

# Adapting a UTI test to diagnose coronavirus

The University of South Wales is developing a rapid diagnostic test for Covid-19 with help from the Welsh NHS and industry partners.

**Researchers adapted a technique that they had been developing for the diagnosis of urinary tract infections, which featured in Advances 92, to create a new test that detects whether people are actively infected with the underlying SARS-CoV-2 virus.**

The test is designed to be low-cost and quick. It uses a different method and chemicals to the current accredited tests, thereby avoiding supply bottlenecks for the components.

Since an initial evaluation in collaboration with Cwm Taf Morgannwg University Health Board, the team is now working to optimise their test for use at point of care. The molecular technology, which is based on loop-mediated isothermal amplification of DNA (or LAMP), lends itself to point of care testing because no complex sample processing or expensive equipment is required. The approach involves a novel swabbing and sample extraction technique to reduce cross-contamination and biosafety issues, as well as the time taken to process the results.

The team has been working with Electronic Engineering researchers from the university and several Welsh industry partners to develop a point

of care test which will be affordable and will allow results to be available in 20-30 minutes. Engineers at GX Group are designing and producing a set of device prototypes, BioMonde is producing the assay element of the test, and BIC Innovation has been providing guidance on regulatory requirements. Researchers have also been trialling a unique nasal swab printed on 3D printers within Cwm Taf Morgannwg UHB.

Due to its speed and portability, the new test could be used to help ramp up large-scale community testing with a short turnaround time for results. A point of care device could also offer a solution to people who perhaps live and work in more rural areas, as well as in specific care settings and industries to help detect outbreaks quicker and prevent further spread of the virus.



GX prototype image



*“We have been developing our diagnostic testing platform for the last few years, so we know that it works well for other infections such as urine tract infections (UTIs). We have modified this very sensitive and precise technique which is based on proven molecular (LAMP) technology. This is a fluorescent detection of nucleic acid amplification, similar to standard qPCR methods, but at constant temperature. It was designed to be a simple, quick and cost-effective test, suitable for the diagnosis of a range of infections, so our work over the last few years has enabled us to quickly switch it to detect the underlying virus for Covid-19.”*

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