

ImmunoPro Project

Developing an effective therapeutic vaccine for all prostate cancer patients





RBWH
Foundation

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About Royal Brisbane and Women's Hospital

Our Hospital

Royal Brisbane and Women's Hospital.... touching lives for over 150 years.

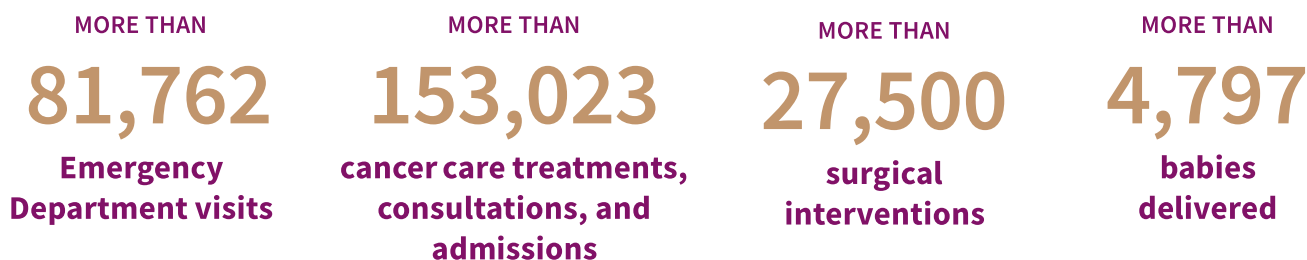
You would be hard pressed to find a Queenslanders without a story to tell about the RBWH. Throughout its long and distinguished history, the hospital has treated millions of people, saved countless lives, welcomed over half a million babies and trained generations of leading healthcare professionals.

The RBWH is a quaternary and tertiary referral teaching hospital, providing services to patients throughout the State, Northern New South Wales, the Northern Territory and the Pacific Rim, incorporating all major health specialties including medicine, surgery, psychiatry, oncology, women's and newborn services, trauma services and more than 30 subspecialties.

The hospital is also known for the significant teaching and research roles it performs in partnership with Queensland's major tertiary institutions. The hospital is at the forefront of internationally acclaimed medical research and holds the title of the largest teaching hospital in the Southern Hemisphere.

The RBWH has the potential to become a world leader in the provision of healthcare, education, training and research.

In 2019, RBWH's 8,000 multidisciplinary staff provided more than one million episodes of high-quality healthcare to patients, including:



Today the Royal Brisbane and Women's Hospital is Queensland's largest and busiest hospital, providing state-of-the-art health care services to over half a million people each year in a wide range of areas including cancer care, critical care, allied health, mental health, surgery and maternity services.

Our Foundation

RBWH Foundation (the Foundation) the charity behind the cause.

Although RBWH is part of Queensland Health, funding from the government is limited and there is often no available budget for certain equipment, training and research that will ensure the Royal remains at the forefront of patient care, and on the leading edge of new technology and treatment methods.

The Foundation's role is to fill this funding gap. All money raised by the Foundation is used to fund research on campus, purchase vital pieces of equipment, provide resources for patient comfort, and enable key health professionals to attend additional training programs, conferences and seminars. ImmunoPro project funding will be directed specifically to undertaking research, rather than purchasing equipment.

To raise these funds, the Foundation relies heavily on the support of the community. Your contribution will allow RBWH to build on its achievements of the last 150 years, to create an internationally acclaimed medical facility dedicated to the health and wellbeing of the local community, while making an impact world-wide.

RBWH Foundation is registered as deductible gift recipient (DGR) under the Subdivision 30 BA of the Income Tax Assessment Act 1997 and is endorsed by the Australian Tax Office (ATO) as an income tax concession charity (TCC).

Executive Summary

The ImmunoPro research project aims to develop an effective therapeutic vaccine for all prostate cancer patients.

The ImmunoPro research project will herald in a new treatment paradigm for prostate cancer using the body's own natural immune defences to fight this troublesome condition.

Prostate cancer is the most common malignancy diagnosed in Australian men with up to 30% who proceed to radical prostatectomy, the most common form of treatment for clinically localised disease, having secondary cancer diagnosed subsequently.

