

# News Update

Winter 2020



## Tackling the COVID-19 challenge at Centenary

Our researchers have launched 11 projects aimed at reducing the global threat of COVID-19.

Visit our website for project details and updates on our coronavirus research.

## COVID-19 research targets human enzymes

Our researchers have examined the critical role of human enzymes and the coronavirus in a scientific review article that explored potential strategies for COVID-19 disease treatment and management.

The review article published in the prestigious 'Journal of Diabetes', sought to explain how the human enzyme dipeptidyl peptidase (DPP4), which is a driver of diabetes severity, could be exacerbating COVID-19.

"COVID-19 is more severe in people who have type 2 diabetes, obesity and related chronic diseases," said Professor Mark Gorrell (Head of our Liver Enzymes in Metabolism and Inflammation Program) and senior author of the article.

"We also see more DPP4 made in people with diabetes, obesity and related chronic diseases. Drugs that target DPP4 enzyme activity are regularly taken by many people for type 2 diabetes. Such drugs may have immune system and cardioprotective effects that could be beneficial in COVID-19 cases," he said.

The review article also noted that DPP4, which is known to be the key receptor for the MERS-coronavirus (Middle East respiratory syndrome) might be an additional or alternate port of entry for SARS-CoV-2 into human cells.

"Once we fully understand this process, we may be able to develop a drug that can help disrupt this viral activity," said Professor Gorrell.

A new COVID-19 research project at the Centenary Institute has also been recently launched by the Professor.

"TMPRSS2 (Transmembrane protease, serine 2) is essential for SARS-CoV and SARS-CoV-2 infection. This protease activates the viral protein on the coronavirus necessary for virus cell entry at the start of viral infection in the human body," he says.

"We are looking to develop a selective TMPRSS2 inhibitor that is both effective and very safe using our expertise and a unique drug screening approach. The successful development of such an inhibitor could be utilised as a novel therapy for both past and current, and possibly future, SARS-CoV coronaviruses."

## Cardiovascular research excellence recognised

Four Centenary scientists have had their world-leading research recognised by being awarded prestigious NSW Cardiovascular Research Capacity Building Grants.

The grants will help drive the scientists work focused on improving the health of patients with heart and cardiovascular conditions.

The successful scientists are:

- **Professor Philip Hogg**
- **Dr Paul Coleman**
- **Dr Renjing Liu**
- **Dr Yanfei (Jacob) Qi**

The grants are a NSW Government initiative aimed at driving discoveries to improve the cardiovascular health and wellbeing of people living in NSW.

## Consumer Engagement Program

Interested in becoming a Consumer advocate? It's a great way to help our scientists communicate their research effectively to non-scientific audiences.

Find out more [www.centenary.org.au/consumer](http://www.centenary.org.au/consumer)

## Potential highly effective TB diagnostic uncovered

A group of Australian researchers, including from the Centenary Institute, have uncovered a unique blood-based biomarker signature in individuals infected by tuberculosis (TB).

The presence of the biomarker signature, found through a simple blood test, allows individuals with infectious TB – including those with non-symptomatic early-stage disease – to be easily identified and treated.

“A major issue in controlling the spread of tuberculosis is the difficulty of detecting the disease quickly and effectively, particularly in developing countries and in remote areas where technology and testing facilities may be limited,” said lead author of the study, Dr Jennifer Ho from the Centenary Institute and the Woolcock Institute of Medical Research.

“Our biomarker discovery could be used as the basis for a highly effective and simple diagnostic blood test to help detect prevalent cases of TB in the community.”

TB is responsible for approximately 1.5 million deaths each year globally.



## Outstanding cancer researcher acknowledged

Dr Ulf Schmitz, Head of our Computational BioMedicine Laboratory has been recognised as an outstanding cancer researcher, being awarded an NHMRC Investigator Grant.

The grant will support Dr Schmitz and his exploration of post-transcriptional gene regulation in cancer over the next five years, commencing in 2021.

“By improving our understanding of gene regulation and its role in cancer, we can offer new opportunities for better diagnosis, and treatment,” said Dr Schmitz.

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### PROFILE

## Professor Phil Hansbro

Over the last three months Centenary's Professor Phil Hansbro has been busy establishing a new COVID-19 laboratory. He is dedicated to understanding the mechanics underlying SARS-CoV-2 and how it induces COVID-19 disease.

“COVID-19 is a respiratory illness that in particularly severe cases overloads the immune system. The virus can cause an excessive inflammatory response which damages cells and tissues, and this can ultimately lead to respiratory failure and death,” he says.

“The goal is to identify or develop new effective COVID-19 treatments that are able to reduce this ‘inflammatory storm’ in susceptible individuals, ultimately to save lives,” he says.

Outside of the laboratory Phil is an avid birdwatcher.

“I’ve been into birdwatching for as long as I can remember. I’ve got notes in one of my very oldest bird books, from when I was seven. None of my friends or family were interested but for some reason birds have always captured my attention,” he says.

“Birdwatching is the only time in my life when I’m not thinking about my work. It helps me to recharge my batteries and takes me to places I would never normally go to,” he says.

Phil is particularly interested in seabirds and enjoys travelling to remote islands.

“A highlight was visiting the sub-Antarctic Kerguelen Islands where I was fortunate to view vast numbers of petrels, terns, albatrosses and penguins,” he says.

Learn more about our Humans of Medical Research [www.centenary.org.au/meet-us](http://www.centenary.org.au/meet-us).