagnosis and Pathophysiology. What is Our Understanding of This Condition in 2023?; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Dr Aaron Lam

Screening and Detecting Obstructive Sleep Apnoea (OSA) in a Memory Clinic Setting: An Underdiagnosed At-Risk Population?; XVII Symposium on Sleep and Breathing, Auckland, New Zealand – 12-15 March 2023.

A Chatbot to Automate the Delivery of Sleep-Dependent Memory Tasks; 2023 Alzheimer's Association International Conference, Amsterdam, Netherlands – 16-20 July.

The Impact of OSA on Cognitive Decline and Sleep Microarchitecture in Older Adults At-Risk of Dementia; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Isobel Lavender

Cannabinol (CBN) Effects in Insomnia Disorder: A Randomised, Double-Blind, Placebo-Controlled, Crossover, Clinical Trial Protocol; Brain and Mind Centre Symposium, Sydney – 2022.

A Randomised, Double-Blind, Placebo Controlled, Single-Dose, Crossover, Pilot Study Investigating the Effects of Cannabinol (CBN) 30 mg and 300 mg on Sleep Architecture and Next-Day Function in Insomnia Disorder; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Cannabinol (CBN) Effects in Insomnia Disorder: A Randomised, Double-Blind, Placebo-Controlled, Crossover, Clinical Trial Protocol; United In Compassion (UIC) 2023, Brisbane – 11-13 Aug.

Cannabinol (CBN) Effects in Insomnia Disorder: A Randomised, Double-Blind, Placebo-Controlled, Crossover, Clinical Trial Protocol; World Sleep 2023, Rio De Janiero, Brazil – 20-25 Oct.

Samantha Lee

Melatonin Down-Scheduling: An Exploration of Caregiver and Pharmacist Perspectives Towards Melatonin Use in School-Aged Children and Adolescents; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Melatonin Use for Sleep Disturbance in School-Aged Children and Adolescents: An Australian Pharmacy Perspective; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA, 3-7 June.

Nursing Staff's Satisfaction with the Use of Automatic Dispensing Cabinets in Intensive Care Units: Pre-post COVID-19 Comparison; Medicines Management 2023, Cairns – 2-4 Nov.

Fraser Lowrie

Does Exercise Reduce Fat Free Mass Loss During Very Low Energy Diet-Induced Rapid Weight Loss? A systematic review and meta-analysis; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Dr Elizabeth Machan

Theory – Introduction and Background, Actigraphy Masterclass; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Dr Elie Matar

Impaired Colour Discrimination is Associated with Hallucinations in Dementia with Lewy Bodies, International Lewy Body Dementia Conference 2022, Newcastle Upon Tyne, England – 15-17 June 2022.

Dr Zoe Menczel Schrire

Feasibility of 12 weeks Melatonin Supplementation in Mild Cognitive Impairment; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Safety of Higher Doses of Melatonin in Adults: A Systematic Review and Meta-Analysis; Poster, Sleep DownUnder 2022 – Brisbane, 8-11 Nov.

Dr Benjamin Nguyen

Is Obstruction Obstructing Survival? Long-Term Mortality in Patients with COPD Requiring Acute NIV With and Without OSA; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Dr Matthew Rahimi

A Study in Physiological Activation Responses to Posture Shifts in Sleep and the Impact of Supine Avoidance Alarms; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Dr Andrea Ricciardiello

Objective Measures of Sleep Architecture in Adults and Older Adults with Depression: A Systematic Review and Meta-Analysis; Poster, Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Objective Measures of Sleep Architecture in Adults and Older Adults with Depression: A Systematic Review and Meta-Analysis; Sleep Europe 2022, European Sleep Research Society, Athens, Greece – 27-29 Sept.

Dr Sheila Sivam

Advanced Trainee Education Weekend, Non-Respiratory Sleep Disorders, Thoracic Society of Australia and New Zealand – May 2022.

Management of Less Common Sleep Disorders for GPs: Assessment, Management and Referral Options for Narcolepsy, Australasian Sleep Association Webinar – September 2022.

Narcolepsy Management in Australia, Thoracic Society of Australia and New Zealand NSW/ACT Thoracic Clinical Update and Annual Scientific Meeting 2023, Concord Hospital, 3 November.

Hypersomnolence Research in Australia – What’s Going On?; Living with Narcolepsy and Idiopathic Hypersomnia in Australia; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

A Clinician’s Guide to Ordering Actigraphy; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Optimising Care Series: Sleep Medicine Updates, Australasian Society of HIV, Viral Hepatitis and Sexual Health Medicine – Feb 2023.

Challenges in Making a Narcolepsy Type 1 diagnosis; TEVA Pharmaceuticals webcast – Mar 2023.

Hypersomnolence Syndromes: Diagnosis and Management Updates, Australia and New Zealand Association of Neurologists Annual Scientific Meeting 2023 – 15-18 May.

Measuring Sleep and Interpreting Sleep Studies; Introduction to Dental Sleep Medicine 2023, Australasian Sleep Association – 23 Sept.

Dr Anastasia Suraev

Acute Effects of Combined Cannabidiol (CBD) and Δ9-tetrahydrocannabinol (THC) in Insomnia Disorder: A Randomised, Placebo-controlled Trial Using High-Density EEG; Sleep DownUnder 2022, Brisbane – 8-11 Nov.

