

Resource Summary Report

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CRISPR-Enhance Lateral Flow Assay

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Proper Citation

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Protocol Information

URL: <https://dx.doi.org/10.17504/protocols.io.bk5zky76>

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Group: Jain Lab

Summary: The CRISPR-Enhance SARS-CoV-2 detection kit has been designed to detect fragments of the Nucleocapsid ("N") gene and Envelope gene (E) of SARS-CoV-2. An included third target is the human RNase P POP7 gene ("RP") which serves as a control for the extraction of the clinical sample in the absence of a positive SARS-CoV-2 result. The entire reaction from RT-LAMP amplification to CRISPR-based detection of the target analytes can be performed in approximately one hour. The CRISPR-Enhance kit comprises of two steps. Step one is a reverse transcriptase loop-mediated amplification (RT-LAMP) where targeted SARS-CoV-2 genomic RNA is reverse transcribed to DNA, and this DNA is amplified by a strand-displacing DNA polymerase. Step two is the transcription of the amplified DNA to activate the collateral cleavage activity of a CRISPR complex programmed to the target RNA sequence. This collateral activity results in cleavage of nucleic acid reporters, resulting in a visual readout using a paper strip in approximately 2 mins.

Affiliations: University of Florida, University of Florida, University of Florida

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