

SPRING 2021

Thanks to you...

Fighting COVID-19
Variants of Concern,
and the transformative
power of your gift

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Burnet Institute
Medical Research. Practical Action.



In a world *transformed*

In a world transformed by COVID-19, Burnet remains dedicated to the elimination of infectious diseases, including viral hepatitis, HIV, malaria, and tuberculosis. However, front-of-mind for most of us at the moment is the impact of the COVID-19 Delta variant and subsequent lockdowns, as we race to go get a significant portion of the population vaccinated. In this newsletter you will hear from three of Burnet's world-class scientists and how your support is helping them in the fight against COVID-19.

Our mathematical modelling team has been contributing to the front-line response to COVID-19 here in Australia from the very beginning of the pandemic, thanks to your ongoing support. In this edition **Dr Nick Scott** will share the results of a world-first study on the effectiveness of masks in preventing COVID-19 transmission.

You will also hear from **Professor Heidi Drummer** and **Dr Andy Poubourios** on their world-class research on second generation vaccines to fight COVID-19 Variants of Concern. Find out what your support has meant to them personally, and how it has made it possible for them to press on with the all-important proof of concept stage.

On a different note, one of the things I have really been missing during the pandemic is one-on-one contact with supporters like you. So can I encourage you, please, to get in touch?

We are currently doing our **2021 Supporter Survey**, and if you have not already received this in the mail or via email and would like to participate, please email me at giving@burnet.edu.au, or click on the image below to do the survey online. I'd be really happy to hear about your connection to Burnet, what research is of most interest to you, and how you have been coping through the pandemic.

Until we can meet again in person,
I wish you all the best

Brendan

Professor Brendan Crabb AC



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Cover: Professor Heidi Drummer, fighting COVID-19 Variants of Concern



“

I want to say a heartfelt thank you to everyone who so generously supported mathematical modelling at Burnet. I am passionate about maths, and about saving lives with modelling. I'm really pleased that so many Burnet supporters, like you, recognise the importance of what my team and I do here at Burnet. Thank you so much for your incredible generosity.

DR NICK SCOTT, HEAD OF BURNET'S MODELLING AND BIostatISTICS GROUP

YOUR GIFTS IN ACTION

Dr Nick Scott, *crunching numbers* to save lives”

Thanks to your support, Dr Nick Scott and his team of mathematical modelling experts continue to work tirelessly to outsmart COVID-19 here in Australia. They provide regular policy briefs to the Australian and Victorian governments, which have been used to inform the public health response to the pandemic.

Mathematical modelling is the process of using maths to make predictions about the real world. It helps us to understand situations, project outcomes, and is the link that translates data into decision-making evidence.

Also, in July this year, Nick co-authored a world-first study, which found that the mandating of masks during Melbourne's COVID-19 second wave in July 2020 was the single-most important control measure, and “turned the epidemic around”.

“We had a unique situation in Melbourne where masks were made mandatory as a single policy change, and compliance went from low use to very high use of masks in the community very rapidly. What we saw was a significant 20-30 per cent reduction in the effective reproduction rate that correlated with that policy, so it turned the epidemic around from case numbers that were increasing every day to a situation

where we could see the numbers were getting back under control.”

At a time when some Australians may be experiencing lockdown fatigue or apprehension, this study provides evidence that mandatory masks are a tool that can be effective against COVID-19.

“This is important, because they're not that invasive when compared to some of the other restrictions that need to be applied to control COVID-19. The fact that we can get real benefit from something that has minimal impact on people's lives is really important.”



Fighting COVID-19 Variants of Concern, and the *transformative power* of your gift



The support we have received from donors for our COVID-19 Spike protein project has, quite simply, transformed our vision for this research. Having secure funding for the next year allows us to plan out a more ambitious scope of work than we'd initially thought we'd be able to achieve. I want our supporters to know that their gifts not only support existing research, but have the power to enrich and transform research. We can do more because of you, and that is amazing. Thank you.

PROFESSOR HEIDI DRUMMER

Spotlight on COVID-19 Variants of Concern

The current outbreak of COVID-19 in Sydney, and the most recent outbreaks in Melbourne and parts of Queensland, have cast a spotlight on the Delta variant of the SARS-CoV-2 virus. The same variant has also caused community outbreaks in Darwin and Perth.

