Media Release May 13, 2014

The Queensland Health and Medical Research Awards

FINALISTS ANNOUNCED

The Queensland Health and Medical Research Awards, an initiative of ASMR, honour the quality of scientific endeavour in Queensland. Announcing the finalists today, co-convenors Drs Jill Larsen, Leisl Packer and Loredana Spoerri applauded the overall quality of scientific research in the many excellent applications received.

Winners and runners-up for all categories will be announced at the

ASMR Medical Research Week® Gala Dinner
Friday May 30th
The Sky Room, Brisbane Convention Centre, South Brisbane

Postgraduate Student Award Finalists

Lauren Aoude, QIMR Berghofer Medical Research Institute

POT1 mutations predispose to familial melanoma

An international research team found that individuals with mutations in a gene called POT1 have an extremely high risk of developing melanoma. POT1 maintains the ends of chromosomes and is involved in the repair of UV damage so when its function is impaired chromosomes become destabilised. This finding significantly increases our understanding of why some families have high incidence of melanoma. In the future this may lead to earlier detection and better treatment options of those at risk.

Nathalie Bock, Queensland University of Technology

Growth-factor loaded electrosprayed microparticles for targeted bone tissue regeneration

Bone loss is currently treated clinically by growth factor (GF) therapies. However those current treatments use high doses of GFs to stimulate bone regeneration, which may lead to adverse side effects for other surrounding tissues. In this work we present a novel technique electrospraying able to encapsulate bone-relevant GFs within biodegradable carriers, which simultaneously protect GFs from the environment and deliver lower doses as the carriers degrade. This new system is gentle to the GFs, which remain active longer for more efficacious bone regeneration providing a safer and cheaper alternative for bone loss treatment.

Donald McLeod, QIMR Berghofer Medical Research Institute

Autoimmune thyroid disease incidence varies by race/ethnicity

Autoimmune thyroid diseases are the most common cause of autoimmunity with Graves' disease causing an overactive thyroid and Hashimoto's thyroiditis an underactive thyroid. Examining 15 years of U.S. military data I have found that Graves' disease in African Americans and Asian/Pacific Islanders compared with Caucasians was nearly 2 times more common in women and over 2.5 times more common in men. The opposite racial patterns occur with Hashimoto's thyroiditis. My presentation will also discuss follow-on work examining whether these patterns are seen in the U.S. wider population.

Mitchell Stark, QIMR Berghofer Medical Research Institute

MIR-514A regulation of the tumour-suppressor gene NF1 confers resistance to PLX4032 targeted therapy of melanoma

Targeted therapy in patients with Stage IV melanoma (distal spread of disease) is one of the first-line treatments for advanced disease; however most patients have resistance to therapy. One of the many mechanisms for this resistance is due to loss of a 'tumour-suppressor' gene called NF1. We found that loss of NF1 function can be explained in part via regulation by a microRNA called miR-514a. We found that when miR-514a was turned on melanoma cells were resistant to the main targeted therapy. Results from this study will help to devise better treatments for late stage melanoma patients.

Bryony Thompson, QIMR Berghofer Medical Research Institute

A systematic approach to clinical classification of DNA sequence variants in mismatch repair genes: the insight initiative

Sometimes it is difficult to understand if a change in a cancer gene is a real fault that causes disease. This complicates clinical management of families. An international consortium of clinicians and researchers developed standardized criteria to evaluate alterations in genes that can cause inherited cancer of the colon and uterus. A public database containing 2 360 alterations in these genes were evaluated using these criteria and disseminated online for use by clinicians to improve patient management.

Simon de Veer, Queensland University of Technology

Seeding drug discovery: development of novel protease inhibitors for inflammatory skin disorders

The skin forms an essential barrier that shields the body from infection and physical or chemical damage. Failure to preserve skin barrier integrity is a major contributor to several skin disorders including atopic dermatitis and Netherton syndrome, which have far reaching health psychosocial and economic impacts. Here we developed a novel therapeutic strategy that aims to restore skin barrier function by blocking the activity of several proteases that when overactive can disrupt this vital protective structure. To achieve this we produced inhibitors for kallikrein-related peptidase (KLK)5, KLK7 and KLK14 by engineering a naturally occurring cyclic peptide found in sunflower seeds.

Postdoctoral Researcher Award Finalists

Dr Jyotsna Batra, Queensland University of Technology/Translational Research Institute

Genome-wide association studies of miRSNPs identify novel prostate cancer risk loci

miRNA are small non-coding RNA regulating gene expression by binding mostly to the ends of their target genes. Genetic variation can affect the binding between miRNAs and mRNAs. I undertook large comprehensive genetic association studies of such genetic variations with prostate cancer risk and identified 7 novel risk regions. I also validated the functional role of two of the variations in the KLK3 and MDM4 genes. This approach has thus opened new avenues for future studies to explore these regions as potential targeted therapeutics and/or disease biomarker for prostate cancer.

