



Australian Government

National Health and Medical Research Council

NH|M|R|C

RESEARCH EXCELLENCE AWARDS 2017

27 JUNE 2018

WORKING TO BUILD A HEALTHY AUSTRALIA



PROFESSOR ANNE KELSO AO

CHIEF EXECUTIVE OFFICER

One of the most enjoyable parts of my role is the opportunity to acknowledge the outstanding contributions of Australia's researchers. Of all endeavours, health and medical research arguably has the greatest potential to improve the quality of human life. This era is one of unprecedented possibility in our bid to understand, prevent, treat and cure disease.

The Research Excellence Award winners celebrated here were the top-ranked applicants in each of NHMRC's funding schemes in 2017. All have shown their outstanding capabilities in their chosen fields of research and have proposed future research of the highest quality and promise. Yet again I am awed by the originality and diversity of research undertaken by Australian researchers with NHMRC support. These projects will deliver tangible benefits to human health.

Congratulations to each of our winners. I wish them every success in their research and look forward to seeing the outcomes in the years ahead.

THE AWARDS

RIISING STAR AWARD

The award is given to the top-ranked application by an Indigenous researcher in the Early Career Fellowship scheme.

GUSTAV NOSSAL AWARD

The award is named in honour of Sir Gustav Nossal and his pioneering work in the field of immunology. It is awarded to the highest ranked applicant for an NHMRC Postgraduate Scholarship in the field of medical and dental research.

FRANK FENNER EARLY CAREER FELLOWSHIP

This award is named to honour the achievements of Professor Frank Fenner. This is awarded to the highest ranked applicant from the Biomedical or Public Health Early Career Fellowship category whose research focus is in an area of international public health application, and best reflects the qualities exemplified in Professor Fenner's career.

MARSHALL AND WARREN AWARD

The award is named after Australian Nobel Laureates Professors Barry Marshall and Robin Warren, who were awarded the 2005 Nobel Prize in Physiology or Medicine. The award is made to the applicant with the most highly innovative and potentially transformative Project Grant application.

PROJECT GRANT

Project Grants support the creation of new knowledge by funding the best investigator-initiated research project in any area relevant to human health. The award is given to the highest ranked applicant in NHMRC's Project Grant scheme.

PROGRAM GRANT

Program Grants support teams of high calibre researchers to pursue broad based, multi-disciplinary and collaborative research activities. The award is made to the highest ranked applicant in NHMRC's Program Grant scheme.

DEVELOPMENT GRANT

Development Grants support the commercial development of a product, procedure or service that would result in improved health care, disease prevention or provide health cost savings. The award is given to the highest ranked applicant in NHMRC's Development Grant scheme.

FELLOWSHIP AWARDS:

RESEARCH FELLOWSHIP

Research Fellowships support leading health and medical researchers in full-time research. The award is given to the highest ranked applicant in NHMRC's Research Fellowship scheme.

ELIZABETH BLACKBURN FELLOWSHIPS [BIOMEDICAL, CLINICAL, PUBLIC HEALTH]

These fellowships are named after Australian-American Nobel Laureate Elizabeth Blackburn, who was awarded the 2009 Nobel Prize in Physiology or Medicine. The fellowships promote and foster the career development of female researchers. The award is made to the highest ranked female applicant in each of the biomedical, clinical and public health pillars of the Research Fellowship scheme.

PRACTITIONER FELLOWSHIP

Practitioner Fellowships support research that results in the translation of evidence into improved clinical practice and health policy, delivering improvements in health and healthcare to Australians. The award is given to the highest ranked applicant in NHMRC's Practitioner Fellowship scheme.

CAREER DEVELOPMENT FELLOWSHIPS [BIOMEDICAL, CLINICAL, INDUSTRY, POPULATION HEALTH]

Career Development Fellowships support early to mid-career health and medical researchers. It helps investigators establish themselves as independent, self-directed researchers. The award is given to the highest ranked applicant in each of the biomedical, clinical, industry and population health pillars of the Career Development Fellowship scheme.