The World Health Organization (WHO) estimates that the variant is 55 per cent more transmissible than the Alpha variant, which was in turn around 50 per cent more transmissible than the Wuhan strain. That means someone infected with Delta can infect up to six or seven others compared to two to three with the Wuhan strain.

The good news is that the current vaccines still offer significant protection, even if it is slightly reduced. Lockdown measures and mask-wearing also play an important role in fighting the variant.

But looking to the future, variants of concern mean that the world is in desperate need of a second-generation vaccine, or booster shot, that is effective against all COVID-19 variants. A universal vaccine.

The potential of the Burnet Spike Protein

As you know, research underway in the Burnet laboratories by scientists in the Viral Entry and Vaccines Group, led by Professor Heidi Drummer and Doctor Andy Poubourios, has the potential to create that much needed universal vaccine.

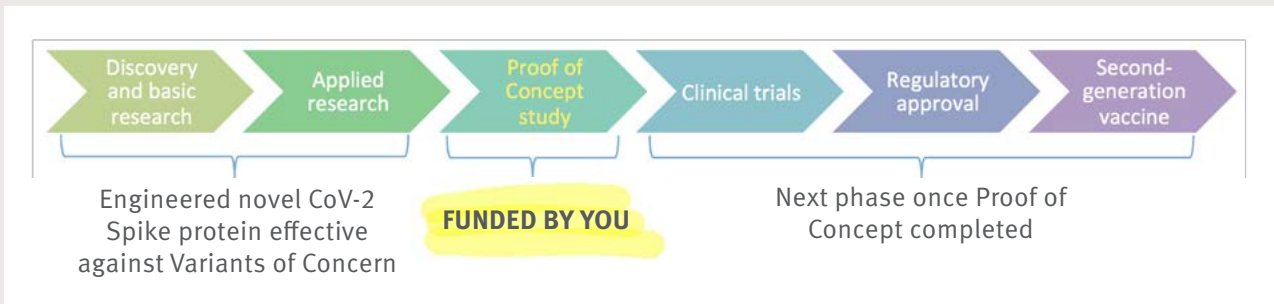
Current COVID-19 vaccines inject non-dangerous Spike proteins into the body to induce the body to build T-cells and antibodies that will remember how to fight the COVID-19 virus if we are infected in the future. The problem is that mutations to the virus Spike protein cluster on the top of the Spike protein, where the virus interacts with human cells, and it means the antibodies may no longer recognise and fight the virus as effectively.

The alternative strategy is to develop a universal Spike booster vaccine that focuses the antibody response to the protein regions that are not altered in variants of concern.

Thanks to your incredibly generous support of their research, Heidi, Andy and their team are powering ahead with the proof of concept phase of their booster vaccine.



Fighting COVID-19 Variants of Concern, and the *transformative power* of your gift



Transforming proof of concept, thanks to your support

Proof of concept is a critical stage in the research pipeline. In this case, it will allow further testing in a lab setting to ensure the vaccine is effective in generating immunity to protect against COVID variants of concern. If it works, we will then move onto human trials in a clinical setting. As Andy explains further:

“We know that our modified vaccine containing the Burnet-engineered Spike protein can produce antibodies in preclinical studies,

which are effective against a variant of concern – in this test case, the Beta variant from South Africa, so we know that it works. The next phase is to show that it works in an adeno system, as well as an mRNA system, which are the two delivery systems used by the major vaccine companies.”

BioNTech-Pfizer and Moderna use messenger RNA (mRNA) as the Spike delivery vehicle, while AstraZeneca and Johnson and Johnson/Janssen use weakened common cold viruses known as adenoviruses.

“We are continually trying to improve and get more information about how our vaccine works.”



The exciting thing for me about getting such great support from the community for our research, is how it opens up new possibilities. Secure funding has allowed us to broaden the scope of work so that we can look at different vaccine platforms, with the knowledge that we have time to achieve all the work we need to do to get us to clinical trials. I’m so impressed with how much generosity there is out there. It just blows my mind. Thank you.

DR ANDY POUBOURIOS



DONOR PROFILE

Making a contribution as a donor and a staff member



“

Not everyone gets to do something they love and get paid for it, but I do. I wouldn't work for someone I didn't believe in, and I believe in Burnet. So I'm happy to be making a contribution, both as a staff member and as a donor.

