



University of Warwick Science Park, Venture Centre, Sir William Lyons Road, Coventry CV4 7EZ

Website: www.micropathology.com E-mail: info@micropathology.com

SARS-CoV-2 (COVID-19) factsheet

There are seven known coronaviruses that infect humans, named for the crown-like spikes on their surface. The current coronavirus outbreak (COVID-19) started in Wuhan, China in December 2019 and rapidly spread across the world. The causal agent is a novel coronavirus which was given the name SARS-CoV-2 (originally named 2019-nCoV). As of 22nd November 2023, 772 million cases have been confirmed globally (7 million deaths) including 25 million in the UK (232,000 deaths). Sequencing data suggests a very recent shift into humans with the closest related coronaviruses found in bats and pangolins. The publication of many whole genome sequences for SARS-CoV-2 has facilitated the design of specific RT-PCR assays for the virus.

The main symptoms of infection are fever, dry cough, dyspnea, headache and pneumonia. Loss of sense of smell and/or taste are also increasingly common symptoms being associated with SARS-CoV-2 infection. These symptoms can progress to respiratory failure and death, especially in elderly people or those with underlying health conditions. The disease is transmitted by human-to-human contact although some studies have suggested that the virus will survive on surfaces for up to 3 days.

During the height of the pandemic, the UK government set out the aim of performing 500,000 tests for SARS-CoV-2 a day. Since the 20th February 2020, Micropathology Ltd. have been testing for SARS-CoV-2 in respiratory samples (received from both NHS and private clinics) and we are capable of processing up to 4000 samples a day with same-day results. We have developed and optimised a rapid, extraction-free testing method (PLoS ONE 15(12): e0243266) and use a specific probe-based RT-PCR assay, targeting the N gene (see Figure 1 for an example of the results), based on primers published by the American CDC. An internal control is also included to test for PCR inhibitors. This assay is UKAS accredited and has proven to be both highly specific to SARS-CoV-2 and very sensitive, allowing effective detection in samples with low viral loads. Using genome analysis, we have confirmed that our assay will detect all variants currently reported.

The recommended sample type for this assay is a throat swab which must be taken by a medical professional. Nasopharyngeal swabs and combined throat and nose swabs are acceptable. NPA and BAL and also validated sample types and sputum can be tested but is not fully validated.

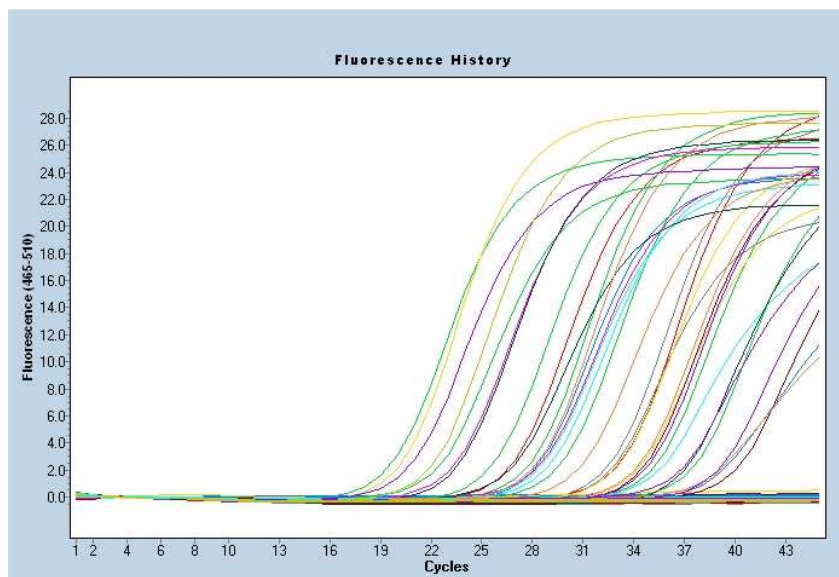


Figure 1: Detection of SARS-CoV-2 by RT-PCR. Samples with an amplification curve are all positive for SARS-CoV-2.