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News Update
Autumn 2019

Leading the global fight against tuberculosis

Tuberculosis (TB) is far from eradicated around the world. TB still infects more than 1,400 people per year in Australia and over 1.2 million Australians are living with latent TB, a non-infectious form of TB that puts them at risk of developing the active disease.

The National Health and Medical Research Council (NHMRC) granted $2.5 million for the Centre for Research Excellence in Tuberculosis Control on both sides of the boarder (TB-CRE) to operate as an interdisciplinary centre of research excellence over five years. Professor Warwick Britton AO, is head of Centenary's Tuberculosis Research Program and TB-CRE, and is a global expert in tuberculosis research leading the fight to end TB.

This year, TB-CRE in collaboration with Results Australia, TB|Forum, Australian TB Caucus, the Burnet Institute and TB Alliance came together at Centenary to host the Sydney World TB Day Event featuring presentations from leading TB experts, a tuberculosis survivor and government representatives led conversation around the global theme – It's Time To End TB.

MORE NEWS INSIDE ▶

Centenary Institute life saving research

Cancer. Inflammation. Cardiovascular.

Fighting a global killer infection - tuberculosis

More than 1,400 people per year are diagnosed with tuberculosis in Australia. Antibiotic resistant TB is particularly deadly and expensive to treat, costing up to $250,000 to treat a single case in Australia.

Our Immune-Vascular Interactions Laboratory's research has led to two new advancements in the global fight against TB.

The group have identified a powerful tool to fight TB in collaboration with scientists at the University of Sydney. Their research has shown antioxidant drugs both kill mycobacteria, the cause of infection, and keep the immune system from causing too much damage through out-of-control inflammation.

"Tuberculosis is one of the most common inflammatory diseases, and it is the immune systems that do most of the damage to the body during infection," says Head of Centenary's Immune-Vascular Interactions Laboratory, Dr Stefan Oehlers.

In a second study the scientists have found a brand new target for treating drug-resistant TB. They have uncovered that the TB bacterium hijacks platelets from the body's blood clotting system to weaken our immune systems.

The team have been working on new ways to treat TB by increasing the effectiveness of the immune system.

Following their hunch that these platelets were being tricked by the infection into getting in the way of the body's immune system, the researchers treated infections with anti-platelet drugs, including widely available aspirin, and were able to prevent hijacking and allow the body to control infection better.

Improved insight in to tumour growth

Head of our Liver Enzymes in Metabolism and Inflammation Program, Professor Mark Gorrell, in collaboration colleagues, have developed a novel model system for accurately monitoring tumour stage and immune cells involvement.

Ovarian cancer develops slowly and the immune system is crucial in controlling the tumour. In this study, the researchers modified ovarian cancer cells so they glowed in a way that can be seen in live laboratory mice models – enabling counts of tumour cells and immune cell subsets when each tumour is removed.

This allowed the researchers to learn new information on tumour growth, as well as discover which immune cells are in the tumour.

It is planned to apply the model to other cancers, including liver cancer.

Recognition for world-class cancer research

Cancer Council NSW has awarded funding to 13 ground-breaking cancer research projects including two to the Centenary Institute.

Dr Justin Wong, Head of our Epigenetics and RNA Biology Program for his research 'Understanding the mechanisms that cause acute myeloid leukaemia' and Professor Phil Hansbro, Director of the Centenary UTS Centre for Inflammation for his project 'Could our gut bacteria play a role in lung cancer?' have both been awarded project grants.

"We are extremely proud to announce another round of extraordinary projects in 2019. We are confident these projects will provide incredible value to cancer patients and continue to push our progress towards a cancer free future," said Dr Jane Hobson, Research Grants Manager at

Cancer Council NSW.

Funds have been awarded to projects deemed through peer review to be of the highest scientific merit; and through consumer review to be of the most value to the community supporting Cancer Council.

We congratulate Professor Hansbro, Dr Wong and their research teams on this recognition and their world-class research.

Dr Elinor Hortle, Research Officer in the Immune-Vascular Interactions Laboratory and Lead Author of the paper published in The Journal of Infectious Diseases says “This is the first time that platelets have been found to worsen TB in an animal model. It opens up the possibility that anti-platelet drugs could be used to help the immune system fight off drug resistant TB”.

Building the case for a closer look at known heart-disease genes

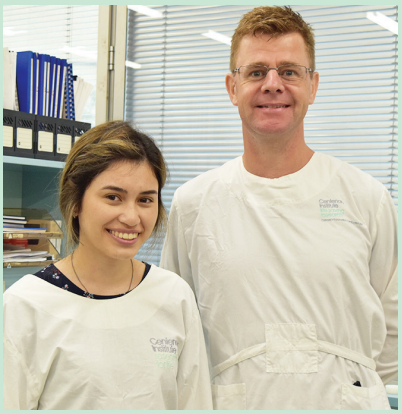
Our scientists have conducted a study which could change how researchers discover the causes of genetic heart disease.

At the moment, the bulk of genetic testing focuses on the protein-coding sections of DNA to look for disease-causing variants. However, these protein-coding regions only make up about two-per-cent of our entire DNA sequence.