THE WINNERS

RISING STAR AWARD

Doctor Lisa Whop

GUSTAV NOSSAL AWARD

Doctor Amanda Gwee

FRANK FENNER EARLY CAREER FELLOWSHIP

Doctor Matthew Field

MARSHALL AND WARREN AWARD

Associate Professor
James Bourne

PROJECT GRANT

Professor Stephen Nutt

PROGRAM GRANT

Professor Jamie Craig

DEVELOPMENT GRANT

Professor Shudong Wang

ELIZABETH BLACKBURN FELLOWSHIPS

BIOMEDICAL

Professor Melissa Little

CLINICAL

Professor Leanne Togher

PUBLIC HEALTH

Professor Rebecca Ivers

FELLOWSHIP AWARDS

RESEARCH FELLOWSHIP

Professor Melissa Little

PRACTITIONER FELLOWSHIPS

Professor Sharon Lewin,
Professor Gemma Figtree
and Professor Stephen Tong

CAREER DEVELOPMENT FELLOWSHIPS

CLINICAL — LEVEL 1

Doctor Trisha Peel

CLINICAL — LEVEL 2

Associate Professor
Adam Deane

POPULATION HEALTH — LEVEL 1

Doctor Joanne McKenzie

POPULATION HEALTH — LEVEL 2

Associate Professor
Germaine Wong

INDUSTRY — LEVEL 2

Associate Professor
Paulo Ferreira

R.D. WRIGHT BIOMEDICAL — LEVEL 1

Doctor Daniel Pellicci

R.D. WRIGHT BIOMEDICAL — LEVEL 2

Doctor Darren Creek



RISING STAR AWARD

DOCTOR LISA WHOP

MENZIES SCHOOL OF HEALTH RESEARCH

**REDUCING DISPARITIES IN CERVICAL CANCER INCIDENCE
FOR ABORIGINAL AND TORRES STRAIT ISLANDER WOMEN
THROUGH SCREENING AND VACCINATION**

Significant inequalities persist in cervical cancer rates among Indigenous Australian women compared with the larger population, despite a national prevention program using cervical screening and a Human Papillomavirus (HPV) vaccination.

Research by Dr Lisa Whop found Indigenous Australian women had twice the frequency of high-grade abnormal results on their pap tests and were also less likely to receive a follow-up within the recommended timeframe. Dr Whop, a Torres Strait Islander woman from Queensland, is focusing her research on two priority areas: improving uptake of screening among never-screened Indigenous Australian women, and increasing uptake and completion of HPV immunisation among Indigenous adolescents.

"My aim is to ensure Indigenous Australian women remain beneficiaries as Australia moves towards eradicating cervical cancer. Ideally, this would mean a reduced number of Indigenous Australian women are diagnosed with cervical cancer, and improved survival rates of Indigenous Australian women detected with this cancer."



GUSTAV NOSSAL AWARD

DOCTOR AMANDA GWEE

MURDOCH CHILDREN'S RESEARCH INSTITUTE

IMPROVING THE TREATMENT OF NEONATAL SEPSIS
THROUGH VANCOMYCIN PHARMACOKINETIC
AND PHARMACODYNAMIC MODELLING

Newborns who develop serious infections are routinely treated with the antibiotic vancomycin. However the best dosing method in newborns has never been determined.

Dr Amanda Gwee is examining two different ways of administering vancomycin to newborns as well as studying how much of this drug is needed to effectively treat infections. Her research is timely as more bacteria become resistant to antibiotics, with some treatments no longer effective. Dr Gwee hopes her studies will enable first-line antibiotics to be useful for longer and ensure newborns are getting the best possible medical care.

Her findings will ultimately lead to a standardised dosing method for vancomycin in newborns as well as the development of a widely available dosing tool to ensure all newborns receive the optimal dosage of vancomycin.

"It is very clear that infections remain one of the biggest threats to the lives of children throughout the world. And now, with antimicrobial resistance on the rise, I feel that my area of research — antimicrobial dose optimisation — is even more important to not only prevent the emergence of resistance but to overcome it."



FRANK FENNER EARLY CAREER FELLOWSHIP

DOCTOR MATTHEW FIELD

JAMES COOK UNIVERSITY

DEVELOPING CORE BIOINFORMATICS CAPACITY AT
THE AUSTRALIAN INSTITUTE OF TROPICAL HEALTH AND MEDICINE

Biology has entered a data-rich era thanks to the decreased cost of collation and increased volume of sequence data. This cost-effective next generation sequencing means the research bottleneck for many projects is shifting from data generation to analysis.

Dr Matthew Field is finding ways to manage this data in the hope of personalised medicine routinely being used in clinical practice, ensuring each patient gets the precise treatment required for their biological makeup.