Our research team is internationally-recognised as having expertise with prostate cancer studies involving Dendritic Cell (DC) therapy at both clinical and pre-clinical levels. The next step is to undertake the proposed research as an immediate precedent to patient treatment.

The ImmunoPro research project aims to develop an effective therapeutic vaccine for all prostate cancer patients.

The goal is to:

- optimise the essential components for producing vaccines of prostate cancer which are optimally tailored to each individual patient's tumour
- undertake a clinical trial of patients with prostate cancer using individualised vaccines

We anticipate the first part of the project will take three years, with vaccination of patients in years four and five.

The research is required so that all patients with all tumours will benefit from treatment tailored to their individual cancers. All current treatments for prostate cancer have side effects with cure only effective for tumours localised to the prostate. By contrast with other treatments, DC therapies have a minimum of unwanted effects in some patients, and only in the short term. When they have been optimised, they promise to be effective for all prostate cancers.

Philanthropic support of \$500,000 is required for the first three years of the project.

The research team includes:

Trial Coordinator:

Emeritus Professor RA ('Frank') Gardiner AM

Principal Clinical Researchers:

Associate Professor John Yaxley and Associate Professor Matthew Roberts

Principal Pre-clinical Researchers:

Associate Professor Kristen Radford, Associate Professor Michelle Hill, Dr Paul Mainwaring, Dr Kevin Koo & Professor Matt Trau

Your Opportunity

The ImmunoPro project requires your philanthropic support as unfortunately this funding is not currently available through government bodies. The Royal Brisbane and Women's Hospital (RBWH) Foundation is seeking support for this important research project at Royal Brisbane and Women's Hospital.

Your support may provide a new treatment paradigm for prostate cancer using the body's own natural immune defences to fight this troublesome condition. You may help to develop a therapeutic vaccine for all prostate cancer patients, potentially saving lives in Australia and around the globe.

ImmunoPro Project

To develop an effective therapeutic vaccine for all prostate cancer patients

The effect of prostate cancer is wide reaching – affecting males diagnosed with the condition, their families and communities.

About Prostate Cancer

In Australia, prostate cancer is the most commonly diagnosed cancer in men. Approximately 3,500 Australian men die of prostate cancer each year. This cancer does not produce symptoms until it is advanced, so early diagnosis is currently made indirectly through the PSA blood test.

- One in 7 men will be diagnosed with prostate cancer by the age of 85.
- It is more common in older men, with 63% of cases diagnosed in men over 65 years of age.
- More men die of prostate cancer than women die of breast cancer.
- 30% of patients who undergo radical prostatectomy, the commonest form of treatment for clinically localised disease, have secondary cancer diagnosed subsequently.

The ImmunoPro project

The vision of our medical research is to develop a therapeutic vaccine for all prostate cancer patients

The ImmunoPro project aims to develop a therapeutic vaccine for all prostate cancer patients. The research project will herald in a new treatment paradigm for prostate cancer using the body's own natural immune defences to fight the most common cancer in men.

As routine treatment, those men at high risk of cancer escape will have lymph nodes and prostate cancer removed by prostatectomy, and used to develop a personalised activation of the patient's immune system. We have refined this DC immunotherapy approach to be more effective and less resource-intensive than prior applications.

When incurable recurrent cancer is detected by an elevated PSA test following a prostatectomy, participants will receive their vaccines to target microscopic cancer cells undetectable by imaging, providing the optimal scenario for cure at a time tumour burden is very low and patients are feeling well.

We are also developing a new approach to diagnose aggressive, potentially life-threatening disease to identify those likely to have microscopic cancer escape. This test involves detecting cellular exosomes and will complement other research being undertaken with co-investigators at XING Technologies to identify prostate cancer cells.

Prior to vaccine treatment, essential optimisation is required to maximise efficacy and safety for personalised treatment. This preparatory phase will take up to three years.

Through strengths in diagnostic testing, modern cancer imaging and clinical trials, this research will ensure an impactful outcome to benefit men worldwide.

Our group members are internationally recognised as experts in prostate cancer studies, with DCs in particular, at both clinical and pre-clinical levels. The next step is to undertake the proposed research as an immediate precedent to patient treatment.

