



PRESS RELEASE

Antibody from recovered COVID-19 patients found to reduce severity of disease

Study found that an antibody, P36-5D2, demonstrated a substantial decrease in infectious virus load in the lungs and brain, and reduced lung disease in laboratory models

Singapore, 11 January 2022 — In a study jointly conducted by the Bio-Safety Level 3 (BSL-3) Core Facility at the NUS Yong Loo Lin School of Medicine (NUS Medicine) and Beijing Tsinghua University, an antibody was found to be capable of neutralising major SARS-CoV-2 variants of concern.

As SARS-CoV-2 variants continue to emerge and spread around the world, antibodies and vaccines to confer broad and potent neutralising activity are urgently needed. The paper titled “A Potent and Protective Human Neutralizing Antibody Against SARS-CoV-2 Variants”, which was first published in *Frontiers in Immunology* December 2021, explained how the team isolated and characterised monoclonal antibodies from individuals infected with SARS-CoV-2.

In the study, crystal and electron cryo-microscopy structure analyses revealed that P36-5D2, when targeted to a conserved epitope on the receptor-binding domain of the spike protein, withstood three key mutations. These mutations, namely K417N, E484K, and N501Y, are found in variants that escape from many potent neutralising monoclonal antibodies. A single intraperitoneal injection of P36-5D2 as a prophylactic treatment demonstrated protection of the in vivo models from severe disease in the course of an infection with SARS-CoV-2 Alpha and Beta variants. These models had normal activities and body weight and were devoid of infection-associated death for up to 14 days, and demonstrated a substantial decrease of the infectious virus in the lungs and brain, as well as reduced lung disease.

The effects of P36-5D2 serve as an important reference for the development of antibody therapies against SARS-CoV-2 and its current and emerging variants. The team is conducting further research to study its effects of protection against the infection of the Delta and Omicron variants.

“The discovery of this antibody means we can be more confident in our fight against COVID-19 and its variants. With a strong and established collaboration within NUS Medicine and Beijing Tsinghua University, our scientists would be able to improve our technology to identify antibodies that can potentially treat more unknown variants that may come up in the future,”

said Dr Mok Chee Keng, Head, Science and Service Support Team, BSL-3 Core Facility at NUS Medicine.

About the National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established our NUS Overseas Colleges programme in more than 15 cities around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 30 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

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About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is Asia's leading medical school and ranks among the best in the world (Times Higher Education World University Rankings 2022 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2021).

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