The Australian Society for Medical Research
ASMR Medical Research Week® June 2-10, 2011

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ASMR WA SYMPOSIUM
Friday June 3 Haydn Williams Lecture Theatre , Curtin University of Technology, Bentley

SCIENTIFIC MEETING ATTRACTS WA'S FINEST YOUNG RESEARCHERS

BREAST MILK = STEM CELLS?!!

Dr Foteini Hassiotou, from *The University of Western Australia* has amazingly shown that human breastmilk contains stem cells, able to differentiate into different cell types. This finding is important in multiple ways – it has identified a new ethical source of pluripotent cells that may be used in regenerative medicine, provides mammary gland stem cells for breast cancer research, and raises the question of the role of these cells in infant development, perhaps fuelling the debate that "breast is best."

KANGAROOS KEY TO POTENTIAL HUMAN TREATMENT

Leishmaniasis is a parasitic disease ranked 2nd after malaria in terms of mortality and morbidity, with at least 2 million new cases reported annually. The causative parasite Leishmania is transmitted by sandflies, and there are 20 different Leishmania species known to cause human disease. Javier Koh is an Honours student at The University of Western Australia and he is investigating a new Leishmania parasite identified in Australia, named "Leishmania australiensis." The Australian parasite was identified in the red kangaroo and is thought to not be able to cause disease in humans, making it a suitable vaccine candidate, as currently no vaccines exist for this disease.

IT'S ALL IN THE GENES!

GENETIC CLUES TO EAR DISEASE

Otitis media is a common childhood disease characterised by inflammation of the middle ear. Otitis media is inherited in 40-70% of cases, however the majority of genes that lead to a person having a greater susceptibility for the disease are unknown. Results from a recent study of Western Australian patients conducted by PhD student Marie Rye from the Telethon Institute for Child Health Research, has revealed some novel gene candidates that may be contributing to susceptibility for otitis media in early childhood.

DRUG ADDICTION IN YOUR GENES - CLUES FOR TREATMENT

Drug dependency, such as heroin addiction, is significantly influenced by genetic factors. *Laith Al-Eitan* is a PhD student at *The University of Western Australian* who is exploring the theory that this genetic influence in drug addiction also extends to treatment outcomes (e.g. naltrexone). Determining the effect of genetic factors on a person's response to treatment will provide crucial knowledge to aid the improvement of treatment strategies for addicts.

ELEVATED GENE NEW DRUG TARGET FOR DEVASTATING LUNG DISEASE

Malignant mesothelioma is a universally fatal cancer that is predominantly caused by exposure to asbestos. There are no effective treatments for mesothelioma and patients die within 9-12 months after diagnosis. The *Lung Institute of WA* PhD student *Ai Ling Tan* has identified a molecule (fibroblast growth factor-9, FGF-9) that is elevated in patients with mesothelioma. Her finding provides a promising molecule to target for the treatment of mesothelioma.

MORE THAN SKIN DEEP: ANTI-CANCER PROPERTIES OF TEA TREE OIL

The antimicrobial and anti-inflammatory properties of tea tree oil, derived from the Australian native tree *Melaleuca alternifolia,* are well known. Interestingly, tea tree oil is now also thought to possess anticancer properties when it is applied topically in combination with an enhancer to increase penetration through the skin. *The University of Western Australia* researcher *Cornelia Bertram* is further researching the anti-cancer activity of tea tree oil in types of cancers. Additionally she is pursuing the development of effective pharmaceutical products that promote ability of tea tree oil to penetrate the skin, and to further improve its anti-cancer activity, as it is believed that delivering the tea tree oil efficiently through the skin is critical to achieve its anticancer benefits.

ATTACKING TUMOURS FROM THE INSIDE PROVIDES GREAT HOPE

Solid tumours are difficult to treat as they have a barrier with prevents adequate delivery of anti-tumour drugs, and access by immune cells that would normally attack the tumour is inhibited. As such, current immunotherapies have only shown limited success against these cancers. The *WA Institute for Medical Research's Dr Anna Johannson* has developed a novel way to deliver compounds directly into tumours, better exposing them and making them more susceptible for immunotherapies.

EXERCISE DECREASES CHANCE OF ALZHEIMER'S DISEASE VIA ENLARGED REGION IN THE BRAIN – A STRONG LINK

The hippocampus is a structure of the brain associated with short and long-term memory and is one of the first brain structures affected by Alzheimer's Disease. An increased amount of physical activity has been shown to reduces Alzheimer's Disease risk and enhance cognitive function. However very little is known as to how physical activity influences the structure and volume of the brain. *UWA* PhD student *Belinda Brown*'s research has found that individuals undertaking higher levels of physical activity have higher volumes of the hippocampus, a key finding in the quest to understand this link better.

STRESSED MUM'S CAN LEAD TO KIDNEY & LIVER ABNORMALITIES IN CHILDREN

If women are stressed during pregnancy, this can influence the likelihood of their child to develop metabolic diseases such as obesity and type 2 diabetes when they become adults. PhD student *Richard Maganga* from *The University of Western Australia* studies stress during pregnancy and has shown that nutrition of a mother from dietary restriction leads to premature ageing in her foetus' liver and kidneys. His theory is that this premature aging might be a precursor to disease susceptibility for the child much later in life.

OSTEOARTHRITIS: WHAT A PAIN JOINTS CAN BE!

People with osteoarthritis often suffer pain and this becomes a major disability for them. Surprisingly it's been poorly understood how pain is felt through joints. *Huey Sian Yap* from *Murdoch University* has been trying to decipher this mystery. Her research is defining the locations and functions of a critical sensor molecule for pain in joints named the TrkA receptor.

Photo and Interview Opportunities

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