Why our research is unique

Associate Professor Kristen Radford has more than 20 years' experience in DC vaccine strategies and has been awarded a Fulbright Future Scholarship (USA) for 2020. The laboratory Associate Professor Radford currently works in completed the first-in-man Phase I trial of cellular therapy (blood-based) in advanced prostate cancer and was the first to discover the CD141 Dendritic Cell subset.

Associate Professor Radford has also successfully investigated a humanised mouse model to show both the most effective DC subset for use in cancer immunotherapy and the key antigens for Dendritic Cells to activate T-cells.

Unlike previous vaccine studies ImmunoPro will:

- Expand patients' CD141 cells from Prostate Cancers and lymph nodes with DC growth factor Flt3 ligand
- Produce DC vaccines that cause little or no toxicity yet allow further treatments, e.g., CAR-T (being developed for other cancers at RBWH), checkpoint inhibitors and chemotherapy (if required subsequently)

Professor Gardiner, Dr Mainwaring and Associate Professor Radford conducted three DC Prostate Cancer clinical trials, including the first in Australia, but despite some notable long-term responses most patients did not respond.

ImmunoPro will:

- Treat men early when tumour burden and diversity are very small
- Use patients' own cancer-seeking DCs
- Detect additional vaccine targets using emerging data from Associate Professor Hill, and Drs Mainwaring and Koo

Proposed research timeline

We anticipate the first part of the project will take three years and that we can begin vaccinating patients in years four and five. Phase one will be undertaken during 2020 to 2021, with the planning for phase two clinical trials to commence in 2023.

STAGE ONE	2020	2021	2022	2023
1 - Ethics approvals, institutional agreements				
1 - Clinical exploratory study (30 patients)				
1 - Analysis & publication, method refinement				
2 - Phase 1 clinical trial (30 patients)				
2 - Planning for phase 2 clinical trial				

Patient requirements for research to be conducted

ImmunoPro Stage 1 = 30 patients

ImmunoPro Stage 2 = 30 patients

Collaborating partners

- **RBWH** – Associate Professor John Yaxley, Associate Professor Matthew Roberts
- **University of Queensland Centre for Clinical Research (UQCCR)** – Emeritus Professor RA “Frank” Gardiner, Associate Professor Matthew Roberts, Dr Kevin Koo, Ms Aine Farrell
- **Mater Research Institute, Translational Research Institute (TRI)** – Associate Professor Kristen Radford
- **QIMR Berghofer** – Associate Professor Michelle Hill, Dr Renee Richards
- **UQ Australian Institute for Bioengineering and Nanotechnology** – Professor Matt Trau
- **XING Technologies** – Dr Kevin Koo, Associate Professor Paul Mainwaring

Our Current Need

The ImmunoPro Project

Research Aim

To compare the prevalence of CD141 cells in patients' blood, lymph nodes and prostatic tissue for a vaccine with pertinent prostate cancer tumour antigens

Background

Exemplified by melanoma, checkpoint inhibition immunotherapy for cancer has captivated the public's imagination. However, only a minority of patients and cancers respond to this form of treatment with prostate cancer not among them. A different immunological approach, in which we have considerable experience, is Dendritic Cell (DC) therapy. Unlike checkpoint inhibition, the DC approach augments patient immune responses.

We undertook three DC clinical trials in prostate cancer, including the first in Australia, and although there were notable long-term responses, the majority of patients did not respond to their vaccines.

Importantly, these studies have enabled us to identify critical factors limiting efficacy and to establish the safety of the DC therapy approach.

Two key aspects subsequently investigated successfully by our group, in a humanised mouse model, have been identifying the most effective DC subset for use in cancer immunotherapy and the most appropriate antigens for DCs presentation to activate T cells. It is now time to start moving this research from the laboratory into the clinic.

Research Plan

Patients undergoing radical prostatectomy and lymph node dissection at RBWH will have blood taken at the time of anaesthetic induction during their prostatectomies and subsequently in the recovery suite. Small core samples of prostate tumour, adjacent prostate and lymph node will also be taken for CD141 analysis in Associate Professor Radford's laboratory.