Acute Effects of Cannabinoids in Insomnia Disorder: A Randomized, Placebo-controlled Trial Using High-Density EEG; SLEEP 2023, American Academy of Sleep Medicine, Indianapolis, USA – 3-7 June.

Clinical Trials of Cannabinoids in Insomnia and Neuropathic Pain Patients; United In Compassion (UIC) 2023, Brisbane – 11-13 Aug.

Dr Rick Wassing

Wearable devices in clinical sleep research; World Sleep 2022, online – 11-16 Mar.

Overnight Adaptation of Emotional Distress;

University of Pittsburgh, online – Dec 2022.

Proposed Clinical Trial on Insomnia Treatment and Mental Health; Research with Purpose (philanthropic funding) – July 2023.

Insomnia and Its Associations with Impaired Emotion Regulation and Anxiety; European Sleep Research Society (online) – Oct 2023.

Professor Brendon Yee

Restless Legs Syndrome in the Elderly; Hunter Parkinson’s Society Meeting – 2022.

Trainee Meeting: How to Bbecome a Clinician/ Researcher, World Sleep, Canada, online – Mar 2022.

Update on Treatment of CNS Disorders of Hypersomnolence; Sleep in Aotearoa 2022, New Zealand, online – 2-13 May.

Management of Less Common Sleep Disorders in General Practice: Restless Legs Syndrome, Australasian Sleep Association webinar – Sept 2022.

Meet the Professor; SLEEP 2022, American Academy of Sleep Medicine, Charlotte, USA – 4-8 June.

Asia-Pacific Medical Masterclass Series – 2022.

New Drugs for Sleepiness: Where Might They Fit In?; State of the Art 2023, Monash Lung and Sleep Institute, Melbourne – 28 July.

Orexin-2 Agonists in Healthy Participants and Narcolepsy; World Sleep 2023, Rio De Janiero, Brazil – 20-25 Oct.

Plenary: OSA and Cognition; 21st Annual Meeting of the Taiwan Society of Sleep Medicine 2023, Taipei, Taiwan, 28-29 Oct.

Non-Respiratory Sleep Disorders; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

Will New Weight Loss Therapies Resolve OSA?; Sleep DownUnder 2023, Adelaide – 8-11 Nov. Pharmacotherapy of OSA; APSR 2023 (27th Congress of the Asian Pacific Society of Respirology), Singapore, 16-19 Nov.

Management of Overlap Syndrome, Thoracic Society of Australia and New Zealand, New Zealand – Nov 2023.

Asia-Pacific Medical Masterclass Series – 2023.

Dr Yizhong Zheng

A Comparison of Two Obesity Related Hypoventilation Disorders – Impact on Sleep, Quality of Life and Neurocognitive Outcomes and the Effects of PAP Therapy; Sleep DownUnder 2023, Adelaide – 8-11 Nov.

WOOLCOCK CENTRE FOR CHRONIC DISEASES OF AGEING

GROUP LEADERS: Professor Carol Armour and Dr Angela D’Rozario

Established in July 2022, the Centre is undertaking research into chronic health conditions common in ageing, including sleep apnea and other sleep disorders, and chronic obstructive pulmonary disease (COPD). We are exploring how these conditions relate to cognitive decline and neurodegenerative diseases such as dementia.

The dramatic increase in life expectancy over the past 50 years has been a triumph of medicine. But it has also led to an increase in the rates of chronic and degenerative disease. Through our Centre, we will discover new approaches for early diagnosis and treatment of age-related sleep and respiratory disorders and translate those discoveries into world-best clinical practice.

The Woolcock Centre for Chronic Diseases of Ageing has been made possible through the generous support of our donors, the Ernest Heine Family Foundation and Mrs Janice Gibson.

OUR ADVISORY TEAM

Professor Carol Armour (Co-Chair), Dr Angela D’Rozario (Co-Chair), Professor Alaina Ammit, Associate Professor Christopher Gordon, Professor Guy Marks, Professor Chris O’Neill, Associate Professor Craig Phillips, Professor Daniela Traini, Professor Brendon Yee, Professor Paul Young.

OUR RESEARCHERS

Dr Angela D’Rozario (Director), Professor Brendon Yee,

Professor Ron Grunstein, Dr Camilla Hoyos, Professor Brian Oliver, Dr Hui Xin Ong, Dr Katrina Tonga, Dr Rick Wassing, Dr Julia Chapman, Dr Dia Xenaki, Dr Andrea Ricciardiello, Dr Gianluca Cotta Ramusino, Dr Rhearne Ryan.

Research undertaken by the Centre for Chronic Diseases of Ageing aims to develop a range of innovative approaches to better characterise, understand and treat sleep disorders and chronic obstructive pulmonary disease (COPD), related cognitive impairment and dementia risk. We plan to:

- Establish a new specialised research clinic for COPD and sleep-disordered breathing patients;
- Develop a new testing method for people with sleep disorders or COPD or other ageing-related disorders for early recognition of cognitive impairment;
- Identify biomarkers to discover the mechanisms of brain ageing and cognitive decline in people with sleep disorders or COPD using innovative techniques;
- Provide evidence through clinical trials of the role of smoking versus COPD in cognitive decline;
- Develop a model to test new interventions for cognitive decline at a very early stage in disease;
- Formulate new agents/repurpose existing agents for testing very early in the process of cognitive decline in people with COPD and sleep disordered breathing; and
- Test non-drug interventions in proof of concept trials.



