



The Australian Society for Medical Research
ASMR Medical Research Week® June 2010

ASMR QUEENSLAND POSTGRADUATE STUDENT CONFERENCE
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Institute for Molecular Biosciences, University of Queensland

MEDIA RELEASE

BRILLIANT YOUNG QUEENSLANDERS STRUT THEIR STUFF

Cancer, Tissue Engineering, Vaccines, Brain Development
and much, much more!

Queensland has it all ... sunshine, surf and science to dazzle the world!!!

WELCOME TO THE FUTURE – QUEENSLAND BRAIN INSTITUTE RESEARCHERS MOVE TOWARDS HARNESSING NEUROGENESIS FOR BRAIN REPAIR

The adult brain produces new nerve cells in a process called *neurogenesis*. The cells divide and decide between becoming a neuron (the information-processing cells of the brain), or part of the supporting cell network. Cells choosing to become neurons migrate through the brain along a specific pathway from their birthplace to their final destination, where they integrate into existing networks to replace older cells.

These cells have the potential to be used in therapies targeting disease or damage in the adult brain. Dana Bradford and Helen Cooper from the Queensland Brain Institute have identified some of the proteins involved in the decision to become a neuronal cell!

'DEM BONES, 'DEM BONES

SYNTHETIC SCAFFOLDING FOR RECONSTRUCTING BONES

Established therapies for bone defects are mainly restricted to the transplantation of patient-own bone (ABG) to stimulate defect healing. There are significant disadvantages to this approach including limited availability of transplantable bone. Johannes Reichert and colleagues (IHBI, QUT), have developing an alternative strategy that relies on the transplantation of a synthetic scaffold in combination with a potent bone growth-stimulating agent. Their experiments suggest this approach can serve as an equivalent alternative to established therapies.

SUNFLOWERS and prostate cancer drug

Prostate cancer is the most common cancer and leading cause of death among male patients in industrial countries. A natural protease inhibitor from sunflowers is currently undergoing testing by Joakim Swedberg (QUT) who has shown that it acts as an inhibitor to prostate cancer progression and shows promise for therapeutic use in the treatment of prostate cancer.

TROPICAL DELIGHT - “Going Troppo” is good for you!

There is finally evidence of the health benefits of eating the delicious mango, yet another reason for lovers of this fruit to indulge! At UQ, Ashley Wilkinson's studies show that mangoes may even help fight against breast cancer, that it might be possible to breed “super mangoes” with even higher nutritional and medicinal qualities.

The ASMR MRW® undertaken by ASMR is supported by funding from The Australian Government Department of Health and Ageing



NEWBORNS - PREVENTING BRAIN INJURY

Julie Wixey (Perinatal Research Centre, UQ) is looking at how neurons are damaged after neonatal brain injury. New findings show that serotonin neurons are lost after neonatal brain injury. This damage may be due to neuroinflammation which suggests that drug therapy intervention to block neuroinflammation may prevent this brain injury to newborns.

TAILOR MADE VACCINES FOR MS

MS is a disease involving a person's own immune system damaging the brain and spinal cord and causing disability. It currently affects around 20,000 Australians. It usually strikes when people are 20-40 years of age causing many different symptoms and varying degrees of disability, from impaired vision or balance, to weakness or paralysis of the arms and legs. Current treatments suppress the activities of all cells of the immune system, not just those causing the damage. Attempts have been made to develop 'tailor-made' vaccines that will alter the activity of disease-causing cells specifically. Whilst human trials have showed great potential, high dosages of vaccine have been required, with associated side effects. Nancy Moxey's (UQCCR, RBWH) research investigates using smaller doses of vaccines, having the same positive outcomes, yet with less negative side effects.

BLUE EYES AND FRECKLES

Elizabeth Webb (UQ) and colleagues have studied high-risk melanoma patients and discovered these patients are more likely than healthy volunteers to have blue eyes and "eye freckles". Could pigmentation genes be involved as risk factors for this aggressive and currently untreatable form of cancer?

SNEAKY PARASITES

Malaria kills almost as many people as cancer worldwide every year. The specific parasite, called a gametocyte is transmitted from human to mosquito and back to human. These parasites are sneaky and secretive creatures and difficult to study. They masquerade as other parasites and hide away in bone marrow. Chris Peatey (QIMR) and colleagues have found a way to study gametocytes by growing some which glow green and make them easier to see. It's been found that some anti malarial drugs have the potential to spread it further rather than to kill the parasite.... This understanding opens the way to find effective controls and offers hope for millions of people around the world.

TISSUE ENGINEERING - STIMULATING HUMAN CARTILAGE CELLS

Osteoarthritis (OA) is a highly prevalent cartilage and bone disease afflicting millions of people worldwide and there is no cure. Once damaged, cartilage continues to degenerate because it has limited capacity for self-repair. Current clinical treatments are often inadequate to treat advanced-stage OA, and there is a heightened interest in developing tissue-engineered cartilage as a replacement for the degenerated tissue. June Jeon (IHBI, QUT) is investigating the benefits of mechanical stimulation cartilage cells (chondrocytes) during culture in the laboratory to improve tissue-engineered cartilage and bring hope to over 1.4 million Australians who suffer from osteoarthritis.

IDENTIFYING THE KRYPTONITE OF BREAST CANCER CELLS

Yvette Drabsch (UQ) and co-workers have shown that a particular gene, *MYB*, is essential for making hormone sensitive cells grow. When the *MYB* gene is switched off, breast cancer cells stop growing, and they are encouraged to differentiate. Some anti-cancer drugs act on differentiating cancerous cells, so excitingly switching the *MYB* gene off makes these drugs more effective in combating cancer.

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PREDICTIVE MARKERS FOR BREAST CANCER PROGNOSIS – DIRECTING TREATMENT REGIMES

Not all breast cancers are the same. Some respond well to chemotherapy and hormone treatments, others don't. This study seeks to identify specific breast cancer cells that will respond well to treatment. Investigating certain biomarkers, Helen McCosker (QUT) and colleagues have identified two families of proteins with the ability to provide disease prognosis and likely outcomes of treatment regimes, potentially helping many thousands of Australian women.

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