In addition, these patients will have had pre-operative urine RNA antigen profiling by Dr Kevin Koo at UQCCR and XING Technologies, in addition to analyses of blood and tissue (obtained as above) by Dr Kevin Koo at UQCCR and XING Technologies, and marker profiling of extracellular vesicles by Associate Professor Michelle Hill (at QIMR Berghofer).

Research Goals

- To optimise the essential components for producing therapeutic vaccines of prostate cancer which are optimally tailored to each individual patient's tumour.
- To undertake a clinical trial of patients with prostate cancer using an individualised therapeutic vaccine.

Research Schedule

We anticipate the first part of the project will take three years and that we can begin vaccinating patients in years four and five.

Funding Allocation

Clinical: RBWH and UQCCR on RBWH campus

Immunology studies: MMRI/TRI

Antigen studies: UQCCR and QIMR Berghofer (RBWH campus) & XING Technologies

Appendix 1

Researcher Biographies

Emeritus Professor Robert ('Frank') Gardiner AM

Professor Frank Gardiner pioneered urological research in Queensland, establishing Brisbane internationally as a centre of innovative studies in urology. Professor Gardiner was the first to demonstrate the lymph drainage of the human prostate using lymphoscintigraphy and undertook the first dendritic cell vaccine studies in prostate cancer in Australia (including one Randomised Controlled Trial).

He has also promoted the use of seminal fluid in the very early detection of prostate cancer, leading to development of the Progenesa™ PCA3 test by Canadian and Dutch colleagues. Since 2000, with colleagues, Professor Gardiner has initiated and/or participated in six completed and published randomised controlled trials in South East Queensland and has been an editorial board member of seven peer-reviewed international journals, fulfilling roles as sub-editor and section editor in two, and associate editor in another.

Professor Gardiner has been, and continues to be, a Chief Investigator on multiple national and international research grants. He has published widely with 233 peer-reviewed manuscripts (which includes 11 book chapters).

Professor Gardiner is a Member of the Order of Australia, a Fellow of the Urological Society of Australia and New Zealand, and (internationally) the Urological Research Society. He was awarded a Certificate and Medal for Outstanding Service to the Royal Australasian College of Surgeons and was honoured with a RBWH Distinguished Research Award.

Associate Professor Matthew J. Roberts

Associate Professor Matthew Roberts is Consultant Urologist at RBWH and Redcliffe Hospitals, a Clinician Research Fellow with the Queensland Health's Metro North Hospital and Health Service; a UQCCR Group Leader and Clinical Associate Professor at the University of Sydney.

Associate Professor Roberts is a medical graduate of The University of Queensland and completed Urology specialty training in Queensland and New South Wales. He completed his PhD under the supervision of Professor "Frank" Gardiner investigating new biomarkers for the early detection and characterisation of prostate cancer.

Matthew was recently successful in being awarded a highly competitive Metro North Clinician Research Fellowship and works as a surgeon-scientist with interests in urologic cancers, infections and other diseases. He has authored many communications including one book (Senior Editor), three book chapters, and more than 80 peer reviewed manuscripts in international journals and presented his research at more than 20 international urology and clinical cancer meetings.

Among his many prizes and scholarships are a National Health and Medical Research Council (NHMRC) Clinical Postgraduate Research Scholarship, Cancer Council Queensland PhD Scholarship, Royal Australasian College of Surgeons' John Buckingham Travelling Fellowship, and selection for the Global Young Scientists Summit.

Matthew was the only University of Queensland student chosen following a competitive selection process by the Australian Research Council. Matthew has been awarded the Doctor-in-Training Research Scholarship by Avant Mutual Group and was the first medical student to receive the Professor William Egerton Surgical Research Award at the 2011 and 2012 RBWH Healthcare Symposia.

Matthew an invited peer reviewer for NHMRC Project Grants and more than 20 international journals, is recognised as being in the top 20 UQ Researchers for Peer Review (per Publons). His research supervision includes MBBS Honours (First Class) and multiple junior doctors, resulting in international publications and presentations.

