Resource Summary Report

Generated by dkNET on Sep 12, 2026

A lateral flow-based at-home test for detection of SARS-CoV-2

DOI:10.17504/protocols.io.bs8bnhsn
Type: Protocol

Proper Citation

Peng Xu, Venice Servellita, Krzysztof Langer, Dan Weisgerber, Gordon Murtaugh, Adam R Abate, Charles Chiu 2021. A lateral flow-based at-home test for detection of SARS-CoV-2. protocols.io dx.doi.org/10.17504/protocols.io.bs8bnhsn

Protocol Information

URL: https://dx.doi.org/10.17504/protocols.io.bs8bnhsn

Authors: Peng Xu, Venice Servellita, Krzysztof Langer, Dan Weisgerber, Gordon Murtaugh, Adam R Abate, Charles Chiu

Group: Coronavirus Method Development Community, UCSF

Summary: We have developed a highly sensitive and specific LAMP(loop-mediated amplification)-based assay for thedetection of SARS-CoV-2 that can potentially be used for at-home and point-of-care (POC) testing. The assayincludes only three simple steps: (1) heat inactivate the sample mixed with lysis buffer and add LAMP reagentmix, (2) incubate the reaction on a heating device, and (3) read the result by inserting a lateral flow strip intothe tube. Performance is comparable to gold-standard RT-PCR testing, as the assay is based on nucleic acciddetection rather than antigen detection which is used by the majority of lateral flow strip-based assays. There isminimal pre-processing involved and no bulky instrumentation needed, and non-lab professionals can followthe instructions and understand the results easily. The assay targets the SARS-CoV-2 nucleoprotein (N) geneand is capable of detecting as low as 4.0 copies per reaction (0.5 copies/??L) of SARS-CoV-2 RNA,demonstrating no cross-reactivity with a panel of 20 other respiratory pathogens. Furthermore, the test can berun on multiple sample types, including nasopharyngeal and/or oropharyngeal swab and saliva samples.Overall, this assay provides a rapid (sample-to-answer turnaround time of ~40 min), accurate, and affordablesolution to the challenge of at-home diagnostics for SARS-CoV-2.

Affiliations: Department of Bioengineering and Therapeutic Sciences, California Institute for Quantitative Biosciences, University of California, San Francisco, California, USA, Department of Medicine, Division of Infectious Diseases, University of California San Francisco, San Francisco, CA, USA, Department of Bioengineering and Therapeutic Sciences, California Institute for Quantitative Biosciences, University of California, San

Francisco, California, USA, Department of Bioengineering and Therapeutic Sciences, California Institute for Quantitative Biosciences, University of California, San Francisco, California, USA, Department of Bioengineering and Therapeutic Sciences, California Institute for Quantitative Biosciences, University of California, San Francisco, California, USA, Department of Bioengineering and Therapeutic Sciences, California Institute for Quantitative Biosciences, University of California, San Francisco, California, USA, Department of Medicine, Division of Infectious Diseases, University of California San Francisco, San Francisco, CA, USA

Version: 1

Publication Date: 2021

Proper Citation: Peng Xu, Venice Servellita, Krzysztof Langer, Dan Weisgerber, Gordon Murtaugh, Adam R Abate, Charles Chiu 2021. A lateral flow-based at-home test for detection of SARS-CoV-2. protocols.io dx.doi.org/10.17504/protocols.io.bs8bnhsn

Record Creation Time: 20210329T220521+0000

Record Last Update: 20210329T220850+0000

Data and Source Information

Source: