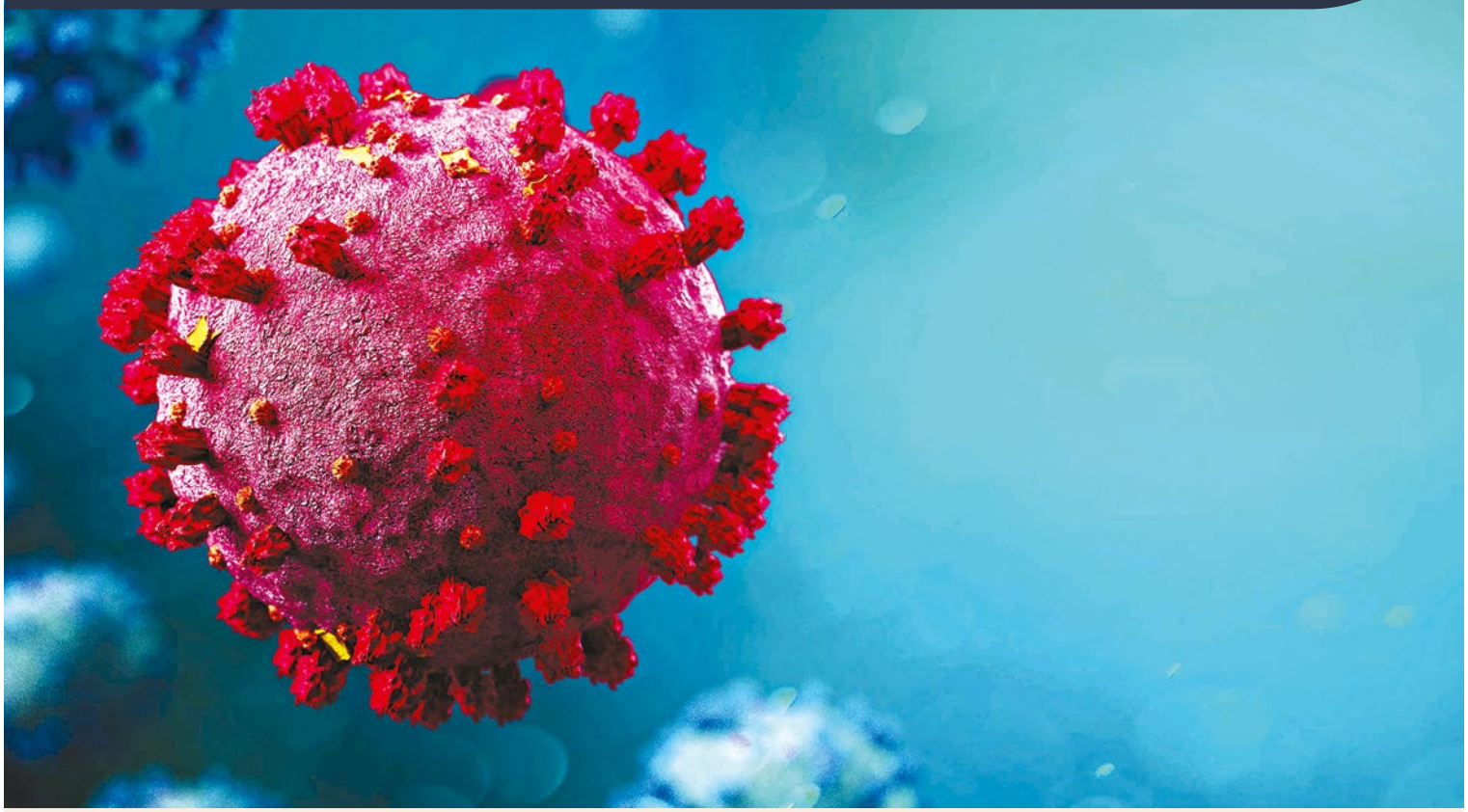
Burnet
reach for the many

Staying ahead of emerging coronavirus threats



The Burnet Vaccine Initiative is developing simple, stable, and accessible vaccines against Betacoronaviruses (βCoV) that have the potential to cause future epidemics and pandemics.

Applications

Our vaccines are designed to

- generate broad and durable immune protection not easily evaded through immune escape
- be simple to produce, store and distribute
- be adaptable to any vaccine modality – protein, mRNA, viral vector.

Our technology will:

- simplify the manufacture, storage and distribution of trimeric βCoV recombinant spike protein vaccines
- increase the potency of other vaccine modalities such as mRNA that deliver soluble or full-length βCoV spike.

BVi Burnet Vaccine Initiative

Technology profile

Our new technology is based on covalently stabilised, soluble βCoV spike trimers.

- Elicits 10-fold higher neutralising antibody responses that are protective
- Free of trimerisation clamps: >90% trimer; no off-target antibodies
- Thermostable: retain biophysical and antigenic structure at 37°C for 8 weeks
- Retains biophysical and antigenic structure after lyophilisation and storage
- Stabilised spikes can be delivered by mRNA as soluble and full-length membrane-anchored forms
- Stabilisation technology applicable to emergent SARS CoV-2 variants, bat sarbecoviruses and MERS CoV
- Potential for polyvalent pan-Betacoronavirus formulations

Intellectual property

- **PCT/AU2022/050880** (11 Feb 2021) 'Vaccine Antigen.' Core stabilisation of SARS CoV-2 Spike. (see also https://doi.org/10.1371/journal.ppat.1010981)
- **PCT/AU2024/050878** (15 Aug 2023) 'Vaccine Antigen.' Optimisation and covalent stabilisation of clamp-free Sarbecovirus spike trimers leading to enhanced immunogenicity.
- **Provisional patent application** (13 Dec 2024) 'MERS Vaccine Antigen.' Optimisation and covalent stabilisation of clamp-free MERS CoV spike trimer

Our collaborators

- Doherty Institute, Australia
- Laval University, Canada
- Kirby Institute, Australia
- Monash Biomedicine Discovery Institute, Australia
- Monash Institute of Pharmaceutical Sciences, Australia
- University of New South Wales, Australia

Our Viral Entry and Vaccines laboratory is fast-tracking their work on a universal COVID vaccine including proof-of-concept and preclinical validation studies.

Left to right: Dr Andy Poumbourios, Christine Langer, Professor Heidi Drummer, Irene Boo

Work with us

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