Associate Professor John Yaxley

Associate Professor Yaxley has a urological practice that is sub-specialised to the treatment of prostate cancer. Dr Yaxley has performed more than 2700 radical prostatectomy and over 1000 brachytherapy procedures. Dr Yaxley has over 100 peer reviewed publications and has an active interest in prostate cancer research. He was a co-investigator in the randomised open verses robotic radical prostatectomy trial at RBWH, published in the Lancet. Dr Yaxley's current interests include research into newer staging and diagnostics techniques for prostate cancer, including prostate MRI and PET PSMA scans.

Associate Professor Michelle Hill

Associate Professor Michelle Hill, PhD, leads the Precision and Systems Biomedicine Laboratory, which aims to improve health outcomes by harnessing the power of omics and computational systems biology.

After training in cell biology and biochemistry, Michelle established the Cancer Proteomics Group at UQ Diamantina Institute in 2009, relocating to QIMR Berghofer in April 2017. With funding from NHMRC, ARC, PCFA and AICR, the lab initially focused on the mechanisms of cholesterol and obesity in prostate cancer and oesophageal adenocarcinoma.

In parallel, to address the urgent need for better diagnostics and early cancer detection, the team developed novel glycoprotein biomarker pipelines, and successfully identified and validated blood biomarkers for early detection of oesophageal adenocarcinoma. Most recently, Michelle's team has been developing and applying novel multi-omics analyses for full molecular profiling of exosomes as liquid biopsy targets.

Associate Professor Kristen Radford

Associate Professor Kristen Radford leads the Cancer Immunotherapies Group at Mater Research, University of Queensland, in the Translational Research Institute in Brisbane.

Associate Professor Radford completed her PhD in melanoma biology at the University of Newcastle, New South Wales, followed by a postdoc at Cancer Research UK in London. She then joined the newly established Mater Research Institute where she developed a dendritic cell vaccine that was translated to a first-in-man clinical trial for metastatic prostate cancer.

Appendix 1

Researcher Biographies

Her group first characterised the rare human CD141+ dendritic cell subtype that is now widely considered to be the key cell type required for inducing tumour immune responses, and which are important targets for anti-tumour and anti-viral immune responses. She is now pursuing the therapeutic potential of this discovery with international funding to develop vaccines that specifically target human CD141+ DC in vivo.

Associate Professor Radford has published 42 papers and attracted over \$6 million in peer reviewed funding. Her work has been recognised by many awards including NSW Young Australian of the Year, a prestigious NHMRC CDF2 Fellowship 2011-2014, the Sr Regis Mary Dunne Medal for Outstanding Research Contribution 2015, and a 2020 Fulbright Future Scholarship.

Associate Professor Radford is also Director of the Australian Humanised Mouse Program. "Humanised" mice are immunodeficient mice reconstituted with human hematopoietic stem cells that develop functioning human immune cells, including dendritic cells. These are emerging next-generation models for human immunology and are valuable models for understanding human dendritic cell biology and evaluating new human cancer immunotherapies.

Associate Professor Paul Mainwaring

Associate Professor Paul Mainwaring worked as a medical oncologist for 25 years, with an emphasis on basic, clinical and translational research applying new technologies to deliver the best available personalised care to patients and their carers. He has published extensively in the world's leading cancer journals including the New England of Medicine, Lancet, Lancet Oncology and Journal of Clinical Oncology.

After Associate Professor Mainwaring's initial Medical Oncology training in Sydney at Royal Prince Alfred and Royal North Shore hospitals he moved to the Royal Marsden in London, Europe's largest cancer hospital. Paul completed his MD in cell death at the Institute of Cancer Research and was appointed as a consultant at Guy's, King's and St Thomas' NHS Trusts in 1999.

In 2002, Paul returned to Australia as Director of Medical Oncology, Mater Adult Hospital, and in 2008 transferred across into private practice in Queensland continuing his translational and clinical research. As part of this work he came across the disruptive nanotechnologies being developed in Queensland that could transform patient care.

In 2019, Paul transitioned across from working as a medical oncologist to Xing Technologies to assist the brilliant team of researchers in bringing the Xing vision to patients.

