

## QUEENSLAND – SUNNY AND SMART! YOUNG SCIENTISTS SHOWCASE THE STATE'S CUTTING EDGE HEALTH AND MEDICAL RESEARCH

Translational Research Institute, Woolloongabba QLD

*Nanotechnology, bio-engineering, tissue regeneration, maternal health, infections diseases, personalized medicine, heart disease, vaccine delivery, multi and transdisciplinary research, Queensland has it all!*

### **Improving cancer treatment: it's not one size fits all**

Personalised medicine is already a part of our healthcare. When a doctor uses family history or past medical events and results to make treatment decisions, it is a type of personalised medicine. But more advanced examples of personalised medicine could improve cancer treatment.

New research from *Tashbib Khan* at the Mater Research Institute, University of Queensland may help to bridge the gap between bench and bedside that is often present when attempting to translate research laboratory studies into clinical success.

Khan established a model using wafer thin slices of a patient's own tumour, combined with different drugs, to determine the best treatment for that patient. The model can give oncologists results **within a week**, providing a short enough turnaround time to ensure personalised medicine for these patients, giving them the best chance at survival.

### **New DNA test identifies our lost soldiers**

DNA testing is used to identify the remains of Australian military personnel, recovered from historical conflicts. But, limitations of currently available testing methods mean that further evidence is required to make a proper identification ~30% of the time. A new targeted DNA test is available that could improve the identification process, but needs to be validated for use on historical remains. *Jasmine Connell*, a PhD student from the Genomics Research Centre, QUT has analysed 2,246 pairs of maternally related individuals to establish a better understanding of the intergenerational mutation rate, and determine whether the current identification guidelines are sufficient for the alternative DNA testing methods.

### **A therapeutic intervention for spinal cord injury**

*Mariah Sarwat* from Queensland University of Technology, Institute of Health and Biomedical Innovation is working to develop a novel treatment for spinal cord injury using peptide hydrogels for regenerative purposes. This approach will allow the use of hydrogels as a delivery vehicle for cells, initiating growth and spread of the encapsulated cells directly to the site of injury to promote tissue regeneration.

## Tissue Engineered Heart Valves

Valvular heart disease is the third leading contributor to cardiovascular disease resulting in more than 5 million deaths annually. *Navid Toosi Saily* from Queensland University of Technology, Institute of Health and Biomedical Innovation aims to overcome the disadvantages of current heart valve prosthesis by providing an alternative mechanically stable valve that also supports tissue growth and remodelling. This research incorporates advanced additive biomanufacturing technologies and a biomimetic design approach to fabricate scaffolds that embrace mechanical, structural and geometrical complexities of native heart valves.

## The genetics of concussion

Responses to head trauma vary between individuals. Some individuals that experience mild head trauma like a small incidental bump develop severe, concussion-like symptoms, including seizures or migraines. Omar Ibrahim is a PhD researcher at the Genomics Research Centre who has examined the genetic profiles of 25 patients with similar presentation and has identified potential genes that may explain the severe response to trivial head trauma. Expanding this research to include more concussion subtypes aims to inspire more informed treatment and management of concussion.

For further information, interviews and photo opportunities, contact Dr Mitchell Sullivan 0473 068 543 or Dr Amy Winship on 0401 657 785



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