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The Australian Society for Medical Research

ASMR Medical Research Week® 2nd June – 10th June 2016

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The Queensland Health and Medical Research Awards

WINNERS ANNOUNCED

Winners of these prestigious awards were announced at the ASMR Medical Research Week® Gala Dinner, this year at the Hillstone, St Lucia (The Grant View Room)

Arabella Young, QIMR Berghofer Medical Research Institute

Winner of the Postgraduate Student Researcher Award

Targeting immunosuppressive adenosine to enhance anti-tumour immunity

Cancer immunotherapies are currently revolutionising treatment options for cancer patients. In contrast to conventional therapies, immunotherapy strengthens a patient's own immune response towards aberrant cancer cells, providing long-term protection against a range of tumour types. However, within the tumour microenvironment, multiple immunosuppressive mechanisms exist to prevent an effective immune reaction. Therefore, identifying alternate therapeutic targets and synergistic combinatorial approaches is required to further improve clinical responses. Notably, production of the immunosuppressive metabolite adenosine is increased within the tumour microenvironment. This inhibits tumour cell killing performed by immune cells leading to disease progression. As therapies targeting both adenosine generation and signalling are currently undergoing early phase clinical trials in cancer, we assessed whether co-targeting multiple parts of the adenosine pathway improved therapeutic benefit. Here, we identified that co-blockade of adenosine-related molecules limits tumour initiation, growth and metastasis, providing important considerations for optimal activity as these therapies move forward to clinical utility.

Dr Mark Adams, Queensland University of Technology, Translational Research Institute

Winner of the Postdoctoral Researcher Award

CDCA3 is a potential target to enhance non-small cell lung cancer cell sensitivity to cisplatin

Lung cancer is responsible for the most cancer-related deaths worldwide and has a poor survival rate. The most common type of lung cancer is non-small cell lung cancer (NSCLC). A commonly used drug to treat NSCLC is cisplatin. However, cancer cells develop mechanisms to cope with cisplatin leading to resistance to this therapy in patients. We have focused on identifying novel molecules that might prove useful in preventing cisplatin resistance. Accordingly, we have identified the molecule cell division cycle associated protein 3 (CDCA3) which functions normally to permit controlled growth. We have identified that levels of CDCA3 are increased in NSCLC and that cancer cells lacking the CDCA3 molecule are more sensitive to cisplatin than control cells. We have identified that CDCA3 is a novel factor mediating NSCLC. Strategies to target and suppress the levels of this molecule may benefit patient outcome by preventing cisplatin resistance.

Dr Makrina M Totsika, Institute of Health and Biomedical Innovation, Queensland University of Technology

Winner of the Senior Researcher Award

Preventing bacteria from sticking (around)

Antibiotic resistance -*when bacteria change and antibiotics fail*- is a looming public health crisis. Each year more than 700,000 people die from antibiotic-resistant infections with numbers predicted to skyrocket to 10 million annual deaths by 2050 if no action is taken. We desperately need new drugs to tackle multidrug resistant bacteria. A common cause of drug-resistant infections is *E. coli* ST131, a pandemic multidrug resistant organism that emerged in 2008. We published the first comprehensive investigation of ST131's genome and disease mechanisms. In follow-up studies we identified key ST131 factors that play a role in disease and tested novel drugs against them. This was the first time that a drug targeting bacterial adherence -the first step of infection- was successfully applied in treating mice with chronic ST131 infections and it could also prevent ST131 infections when antibiotics failed. We are now translating these findings into anti-adhesion antimicrobial therapies for humans.

Professor Louise Cullen, Metro North Queensland Health, Queensland University of Technology

Winner of the Clinical Researcher Award

Improved management of Emergency Department patients with chest pain reduces time in hospital and saves health care costs

Chest pain is a leading cause of presentation to hospital Emergency Departments, with lengthy investigations and treatments meaning many patients are admitted to hospital. The *Accelerated Chest Pain Risk Evaluation (ACRE)* project has demonstrated that a new, faster, method of investigating and treating unspecified chest pain in the Emergency Department is safe and effective at getting patients home sooner, frees up hospital beds, and saves millions in costs to the health system. The ACRE project was conducted from October 2013 to August 2015, in 16 public hospital Emergency Departments around Queensland. Results show that patients' length of stay in the Emergency Department (the time spent in the Emergency Department before either being discharged home, or admitted to the hospital) decreased. Hospital admissions for chest pain fell by 13%, and patients who were admitted to hospital were able to safely return home six hours sooner than with standard treatment.

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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