WOOLCOCK CENTRE FOR LUNG CANCER RESEARCH & LUNG CANCER RESEARCH NETWORK

DIRECTOR: Professor Maija Kohonen-Corish

The revolutionary Centre for Lung Cancer Research was built at the Woolcock Institute of Medical Research with the financial support of NSW Health and the Office of Health and Medical Research as well as a number of generous donors. This modern, purpose-built research centre is now well-established and is changing the way a deadly cancer is diagnosed, treated and studied both in Australia and globally. Our flagship projects include:

- Understanding how the human microbiome is altered in lung cancer and how it can be exploited in treatment;
- Uncovering the contrasting impacts of antibiotic use to improve lung cancer therapies; and
- Mapping of lung cancer susceptibility genes in children with pediatric cancers.

This program is delivering the following outcomes:

- Development of microbiome-based biomarker

testing tools for estimating resistance of lung cancers to systemic therapy;

- Establishment of the biological basis for conducting randomised controlled trials of doxycycline antibiotics as a co-therapy for lung cancer; and
- Identification of lung cancer-associated gene variants in children with pediatric cancers.

This research will open up pathways to overcoming challenges that today limit the life expectancy of people with non-small cell lung cancer.

GRANTS

Perpetual, Impact Philanthropy – awarded 2021-2022. Professor Maija Kohonen-Corish. (\$100,000).

Perpetual, Impact Philanthropy – awarded 2023-2024. Professor Maija Kohonen-Corish. (\$75,000).

Tour De Cure Senior Research Grant – awarded 2023-2024. Professor Maija Kohonen-Corish. (\$100,000).



OUR CLINIC

The Woolcock Clinic is a world-leading medical centre specialising in the diagnosis and treatment of all sleep and breathing disorders. Our dedicated clinicians, who are at the forefront of international health research, are able to support patients with the latest innovations in diagnosis and cutting-edge evidence-based medicine.

The COVID-19 pandemic still impacted our services and support during 2022 and 2023, however the staff of the clinic continued to offer world's best practice in clinical care. We followed NSW Health guidelines in terms of infection control and changed our clinical trial program to accommodate the required infection control requirements.

We continued to provide a comprehensive range of services for sleep and breathing disorders such

as asthma, chronic obstructive pulmonary disease (COPD), chronic cough, allergies, obstructive sleep apnea (OSA), insomnia, narcolepsy, restless legs syndrome and parasomnias (sleepwalking) in both adults and children.

The Woolcock NeuroSleep Clinic is a world-leading specialist centre for the diagnosis and treatment of sleep disorders, neurodegenerative and/or mental health problems. In addition, the Woolcock Therapy Centre, a Continuous Positive Airway Pressure (CPAP) clinic with dedicated CPAP therapists, offers expert help and advice to patients with sleep apnea which is vital to successfully using CPAP.

We also expanded our paediatric services to support parents and patients with childhood and adolescent sleep disorders, allergies, nasal and sinus conditions.



IN THE MEDIA

The Woolcock appeared regularly in print, online, radio and television media during 2022-2023, with our experts being interviewed about their world-leading research and providing commentary on topical issues.

Coverage driving high reach in 2022 included:

- Reports on microbiome and lung cancer (Anna McLean and Maija Kohonen-Corish)
- The LOCAL sleep study (Angela D’Rozario)
- Stepping down asthma prescribing (Helen Reddel)
- The CANRest study (Ron Grunstein)

Coverage driving high reach in 2023 included:

- Third-hand vaping stories (Brian Oliver)
- Results of the Alkermes trial (Brendon Yee)
- The ASTEROID study (Chris Gordon)

** Reach: how many people saw/heard the news item; Mentions: the number of media mentions (TV, radio, online news, newspapers, magazines)*

2022

Number of media mentions: 316

Potential reach: 11.49 million

Top stories:

- 21/01/2022: **Medical Republic, Euan Tovey**, “We need to talk about masks”
- 26/01/2022: **Daily Telegraph Australia, Ron Grunstein**, “200 people needed for Australian-first cannabis trial for people with sleep problems”
- 4/02/2022: **9News, Anna McLean and Maija Kohonen-Corish**, “Surprising new weapon being investigated for lung cancer treatment”
- 8/02/2022: **The National Tribune, Daniela Traini**, “Nasal spray new hope for Covid vaccine delivery”
- 15/02/2022: **ABC Radio, Angela D’Rozario**, “The Australian study uncovering what happens in the brains of people with sleep apnoea”
- 15/03/2022: **Medicine Today, Helen Reddel**, “Halving the carbon footprint of inhaled asthma therapy”
- 5/04/2022: **ABC JJJ Hack, Chris Seton**, “Some experts are recommending breaking up our sleep into ‘shifts’ for better productivity”
- 7/04/2022: **ABC News online and TV, Guy Marks**, “Vaping causes harm and addiction in ‘new generation’ of users, major report warns”
- 12/04/2022: ABC Parental as Anything podcast, Chris Seton, “Winning the sleep wars”