Dr Joseph Powell, University of Queensland

Detection and replication of epistasis influencing transcription in humans

Epistasis the interactive effect of two or more genetic mutations in the genome influences the expression of genes in human populations in a world first study published in Nature by researchers at The University of Queensland (UQ). Scientists at the Queensland Brain Institute (QBI) have found that epistasis – the long debated effect of whether mutations interact with each other – exists throughout human populations.

Dr Kyle Upton, Mater Research Institute/University of Queensland

Defining the Role of Mobile Genetic Element Mutations in Development and Disease

Mobile Genetic Elements are a normal feature of our DNA and have played a significant role in our evolution. Ongoing mobilisation of these mobile elements remains a powerful source of mutation and can cause disease. Dr Upton has driven the development of a State of the Art technique to identify rare DNA mutations caused by Mobile Genetic Elements. In collaboration with leading international scientists he has characterised the role of these elements in normal brain development and in multiple cancer models. His current work uses single cell genomics to understand the impacts of MGE mobilisation in brain development and disease.

Senior Researcher Award Finalists

Dr Sang Hong Lee, University of Queensland Brain Institute

Dissecting the genetic architecture of mental disorders

A fundamental question in medical research is the degree to which common genetic effects are shared between subjects groups and disease traits. For schizophrenia we showed that substantial liability to the disease was distributed among common genetic variants and the architecture of the disease was polygenic. Subsequently we estimated the genetic relationship between five psychiatric disorders providing empirical evidence of shared genetic etiology for psychiatric disorders. We have provided empirical evidence of shared genetic etiology for psychiatric disorders. Many other studies have used our approach to dissect the (shared) genetic architecture of various diseases.

Dr Stephen Mattarollo, University of Queensland Diamantina Institute

Combination immunotherapeutic strategy for B cell lymphomas

Patients with blood cancers typically respond well to initial treatment but later relapse with disease. The immune system can be effective at controlling cancer but often requires manipulation by way of immunotherapy to be effective. A potential treatment option is to boost the natural immune response against cancer. This study investigates a vaccine that activates a certain immune cell NKT cells to fight lymphomas by delivering an NKT cell-activating molecule. Outcomes will allow assessment of combining an NKT-based vaccine with established treatments for blood cancers.

Dr Irina Vetter, University of Queensland

Oxaliplatin-induced cold allodynia is mediated by Nav1.6-expressing pain pathways

Chemotherapy-induced neuropathy is a debilitating side effects affecting cancer patients that can lead to treatment interruptions. There is currently no effective treatment for this symptom. In this study we assessed the mechanisms leading to chemotherapy-induced pain and assessed the efficacy of analgesics in order to develop better treatment approaches.

Clinical Researcher Award Finalists

Dr Colm Keane, Princess Alexandria Hospital

Measures of net anti-tumoral immunity add to the predictive power of conventional prognostic factors in diffuse large B cell lymphoma (DLBCL)

My findings indicate that manipulation of the immune system will improve treatment and prognostication in lymphoma. I have also shown for the first time in any cancer a rationale for why response to these agents is variable and have identified patients most likely to benefit from immune manipulation therapy.

Dr Siok Tey, QIMR Berghofer Medical Research Institute

Regulatory T cells for the treatment of graft-versus-host disease following allogeneic haematopoietic stem cell transplantation

Bone marrow transplantation can cure blood cancers. However many patients develop a complication known as graft-versus-host disease (GVHD) whereby the donor immune response attacks the recipient's tissues. A type of immune cell called regulatory T cells (Tregs) can suppress immune response and help control GVHD. We have developed a method to obtain Tregs from healthy donors and expand them in the laboratory. Importantly we can make these Tregs safer by inserting a safety gene. We are now scaling up the cell manufacturing technology in preparation for a phase I study in patients with chronic GVHD.

Dr Shelley Wilkinson, Mater Research Institute/University of Queensland

Translation of a gestational diabetes nutrition model of care into practice: results from an implementation project

Gestational diabetes mellitus (GDM) occurs in 5% of pregnancies and is increasing with the 'obesity epidemic'. Poorly-controlled GDM results in negative outcomes that have personal clinical and public health costs. GDM guidelines recommend Medical Nutrition Therapy as the primary intervention for managing blood glucose levels (BGL) including 3+ dietitian visits; this is not followed in Australia. This study showed theory-based steps taken to incorporate guidelines at a South-East Queensland maternity hospital improved GDM services with significantly more women seeing the dietitian according to guidelines with less need for GDM medication. This study's findings will help take this service across Queensland.

Abstracts and biographical information are available from http://asmr.org.au/MRWMedia

For further information about the finalists and announcement of the winners/for interviews contact

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