

FELLOWSHIP RESEARCH SUMMARIES AND CANDIDATE BACKGROUND



Dr Laura MacKay

Viertel Fellowship

Doherty Institute, University of Melbourne

Co-opting the body's existing immunity cells to work against viruses and cancers

Dr MacKay originally wanted to pursue a career as an artist, like her mother. But decided on getting a 'sensible' degree in science. She became very interested in immunology after suffering from glandular fever during her time at university.

"Being creative is a crucial skill as a scientist – innovative discoveries don't happen unless you think outside the box."

"It's an honour and privilege to be awarded the 2019 Viertel Fellowship, the funds will go a long way in advancing my quest to harness the immune system to fight infection and cancer."

"Investing in medical research is paramount for scientists to make discoveries and to enhance treatments, this is a tremendous commitment by the Sylvia and Charles Viertel Charitable Foundation and one that I'm extremely appreciative of."

Project description

The development of optimal immunotherapies against viruses and cancer requires the generation of an effective cellular immune response. While some immune cells patrol the blood, a unique subset of T-cells, called tissue-resident memory T-cells, exist in tissues of the body and are different to those ordinarily circulating in the blood. These types of T-cells are 'first responders' against pathogens that are encountered at body surfaces and are critical to immune protection for pathogens such as influenza, herpes simplex virus, malaria, and even some tumours. Most recently these T-cells were associated with significantly improved survival rates in patients with breast cancer and melanoma. Laura and her team are now looking at ways to boost the generation of these T-cells and enhance their ability to protect people from disease via a new program of T-cell based immunotherapies that can work with existing treatments and improve patient outcomes.

About Dr MacKay

The University of Melbourne's Dr Mackay is a Laboratory Head and Senior Lecturer at the Doherty Institute and holds an Adjunct appointment at the Singapore Immunology Network at A*STAR. Her Laboratory studies memory T-cell responses, with a focus on the signals that control tissue-resident memory T-cell differentiation, with a view to harness these cells to develop new treatments against infection and cancer.

Laura obtained her PhD from The University of Birmingham, U.K., in 2009, before taking up a post-doctoral position with Professor Francis Carbone at the University of Melbourne. Laura established an independent group at the Doherty Institute in 2016, and is currently a Howard Hughes Medical Institute (HHMI) and Bill & Melinda Gates International Scholar and an National Health and Medical Research Council (NHMRC) Career Development Fellow. Her research is supported by several research project grants from the NHMRC, and she is the recipient of several awards including The Michelson Prize for Human Immunology (2018) and The Victorian Young Tall Poppy Award (2016). Laura is a regular co-host on Melbourne Triple R Radio science show Einstein-A-Go-Go, and serves on the council of the Australian Society of Immunology. She is the recently appointed President of The Federation of Immunological Societies of Asia-Oceania (FIMSA).



Associate Professor James Ward

Viertel Fellowship

South Australian Health and Medical Research Institute and Flinders University, Adelaide

Transforming the health of Aboriginal young people using population health approaches, health services research and biomedical interventions

Associate Professor Ward said receiving the Viertel Senior Medical Fellowship is one of the greatest achievements of my career.

"It is not only recognition of my many years of research aimed at addressing disparities in Aboriginal and Torres Strait Islander health, but also recognition of the generosity and trust of communities across Australia and of my staff and colleagues who have enabled this research."

"The Viertel Foundation now provides a solid base from which to scale up studies in population and health services research as well as additional studies testing biomedical interventions, all of which are required to address disparity between Aboriginal and non-Indigenous Australians."

Project description

James' research currently involves partnerships with more than 100 Aboriginal communities and is aimed at addressing disparities in health and social outcomes for young Aboriginal people, especially those in regional and remote communities. In adolescence, the predominant infections are those of the urogenital tract and blood stream. The fundamental cause is appalling levels of socioeconomic disadvantage combined with epidemiological factors, risk behaviours and health service inefficiencies. A strength of his work is building on the existing infrastructure in communities as well as the agency, resilience and culture to achieve outcomes that are both effective and beneficial to communities. The Fellowship will enable several large-scale health service research studies to be scaled up, including a national sentinel surveillance network of Aboriginal primary care services, several national population health studies and new areas involving molecular epidemiology, and a trial to test effectiveness of Neisseria Meningitis B vaccine on prevalence of Neisseria Gonorrhoea and their impact in STI transmission.

