

NFMRI announces 2018 grant recipients and the recipient of the John Dixon Hughes Medal

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National Foundation
for Medical Research
and Innovation



A/Prof Nicholas Huntington is awarded NFMRI's 2018 Dr John Dixon Hughes Medal

The National Foundation for Medical Research and Innovation (NFMRI) announced A/Prof Nicholas Huntington from the Walter and Eliza Hall the recipient of the 2018 Dr John Dixon Hughes Medal for Medical Research Innovation

The Medal, developed in honour of Dr John Dixon Hughes OAM (NFMRI's longest standing Trustee) showcases and celebrates the achievements of Australia's recent biomedical research innovators, entails a \$50,000 prize in the form of a research grant.

Associate Professor Nicholas Huntington's outstanding contribution to biomedicine has garnered a strong international reputation and signals his emergence as one of the world's leaders in cancer immunology and innovation.

A/Prof Huntington is an immunologist by training and is a laboratory head at the Walter and Eliza Hall Institute. For the past 6 years since its inception the Huntington lab has made major discoveries in the field of immune regulation and immunotherapy.

immunotherapy.

A/Prof Huntington spearheaded a program of pre-clinical NK cell research and drug development that is poised to have a profound impact in the quest to cure cancer. Using cutting-edge genome wide CRISPR screens, his group established a set of genes that impaired the NK cell response to a key growth factor, IL-15. Deleting one such gene, Cish, in NK cells, his team made a breakthrough discovery that Cish acted as a checkpoint or switch that shutdown the ability of NK cells to continue killing cancer cells. As such, ablation of this gene in pre-clinical models prevented melanoma, breast, prostate and lung cancer metastases from developing and reduced the onset and growth of sarcomas, breast and colon cancer.

His research generated immense interest from the immunology and cancer fields when published in 2016 (Delconte et al, Nature Immunology 17; 816-824; Putz et al, Oncoimmunology; 6:2). The pharmaceutical and biotechnology industry was convinced that the target was valid and safe, no less than 12 companies and venture capitalists expressed interest in partnering with A/Prof Huntington's team and develop drugs to inhibit Cish in cancer patients.

Working with the Institute's leaders in structural biology, medicinal chemistry, high-throughput chemical screening (HTCS) and proteomics, A/Prof Huntington assembled a world-class drug discovery team. Using two relevant patents on which he is an inventor, the Institute's expertise in SOCS biology and the HTCS data, A/Prof Huntington successfully leveraged a multi-million dollar investment and licencing from the French pharmaceutical company Servier to co-develop small molecule inhibitors for cancer immunotherapy with A/Prof Huntington acting as Project Director for this collaboration.

NFMRI's 2019 Medical Research Innovation Conference

"Aligning intent: working towards a more sustainable, efficient and effective medical research ecosystem"

Peppers, The Sands Resort
Torquay Victoria
20th-21st November 2019





2018 NFMRI awards

In the presence of industry, business, government, academia and philanthropy, NFMRI announced the successful researchers from across the country receiving new funding to support the advancement of their innovations commencing in 2019.

The event was kindly hosted by KPMG in Sydney on the 27th November.

Prof Roger Chung, Macquarie University

\$183,488 over 1 year, Nervous system disorders – Amyotrophic Lateral Sclerosis (ALS)

Preclinical evaluation of novel therapies for clearance of TDP-43 in amyotrophic lateral sclerosis

Professor Chung's team recently identified mutations in a specific gene (CCNF) as the cause of amyotrophic lateral sclerosis (ALS) in a large Australian family. A number of different mutations in the CCNF gene were identified by their international collaborators, and more recently by other international research groups. CCNF encodes a component of the protein that is a central regulator of protein degradation within cells. Because abnormal accumulation and aggregation of a protein, called TDP-43, inside motor neurons is the key pathological hallmark of the disease, it is possible that defective CCNF might contribute to a common convergent mechanism that leads to the abnormal protein aggregation that causes ALS.

To explore this further, Professor Chung's team have successfully undertaken further experiments and screening. The data generated from these experiments and screenings has provided compelling evidence.

NFMRI funding would be used towards a study that will provide strong pre-clinical evidence of efficacy for a proposed gene therapy. This is essential data for advancing this innovation through commercial development. This discovery is currently protected through a PCT that is due for conversion to National Phase in 2019, and potential commercial investors (pharma etc) that they have

approached have indicated that positive indications in a pre-clinical mouse study are required before they can consider the innovation for investment.