As part of developing these information pipelines, Dr Field and his team are using sequencing technology to identify pathogens responsible for tropical diseases aiming to develop precise patient treatments. They are also investigating how Indigenous Australians may respond differently to cancer treatments due to differences in their genomes.

"My love of biology and computers naturally led me to bioinformatics, which is playing an increasing role in medical research by expanding our understanding of the underlying cause of human diseases."



MARSHALL AND WARREN AWARD

ASSOCIATE PROFESSOR JAMES BOURNE

MONASH UNIVERSITY

THE PULVINAR IS INSTRUMENTAL IN THE DEVELOPMENT
OF VISUAL CORTICAL NETWORKS

Brain injury and disease continue to have a major impact on individuals of all ages, their families and society. There is still much to uncover about the ways information is processed in specific circuits of the brain which play a role in complex behaviours like vision and speech.

Associate Professor Bourne has focused his research on understanding these circuits to help those recovering from brain injury, as well as children experiencing difficulties with their vision. Already, his research has found a new pathway linking the eye to the brain which is responsible for integrating specific visual information critical for behaviours early in life.

Understanding these circuits has significant implications for a number of developmental brain disorders that can arise in early childhood. A/Professor Bourne's findings have seen better informed care and treatment for those with a brain injury, as well children who show early signs of movement and vision problems.

"I have a deep fascination with how information which processed in specific circuits of the brain plays a role in complex behaviours like vision and speech... I hope to be able to clarify the involvement of these pathways in learning, language or movement disorders, and specifically in childhood blindness."



PROJECT GRANT

PROFESSOR STEPHEN NUTT

**THE WALTER AND ELIZA HALL
INSTITUTE OF MEDICAL RESEARCH**

DETERMINING THE ESSENTIAL REGULATORS
OF ANTIBODY PRODUCTION

Our immune system plays a crucial role in maintaining our health by preventing infection, with plasma cells responsible for producing protective antibodies. However, rogue plasma cells can cause disease as the antibodies wrongly target our own body.

Professor Nutt's research is aiming to better understand the production of antibodies and to stop faults in this process which result in autoimmune diseases and cancers.

This includes understanding how cells make decisions, including the signals that initiate the formation of immune cells from rare blood stem cells, through to strategic responses in the body about whether to attack foreign organisms.

"I believe that understanding how immune cells normally work tells us what is going wrong in disease settings and highlights new approaches to treat diseases such as autoimmunity and allergy."



PROGRAM GRANT

PROFESSOR JAMIE CRAIG

THE FLINDERS UNIVERSITY OF SOUTH AUSTRALIA

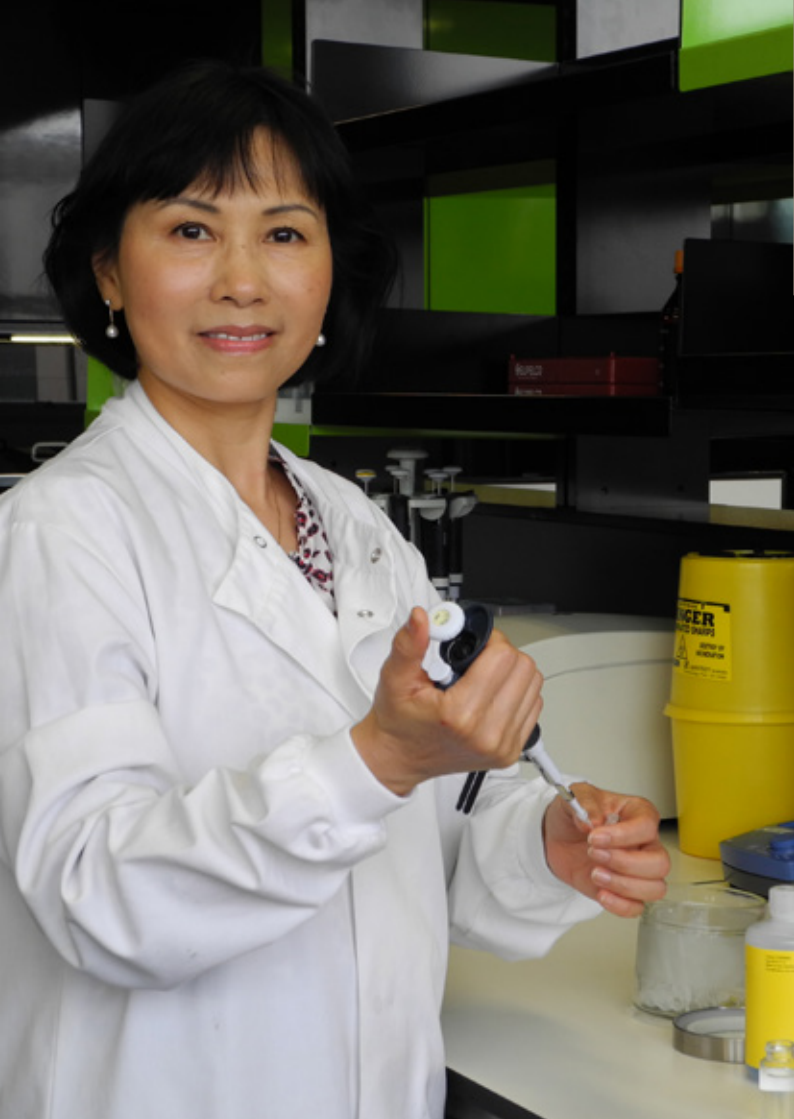
TRANSLATING GENETIC DETERMINANTS OF GLAUCOMA
INTO BETTER DIAGNOSIS AND TREATMENT

