The Australian Society for Medical Research
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LEADING LIGHTS IN NSW SHINE HOPE ON DISEASE!

Who: Young Scientists
What: ASMR NSW Scientific Meeting
Where: The University of Sydney Veterinary Science Conference Centre
When: Monday 6th June, 2011

A MUM WITH BREAST CANCER MOTIVATES YOUNG PHD STUDENT'S RESEARCH

Nuruliza Roslan, a PhD student at *The University of Sydney*, has a strong passion for wishing to make a significant contribution to breast cancer research. She has a personal drive, as her mother was diagnosed with breast cancer when she was in her 30s. Nuruliza is investigating a tumour protein called TPD52, which is known to be more abundant in many cancer types. Interestingly cancer cell lines that express less TPD52 die, so Nuruliza's approach is to see whether she can harness this observation and try to artificially decrease the levels of TPD52 in breast cancer cell lines.

YOUR DIET – LESS & MORE OF KEY INGREDIENTS RECIPE FOR HEALTH SUCCESS

ENERGY CRISIS IN AGEING CELLS TRIGGERS ALZHEIMER'S DISEASE

Alzheimer's disease is a devastating neurodegenerative disease, rapidly increasing in prevalence largely due to ageing populations worldwide. Ageing brains have reduced energy metabolism. *University of Sydney's Dr Ineka Whiteman* has shown for the first time that reduced energy supply in brain cells triggers two major 'early-Alzheimer' pathologies. Her findings suggests that simple lifestyle changes that maintain energy supply to brain cells may be paramount in preventing Alzheimer's, such as eating a diet rich in antioxidants and maintaining a good blood supply to the brain through physical and mental activity.

HOW DOES WHAT YOU EAT EFFECT YOUR CHANCES OF GETTING PROSTATE CANCER?

Dr Qian Wang from the *Centenary Institute* studies prostate cancer, the most common malignancy in men, and the second leading cause of male cancer-related deaths in the Western world. Nutrition, including the intake of red meat and dairy, are associated with prostate cancer development, and it is known that the amino acid leucine is present in high concentrations in these foods. Dr Wang has followed up this lead, determining whether the high levels of leucine present in Western diets may contribute to prostate cancer cell growth and development. He has found that when prostate cancer cells were effectively starved of leucine, their growth was stunted.

BIOENGINEERING HEART STENTS

Coronary heart disease is often treated by the strategic placement of stents, however the materials stents are made out of lead to some undesirable side effects, such as promoting the formation of blood clots. *University of Sydney* PhD student *Anna Waterhouse* has been coating stainless steel with a biocompatible plasma-activated coating (PAC), which creates stents with a biologically active coating, enabling them to integrate into the blood vessel, which eliminates these side effects.

DETERMINING EFFICACY OF ANTI-TUMOUR THERAPIES WITH ARSENIC!

The aim of most anti-tumour therapies such as chemotherapy or radiation is to induce tumour cell death. The more effective a therapy is, the greater the tumour cell death. Unfortunately there are currently no specific ways to measure cell death of a tumour. PhD student *Danielle Park,* from the *Lowry Cancer Research Centre*, has developed an agent, a synthetic arsenic derivative that accumulates within dying cells, to effectively image cell death within tumours. This agent can provide a rapid early indication of how well a therapy is working, enabling physicians to rapidly optimise the treatment plan. Time wasted on ineffectual therapies will be minimised, sparing cancer patients unnecessary side effects.

SCHIZOPHRENIA KEY TO BRIAN TUMOUR TREATMENT: ANTI-PSYCHOTIC DRUGS THE ANSWER!

The brain cancer known as Glioblastoma Multiforme (GBM) is very difficult to treat and unfortunately most patients live on average only a year, even after neurosurgery and radiotherapy intervention. *Nirmani Wijenayake,* a PhD student from the *University of New South Wales* used the interesting observation that patients with schizophrenia have a lower incidence of some cancers, suggesting that one of the regular drugs used to treat schizophrenia may also be effective against tumours. Nirmani has tested various antipsychotic drugs on GBM tumour cell lines and found that they are effective at reducing cell growth. As the action of antipsychotic drugs is thought to be via blockage of the cholesterol pathway, Nirmani additionally tested the cholesterol-lowering drugs statins and showed that when they antipsychotic drugs and statin treatment were combined, cell death was increased.

BIG MUSCLES WARD OFF DIABETES

Dr Lowenna Holt from the *Garvin Institute* has been studying a type of mouse lacking a gene that makes an insulin-interacting protein known as Grb10. Remarkably these mice have large skeletal muscles, and a superior ability to regulate glucose. Skeletal muscle plays an important role in our metabolism, and when we lose muscle mass as we age, or our muscle becomes insulin-resistant in diabetes, our metabolic health is compromised. Lowenna has been studying why the mice without Grb10 have improved metabolism and has discovered that their bigger muscles are caused by an increased number of muscle fibres, not simply bigger muscle fibres. Is there a way that she can use this knowledge to form treatments?

Photo and Interview Opportunities

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