

TECH OFFER

Rapid Covid-19 Neutralizing Antibody Test From A Drop Of Blood



Rapid COVID-19 Neutralizing Antibody Test

Features:

- Detection of COVID-19 neutralizing antibodies induced by vaccination
- A drop of non-processed fingertip blood
- 10 min from sample-to-result
- No laboratory require

KEY INFORMATION

TECHNOLOGY CATEGORY:

Healthcare - Diagnostics

TECHNOLOGY READINESS LEVEL (TRL): **TRL5**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO174599**

OVERVIEW

COVID-19 vaccination programs have been implemented worldwide to battle the pandemic and allow resuming social interactions as much as possible to the 'normal operation' without having to close all activities. However, recent reports reveal that vaccine effectiveness is reduced overtime. In addition, the current vaccines offer less protection against the new emerging viral variants.

Monitoring of the neutralizing antibodies (nAb) can be used to gain information about the individual protective immune status and vaccine efficacy. Monitoring of nAb in a population could help determine persons requiring booster shots, and persons who are safe to cross borders without being quarantined. However, most tests available are not specific to nAb. Tests that are specific to nAb are lab-based tests that require collection of venous blood, laboratory facilities, skilled operators, and long (one to four hours) sample-to-result time. As such, these tests are not suitable for a large-scale monitoring.

The technology provider offers a rapid 10 minute test that monitors nAb from a drop of fingertip blood. The test can be operated

independently from laboratory facilities and can be used to monitor the vaccine efficacy against different viral variants. The test offers a simple solution that can be used to rapidly monitor individual nAb status at a large-scale without the need for laboratory space, highly skilled operators, or specialist to collect blood samples.

The technology provider is seeking collaborations with partners having expertise in reagent manufacturing, clinical research, and clinical testing for the deployment of this test.

TECHNOLOGY FEATURES & SPECIFICATIONS

The nAb test comprises a proprietary protein engineering technology that allows the test to be performed in simple steps and at a rapid turnaround time. With this technology, it also enables the nAb test to be compatible to cellulose paper, an alternative material to nitrocellulose membrane which is often being used for other rapid tests available in the market. Nitrocellulose membrane supply chain is in a serious shortage globally due to the extreme high demand spikes in COVID-19 rapid tests. Cellulose is a readily available material that can be easily scaled economically. This capability of using cellulose as an alternative can be applied to not just the current nAb test, but beyond to other rapid tests for diagnosis and monitoring of diseases and health conditions. The technology provides an innovative and alternative solution to the field of rapid diagnostic tests while overcoming raw material constraints.

The technology provider also offers an innovative solution to generate a new type of 'binders' that can be used to capture various types of biomarkers for a wide array of applications. The technology allows the new binders to be generated within short periods of six to ten weeks. This is approximately eight times faster than the current methods which often take almost a year to develop.

Collectively, the technology provider offers a technology platform that can be used to generate simple-to-operate rapid tests for diagnosis and monitoring of diseases and health status.

POTENTIAL APPLICATIONS

Current and near future applications

- Rapid COVID-19 nAb test
- Rapid COVID-19 nAb test against the viral variants

Future applications

- Inflammation panel: IL-6, TRAIL, IP-10, CRP, LDH: estimated market size at USD40 billion by 2026
- Endocrine panel: TSH, T3, T4, Cortisol, Testosterone: estimated market size at USD10 billion

UNIQUE VALUE PROPOSITION

The rapid nAb test is intended for use by healthcare providers. The test can be operated independently from laboratory settings and does not require highly skilled operators. Therefore, it can be used in various locations that do not have access to laboratory facilities including clinics, community centers, pop-up healthcare booths, testing stations, etc. The easy setup and mobility of the test provide accessibility to nAb determination for individuals who require or wish to have their nAb status tested.

Leveraging on the current proprietary technology applied to the nAb test, developing other diagnostics tests using this

technology will also offer similar advantages. This includes easy monitoring of health biomarkers from a small volume of unprocessed biological samples at easily accessible locations. These features foster and help realize the future of healthcare systems which is currently moving towards personalized and preventive medicines.