

# Faster test for cancer-causing virus

• Test kit for HPV is size of a credit card • Whole process takes 30 minutes to an hour • Each kit costs under \$1

Felicia Choo

Local researchers have created a device, about the size of a credit card, which can accurately and quickly screen for the human papillomavirus (HPV) that causes cervical cancer.

The whole process would take between 30 minutes and an hour, and each test kit costs under \$1. In comparison, conventional laboratory tests have a turnaround time of several days to a month and cost around \$100.

Tests are now being done to determine its accuracy in detecting infectious diseases, including Zika, dengue and hand, foot and mouth disease, and other diseases like breast and colorectal cancer.

Researchers from the National University of Singapore (NUS) and the Agency for Science, Technology and Research's (A\*Star) Institute of Molecular and Cell Biology said that the device has performed as accurately as laboratory tests with screenings for HPV, but with an added advantage.

"While laboratory tests can detect one to two HPV strains, the kit is able to detect over 10 strains and has better coverage for each strain," said Assistant Professor Shao Huilin from the NUS' Biomedical Institute for Global Health Research and Technology.

Cervical cancer, which can be prevented, is the 10th-most common female cancer in Singapore.

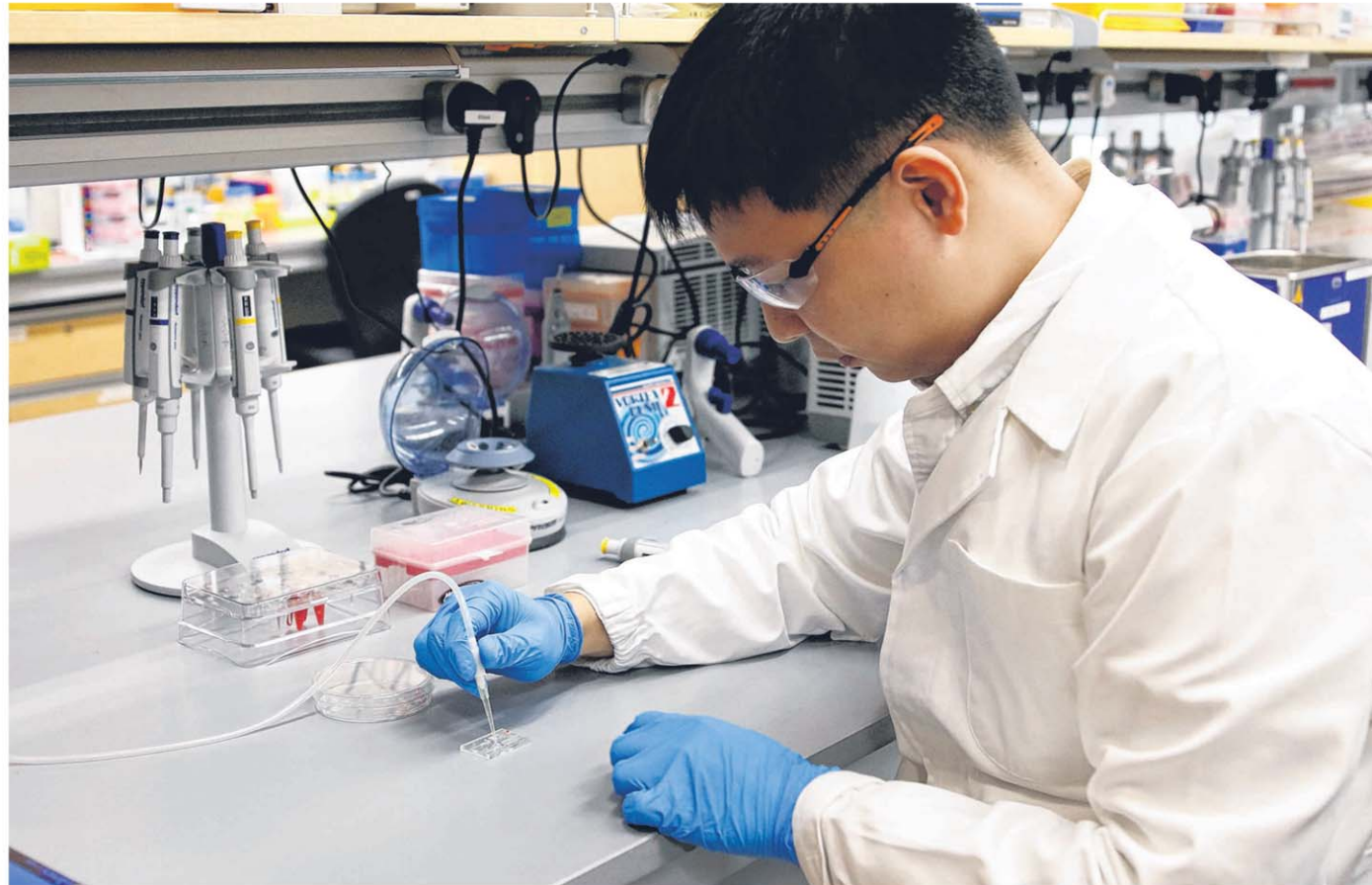
Researchers, who spent 1½ years developing the screening kit, are hoping to commercialise it in a year.

Called enVision, or enzyme-assisted nanocomplexes for visual identification of nucleic acids, the screening kit uses molecular agents which can detect disease-specific molecules.

The kit can detect viruses, bacteria and DNA changes that are known to lead to the development of various diseases.

Users put a drop of their tissue or bodily fluid sample into a small disc.

The sample then flows to another disc that changes colour



Researcher Nicholas Ho of NUS' Biomedical Institute for Global Health Research and Technology and A\*Star's Institute of Molecular and Cell Biology with the enVision screening kit. For the test (right), a drop of the user's tissue or bodily fluid sample is put into a small disc. The sample then flows to another disc that changes colour from white to brown if a disease is detected. ST PHOTOS: JEREMY KWAN

from white to brown if a disease is detected, said Prof Shao, the principal investigator of the study.

She added that if the infection is more severe, the disc will turn to a darker shade of brown.

An initial study of 35 National University Hospital patients to check for HPV showed encouraging results.

The study, which was conducted from November last year to March, found that enVision has a 95 per cent accuracy rate, comparable with conventional laboratory tests.

"The screening kit works at room temperature and does not require heaters or special pumps, making it

very portable," said Prof Shao.

However, she cautioned that when screening for more serious diseases like cancer, the kit should be used under the supervision of a doctor.

Researchers are also working on a smartphone app that can analyse the test results to determine the severity of the infection.

Prof Shao added that studies on more diseases comparing the accuracy of the screening kit with that of laboratory tests need to be done before the device can be commercialised.

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BETTER COVERAGE

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ASSISTANT PROFESSOR SHAO HUILIN, from the NUS' Biomedical Institute for Global Health Research and Technology, on the enVision screening kit for the human papillomavirus that causes cervical cancer.

