

## ASX Announcement

16th July 2020

### **AnteoTech Developing Quantitative Multiplex Test Platform Designed for Rapid Detection of COVID-19**

- **AnteoTech develops proof of concept COVID-19/Flu A&B multiplex test platform**
- **Tests leverage AnteoBind activated Europium particle technology designed for high sensitivity<sup>1</sup>**
- **COVID-19 antigen rapid Point of Care (PoC) test aims to occupy unique market position**
- **Axxin reader (provided as part of the collaboration for COVID-19 test) provides a quantitative digital analysis platform**
- **Next phase of development including clinical studies will take 6-9 months**
- **Regulatory approvals/registrations required prior to market launch**

AnteoTech Ltd (ASX: ADO) ("AnteoTech" or "the Company") is pleased to announce that it has successfully produced multiplexed proof of concept assays using an Axxin AX-2X-S Lateral Flow Reader which are designed to provide high sensitivity<sup>1</sup> concurrent detection of COVID-19 and Flu A&B in a rapid test format.

#### Background

There are several approaches to the identification of people that have or have recovered from the COVID-19 virus. A swab from the nose or throat can identify if the virus (antigen) is present in that person and indicates an active, and potentially transmissible infection. The antigen is no longer detectable after patient recovery. A second approach is to collect a small blood sample and test for the presence of two antibodies, one which may indicate a current or recent infection and a second that may indicate recovery. These antibodies are produced days or even weeks after initial infection.

The swab test is considered to be the more useful in the prevention of the spread of disease because it detects an active infection. Analysis of standard swab tests requires expensive equipment, highly trained staff and is generally performed in large hospitals or pathology laboratories. The tests on these swabs generally take several hours including specimen processing time to generate results and requires complex laboratory equipment and trained technicians.

AnteoTech has developed a proof of concept in house for 2 separate rapid tests one for antigens (using swab samples from nose throat or mouth) and a second for antibodies (using collected blood samples) that are designed to deliver results in approximately 15 minutes. AnteoTech own the IP for the assays developed and Axxin own the IP for the reader that is

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<sup>1</sup> AnteoTech define high sensitivity in COVID-19 tests as a lower limit of detection equal to or lower than 0.1ng/ml of antigen.

used to produce results. AnteoTech's assays can be used in other reader platforms after some development work has been carried out.

#### Analytical Sensitivity of Rapid Diagnostic Tests

AnteoTech has developed several approaches to rapid diagnostic testing<sup>1</sup>. Rapid tests have generally been applied to tests for which "yes/no" results are sufficient. The results can be read by eye (eg pregnancy test). AnteoBind activated IMRA Gold nanoparticles are used in the development of such tests. For tests that require greater sensitivity, Europium nanoparticle based detection can provide up to 20 times improvement<sup>2</sup>. These fluorescent tests require a reader such as the Axxin AX-2X-S Lateral Flow Reader to provide the result<sup>1</sup>. AnteoBind can enable the production of quantum dot fluorescent particles, as are used in Ellume tests, or activated Europium particles, as have been used in the recently announced AnteoTech multiplex sepsis panel<sup>1</sup>.

#### Anteo's COVID-19 Test

The COVID-19 development program was instigated in late March 2020 following careful analysis of the events surrounding global spread of the virus and the response to this spread by the diagnostic industry. The analysis led to AnteoTech forming an opinion that a substantial and unique contribution can be made by AnteoTech in the fight against COVID-19 by leveraging the company's AnteoBind activated Europium particle technology and associated conjugation competency.

Early response by the lateral flow diagnostic industry led to many Gold-based tests approved for emergency use for antibodies in the market. AnteoTech has taken a considered development approach which has led to our capability being used to develop a proof of concept antigen test designed to produce fast results and high sensitivity. AnteoTech believe the multiplexed antigen test powered by AnteoBind activated Europium will be of compelling value to the global market.

We have conjugated COVID-19 antibodies and antigens to AnteoBind activated IMRA Gold particles as model assays and controls to measure the relative performance of the AnteoTech developed Europium-based antigen and antibody tests. As the market for antibody tests is very crowded, AnteoTech has decided to pause further development of this test at its present feasibility stage and focus on further pursuing the antigen test.

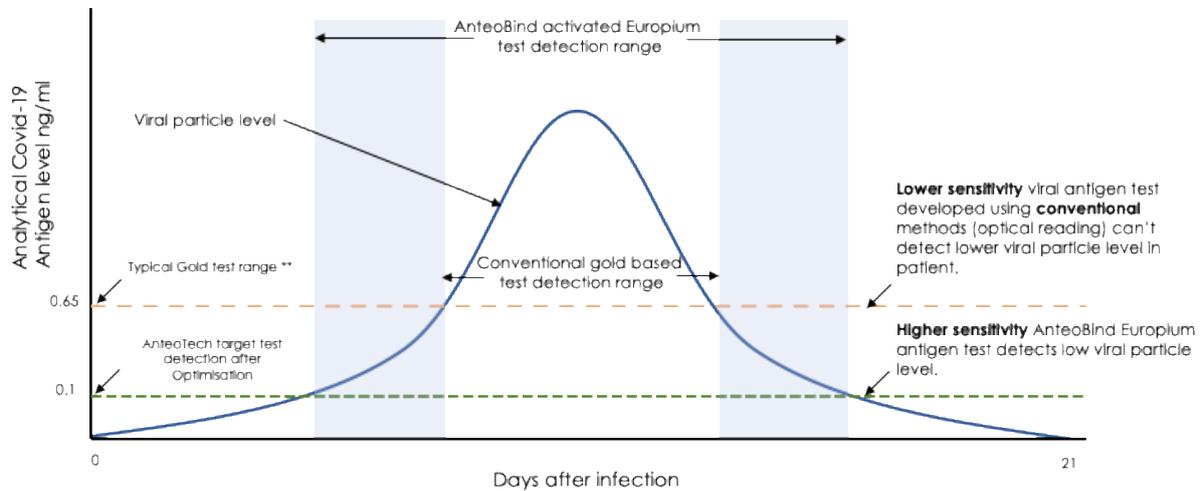
AnteoTech also has the opportunity to include testing of Flu A and Flu B, that were developed in 2018/2019 as part of our model assay development program<sup>3</sup>, into a single multiplex test offering additional information to allow for improved patient care. This will require some additional work to be carried out during the development of the multiplex assay.

