News Update Autumn 2021



Enzyme may be reason for COVID-19 susceptibility

A team of Australian researchers, including from the Centenary Institute, has shown in a new study that older people and men tend to have higher levels of the enzyme ACE2 on the cells of their lower lungs–and that this may be the reason for their increased risk from COVID-19.

"The ACE2 enzyme is the entry receptor for the SARS-CoV-2 virus. The spike of the virus binds to ACE2 on the surface of the cell which is a crucial step to the cell being infected," said Professor Phil Hansbro, Director of the Centenary UTS Centre for Inflammation and co-author on the study.

"We found increased ACE2 expression occurring in older people and males which may explain their higher risk profiles for COVID-19," he said.

"We also discovered lower ACE2 levels in people with asthma which may indicate why this population group appear to suffer less from severe coronavirus complications."

The study was led by Professor Peter Wark from the Hunter Medical Research Institute and the University of Newcastle and was published in the journal 'Respirology'.

COVID-19 research at Centenary Find out more at centenary.org.au/covid19

Prestigious grants success

World-leading research into sudden cardiac death and multiple sclerosis has been boosted with two Centenary researchers successfully securing prestigious Ideas Grants in the latest round of National Health and Medical Research Council funding.

Professor Christopher Semsarian AM (pictured left), Head of the Agnes Ginges Centre for Molecular Cardiology, has received funding of \$1.17 million for a three year study into the role of 'concealed cardiomyopathies' (diseases of the heart muscle) and sudden cardiac death (SCD) in young people.

He believes that a significant proportion of unexplained sudden cardiac arrests and SCD in those aged 35 years and under is due to underlying genetic conditions, representing a preclinical concealed phase of disease.



Associate Professor Anthony Don, Head of the Lipid Metabolism and Neurochemistry Laboratory has received funding of \$925,000 for a four year study investigating drugdevelopment opportunities for the treatment of multiple sclerosis (MS). The disease is caused by the immune system mistakenly attacking and depleting myelin, the fatty substance that insulates neurons in the nervous system.

A/Prof Don will be exploring how the loss of certain key biochemical signals promotes myelin loss in MS, and how drugs that restore those signals may be used to protect and regenerate myelin in people with this disease.

Consumer Engagement Program

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New method to assist fast-tracking of vaccines for pre-clinical tests

Scientists in Australia have developed a new method for the rapid synthesis of safe vaccines.

This is an approach that can be used to test vaccine strategies against novel pandemic pathogens such as SARS-CoV-2, the virus that causes COVID-19. The method involves synthesis of a protein with an attached adjuvant (enhancer) as a single molecule.



Led by Professor Richard Payne at the University of Sydney and Centenary's Professor Warwick Britton (pictured), the team has demonstrated application of the method with a new vaccine for use against tuberculosis (TB), which has generated a powerful protective immune response in mice.

Scholarship to support new study into cirrhosis

Improving the clinical care of patients with cirrhosis (severe scarring of the liver) will be the focus of a new three year PhD project being undertaken at the Centenary Institute.

In the project, liver researcher Dr David Prince will be aiming to better define the community prevalence of cirrhosis, assessing if patients are receiving appropriate stage-level care for their condition, as well as evaluating biomarkers associated with advanced

deterioration in liver function.

Dr Prince who was successfully awarded a National Health and Medical Research Council Postgraduate Scholarship for the project, will be working under Professor Geoff McCaughan, Head of the Liver Injury and Cancer Program.



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PROFILE Laura Yeates

This International Day of Women and Girls in Science saw the Centenary Institute feature the fabulous Laura Yeates.

A cardiac genetic counsellor at Centenary, Laura is also Chair of the Australasian Society of Genetic Counsellors and simultaneously undertaking PhD study exploring care for families affected by sudden cardiac death of a young relative.

"As a genetic counsellor, my job involves meeting and working with individuals and family members affected by genetic heart disease. This can include supporting family members who have lost loved ones, often involving children and young adults," says Laura

"Sudden cardiac death in older people (over the age of 35) tends to be due to coronary heart disease and blocked arteries," she says.

"In younger people however, sudden cardiac death is more commonly due to genetic heart disease. It is a traumatic time for families. It's not just the death of the family member they are coping with but if we suspect or determine the cause of death to be genetic, then other family members may be at risk as well."

In her role, Laura works closely with clinicians and researchers investigating the possible causes of sudden death to be able to provide the genetic counselling to the individuals and families affected.

Read more about Laura, her work and her thoughts on science as a fulfilling career. centenary.org.au/laura-2021



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