Dr Clare Stirzaker, Garvan Institute of Medical Research

\$141,834 over one year, breast cancer

Liquid biopsy monitoring for triple negative breast cancer: a novel epigenetic test

Dr Stirzaker and her team have performed the FIRST genome-wide profiling study on DNA methylation (epigenetics) in Triple Negative Breast Cancer (TNBC). Funding from NFMRI would be used to develop this TNBC-specific blood-based biomarker test, by providing access to the sensitive methylation assay that has been developed in the laboratory of Prof Trau and Dr Korbie at the University of Queensland. This assay is particularly important as it allows, for the first time, up to 50 methylation signatures to be tested on the same clinical sample in one test. In addition, the test employs next-generation sequencing which allows unprecedented sensitivity to be achieved, critical to accurately detect tumour methylation in a blood sample when circulating tumour DNA may comprise only 1% of the total circulating free DNA.

This project is supported in partnership with the generous funding from the NSW Community Foundation, the NSW Community Foundation – Nicholas and Phyllis Pinter Trust (both are managed by Equity Trustees) and NFMRI.

Dr Adam Taylor, Griffith University

\$50,000 over 1.5 years. Infectious diseases – Chikungunya virus

Liposome delivery of a chikungunya virus vaccine candidate: a solution to vaccine production bottlenecks

Dr Taylor has had several partnering discussions with industry around licensing or co-development of their live-attenuated chikungunya virus (CHIKV) vaccine candidate. This highlighted a single barrier for investment: production limits. The modifications that make the virus safe and effective for use as a vaccine, prevent rapid, large-scale production of the virus. It simply doesn't replicate fast enough. In response to this feedback, they have developed an alternative vaccine delivery vehicle that removes the need for in vitro scale up, and therefore, removes the production limit. NFMRI funding will enable conduct of efficacy testing on the new formulation to confirm immune response and storage efficacy.

This type of late pre-clinical research activity is not typically funded through NHMRC, but is critical to obtaining the required data to entice an industry partner, and consequently, bridge the 'valley of death'. CHIKV is transmissible between animals and humans via a mosquito vector. As global temperatures are rising, the mosquito populations in South-East Asia and Queensland are migrating south and their prevalence in New South Wales is increasing.

This project is supported in partnership with the generous funding from the NSW Department of Primary industries and NFMRI.

Dr Steven Wise, Heart Research Institute

\$95,022 over one year. Heart disease

Durable treatment of peripheral artery disease

Dr Wise is seeking support for an injectable treatment for peripheral artery disease. Peripheral artery disease has a significant impact on the health of humans, affecting over 2.3 million Australians and 200 million people globally. There is currently no lasting effective treatment, and thousands of cases result in amputations each year. This intervention has the potential to provide an urgently needed improved treatment option.

NFMRI funding would provide support for the one-year research plan incorporating a rat model and rabbit model study that will demonstrate safety and efficacy in two established animal models of vessel injury and healing - key criteria for attracting future investment.

These two models will complete the optimisation and proof-of-concept stages for the technology (rat model), before going head-to-head with current clinical practice in arteries of increasing anatomical similarity to humans (rabbit). Together these studies will provide the necessary data package to enable investors to confidently drive the technology to the next stage of development and toward clinical translation.

A/Prof Joanne Macdonald, University of Sunshine Coast

\$140,550 over 1.25 years. Infectious diseases - Malaria

A rapid, sensitive and portable molecular genetic test for diagnosis of Malaria in blood

In a project previously funded by the Bill and Melinda Gates Foundation, A/Prof Macdonald and her team developed rapid assay technology for the detection of Malaria (*Plasmodium falciparum*) in mosquitoes. Support is now required to validate the rapid and sensitive Malaria test for detecting subclinical infection levels at a collaborating institute by testing it on human samples containing low levels of infection. These samples are uniquely available via a collaborator already performing human clinical trials for treatment of Malaria infections. If it can be demonstrated that the test has higher sensitivity and can detect subclinical parasite levels, then the test will be well positioned to attract funding and investment for development into both the clinical detection market, as well as the market for tests that can assist with community screening for eradication programs.

NFMRI funding would also be used to determine the optimal manufacturing reagents to achieve the best possible sensitivity, specificity and reliability of testing kits, to provide further confidence for potential investors that our test can be reliably manufactured. The team will also expand the assay to detect other malaria strains such as *P. vivax*, which will extend the number of countries the tests can be employed in, as the relative prevalence of *Plasmodium* strains differs between countries.

This project is supported in partnership with the generous funding from the NSW Department of Primary industries and NFMRI.

Alzheimer's Disease Grant Round

As part of our partnership with [The Mason Foundation](#) (managed by Equity Trustees), NFMRI held a special purpose Alzheimer's Disease grant round. Thank you to all of those who submitted an EOI. Shortlisted researchers have been invited to submit a full applications and results will be announced in 2019.

Upcoming Researcher Presentations

28th November 2018 Sydney, UNSW (Lowy Cancer Research Institute)

14th February 2019 - Sydney - USYD

19th March 2019 - Melbourne - Baker IDI

If you would like to invite a speaker from NFMRI please complete the [speaker request form](#).



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