<sup>1</sup> See Axxin Sepsis Test Announcement 14/5/2020

<sup>2</sup> Ref. J Immunol Methods. 2019 Feb;465:39-44.; Anal Bioanal Chem. 2013 Sep;405(23):7541-4.; Anal Biochem. 2012 Sep 1;428(1):31-8.

<sup>3</sup> See Anteo Shareholder Presentation 7/08/2018

## Anteobind Activated Europium Designed to Increase Sensitivity and Improve Rate of Detection



\*\*<https://doi.org/10.1021/acs.analchem.0c01975>

### Outcomes of AnteoTech COVID-19 Test Development

The three tests (COVID-19 antigen, Flu A and Flu B) harness AnteoTech's Anteobind activated Europium particle technology which are designed to improve assay reproducibility and performance and is made possible by patented Anteobind nanocoating technology. Combined with the Axxin reader the AnteoTech test is designed to deliver higher sensitivity than the Gold particle-based antibody tests that are commonly used in point of care platforms today.

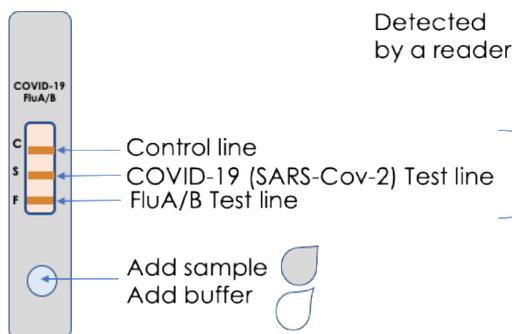
## Viral Antigen Rapid Test

**AnteoTech 15-min**  
Europium based dual test



Partner reader (e.g. Axxin)

Digital display  
result and  
sharing



Detected  
by a reader



Patient ID###  
COVID-19  
FLUA/B  
Antigen  
**Positive**

When completed AnteoTech believes the test will fill an unmet need in the diagnostic response to COVID-19 by providing:

- High sensitivity and increased detection enabled by the Anteobind Europium particle conjugation. This allows earlier detection of the disease and the potential for detection from saliva as well as mucus samples. As AnteoTech hold the IP for Anteobind and has

not licensed AnteoBind activated Europium particles for COVID-19 antigen assays, no other COVID-19 test on the market has or will have AnteoBind activated Europium as a basis for COVID-19 testing in the foreseeable future.

- COVID-19 antigen test combined with Flu A&B in a multiplex platform to differentiate the cause of symptoms at the point of care.
- Quantitative analysis capability enabled by fluorescence and a sophisticated Axxin digital reader that allows data collection and analysis at the point of care.
- Decision support via data from digital reader for medical response and direction to quarantine.

### Summary and Next Steps

AnteoTech's proof of concept for COVID-19 antigen test demonstrates a working full cassette assay. The next phases of development, to be conducted over the next six to nine months, aim to optimize the tests, improve further the lower limit of detection, verify and validate the design, conduct clinical studies required for targeted markets (to be confirmed at a later date), gain regulatory approvals and prepare for outsourced scaled manufacturing.

When complete, a portable point of care device for swab samples is expected to provide accurate diagnosis within 15 minutes. AnteoTech believes this capability will enable health providers to reduce the spread of disease via recommendation of immediate isolation of those infected with COVID-19.

AnteoTech has showcased the test to several global medical device suppliers and is actively seeking further partnerships to extend its activities in these exciting fields. Discussions with these companies are continuing.

AnteoTech will announce any partnership developments as they occur.

**AnteoTech's CEO Derek Thomson commented:** "This is another important milestone for AnteoTech as we further leverage AnteoBind activated Europium and our Assay Development competency with the aim to deliver an end user product in the Lateral Flow Point of Care market. All the company including myself are immensely proud to have made the decision to develop this test as we believe our competency and product is unique and can make a substantial difference in the global fight against the COVID-19 virus".

This announcement has been approved by the Board

### **ABOUT ANTEOTECH GROUP – AnteoTech Limited (ADO:ASX)**

AnteoTech (formerly Anteo Diagnostics Ltd) is a surface chemistry company with Intellectual Property ("IP") in its core technology product groups AnteoCoat™, AnteoBind™ and AnteoRelease™. The Company's purpose is to create shareholder value by identifying and solving important global industry problems by providing unique value-add solutions for its customers. Customers operate in the life sciences, diagnostics and energy markets.

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