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FIND OUT HOW SMART QUEENSLAND REALLY IS!

Understanding fetal programming for adult disease

Working under the supervision of Professor Karen Moritz at the School of Biomedical Sciences, University of Queensland, Emily Dorey is investigating the effect of alcohol consumption around the time of conception and Sarah Walton looks at how reduced oxygen supply to the developing fetus affects kidney and cardiovascular health in later life.

Most women cease drinking alcohol when they know they are pregnant but Emily Dorey's research suggests we need to do more and that alcohol consumption should stop prior to conception. Exposure to alcohol, even around only the time of conception, affects food seeking behaviour in rat offspring with male offspring having a preference for a diet high in fat and cholesterol.

Sarah Walton has found that what nourishes us in the womb and as infants can profoundly affect our health in later life. Maternal ill health, environmental disadvantage and malnutrition can impair optimal development of organs such as the heart and kidney, meaning these organs may not be robust enough to support a person throughout their lifespan.

Sarah said, *"We have used mice to study how reduced oxygen supply during pregnancy, a common complication, affects kidney and cardiovascular health in later life. These mice are born with smaller, underdeveloped kidneys and develop signs of cardiovascular and kidney disease in adulthood. If fed a diet high in salt, the symptoms of cardiovascular and kidney disease worsens significantly*". This suggests that although prenatal disadvantage such as low oxygen supply may be unavoidable, consuming a healthy postnatal diet may prevent or at least limit poor health outcomes.

Microparticle painkillers pack a big punch

Uncontrolled pain in cancer patients is exacerbated by treatment with chemotherapies or radiation treatment.

Developing more effective and long-acting novel pain-killer treatments is the research focus of Dr. Felicity Han who is studying at Centre for Integrated Preclinical Drug Development, The University of Queensland, supervised by Prof. Maree Smith. Preliminary results from Felicity's research has shown that biodegradable microparticles packaged up with two pain killers can be released slowly over a four week period, prolonging periods of pain relief and giving hope to patients.

Felicity's findings hold considerable promise as a suitable approach for alleviating severe cancer-related pain in the future

Fighting man's most common cancer with Australian natural products

Claire Levrier from Griffith University (Eskitis Institute for Drug Discovery) and QUT (Australian Prostate Cancer Research Center – Queensland) is tackliing prostate cancer head on.

Affecting one in five Australian men, it will kill more Australians than breast cancer. Poor diagnostic tests and no cure for the advanced stage of prostate cancer are the reasons behind the high mortality rate.

Claire has discovered new molecules from Australian endemic plants that efficiently kill prostate cancer cells. Using plant extracts from the Queensland laurel (*Anopterus macleayanus*) or *Hernandia albiflora*, she has isolated two natural compounds with promising anti-cancer activity and identified their cellular targets in prostate cancer cells. The most potent and promising new chemical, termed 6-AA by Claire, is the focus for further development in pre-clinical studies.

Interview and photo opportunities

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