KATE CHERRY, CLINICIAN AT BURNET INSTITUTE
(WITH HARVEY ON A VISIT TO THE BEACH)

Kate Cherry completed her PhD at Burnet in 2004 and has been here ever since.

Kate has been a clinician in Victoria's public hospital system since 1993 and has always had a particular interest in caring for people living with HIV. Her PhD (investigating neurologic complications of HIV and HIV treatments) heightened her interest in research. For several years she ran a small lab at Burnet.

“I really enjoy working with colleagues from diverse backgrounds and providing a clinical and/or epidemiological perspective on projects. The buzz of looking at data and seeing new findings emerge is very real.

“But for me, the greatest motivator is the patients. Seeing patients in the clinic constantly raises questions about disease pathogenesis, drug toxicities, quality of life and more.

“What could be more natural than combining clinical work with a role trying to answer some of the questions that come up?”

Today, Kate leaves the main work of research to others, but enjoys contributing her skills and clinical perspective to various projects. She combines a part-time role here at Burnet as staff physician and

clinical epidemiologist, with patient care (infectious diseases physician, Alfred Health, where she is also a member of the Ethics Committee), hospital governance (Board Director at Peter Mac) and volunteering. She also has honorary academic appointments at both Monash University and the University of the Witwatersrand in South Africa.

Kate made the decision long ago to give at least ten per cent of what she earns in philanthropic gifts. She has been giving to Burnet regularly since her PhD, and has a specific interest in addressing funding gaps.

“Working on the inside at Burnet, I see a very real struggle to cover the associated costs of research. All the ‘unsexy’ overhead costs like keeping the lights on, salary on-costs, or whatever it might be, often remain unfunded. For that reason, my gifts to Burnet are ‘discretionary’. Rather than telling Burnet how to use my donations, I leave it to them to put it where it is needed, and where, perhaps, it is the hardest to attract funding. I know from personal experience that plugging these unfunded gaps can make a real difference – to the research, and ultimately to the patients.”

Each edition we will feature a story from one of our supporters, like you.
If you have a story you would like to share, please email: ashley.sievwright@burnet.edu.au.

In awards news

NHMRC awards for Associate Professor Josh Vogel

Associate Professor Vogel was presented with the 2020 National Health and Medical Research Council (NHMRC) Peter Doherty Investigator Grant Award (Emerging Leadership), and the 2021 Commonwealth Health Minister's Award for Excellence in Health and Medical Research, valued at \$50,000.

Associate Professor Vogel's Grant will support his team's research to improve health outcomes of preterm newborns in low- and middle-income countries.

"There's never been a more important time to focus on how to improve health for pregnant women and newborns," Associate Professor Vogel said.



Image: (L-R) Health Minister The Hon. Greg Hunt MP, Associate Professor Josh Vogel, and NHMRC CEO Professor Anne Kelso AO

Get the full story here: burnet.edu.au/news/1455

Donor-funded travel awards for Burnet researchers announced

Burnet Travel Awards enable outstanding researchers to exchange knowledge with their peers, present their work, receive mentoring through participation in scientific conferences and gain exposure to the wider scientific community in which they specialise.

Although conference attendance will be delayed by COVID-19, this remains a key way to support Burnet scientists to pursue their careers and make important contributions to global health.

Dr Alyce Wilson, Public Health Registrar and Senior Research Fellow with the Global Women's and

Newborn's Health Group, is the winner of the Dora Lush Travel Fellowship (\$10,000 for international travel), open to mothers of young children.

"COVID has thrown so many challenges to us ... and this award provides an opportunity for me to continue what I love doing," Dr Wilson said.

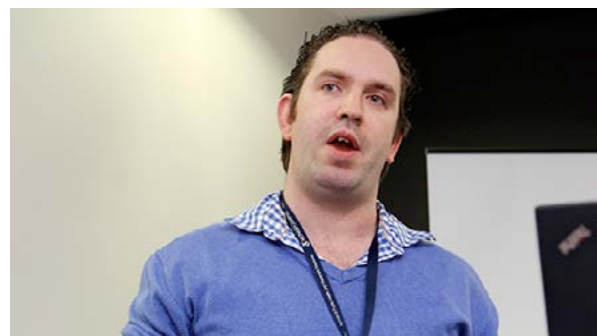


WITH THANKS to the very special donors, trusts and foundations who support the Burnet Travel Awards.