- 5/05/2022: **The Medical Republic, Maija Kohonen-Corish**, “Targeting the microbiome to improve cancer care”
- 5/05/2022: **Australian Pharmacist, Bandana Saini**, “Short of breath”
- 13/05/2022: **ABC Radio Adelaide, Christine Cowie**, “How to have a warm and safe winter with your gas appliances”
- 25/05/2022: **Aged Care News, Camilla Hoyos**, “Treating sleep apnoea can improve memory in people with cognitive decline”
- 15/06/2022: **Sydney Morning Herald, Chris Seton**, “What’s with all the fuss about nose breathing?”
- 12/07/2022: **ABC Radio Sydney, Ron Grunstein**, “Jet lag: what if you can’t fly first class?”
- 21/07/2022: **Croakey, Guy Marks**, “Advocacy by health professionals is critical in these heated, risky times”
- 1/08/2022: **The Canberra Times, Helen Reddel**, “People given ‘too much’ asthma medicine”
- 10/08/2022: **Medical Forum, Camilla Hoyos**, “Does sleep ward off dementia?”
- 11/08/2022: **RACGP News GP, Guy Marks**, “There’s no safe level of air pollution”
- 8/09/2022: **The Guardian, Sinthia Bosnic-Anticevich**, “Itchy, sneezy and wheezy? How Australians can get a handle on hay fever season”
- 20/09/2022: **Sydney Morning Herald, Christopher Gordon**, “He’s hot, you’re not: How to uncover the secrets of a happy relationship”
- 25/09/2022: **Sunday Times (Perth), Delwyn Bartlett**, “Cheap not necessarily cheerful for long-haul flights”
- 27/09/22: **ABC Radio, Chris Seton**, “Daylight savings and exams”
- 29/09/2022: **Medical Republic, Helen Reddel**, “Wet cough a warning for asthma and COPD”
- 7/10/2022: **Australian Doctor, Emma Stumbles**, “How to Treat Long COVID”
- 9/10/2022: **South China Morning Post, Delwyn Bartlett**, “Tips on surviving low-cost journeys and beating jet lag”
- 27/10/2022: **Sydney Morning Herald, Chris Seton**, “Hey parents, melatonin gummies for kids should be a last resort. This is why”
- 4/11/2022: **Channel 9 National News, Ron Grunstein**, “CANRest: can cannabis help you sleep better?”
- 14/11/2022: **Sydney Morning Herald, Ron**

Grunstein and Delwyn Bartlett, “Everything you need to know about getting a good night’s sleep”

- 17/11/2022: **The Australian, Guy Marks**, “Tobacco giant moves to stub out vaping laws”

2023

Number of media mentions: 908

Potential reach: 21.47 million

- 5/01/2023: **National 9 News, Guy Marks**, “Research reveals there’s more to obesity and breathlessness”
- 13/02/2023: **Sydney Morning Herald, Chris Seton**, “Teen brains need more sleep: Why they struggle to get out of bed”
- 28/02/2023: **The National Tribune, Christine Cowie**, “A heated debate - how safe are gas stoves?”
- 12/03/2023: **Daily Telegraph, Delwyn Bartlett**, “3 sleep experts on their top ‘best-sleep-yet’ hacks/ Same hours, better sleep”
- 13/03/2023: **The Medical Republic, Sheila Sivam**, “One in 10 CF diagnoses are in adults”
- 24/03/2023: **Sydney Morning Herald, Ron Grunstein**, “Infrasound a lot of noise about nothing, study finds”
- 11/04/2023: **ABC News Online, Chris Seton**, “Amid explosion in popularity of melatonin to help kids sleep, parents told not to buy it online”
- 12/04/2023: **ABC News Hour, Guy Marks**, “Warnings about wood heaters in the home: Interview with Guy Marks”
- 9/05/2023: **The Age, Brian Oliver**, “The long-term dangers of vaping are unclear but there are troubling clues”
- 24/05/2023: **ABC Radio Sydney, Ron Grunstein**, “Interview with Ron Grunstein”
- 3/06/2023: **Australian Journal of Pharmacy, Bandana Saini**, “Are we taking sleep seriously”
- 15/06/2023: **The National Tribune, Christopher Gordon**, “Please explain? Do sleep apps really help with insomnia?”
- 22/06/2023: **ABC Online, Chris Seton**, “To nap or not to nap, that is the question?”
- 23/06/2023: **The Age, Colin Tuft**, “Panic began to creep in: Why do adults sleepwalk and is it dangerous?”
- 1/07/2023: **Australian Journal of Pharmacy, Brian Oliver**, “Helping in the fight against flu”
- 9/07/2023: **Sun Herald, Brian Oliver**, “Teens buy

vapes online, end up in emergency”