About Associate Professor Ward

Associate Professor James Ward is a Pitjantjatjara/Narungga man and a national leader in Aboriginal and Torres Strait Islander research. He is currently the Head of the Infectious Diseases Research Program, Aboriginal Health, at the South Australian Health and Medical Research Institute and a Matthew Flinders Fellow at Flinders University Adelaide. For more than two decades he has been working passionately to make a difference in adolescent health outcomes through programs, research, community-led interventions and advocacy; particularly in the areas of sexual health, HIV and alcohol and other drugs.

In recognition of his expertise, James has been awarded funding applications totalling \$23m since 2013, including \$7.14m as Chief Investigator on National Health and Medical Research Council NHMRC-funded grants. He has authored > 100 publications and has led national research projects in arguably some of the most sensitive areas of Aboriginal health; sexually transmissible infections and blood borne viruses including issues related to injecting drug use. His work has influenced policy and practice significantly over the past five years, contributing to national guidelines and policy and practice. In 2017, James was recognised by the NHMRC with the Rising Star Research Excellence Award for the top-ranked application by an Indigenous researcher in the Early Career Fellowship scheme and by the local Aboriginal community by being awarded the NAIDOC SA Scholar of the Year. He provides advice to the Commonwealth Government through representation on two committees; 'Alcohol and Other Drugs' and 'STIs, HIV and Viral Hepatitis'.

Throughout his health and research career James has demonstrated a true commitment to improving the health and wellbeing of Aboriginal and Torres Strait Islander adolescents and a dedication to awareness, education, dissemination, advocacy and community engagement.



Dr Kim Jacobson

Bellberry-Viertel Fellowship

Biomedicine Discovery Institute, Monash University

Epigenetic regulation of humoral immunity in health and disease

Bellberry-Viertel Fellowship recipient Dr Kim Jacobson said the fellowships were career changing:

“To be able to have that continuity and stability to focus on our research is fantastic.”

“For me, it means we can delve in deeper, exploring what goes wrong during chronic infections and reveal potential targets for clinical translation. If we make a fundamental discovery in which we can see the translational potential, we can start moving down that pathway straight away rather than apply for further funding.”

Project description

Infectious diseases such as Malaria and HIV are responsible for causing more than a million deaths globally every year, and have so far evaded effective vaccine design. Vaccines rely on immune memory – the ability to clear an infection rapidly to a previously encountered pathogen. The majority of successful vaccines have relied on antibody-mediated immunity. Kim and her team are investigating these important questions in immunology: How are immune cells able to efficiently clear an infection before the pathogen has time to cause harm to the infected person? Why can't we form effective immune memory to pathogens such as Malaria and HIV? And what are the determining mechanics underlying the immune response that will allow us to understand why some infections cannot create the immune memory? Kim's work with epigenetic modifiers investigates which genes are expressed, and which are silenced in the process and ultimately which epigenetic regulators are critical to combat infections and ultimately immunity.

About Dr Jacobson

Dr Jacobson leads the B cells and Antibody Memory laboratory at Monash University, investigating chromatin and transcriptional modifications underlying the formation of immune memory. She is a NHMRC Career Development Fellow, and her work has been published in the top general and specialist journals, such as Science, Nature Immunology and the Journal of Experimental Medicine. Dr. Jacobson completed her PhD at the Centenary and Garvan Institutes in 2007, followed by postdoctoral training at Yale University, where she revealed a novel role for the inhibitory receptor PD-1 in humoral responses. She returned to Australia in 2010 to the Walter and Eliza Hall Institute, where she made key insights into how histone modifications regulate B cell memory, as well as the essential requirement for the oncogene c-Myb in the migration of long-lived plasma cells to their survival niche. She was a 2016 Victorian Young Tall Poppy Science Award recipient, currently serves as Treasurer for the Australasian Society for Immunology and writes for The Conversation.