Glaucoma, a complex highly heritable eye disease, is the leading cause of irreversible blindness globally. Along with cancer and dementia, blindness is among the most feared illness nationwide. Professor Jamie Craig specialises in the care of patients with glaucoma with a focus on translating laboratory-based research into clinical practice.

His current research program with his national co-workers aims to build a global database to identify the genes involved in the development of glaucoma, analyse patient eye tissue and pioneer evidence-based strategies to manage glaucoma patients.

Professor Craig has made great strides in understanding why some people are blinded by glaucoma, and why some families are at high risk of developing it. His work has also helped develop early detection methods to prevent vision loss in future generations.

"With [our research], and applying existing and new treatments, we hope to prevent glaucoma sufferers of all ages from missing out on the opportunity to drive, read, and recognize their loved ones."



DEVELOPMENT GRANT

PROFESSOR SHUDONG WANG

UNIVERSITY OF SOUTH AUSTRALIA

DEVELOPMENT OF A NOVEL AND HIGHLY SELECTIVE CDK4/6 INHIBITOR FOR TREATING CANCER

Professor Shudong Wang is an internationally recognised leader in development of cyclin-dependent kinase (CDK)-targeted medicinal chemistry and cancer therapeutics.

It is estimated that over 134,000 new cases of cancer were diagnosed in Australia in 2017. As Australians are living longer today, the burden of cancer is rapidly increasing. Breakthrough research focusing on new and more effective therapies are of paramount importance to the health of Australians.

Professor Wang's goal is to discover new anti-cancer drugs and to see these through their development into the clinic.

"The launch of our new drug candidate with its novel structure, better clinical safety and enhanced treatment responses would represent a massive improvement on current therapies. There is nothing more satisfying than what we are doing — to find a cure for cancer."



ELIZABETH BLACKBURN FELLOWSHIP — BIOMEDICAL
+ RESEARCH FELLOWSHIP

PROFESSOR MELISSA LITTLE

MURDOCH CHILDREN'S RESEARCH INSTITUTE

REGENERATING THE KIDNEY USING
AN UNDERSTANDING OF NORMAL DEVELOPMENT

With 3.2 million people worldwide receiving treatment for kidney disease, and a dramatic deficiency in transplant organs, there is a need for alternative therapies.

In a bid to genetically engineer these vital organs, Professor Melissa Little has found a way for reprogrammed, self-multiplying, stem cells to be directed to form mini-kidneys containing all the major cell types expected in the human kidney. This breakthrough opens the door to personalised modelling of genetic kidney disease.

Furthermore, Professor Little hopes her research will improve kidney disease diagnosis and our understanding of disease mechanisms and further develop approaches for kidney regeneration.

"I have worked in one or another aspect of kidney biology since I was an Honours student. My shift into developmental biology was because of the wonder and beauty of the biology. My shift into stem cell biology was because I hoped to do something useful with my research."



ELIZABETH BLACKBURN FELLOWSHIP
— CLINICAL

PROFESSOR LEANNE TOGHER

UNIVERSITY OF SYDNEY

ADVANCING LIFE PARTICIPATION OUTCOMES
FOLLOWING TRAUMATIC BRAIN INJURY BY IMPROVING
COMMUNICATION SKILLS: FROM THE BEDSIDE TO THE BARBEQUE

70 per cent of people with a brain injury experience a loss of communication skills as a result. This sudden change can have devastating and life-changing ramifications, like loss of work, not being able to study, relationship breakdown, social isolation and poor quality of life.

