LATEST NEWS



DISCOVERING A POTENTIAL NEW PATHWAY FOR CANCER THERAPIES

Our scientists have discovered dozens of new likely targets for a particular enzyme (FAP) that is within most tumours; paving the way for the future

development of safer and more effective cancer therapies, including liver, lung, skin, colorectal and pancreatic cancers. Instead of affecting or interacting with just collagen, the researchers have used new technologies to identify 37 molecules which FAP likely modifies.

"Given FAP is fairly unique to damaged cells when compared to healthy cells, the findings from our research will enhance the initial identification and imaging of tumours, as well as provide a safer and more targeted pathway through which anti-cancer therapies can be delivered," says co-lead author, Dr Hui Emma Zhang.

Dr Zhang was recently awarded a prize for presenting her research at the Sydney Cancer Conference.

See the full media release.



FLU-BASED VACCINE HELPS PROTECT AGAINST DEADLY TB

Scientists are a step-closer to developing a more effective vaccine against the world's deadliest infectious disease, following a breakthrough involving researchers

from Centenary. In a study published in the scientific journal Mucosal Immunology, the group has demonstrated how a sub-unit vaccine (based on the Influenza A virus) can be used to activate special memory T-cells in the lungs, which in turn, helps protect against tuberculosis.

Head of Centenary's Tuberculosis Research Program, Professor Warwick Britton believes the study has led to a significant breakthrough in the quest to eliminate TB.

"We are already using this breakthrough to develop other sub-unit vaccines, suitable for delivery to the lunas in humans," says Professor Britton.



BOYER LECTURES 2018: PROFESSOR JOHN RASKO AO

The ABC Boyer Lectures are delivered each year by a prominent Australian and are designed to spark conversations about critical ideas.

This year's Boyer Lecturer was Head of Centenary's Gene and Stem Cell Therapy Program Professor John Rasko AO.

Professor Rasko's "Life-Re-engineered" lectures examine how developments in cell science and genetics are transforming medicine, and changing what it means to be human.

Listen to the four 2018 Boyer Lectures.



RACING TO FUND MEDICAL RESEARCH AND FIND CURES

Supporters of Centenary have recently hit the pavement for two major running events in Sydney in an effort to raise funds for the Institute's life-saving research.

On 12th August, runners participated in the City2Surf, which took them on a challenging 14km route from the city to Bondi Beach, via the notorious Heartbreak Hill,

Centenary scientist Claudio Conoupas was the first team member to cross the line in an impressive 63 minutes! Together, Team Centenary and its corporate supporter Shaw & Partners raised close to \$9,000 from the event.

If that wasn't enough, even more runners, including Centenary's Executive Director Mathew Vadas and Professor Jenny Gamble, took part in the Sydney Running Festival on 16th September, with the team raising more than \$7,000.

A special shout-out to Laura Hill, Katie Halsted and Aleasha Way who completed the gruelling 42km marathon!



BOQ GENDER EQUITY AWARD WINNER ANNOUNCED

Centenary's Dr Shweta Tikoo has won the 2018 Bank of Queensland Gender Equity Early Career Award.

Dr Tikoo, a researcher in the Immune Imaging Program, is currently focusing on exploring a subset of macrophages (a type of white blood cell) in breast cancer progression and metastasis, with the aim of developing more effective treatment strategies to combat the disease.

Accepting the award at the Centenary Institute Foundation Fundraising Dinner on September 20th, Dr Tikoo said she's incredibly grateful to receive such a prestigious prize.

"During the course of my scientific career, I have interacted with several brave women who have fought the scourge of breast cancer. Yet all of these women live in constant fear that the cancer might come back. It's a fear no person should have to live with," Dr Tikoo said.

To read all the full stories from our latest news and find

our 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 bassionate 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

NEWS UPDATE SUMMER 2018



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Cancer. Inflammation. Cardiovascular



IN THE MEDIA

A NEW WAY TO TARGET HIGH RATES OF OBESITY



A novel drug is being touted as a major step forward in the battle against Australia's escalating rates of obesity and associated metabolic diseases. As it stands, 2 in 3 adults in Australia are classified as being overweight or obese.

A long-term study between researchers at the Centenary Institute and UNSW Sydney has led to the creation of a drug which targets an enzyme linked to insulin resistance – a key contributor of metabolic diseases, such as Type II diabetes.

The study has been published in the highly-regarded scientific journal Nature Communications. Surprisingly, although the drug was very effective at reducing the lipids of interest in skeletal muscle, it did not prevent mice (which had been fed a high-fat diet to induce metabolic disease) from developing insulin resistance. Instead, it prevented the mice from depositing and storing fat by increasing their ability to burn fat in skeletal muscle. While the study produced some unexpected results, it's the first time scientists have been able to develop a drug that successfully targets a specific Ceramide Synthase enzyme in metabolic disease, making it a significant advancement in the understanding and prevention of a range of chronic health conditions.