- 27/07/2023: **Body+Soul, Chris Seton**, “Is mouth taping the secret to a good night’s sleep?”
- 4/08/2023: **Australian Doctor, Christopher Gordon**, “Digital health interventions in sleep disorders”
- 23/08/2023: **ABC Radio Sydney, Chris Seton**, “How does your need for sleep change over the years?”
- 8/09/2023: **Channel 9, Ron Grunstein**, “Narcolepsy TV news segment”
- 11/09/2023: **Channels 7, 9 and 10, Brian Oliver**, “Smoking and vaping TV news segments”
- 12/09/2023: **ABC News Sydney, Christine Cowie**, “News clip on poor air quality in Sydney”
- 13/09/2023: **Sydney Morning Herald, Ron Grunstein**, “Melatonin misunderstood as a ‘natural sleeping pill’, but clock setter for some”
- 22/09/2023: **Channel 9, Ron Grunstein**, “Researchers have discovered midlife sleep disorders are linked to what happens in childhood”
- 24/09/2023: **SBS News, Chris Seton**, “The problem that can create a vicious cycle for high school students”
- 27/09/2023: **The Australian, Brian Oliver**, “Study shows vaping damages the mouth ten times faster than smoking”
- 23/10/2023: **Press Association, Brendon Yee**, “Alkermes presents first clinical data for orexin 2 receptor agonist ALKS 2680 at World Sleep Congress”
- 30/10/2023: **ABC Sydney, Simon Lewis**, “Understanding Parkinson’s”
- 3/11/2023: **Channel 9, Chris Gordon**, “The ASTEROID study”
- 20/11/2023: **Channel 7, James Di Michiel**, “Restless legs syndrome interview”

DIGITAL MEDIA

We have continued our commitment to digital media to more effectively communicate the Woolcock’s news and achievements, as well as provide opportunities for public engagement.

During the calendar year 2023, there were approximately 139,000 visitors to the Woolcock website, with the communications team posting 36 news stories in our News section.

We also continued to engage strongly with social media, with 118 original posts each on Twitter/X, Facebook and LinkedIn.

OUR COMMITTEES

Below is a list of the Committees that operated in 2022 and 2023 and their membership (listed by Chair, then members):

FINANCE AND RISK COMMITTEE

Members: Julie Osbourne (C), Carol Armour, Robert Estcourt, Cansy Ittimani, Greg Kaplan, Jayne Shaw, Ian White.

EXECUTIVE COMMITTEE

Members: Carol Armour (C), Brett Toelle, Wai Kuen Chow/Hera Dimitriadis, Greg Kaplan, Brian Oliver, Sinthia Bosnic-Anticevich, Kristina Vincenc, Daniela Traini, Paul Young, Trisha Al-Mazi /Akshay Bhumkar.

NEXT GENERATION/POSTGRADUATE COMMITTEE

Members: Brian Oliver (C); very rapidly changing membership over time.

RESEARCH COMMITTEE

Members: Brett Toelle/Hui Xin Ong (C), Angela D’Rozario (Deputy C), Carol Armour, Akshay Bhumkar, Biljana Cvetkovski, Greg Kaplan, Maija Kohonen-Corish, Nathaniel Marshall, Brian Oliver, Craig Phillips, Alaina Ammit, Kaj Blokland, Kamila Abutalieva

RESEARCH LEADER COMMITTEE

Members: Daniela Traini (C), Alaina Ammit, Sinthia Bosnic-Anticevich, Angela D’Rozario, Christopher Gordon, Ron Grunstein, Camilla Hoyos, Greg King, Maija Kohonen-Corish, Guy Marks, Nathaniel Marshall, Thu-Anh Nguyen, Brian Oliver, Hui Xin Ong, Craig Phillips, Helen Reddel, Paul Robinson, Bandana Saini, Brett Toelle, Paul Young.

CLINICAL COMMITTEE

Members: Colin Tuft (C), all clinicians at the Woolcock, Gosia Bronisz, Greg Kaplan, Jeremy Sparkes, Andrew Treptow, Kristina Vincenc, Hera Dimitriadis.

WHS COMMITTEE

Members: Catherine Shread/Trisha Al-Mazi/Akshay Bhumkar (C), Juhura Al-mazi, Akshay Bhumkar, Cindi Elstub, Ann-Marie Gregory, Greg Kaplan, Shweta Naik, Diren Reddy, John Reynolds, Jeremy Sparkes, Yana Suslik, Rick Wassing.

OPERATIONS COMMITTEE

Members: Greg Kaplan (C), Rita Varoli, John Reynolds, Cansy Ittimani, Kristina Vincenc, Akshay Bhumkar, Hera Dimitriadis.



