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# NUS develops three new swab designs for use in Covid-19 test kit

By [ASYRAF KAMIL](#)



National University of Singapore

Some members of two research teams that developed three nasopharyngeal swab designs for Covid-19 testing: (from left) Dr Alfred Chia, Professor Freddy Boey (showing the swabs), Associate Professor David Allen and Associate Professor Yen Ching-Chiuan.

Published 13 JULY, 2020 UPDATED 13 JULY, 2020

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**SINGAPORE** Research teams from the National University of Singapore (NUS) have

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## WHAT ARE NASOPHARYNGEAL SWABS

Nasopharyngeal swabs are a key element in testing for the coronavirus. They are flexible sticks with a carefully designed tip section that are inserted through the nose to the back of the nasal cavity to collect fluid samples from an individual.

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NUS said that commercially available swabs used in Covid-19 test kits are often out of stock due to supply chain disruptions.

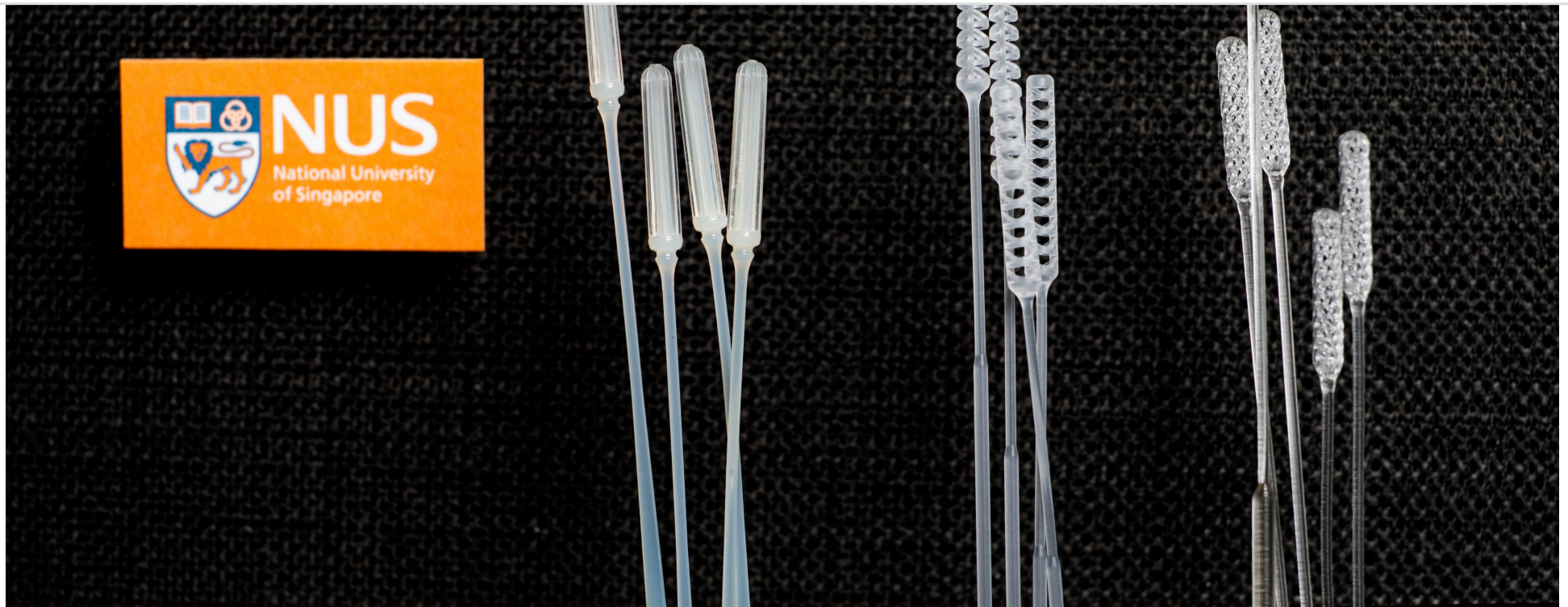
To help address the global shortage, and to ensure that Singapore has a sustainable supply of these swabs, two multidisciplinary research teams from NUS have developed swab designs.

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*NUS researchers have designed three nasopharyngeal swabs for Covid-19 testing: (from left) IM2, IM3 and Python. Photo: National University of Singapore*

## THE 'PYTHON' SWAB

The first team — led by Professor John Eu-Li Wong, Associate Professor Yen Ching-Chiuan and Professor Jerry Fuh — developed a 3D-printed swab named “Python”.

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They worked with professors from NUS' Yong Loo Lin School of Medicine, researchers from the NUS School of Design and Environment and the NUS Faculty of Engineering, as well as clinicians from the National University Hospital (NUH), on the design, pre-clinical testing and clinical validation of the swab.

The clinical efficacy of the swab was then compared to an industry-standard swab in NUH.

The Python swab demonstrated comparable accuracy and performance with no significant difference against the standard swab, NUS said.

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A patent for the Python swab has since been filed and two Singapore companies are mass-producing the swabs.

## INJECTION MOULDED SWABS

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Boey said.

The team also redesigned the “Python” swab to enable it to be injection-moulded. This design was named "IM3".

Test results for both designs showed that their performance was comparable to that of commercially used swabs.

Clinical trials of these swabs are being carried out in NUH and the Singapore General Hospital, and patents have been filed for the two designs, NUS said.

Prof Boey and his team are now working with four companies here to mass-manufacture and sterilise the injection-moulded swabs.

The university said: “About 40 million pieces of the ‘IM2’ and ‘IM3’ swabs are expected to be produced over the next few months, and these locally produced swabs will be priced lower than the current commercially available imported swabs.”

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