"From here, I would like to develop drugs which target both the Ceramide Synthase 1 and 6 enzymes together, and see whether it produces a much stronger anti-obesity and insulin sensitising response. Although these drugs need more work before they are suitable for use in the clinic, our work so far has been a very important step in that direction," says Centenary Institute's Associate Professor Anthony Don.

This breakthrough featured on <u>7 News</u>, <u>ABC RN Breakfast</u> <u>with Fran Kelly</u>, ABC News 24 and several international online news outlets including <u>The Sun</u> and <u>The Mirror</u>.

AUSTRALIAN-LED STUDY UNCOVERS BRAND NEW VIRUS UNDERPINNING KIDNEY DISEASE



Image: Unaffected kidney tubules (pink), virusinfected kidney tubules (green) and associated 'scarring' of the surrounding tissue (red and yellow).

A multi-disciplinary group of scientists from Centenary, in collaboration with researchers at the Memorial Sloan Kettering Cancer Center in New York, have serendipitously discovered a brand-new virus strain, which could change the way chronic and childhood kidney diseases are approached and treated.

Using leading-edge DNA sequencing technologies, the scientists were able to pinpoint the cause as an entirely new parvovirus, with the study published in the highly-prestigious scientific journal *Cell*. Parvoviruses are extremely small viruses that are generally benign, except in immune-compromised individuals.

"This virus is very widespread and has been affecting laboratory mice for 40 years or more, and we have good reason to suspect that both wild and laboratory mice unwittingly harbour it in their colonies," says lead author and Head of Centenary's Skin Imaging and Inflammation Laboratory, Dr Ben Roediger.

"This breakthrough provides new insight into virally-driven kidney disease, which is a major problem in kidney transplant patients. Furthermore, the virus itself appears to be highly specific to the kidney, which means we can potentially exploit its surface ("capsid") protein to develop gene therapies for inherited childhood kidney disease."

Read the full media release.

HUMANS OF MEDICAL RESEARCH

STUART COOK

Growing up, Stuart never really thought he'd one day be donning a lab coat and goggles in his day-to-day work. During high school, he tended to lean towards the humanities subjects. But after studying biology in Year 11, the tables started to turn.

"I grew up in a medical household. My dad is a doctor and my mum is a physiotherapist, so there were always chats around the table about 'this world' but I never really knew anything about it," says Stuart.

"I ended up choosing a science degree at university, and really enjoyed the practical side of it. I mainly focused on biology subjects, but I also had a few earth and environmental science ones as well."

Fast-forward a few years, the 22-year-old has already been the lead author of a study which has uncovered a new pathway in the body to fight cancer, including melanoma.

Stuart started at Centenary at the beginning of 2017 as an Honours Student, and is now a Research Assistant in Dr Ben Roediger's Skin Imaging and Inflammation Laboratory. At the moment, he's focusing on a project which is based around the hallmark of inflammation - the inflammasome.

"You go into the lab not knowing what's going to work. Nine times out of 10 it doesn't work, but then the one time it does, it really hits you and it's what keeps you hooked. But even when it's wrong, that helps steer you in the right direction," he says.

Work aside, Stuart describes himself as a bit of a "space nut".

"I've never studied astrophysics or anything like that, but I've always been fascinated by space. I'm travelling to the US and I'd definitely like to stop by the Space Center in Florida."

As his photo would suggest, Stuart also enjoys spending time on the snow slopes. When he finished high school, he spent some time working in Canada as a ski instructor. For those looking for a ski holiday recommendation, Stuart says you can't go past Japan's northernmost island Hokkaido.

JADE BOLAND



When you talk to Jade, you realise "balance" is important to her, whether it's holding a tree pose on her yoga mat or working to ensure women are better represented in science. The 27-year-old has been at Centenary since the start of 2016, and she currently works as a Research Assistant in Professor Geoff McCaughan's Liver Injury and Cancer Program.

Jade knew she either wanted to pursue art or science once she finished school, and ultimately chose to study the latter at university. She worked in a pathology lab for several years, which gave her the practical skills she needed to become a Research Assistant at Centenary.

At the moment, there's only one treatment available for patients diagnosed with late-stage liver cancer which can extend their life by three months. Jade is part of a team working to improve such therapeutics, as well as identify diagnostic markers with the aim of picking up liver cancer in the earlier stages - something Jade describes as very rewarding.

"I always feel good about the work we do at Centenary – particularly being on the frontline of new medical discoveries," she says.

When asked what she believes is the best thing about working for Centenary, Jade immediately says the people. But she also enjoys being involved in programs outside the lab, such as the Social Committee and the Gender Equity Program.

"I really like how Centenary is actively trying to improve equity, and ensure women are given equal opportunities to pursue a career in science as men."

Jade is also a dedicated yogi, and recently spent time in Byron Bay for a 10-day retreat, as she works towards achieving her yoga teaching accreditation.

"I'm not a very sporty person, so yoga is definitely more my style. Sitting at a bench all day, you start to feel tension in your shoulders, so going to yoga is almost like physiotherapy at a discount price!" she quips.

To meet more of our Humans of Medical Research visit our website.