Dr Kevin Koo

Dr Kevin M Koo received his Bachelor of Science (Biophysics Dual Major, 2013), BSc HonsI (Biochemistry, 2014), and PhD (Cancer Nanobiotechnology, 2018) from the University of Queensland, Australia.

Funded by the highly-competitive International Postgraduate Research Scholarship (IPRS) and Australian Postgraduate Award (APA) by the Australian Commonwealth Government, Kevin's doctoral research (under the advisorship of nanotechnologist

Professor Matt Trau and oncologist Dr Paul Mainwaring) was on the molecular analysis of nucleic acid biomarkers in prostate cancer liquid biopsies (with a particular interest in fusion genes such as TMPRSS2:ERG), and the development of associated nanotechnology-based biosensors, to facilitate precision treatment for prostate cancer patients in the clinic.

In recognition of Kevin's scientific endeavours, his doctoral research has led to a prolific output of 18 first-authored research publications in highly-ranked journals, selected presentation talks at international conferences; as well as competitive awards such as a Springer Thesis Award, Metrohm Australia-New Zealand Young Chemist Award, and an European Molecular Biology Laboratory (EMBL) PhD Symposium Travel Grant.

In addition, Kevin's collaborative research effort has led to successful research funding as a co-chief investigator on national prostate cancer research project grants, including a RBWH Foundation Project Grant and a YFG-RBWH Foundation Project Grant.

Kevin is presently progressing a unique industrial/academic postdoctoral career as a Lead Assay Development Scientist in XING Technologies and a UQCCR Honorary Fellow to continue his prostate cancer biomarker and nanodiagnostics research.

Professor Matt Trau

Professor Matt Trau is Professor of Chemistry at The University of Queensland and also Senior Group Leader and co-founder of the Australian Institute for Bioengineering and Nanotechnology. He currently holds the UQ-CSIRO Chair in Personalised Nanodiagnostics at UQ.

Since graduating from the University of Sydney (BSc Hons I, University Medal) and the University of Melbourne (PhD in Physical Chemistry, 1993), he has held positions in industry and academia across the globe. These include a Fulbright Research Fellowship at Princeton University, USA; and a research scientist at Dow Chemical and ICI Pty Ltd.

Professor Trau has been a Visiting Professor at two of the largest Cancer Research Centres in the world: The Dana Farber Cancer Research Institute, Harvard Medical School, Boston (2000); and the Fred Hutchinson Cancer Research Centre, Seattle (2008); and is internationally recognised for innovative and cross-disciplinary research at the interface between chemistry, nanotechnology, biology and medicine. He has co-authored more than 220 refereed publications, many of which appear in the highest impact journals in his field, e.g., twelve Nature and two Science family publications.

Major awards and honours include an ARC Federation Fellowship (one of the most prestigious scientific fellowships in Australia), a Fulbright Research Fellowship to the USA; a Queensland Young Tall Poppy Award; a UQ Foundation/Vice Chancellor's Research Excellence Award; a Paul Harris Fellowship; and a Pink Circle Award for breast cancer research excellence.

Appendix 2

Grants Received

RBWH Foundation YFG Prostate Cancer Research Fund:

Yaxley J, Koo K, Trau M, Goh J, Mainwaring PN, Samaratunga MLTH, Lavin MF, Yoneyama T, Ohyama C, Gardiner RA. Detection of Clinically Significant Prostate Cancer: a paradigm shift. \$0.5 million. 2019-2024.

NHMRC:

Centre for Research Excellence in Prostate Cancer Survivorship. Chambers SK, Newton R, Scuffham P, Baade P, Galvão D, Dunn J, Smith D, Wittert G, Davis I, Gardiner RA (Frank). \$2,498,842. 2016-20.