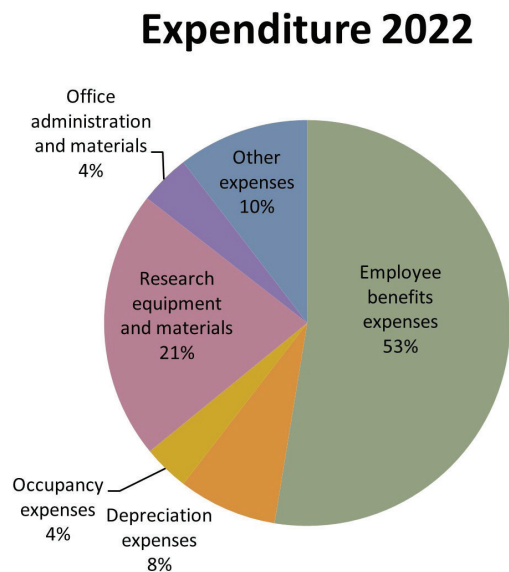
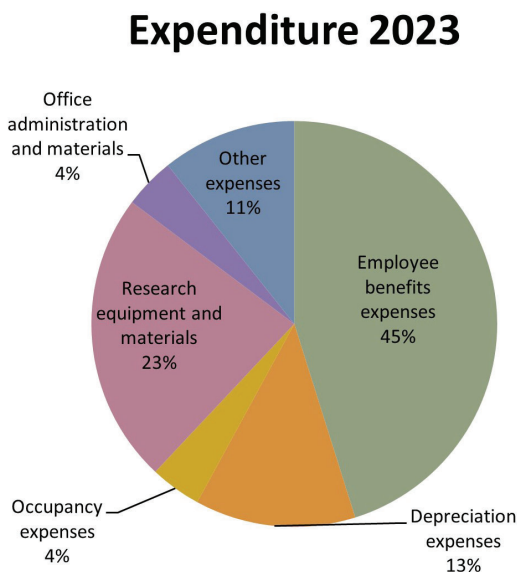
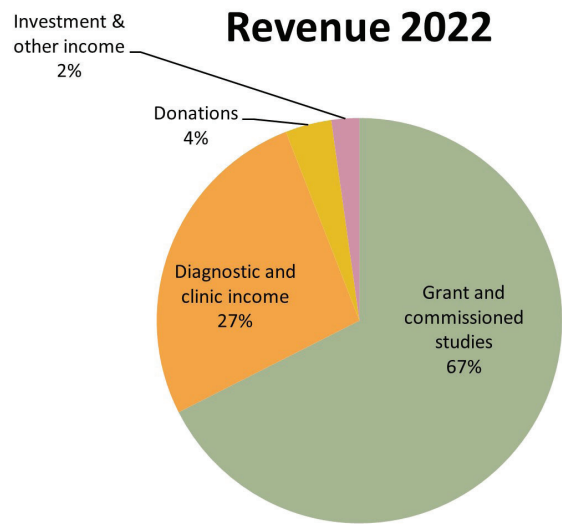
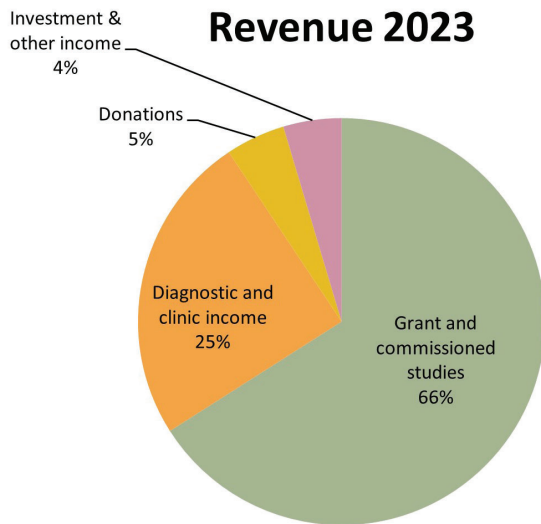
FINANCIAL PERFORMANCE

The Woolcock Institute of Medical Research experienced a major period of change in the years 2022 and 2023 with the primary affiliation moving from the University of Sydney to Macquarie University.

Despite additional challenges introduced by this transition, the Woolcock’s financial performance in 2023 was robust. Total revenue increased by \$1.73 million or 11.5 percent compared to 2022. This was driven by \$1.41m growth in research income and an increase of approximately \$200,000 in philanthropic donations to research. Ninety-six percent of all expenses in 2022 and 2023 were made on research

directly, research support or the clinic. Only four percent of total expenses was spent on administration.

The 2023 statutory financial result of the Woolcock was a deficit of \$1,190,247 (compared to a deficit of \$810,983 in 2022). This included \$2,492,527 in non-cash depreciation and amortisation mostly brought by the expiring lease of the Woolcock building in Glebe. The 2023 financial result with this one-off non-cash expense removed was a surplus of \$1,302,280. This surplus provided the Woolcock with a solid buffer to cover relocation expenses to the new purpose-built premises on the Macquarie University campus.



STATEMENT OF PROFIT OR LOSS

	\$	\$
	2023	2022
REVENUE		
Revenue	18,291,404	15,785,600
Total revenue	18,291,404	15,785,600
EXPENSES		
Depreciation expenses	(2,492,527)	(1,304,874)
Employee benefits expenses	(8,795,110)	(8,726,436)
Occupancy expenses	(792,223)	(609,056)
Research equipment and materials	(4,526,867)	(3,556,556)
Office administration and materials	(787,705)	(666,212)
Other expenses	(2,087,219)	(1,733,449)
Total Expenditure	(19,481,651)	(16,596,583)
Surplus/(deficit) from operating activities	(1,190,247)	(810,983)