After successfully helping a young woman regain her ability to communicate following a serious brain injury over 30 years ago, Professor Leanne Togher saw the importance of tailored, specialist treatment. Today she is working to identify the most effective treatments, based on theories of neural repair, cognitive processing and models of learning.

Professor Togher is making her findings widely available using digital health technology, leading to improved recovery and less disruption to the lives of those affected.

"My first case taught me that specialist treatment can lead to restoration of communication after a brain injury, the importance of including family in all the treatment (which in this case was her young husband of three weeks) and also the need to focus on everyday life activities when developing treatment plans."



ELIZABETH BLACKBURN FELLOWSHIP
— PUBLIC HEALTH

PROFESSOR REBECCA IVERS

THE GEORGE INSTITUTE FOR GLOBAL HEALTH

REDUCING THE GLOBAL BURDEN OF INJURY
THROUGH EFFECTIVE PREVENTION AND TRAUMA CARE

Injuries are a global public health issue, and a leading cause of death in Australia for people aged one to 44. The likelihood of being injured also increases as socioeconomic status declines; the same goes for the severity of an injury.

Professor Rebecca Ivers is dedicated to addressing this global challenge, looking to generate research outcomes applicable not only to an Australian setting, but internationally. Professor Ivers' work focuses on implementation of programs to reduce injury and improve trauma care, with a focus on addressing inequities in injury in low income settings, and in partnership with Aboriginal and Torres Strait Islander people. Her work includes research addressing road injury, burns, drowning and falls, including a major program of work to address drowning in Bangladesh.

Professor Ivers has also worked with clinicians in regional and resource poor areas to determine best-practice care methods.

"I have gravitated to injury research because of the need — it is a major global issue but there has been insufficient investment either in research or in policy."



PRACTITIONER FELLOWSHIP

PROFESSOR SHARON LEWIN

UNIVERSITY OF MELBOURNE

THE FUTURE OF HIV CARE —

LONG TERM REMISSION AND ELIMINATING CO-MORBIDITIES

Excellent treatment is now available for people living with HIV. Antivirals can control the virus and allow the immune system to recover, leading to a near normal life span. However treatment is life long and there is no cure.

Professor Sharon Lewin is developing tools to understand how the virus survives in the human body in HIV-infected individuals on suppressive treatment and is looking to identify and test new drugs to eliminate the virus that can persist. Recently approved drugs for cancer treatment work by triggering the body's own immune response, and Professor Lewin hopes they will have a similar effect with HIV. Her research is also searching for ways to reduce the incidence of liver disease in those with HIV or hepatitis B.

"I hope to find a way to one day allow people living with HIV to safely stop antiviral treatment and once off antivirals, to stay well and no longer transmit the virus to other people. I also hope to find new ways to manage the damaging effects on the liver which occur when someone is infected with both HIV and hepatitis B virus."



PRACTITIONER FELLOWSHIP

PROFESSOR GEMMA FIGTREE

UNIVERSITY OF SYDNEY

FROM FUNDAMENTAL MECHANISMS TO STRATEGIC METHODS OF
EARLY DETECTION AND TREATMENT FOR CARDIOVASCULAR DISEASE

Globally there are a growing number of people with coronary artery disease despite showing minimal risk factors. Working with large biobanks of patient data, Professor Gemma Figtree is searching for genetic markers and signs people may be at risk of coronary complications.

A major focus will be using multi-“omics” and bioinformatics approaches to unravel new markers and mechanisms in patients who present with heart attacks despite minimal standard risk factors. Professor Figtree’s work will also translate her fundamental discoveries into novel methods for cardiovascular diagnosis, risk stratification and therapy.

“I would like to discover a marker that integrates the host response to various modifiable cardiovascular risk factors, that allows us to identify patients at high risk of atherosclerosis in its early phase, and allows aggressive therapy to prevent progression.”



PRACTITIONER FELLOWSHIP

PROFESSOR STEPHEN TONG

UNIVERSITY OF MELBOURNE

TRANSLATING NEW THERAPEUTICS
AND DIAGNOSTICS FOR MAJOR PREGNANCY COMPLICATIONS

Professor Stephen Tong is an obstetrician and his team is focussed on translational research, developing new diagnostics and treatments to tackle major complications that threaten the lives of mothers and babies.

