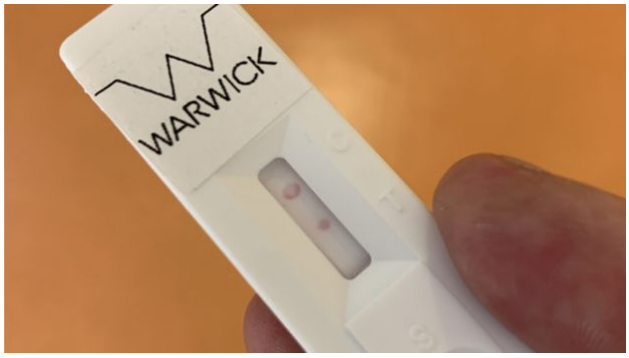
Rapid diagnostic test for COVID-19

Background

There is an urgent global need for point of care diagnostic tests to identify people currently infected with the SARS-CoV2 virus (Covid-19). Current PCR-based testing requires samples to be shipped to a centralized testing laboratory which means that results typically take 24 hours or more to be confirmed. As the world moves beyond the first pandemic spike and populations emerge from lockdown, there will be an increased need for rapid testing options which can underpin test-trace-isolate strategies.



The Invention

University of Warwick researchers are developing a new test for Coronavirus which potentially offers significant benefits because it delivers a very rapid result and requires no specialist lab equipment or training to complete. The result is that people could determine very quickly whether they have a current infection and take appropriate action, for example to self-isolate. The Warwick team have demonstrated that glycan-functionalised nanoparticles can be used to detect the spike protein from SARS-CoV-2 (the virus behind the "COVID-19" outbreak). Furthermore, they have demonstrated that a lateral flow device (similar to pregnancy test) can be used to diagnose the presence of SARS-CoV-2 in saliva.

The Market

A very large, immediate market opportunity exists for a rapid diagnostic test which can detect people with current infections during this "first wave" of the epidemic, which is likely to be followed by a second wave of infections in November/December 2020 in the UK. As an indication of scale, Germany is currently estimated to be completing 150,000-200,000 tests per week. There may also be a longer term opportunity for a test which can be used at the point of care, particularly in settings where the gold standard PCR- or genomic based testing is unavailable. The carbohydrate-based test has a particular advantage over antibody-based detection methods as they are particularly stable to heat and moisture, making them easy to distribute and store in remote locations without the need for refrigeration facilities or particularly costly packaging. The estimated shelf life is >1year, based on commercial test for Equine Flu marketed be Iceni Diagnostics which uses similar technology.

Next Steps

The group has an existing collaboration with Iceni Diagnostics, an SME which has expertise in developing lateral-flow devices based on glycosylated nanoparticles. The outstanding technical development step is confirming that the test is sensitive enough to detect the virus in saliva samples. Two hospitals have already indicated a willingness to test devices using patient samples which have already been confirmed positive by PCR.
A UK patent application (GB2007895.2) has been filed on the new method and key compositions of matter. The patent and the associated intellectual property are available for licence through Warwick Ventures.

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