STATEMENT OF FINANCIAL POSITION

	\$	\$
	2023	2022
ASSETS		
Cash and cash equivalents	6,590,608	5,375,139
Trade and other receivables	1,645,739	863,727
Inventories	86,861	83,611
Other financial assets	11,874,396	11,705,686
Other assets	426,319	309,982
Total current assets	20,623,923	18,338,145
Property, plant and equipment	271,278	505,485
Lease assets	559,972	1,353,509
Total non current assets	831,250	1,858,994
Total assets	21,455,173	20,197,139
LIABILITIES		
Trade and other payables	967,444	664,091
Lease liabilities	153,033	603,498
Provisions	3,486,133	725,229
Contract liabilities	11,395,261	10,408,772
Total current liabilities	16,001,871	12,401,590
Lease liabilities	0	153,435
Provisions	224,595	1,223,160
Total non current liabilities	224,595	1,376,595
Total liabilities	16,226,466	13,778,185
Net assets	5,228,707	6,418,954
EQUITY		
Retained earnings	5,228,707	6,418,954
Total equity	5,228,707	6,418,954

BOARD OF DIRECTORS



ROBERT ESTCOURT AM (BOARD CHAIR)

Appointed 14 September 2005

Member of the Lung Foundation of Australia Investment Advisory Committee (2020-); Director Brookvine Pty Limited (2004-); Director and Chair of Finance and Risk Committee Radio 2RPH; Member Australasian Sleep Association Finance Committee; Investment Consultant to The Royal Australian & New Zealand College of Ophthalmologists (RANZCO) (2013-); Consultant AA Solutions (2012-); Director e Clipse Online (2010-2016); Director Innova Asset Management (2014-2015); Independent Investment Committee Member Charter Hall Opportunity Funds (2005-2014); Chairman Austock Asset Management (2007-2009), Director & Chief Executive Officer, Retail Cube Limited (2004-2006); Principal, Estcourt Associates (2003-); Director of AMP Portfolio Businesses (2002-2003); Director and Head of Cobalt RunOff Services Ltd (2000-2002); AMP Group GIO Task Force (1999-2000); Director, AMP Asset Management (1992-1999); Head of AMP Investments, New Zealand, 1990-1992; Head of Investment Strategy; Equity Research, AMP Investments (1986-1990); Assistant General Manager, Investment Division, UAL Merchant Bank (1974-1986). In 2021, Robert was awarded a Member of the Order of Australia for his significant service to the financial management sector.



JULIE OSBORNE (DEPUTY CHAIR)

Appointed 30 May 2012

Ms Julie Osborne has extensive experience across a range of sectors including in excess of 25 years in financial services. She currently chairs the Board of Assetinsure Pty Limited and serves as a non-executive director on the Boards of Auto & General Insurance Company Limited, NSW Crown Holiday Parks Land Manager and Police Bank Limited. Julie has also consulted to KPMG in the Audit, Assurance and Risk Consulting Division regarding the strategic alignment of capability and business development. Previously, in her executive career, Julie was an Executive Director at Westpac Banking Corporation for 15 years where she led the Structured Finance business within the Treasury Division and served on various Westpac Group subsidiary companies in Australia and the United States. Julie is a past member of the Summerland Financial Services Limited Board and the Starlight Children's Foundation NSW Advisory Board.



PROFESSOR CAROL ARMOUR AM (EXECUTIVE DIRECTOR)

Appointed 10 April 2012

Appointed Executive Director 1 July 2012

Professor Armour has worked in the area of asthma research at a basic scientific and clinical level. Her investigations span the breadth of asthma research from the cellular mechanisms to the translation of new ways to treat asthma within the health system. She is on the Australian Respiratory Council, The National Asthma Council and has chaired the National Asthma Monitoring Advisory Committee, worked on the National Therapeutic Guidelines and the Australian Medicines Handbook. From 2003-2006 she was a member of the NHMRC Research Committee and was the Chair of the Training Awards Committee. She was Pro-Vice Chancellor, Research, at The University of Sydney, from 2006 to 2009. In 2005, she was made a Fellow of the Pharmaceutical Society for her services to the profession, and she was awarded the Australasian Pharmaceutical Science Association (APSA) medal for research in 2007. She was an Associate Dean in the Faculty of Medicine until 2018 and was made a Payne-Scott Professor by The University of Sydney in 2018. In 2019, she was awarded an AM for her significant service to medical education and asthma management. In 2020, she was awarded the prestigious Eureka Prize for Outstanding Mentor of Young Researchers, in recognition of her lifelong passion for mentoring and career development of staff and students.



PROFESSOR BRUCE ROBINSON AC

Appointed 30 May 2006 Resigned 5 April 2023

Fellow in Medicine, Harvard Medical School (1986-1988); Instructor in Medicine, Harvard Medical School (1988-1989); Pioneered and Head, Molecular Genetics Unit (1989 – then transitioned to Co-Head, Cancer Genetics in 2010-), Co-Head of the Kolling Institute of Medical Research (1989-); Professor of Medicine (Endocrinology), The University of Sydney (1992); Head, Department of Medicine, The University of Sydney, Northern Clinical School (1996-2001); Chairman, Department of Medicine, The University of Sydney (1998-1999); Head, Division of Medicine, Royal North Shore Hospital (1998-2006); Chairman, Hoc Mai, Australia Vietnam Medical Foundation, The University of Sydney (2001-); Associate Dean (International) Faculty of Medicine, The University of Sydney (2003-2005); Dean, Faculty of Medicine, The University of Sydney (2006-2016); awarded Member of the Order of Australia AM in Queen’s Birthday Honours (2012); Chair, National Health and Medical Research Scientific Council (2015-); Chair, Medicare Benefits Schedule (MBS) Review Taskforce (2015-2020); Director, Cochlear Limited (2017-); Director, Mayne Pharma Group Limited (2014-); Director QBiotics Group Ltd (2018-), Companion (AC) in the General Division of the Order of Australia (2020).