Stillbirth is a tragedy that abruptly ends the lives of over three million unborn babies a year and it leaves an emotional toll on women every single day. Preeclampsia is a serious condition of pregnancy that can claim the lives of mothers and babies.

The major focus of Professor Tong's work is to decrease the large number of lives lost to devastating complications during pregnancy, with his research dedicated to finding safe and effective drug treatments and diagnostic tools.

Professor Tong's team previously discovered two simple drug approaches that could cure ectopic pregnancies without surgery and he is now working with others to test these in human trials running internationally. Professor Tong will continue the hunt for a treatment for this condition that can risk the lives of mothers and babies.

"I believe maternal health and newborn health are important challenges that are also most worthy of 'front and centre' attention of some of the best minds in research."



**CAREER DEVELOPMENT FELLOWSHIP
CLINICAL — LEVEL 1**

DOCTOR TRISHA PEEL

MONASH UNIVERSITY

OPTIMISING PATIENT OUTCOMES FOLLOWING SURGERY —
BRIDGING THE FIELDS OF ANTIMICROBIAL STEWARDSHIP,
MICROBIOLOGY AND INFECTION PREVENTION

Surgical wounds are the leading cause of infections associated with healthcare, and they are the costliest. Bacteria found on the patient's skin are thought to be the main source of infection, making them the target of prevention strategies which rely on the use of antibiotics — a problematic routine as the global population sees a rise in antibiotic resistance.

Dr Trisha Peel's work centres on better understanding the role of the skin's bacteria in infection development, determining the best preventative options, examining the efficacy of current prevention treatments and determining how to most effectively implement evidence-based measures nationwide.

"Antimicrobial resistance, particularly in patients undergoing surgery, is the biggest health challenge today. There is a genuine concern that the benefits of procedures, such as joint replacement surgery, will be undermined by the impact and consequences of antimicrobial resistance."



CAREER DEVELOPMENT FELLOWSHIP
CLINICAL — LEVEL 2

ASSOCIATE PROFESSOR ADAM DEANE

UNIVERSITY OF MELBOURNE

IMPROVING UBIQUITOUS INTERVENTIONS
TO OPTIMISE OUTCOMES FROM CRITICAL ILLNESS

Every year around 130,000 Australians are admitted to an intensive care unit.

Associate Professor Adam Deane is examining common patient care strategies in order to find ways to improve health outcomes for those in intensive care. In order to achieve this he is using several programs of research, including observational data, systematic reviews, small proof-of-concept studies and large pragmatic multi-centre clinical trials.

A/Professor Deane is hoping the results of his clinical trials will identify practical, realistic and cost-effective solutions for conditions that result in considerable mortality and morbidity affecting large numbers of patients.

"As a clinician I want to ensure that interventions I frequently implement at the bedside are informed by high-quality evidence and therefore improve outcomes for a large number of critically ill patients."



CAREER DEVELOPMENT FELLOWSHIP
POPULATION HEALTH — LEVEL 1

DOCTOR JOANNE MCKENZIE

MONASH UNIVERSITY

METHODOLOGICAL RESEARCH IN META-ANALYSIS AND
EVIDENCE SYNTHESIS: AN EVIDENCE-BASED METHODS APPROACH

Systematic reviews are bringing together research on potential benefits and harms of healthcare treatments. They are used by patients and doctors to inform treatment decisions, and by policy makers in deciding which surgeries or medications to fund. Statistical methods are used to combine numerical data on the effects of treatments, the results of which underpin the conclusions of systematic reviews.

Dr Joanne McKenzie has focused her research on developing and evaluating the statistical methods and methodology used in systematic reviews. This research will allow us to answer clinically relevant questions more effectively, with the assurance that the methods will provide valid information.

"My collaborations with researchers have helped strengthen the methods used in randomised trials, systematic reviews and other studies. This is important because the methods we use in research determine whether we get the right answer and this is essential for ensuring that research improves health."



CAREER DEVELOPMENT FELLOWSHIP
POPULATION HEALTH — LEVEL 2

ASSOCIATE PROFESSOR GERMAINE WONG

UNIVERSITY OF SYDNEY

A LIFE COURSE APPROACH TO IMPROVING
THE HEALTH OF YOUNG PEOPLE WITH CHRONIC KIDNEY DISEASE

Kidney disease is a devastating illness in children and can lead to reduced quality of life and premature death. Associate Professor Germaine Wong has found new evidence on the risk of cancer in patients suffering from kidney disease and has devised interventions and strategies for cancer screening and prevention in this at-risk population. She has also identified social inequality and poverty as the key drivers of poor health in children and young adults with kidney diseases.