Movember:

A Phase II randomised controlled trial of high dose vitamin D in localised prostate cancer with intermediate risk of progression. Gurney H, Nair-Shalliker V, Smith D, Gebiski V, Patel M, Frydenberg M, Gardiner RA, Kimlin M, Fenech M, Gillatt D. \$1,040,370: 2016-20

Cancer Council Queensland Strategic Research Partnership:

A randomised controlled trial of open and robotic prostatectomy: Integrated multidisciplinary studies to guide patient management. Gardiner RA, Chambers SK, Dungleison N, Yaxley J, Occhipinto S, Carter R, Williams S, Lavin MF. \$1,490,000: 2008-17

NHMRC:

ASTROID: Active Surveillance and other treatment options for prostate cancer. Schofield P, Juraskova I, Frydenberg M, Chambers S, Gordon L, Gardiner RA. \$749,704: 2015-21

Royal Brisbane & Women's Hospital Foundation and Royal Brisbane & Women's Hospital Foundation:

Combined TMPRSS2:ERG PCA3 and SchLAP1 RNA in Urine for selective detection of Aggressive Prostate Cancer. Yaxley J, Koo K, Trau M, Roberts M, Coughlin G, Gianduzzo T, Lavin M, Gardiner R, Mainwaring P. \$40,000: 2018.

Royal Brisbane & Women's Hospital Foundation and Royal Brisbane & Women's Hospital Foundation:

Molecular effects of metformin and atorvastatin in prostate cancer. Yaxley J, Gardiner RA, Coughlin G, Gianduzzo T, Lavin MF. \$40 000: 2017

NHMRC:

Improving sexual health in men with prostate cancer: a randomised controlled trial of exercise and psychosocial therapies. Galvao D, Chambers SK, Newton R, Gardiner RA, Cormie P, Spry N, Taafe D, Joseph D, Hamilton. \$561 845. 2014-7

Wesley Medical Research:

Randomised controlled trial of Ceftriaxone versus placebo at trial of void post robot assisted laparoscopic radical prostatectomy. Yaxley JW, Coughlin G, Paterson D, Gianduzzo T, Pokorny M, Kua B. \$20,000 2018

Royal Brisbane & Women's Hospital Foundation:

Exploring new paradigms in pre-prostate cancer detection and management. Gardiner RA, Lavin MF, Hill M, Roberts MJ, Schirra HJ, Yaxley J. \$40 000: 2016

Cancer Council Qld Strategic Research Partnership - Grant Extension:

RCT robot and open prostatectomy : Integrated multidisciplinary studies to guide patient management. Gardiner RA, Chambers S, Dungleison N, Yaxley J, S, Lavin M. \$60 000 2015

Royal Brisbane and Women's Hospital:

Exploring new paradigms in prostate cancer detection and management. Gardiner RA, Chambers S, Lavin M, Hill M, Roberts M, Schirra H, Yaxley J. \$40 000. 2015

Royal Brisbane and Women's Hospital:

Exploring new paradigms in prostate cancer detection and management. Gardiner RA, Lavin M, Hill M, Roberts M, Schirra H, Yaxley J. 2014 \$70 000

RBWH Foundation:

Towards concurrent imaging of primary and secondary prostate cancers Gardiner RA, Schirra H, Reutens D, Samaratunga H, Yaxley J, Gianduzzo T, Coughlin G, Clouston J. \$25 000 2011.

Cancer Council Queensland Strategic Research Partnership Grant:

A randomised trial of robotic and open radical prostatectomy: Integrated multidisciplinary studies to guide management. Gardiner RA, Chambers S, Dungleison N, Yaxley J, Occhipinto S, Carter R. \$ 1.25M. 2009

NHMRC Project Grant:

Engineering human dendritic cells for tolerogenic gene therapy of type 1 diabetes. Steptoe R, Radford K. \$831,653 2019–2021

NHMRC Project Grant:

Chong, O'Keeffe, Radford K. A novel molecular mechanism controlling myelopoiesis. \$64K to Mater 2017-2020.

The Kids' Cancer Project:

A Moore, Radford K. Developing novel immunotherapies for childhood blood cancers using advanced, humanised mouse models. \$87 000. 2017–2018

Helmsley Charitable Trust - George Eisenbath nPOD award for team science:

Forbes J, Radford K. Advanced Glycation in the development of T1D t. Administered by University of Miami. 2016–2018

The Children's Hospital Foundation:

Radford K. Developing novel immunotherapies for childhood acute myeloid leukaemia using advanced, humanised mouse models. 2016–2018

Appendix 2

Grants Received

United States of America Department of Defense Congressionally Directed Medical Research Programs:

Radford K, Lahoud M. Clec9A Targeting Antibodies as a New Immunotherapy for Prostate Cancer. \$US 533,025 (AUD \$683,667) 2015–2019

NHMRC Project Grant:

Radford K. A new approach to the design and evaluation of T cell vaccines for cancer and infectious disease. 2015–2017

Worldwide Cancer Research Project Grant:

Targeting human CLEC9A+ dendritic cells as a new strategy for cancer immunotherapy. Radford K, Lahoud M, Price D, Miles J. GBP£ 212,756 (\$390,706) 2015–17

NHMRC Project Grant:

Radford K, Lahoud M, Price D, Miles J “A new approach to the design and evaluation of T cell vaccines for cancer and infectious disease. \$382,077. 2015–2017

NHMRC Project Grant:

Exploring the contribution of interferon-lambda to autoimmune disease. O’Keeffe M, Radford K, Lucas M. \$807,787 2015–2017.

NHMRC Career Development Award:

Understanding human dendritic cells. Radford K. \$424,920 2011–2014.

Cancer Foundation of Australia Project Grant:

Targeted delivery of prostate cancer antigens to dendritic cells for immunotherapy. Radford K, Lahoud M, Clements J. \$375,000 2011–2013.

NHMRC Project Grant:

Production of interferon lambda by dendritic cell subsets and role in adjuvant effects of poly I:C. O’Keeffe M, Radford K, Banerjee A. \$383,029. 2011–2013.

NHMRC Project Grant:

Targeting the human cross-priming dendritic cells for immunotherapy Radford K, Vuckovic S., Munster D. \$568,500 2010–2012.

PCFA (Prostate Cancer Foundation of Australia Young Investigator Grant):

A systems biology approach to elucidate the molecular mechanism of caveolin-1 and statins in prostate cancer progression and metastasis. Hill MM, Parton RG, Chopin L. \$497,046 2009–201

Association for International Cancer Research:

Modulating cholesterol-dependent lipid rafts and caveolin in prostate cancer therapy. Hill MM, Nelson CC, Lee CS, Parton RG. £174,742 6/2010–3/2014

ARC Future Fellowship:

A biological model to understand caveolin-1 and lipid raft function in health and disease. Hill MM. \$714,528. 2013–2016

Australian Research Council Discovery Project:

Control of selective microRNA release via exosomes and microvesicles 2016–4/2019 Hill MM, Cristino AS, Foster LJ, Wenk MR, Cloonan N. \$374,500. 2016–4/2019.

Cooperative Research Centres Projects (CRC-P) Grant:

Koo K. On-farm detection platform; mastitis-causing pathogens in dairy cattle. \$2.4 Million. 2020–2022

NHMRC Ideas Grant:

Trau M. Early detection of lung cancer. 2020

ARC Discovery Grant:

DNA exhibits new self-assembled structures due to clustered DNA methylation. Trau M. 2018–2021

NHMRC Project Grant:

Integrating immunity and genetics in Follicular Lymphoma to establish a prognostic score fit for the modern era. 2018–21

Queen Mary University of London:

Genomics markers in breast cancer. Trau M. 2018–2020

PA Research Foundation:

Queensland Bladder Cancer Initiative. Trau M. 2018

Queensland Department of Agriculture and Fisheries:

Rapid detection and quantitation of Campylobacter jejuni/coli in processing. Trau M. 2016–2019

UniQuest:

AC electrohydrodynamics in microfluidic devices. Trau M. 2016–2018

ARC Discovery Projects:

Trapping and Watching Biomolecular Complexes near Nanopores. Trau M. 2016–2018

RBWH Research Foundation:

Does prostatic manipulation result in increased numbers and clusters of circulating tumour cells? Trau M. 2016.

Next Steps

The ImmunoPro Project

Contact Details

Individual Philanthropy

Nadeyn Barbieri
Philanthropy and Development Director
RBWH Foundation

Address: Block 20, Royal Brisbane and Women's Hospital
Herston QLD 4006

Postal: PO Box 94, Royal Brisbane and Women's Hospital QLD 4029

Mobile: 0410 011 446

Email: n.barbieri@rbwhfoundation.com.au