In a study published in scientific journal Circulation: Genomic and Precision Medicine, researchers in our Molecular Cardiology Program screened 500 families affected by hypertrophic cardiomyopathy – a common genetic heart condition which occurs when the heart muscle thickens, making it difficult to pump blood.

The researchers focused on one of the main disease-causing genes, known as MYBPC3, and discovered they were able to attribute the cause of hypertrophic cardiomyopathy in four families to a variant found in the non-coding region of the DNA.

First-time Lead Author Emma Singer says while on the surface, it may appear to be a small breakthrough, it’s still important for patients affected by genetic heart disease.



Extra! Extra! Read all about it.

Dr Ka Ka Ting, a researcher within our Vascular Biology Program, has had one of her images featured on the front cover of scientific journal Diabetologia.

Recently, Dr Ting led a study which found a novel drug (developed by Centenary scientists) could be used to effectively treat diabetic retinopathy; the main cause of blindness from diabetes. This paper was also published in Diabetologia.

Congratulations Dr Ting on your wonderful success!

Breakthrough in preventing the spread of melanoma

A study led by Centenary’s PhD researcher, Dajiang Guo, has uncovered a brand-new target for melanoma metastasis; providing an improved understanding of how the cancer spreads and opening the door for more effective treatments.

The primary cause of death in melanoma patients is metastasis. In collaboration with 11 other Australian research institutions, our scientists have identified a specific protein (called RAB27A) as a key driver of melanoma metastasis. Dajiang Guo, from our Immune Imaging Program says the discovery provides a new way through which researchers can better target and treat melanoma.

Thank you!

Your generosity makes a world of difference to our researchers! There are lots of different ways you can offer your support and ensure your contribution is used to directly impact the area of research you are passionate about. If you’re interested in making a donation to a specific area of our research please contact us on 1800 677 977, email us at donations@centenary.org.au, or you can make an online donation and nominate the area at www.centenary.org.au/

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HUMANS OF MEDICAL RESEARCH

Prof Chris Semsarian AM

No one likes a good underdog story more than Professor Chris Semsarian. And he believes there's no better rags-to-riches tale than that of the South Sydney Rabbitohs.

"The reason I love the Rabbitohs is because they're a team with heart, and they come from basic beginnings. They got kicked out of the NRL in the late 1990s, but they fought back and re-entered the competition in the early 2000s. They came last for the first few years but they never gave up, and won the premiership in 2014."

You could call Chris a bit of an underdog himself. He's open about growing up in housing commission for the first 16 years of his life. But he believes it's made him a better person.

Now, Chris is an internationally-renowned cardiologist who splits his time working between the Centenary Institute, Royal Prince Alfred Hospital and Sydney University. At Centenary, Chris leads the Molecular Cardiology Program, which he established in 2001.

Chris' research is focused on genetic heart disease in young people, and how those findings can be translated into improving the care of his patients.

During his time as a cardiologist, Chris has seen hundreds of patients and their families. A particular case that sticks in his mind involved a healthy woman in her early 20s who had been experiencing heart palpitations while playing netball. After determining the genetic cause behind her heart problems, they also learned her brother had died suddenly playing rugby in the UK about 15 years earlier, and the family had never found out why.

As his obsession with the South Sydney Rabbitohs would suggest, Chris loves sport – not just as a spectator, but as a cardiologist for the Australian Cricket Team. He also enjoys spending any free time he has with his wife and three children, but he admits he's partial to some 'me-time' on the weekend, which involves just him and a coffee at the local cafe!

Dr Elinor Hortle

Dr Elinor Hortle has a big task on her hands. She's among a league of scientists determined to eliminate the world's deadliest infectious disease.

In 2016, 10.4 million people were diagnosed with tuberculosis globally, and 1.7 million people died as a result.

While Australia is considered a low-risk country, Elinor says that's all the more reason we should use our privilege to stamp out this killer disease.

Elinor started at Centenary in 2017 and is currently working with Zebrafish to try to discover new ways to treat tuberculosis.

There is every chance Elinor could have been working at the United Nations instead of Centenary. During her time as an undergraduate, she completed a double degree in International Politics and Molecular Biology. Later in her degree, she had the opportunity to intern in a laboratory and says she "enjoyed the daily vibe". Luckily for Centenary, it was that experience which launched her life of scientific research.

"I enjoy working somewhere where there's a lot of longevity – many researchers are here for 15 years or longer. It's also nice to see a place where people have worked with each other for a significant length of time," says Elinor.

Outside the lab, Elinor enjoys bouldering – a pastime slightly different from traditional rock-climbing in that the climbs are shorter and no ropes are required. Elinor first tried bouldering while on exchange at a university in the United States about 10 years ago, and since then, she hasn't looked back.

"Bouldering is how I met my husband! I like feeling fit, but a good half of the difficulty of bouldering is that it's cerebral – it's like a puzzle you have to figure out."

Elinor is also a musical talent, having joined her first band at the age of 14. She currently sings in her church band.

Read the full stories and meet more of our Humans of Medical Research at

www.centenary.org.au/humans