Using these findings A/Professor Wong has developed a life course approach to address the needs of these children and close the health gaps. These include the development of an equitable, transparent and efficient deceased donor kidney allocation algorithm that allows improved access for the young and disadvantaged.

"I am really hoping that my current and future research will change the lives of Australians living with kidney disease. The devastating health outcomes in patients suffering from chronic kidney disease and the lack of quality evidence to support novel interventions to improve health have drawn me to this field of research."



**CAREER DEVELOPMENT FELLOWSHIP
INDUSTRY — LEVEL 2**

ASSOCIATE PROFESSOR PAULO FERREIRA

UNIVERSITY OF SYDNEY

UNRAVELLING THE EFFECTS OF PHYSICAL ACTIVITY FOR BACK PAIN

Back pain affects millions of Australians, with a huge number of variables contributing to the cause, severity, treatment and duration of symptoms.

Research by Associate Professor Paulo Ferreira will explore the relationship between this pain and physical activity. His study will cover the impact of patient centred physical activity programs, with the support of e-health technology. A/Professor Ferreira is also looking to better understand the connections between genetics and back pain.

Alongside his research goals is A/Professor Ferreira's focus on the use of technology for management of low back pain, to ensure people in rural and regional areas are able to access the same support and treatment options.

"My research has helped Australians to understand which treatments work and do not work for back pain. It has also helped people to choose which types of physical activities may be beneficial or harmful for low back pain."



CAREER DEVELOPMENT FELLOWSHIP
R.D. WRIGHT BIOMEDICAL — LEVEL 1

DOCTOR DANIEL PELLICCI

UNIVERSITY OF MELBOURNE

THE ROLE OF CD1-RESTRICTED T CELLS IN HEALTH AND DISEASE

As Australians live longer, more are falling ill to autoimmune diseases, cancers and infections in later life. It is important we have a complete understanding of the immune system so we can treat and ideally prevent these diseases, and this forms the basis of Dr Daniel Pellicci's research.

Dr Pellicci is looking at ways of modulating the actions of T cells to aid the body's response to illnesses by studying immune cells in healthy humans and comparing them to those from disease patients.

As part of his research, Dr Pellicci is working to understand the role of lipid-specific T cells in human immunity. These T cells are responsible for leading a potent immune response when activated, and they play an important role in human health. It is hoped a better understanding of these cells will unlock new pathways for treating cancer, infections and even allergies.

"Humans are living much longer these days. With this comes increased complications often associated with a deteriorating immune system. We are more susceptible to infections and cancer, and allergies and autoimmune diseases are on the rise. It is important we invest in basic and clinical research to support the health of Australians."



CAREER DEVELOPMENT FELLOWSHIP
R.D. WRIGHT BIOMEDICAL — LEVEL 2

DOCTOR DARREN CREEK

MONASH UNIVERSITY

ENHANCING ANTI-PARASITIC DRUG DISCOVERY WITH METABOLOMICS

Malaria was eradicated from the Western world in the middle of last century, but continues to threaten almost 40 per cent of the world's population that live in tropical countries.

Dr Darren Creek is looking for ways to improve the treatment of malaria and other tropical diseases using metabolomics, a state-of-the-art technology that allows comprehensive measurement of the chemical fingerprint of cells. By better understanding how drugs interact with parasites Dr Creek hopes his research will lead to the development of new medication to treat malaria and other tropical diseases.

Already Dr Creek's research has resulted in improved dosage guidelines for young children with malaria, and a new drug candidate for malaria that is currently undergoing clinical trials.

"Parasites, like bacteria, are always evolving resistance strategies to avoid being killed by antimicrobial drugs. I hope to develop new drugs with a well-defined mode of action that can kill multi-drug resistant parasites, and develop new testing tools to monitor and manage the spread of drug resistance in the future."

Cover image:

The roots of life

Casey Ah-Cann

Walter and Eliza Hall Institute of Medical Research Image.

Description: Lung development is a complex mechanism that is difficult to study. We are able to remove the lung from the earliest stages of its development and incubate it in the lab to study how it grows from two primordial lung buds to the characteristic tree like structure of the mature lung.

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