

Covid-19

10-minute test to find out if one has immunity

Kit developed by team here may pave way for strategy of giving boosters only when needed

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Using a drop of blood from a finger prick, a new rapid blood test developed by scientists in Singapore can determine if a person has immunity against Covid-19 and its variants.

With the test, it takes just 10 minutes to show results, compared with the 24 to 72 hours needed in conventional laboratory testing.

It was developed by a team of scientists from the Singapore-MIT Alliance for Research and Technology (Smart), MIT's research enterprise in Singapore, and Nanyang Technological University (NTU).

It detects the levels of neutralising antibodies against Sars-CoV-2,

the virus causing Covid-19 and its variants such as Delta and Omicron, said Smart and NTU in a media release on Thursday.

The test, which uses a paper-based assay coated with chemicals that bind to antibodies in the blood sample, has up to 93 per cent accuracy, said the two institutions.

It can be easily adapted for new variants of concern and other diseases in the future, they added.

The findings were published in the scientific journal *Microbiology Spectrum* on Sept 7.

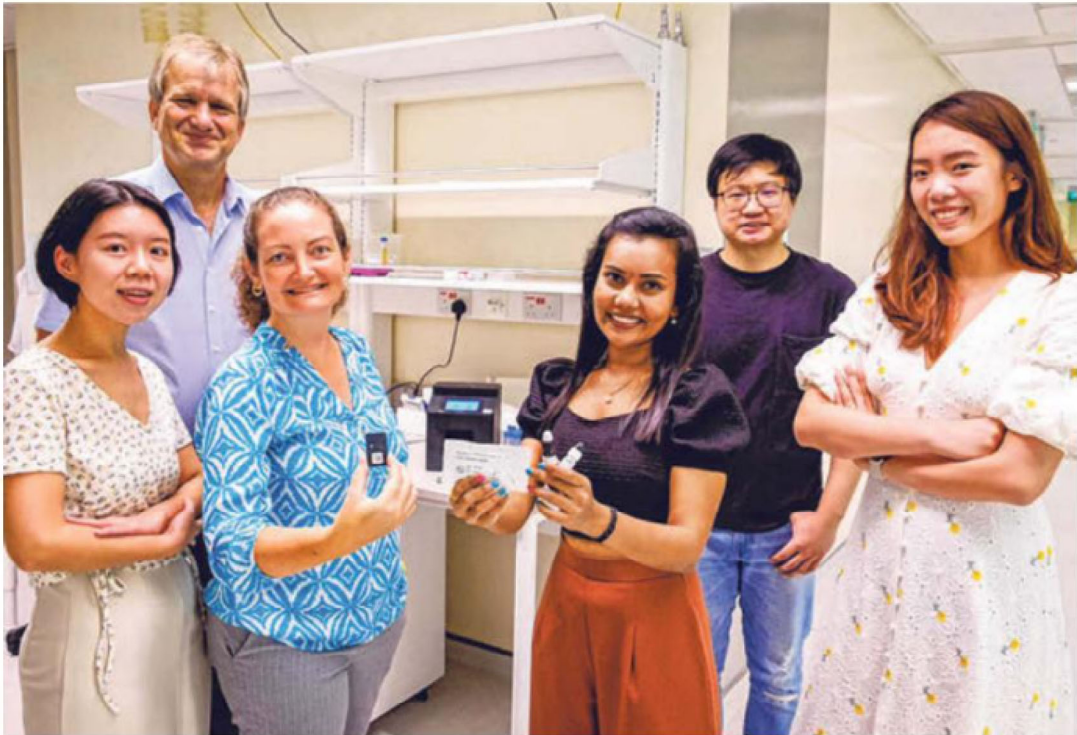
The development of this test kit is also expected to pave the way for personalised vaccination strategies, where people are given vaccination and booster shots only when necessary, depending on their antibody levels and immune

response. "This test kit will also prove integral to a more personalised vaccination approach that will benefit higher-risk individuals such as the elderly and healthcare workers," said the co-first author of the paper, Dr Hoi Lok Cheng, a former post-doctoral associate at the Smart Antimicrobial Resistance (AMR) interdisciplinary research group.

"Individuals from these communities can have their immuno-protective profile assessed on a regular basis via the (test), allowing them to know when a booster dose may be appropriate or necessary."

The test can also be administered by someone without medical training as it does not require the use of any specialised laboratory equipment. Its development is also expected to address issues such as vaccine hesitancy.

"Our study proves that our new



Above: The Singapore-MIT Alliance for Research and Technology's Professor Peter Preiser and his team members – (from left) Patrina Chua, Megan McBee, Abirami R., Ng Say Yong and Sharon Ling – with the test kit cartridge and required reagents. Below: The Covid-19 antibody test kits (right) and a digital reader device, which can detect the levels of neutralising antibodies against Sars-CoV-2 from a drop of blood in just 10 minutes. PHOTOS: NANYANG TECHNOLOGICAL UNIVERSITY



test kit can be a powerful tool, allowing healthcare organisations to screen people and determine their vaccination needs, especially against the current and upcoming variants," said Professor Peter Preiser, co-lead principal investigator at Smart AMR and associate vice-president for biomedical and life sciences studies at NTU.

"This will help allay some peo-

ple's fears that they will be 'over-vaccinated with a booster', since the results will inform them accurately if they are well protected against Covid-19 or not."

Further development of the test kit is under way to meet necessary regulatory approvals and manufacturing standards for public use, said Smart and NTU.

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