PROFESSOR MATTHEW PETERS

Appointed 8 October 2015

Professor Matthew Peters is a Respiratory Physician and Head of Respiratory Medicine at Concord Hospital. He holds academic appointments at Macquarie University and The University of Sydney. He has long had an interest in preventative health and was Chair of Action on Smoking and Health (ASH) for many years. He is a past President of the Thoracic Society of Australia and New Zealand. He has research interests in respiratory physiology and the pulmonary and cardiac responses to hypoxia. He was made a Member of the Order of Australia for significant services to medical education in the 2019 Honours list.



SIMON BLACKBURN

Appointed 20 September 2013

Director, The Hunger Project Australia (2014-), Senior Partner, McKinsey & Company, Sydney (2012-), Partner, McKinsey & Company, Sydney (2008-2012), Partner, McKinsey & Company, Boston (2004-2008), Consultant, McKinsey & Company, Boston (1997-2004), Director, Parents as Teachers, USA (2007-2013), Director Massachusetts STEM collaborative, USA (2004-2007), Research Engineer, Telstra (1992-1993).



JAYNE SHAW

Appointed 12 October 2016 Resigned 8 December 2022

Ms Jane Shaw has significant experience in healthcare management and an experienced clinical background in nursing. She has acted in senior management roles in two Australian private hospitals and established an Australian and international consulting business which was sold to Healthsouth, a large US Healthcare company. After this, she became the co-founder of Vision Group, a business that was successfully listed on the ASX. Ms Shaw has been a member of several private healthcare boards involved with specialist consolidation including cardiology, cancer care, orthopaedics, and women’s health and has continued to work with private equity firms on local and international healthcare transactions. She also holds positions on the boards of Mable Technologies, the Woolcock Institute of Medical Research, and the Hareda Foundation, and as Chairman of BCAL Diagnostics.



DAVID MACINTOSH AM

Appointed 7 April 2021

Member of the Order of Australia 2011, awarded National Medal for Service 2014, Chairman, The Macintosh Foundation, Macintosh Chair of Paediatric Respiratory Medicine – Endowed Chair 29 November 2005 in perpetuity; Founder since 2013 and Benefactor since 2007, Royal Alexandra Hospital for Children - The Children’s Hospital at Westmead; Director, The Australian Lung Foundation (1994-2013); Governor, St Vincent’s Hospital, Curran Foundation; Life Governor, Melanoma Institute of Australia; Deputy Chairman, Ainsworth Charitable Foundation (2016-); Executive Chairman, Manager Director and Independent Director of ASX listed public companies and private companies over 28 years; 35 years of Senior Management and Director level in the Transport and Construction Industries in Australia and Europe; Actively involved in the Surf Life Saving movement for over 50 years; Life Member, Long Reef Surf Life Saving Club Inc.; Life Member, Collaroy Surf Life Saving Club Inc.; Life Member, City Tattersalls Club; Director, Vice President, United Nations Australia Association (NSW) 2017-2019; Appointed Australia’s United Nations Goodwill Ambassador Oceans – Life Under Water SDG-14 and The Pacific, 2018–2019 and Principal Advisor, Marine Life, and Oceans and The Pacific–United Nations Association of Australia (2019-); Awarded Honorary Associate Life Membership TSANZ 2020; Appointed to the Board of ARC in 1997; President of ARC (2000-2013, 2019-); Vice President of ARC (2013-2019); Elected Life Governor of ARC in 2010. Director, Woolcock Institute of Medical Research (2000-2011 and 2021-).



FIONA CAMPBELL

Appointed 22 February 2017

Fiona Campbell was admitted to practise law as a solicitor in the Supreme Court of New South Wales in 1993. She is currently a solicitor in private practice at Vizzone Ruggiero Twigg Lawyers (1997-) specialising in plaintiff medical negligence and other personal injury litigation. Fiona has a particular interest in psychiatric injury and forensic mental health. She has conducted many cases for plaintiffs in numerous areas of medical specialties including orthopaedic surgery, obstetrics, maternal-foetal medicine, neurosurgery, infectious diseases, ophthalmic surgery and oncology. Prior to her employment with VRT Lawyers, Fiona commenced her legal career at Blake Dawson Waldron (now Ashurst) where she joined the insurance (Medical Defence) practice group acting for a large medical indemnity insurer, United Medical Defence. Fiona gained wide-ranging experience and medical knowledge acting for doctors in civil litigation as well as disciplinary and Health Care Complaints Commission proceedings.



IAN WHITE (COMPANY SECRETARY)

Appointed 1 May 2012

Ian White has over 40 years’ experience within the financial services industry across various general management and company secretarial roles.

PUBLICATIONS

2022

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