Get the full story here: burnet.edu.au/news/1470

Brendan Harney recognised for HIV Prevention research

Burnet Institute Research Assistant and PhD candidate Brendan Harney has been acknowledged for excellence in research with an IAS/MSD Prize for Research in HIV Prevention at the 11th IAS Conference on HIV Science.

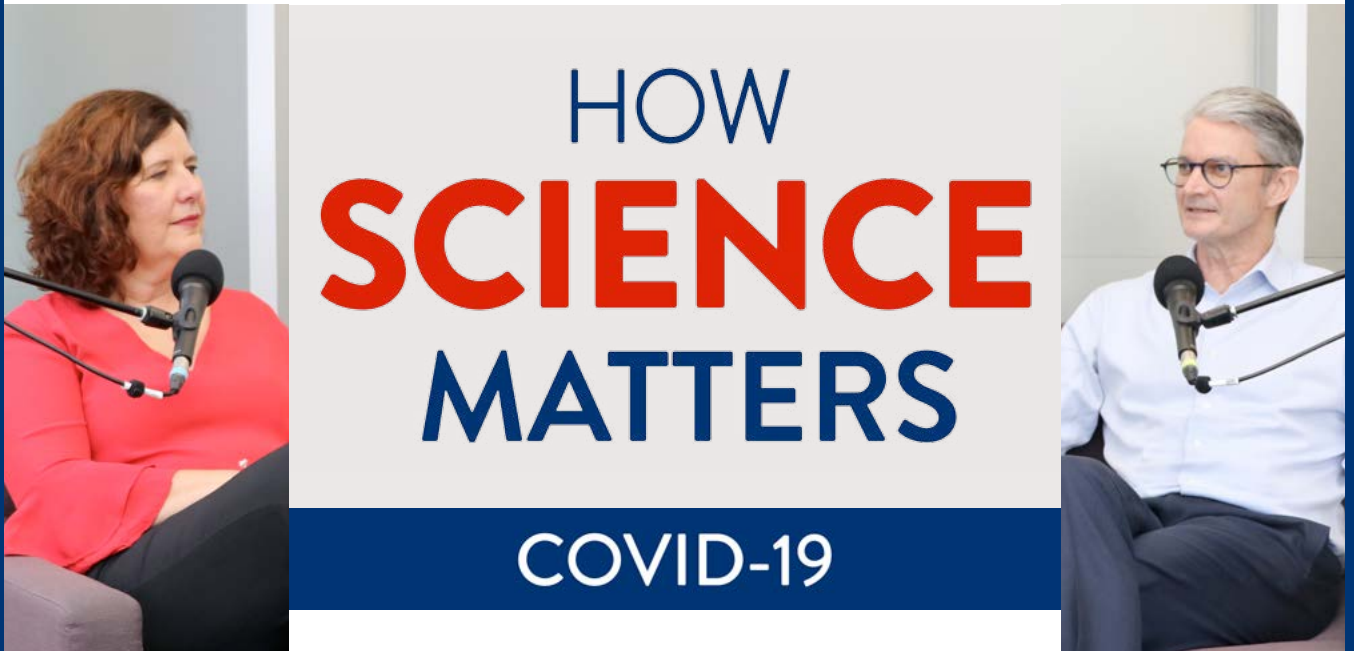


The US\$10,000 prize rewards outstanding researchers who demonstrate innovation, originality and quality in their research into HIV Prevention.

Mr Harney won for his abstract focused on hepatitis C virus reinfection incidence among gay, bisexual, and other men who have sex with men living with HIV.

Get the full story here: burnet.edu.au/news/1471

A NEW PODCAST



We are very excited to share with you How Science Matters, a new 8-part podcast series featuring many of Burnet's visionary scientific thinkers.

You'll hear stories about how COVID-19 has impacted our work and lives, and what keeps our scientists awake at night as they grapple with a pandemic.

Co-hosted by Professor Brendan Crabb AC, one of the best minds in infectious diseases and global health, and former ABC Radio journalist Tracy Parish.

Ep 1: A year like no other, the pandemic continues

Ep 2: Are vaccines the silver bullet?

Ep 3: No-one is safe, until everyone is safe

Ep 4: Everyone's an epidemiologist!

With more to come.

Share the series with family and friends.

We want this podcast to spread like a virus — but in a good way!

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We have offices or representatives in Australia, Myanmar, Papua New Guinea and China, and also contribute to activities in other African, Asian and Pacific countries.


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