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# XPRIZE SHINE - In-tube Fluorescent SARS-CoV-2 Saliva Test

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1 Works for me dx.doi.org/10.17504/protocols.io.bk3rkym6

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## ABSTRACT

This protocol describes how to perform a SHINE in-tube fluorescent assay to detect SARS-CoV-2 RNA from a self-collected nasopharyngeal sample. This protocol is intended for point-of-care use. All enzymatic components are provided as a single-test freeze-dried pellet for shelf-stable storage, and all steps of the protocol are performed at ambient temperature. The protocol requires a transilluminator or another equivalent blue light emitting device. The protocol presented here is an improved version of the method presented in Arizti-Sanz J\*, Freije CA\*, *et al.* Integrated sample inactivation, amplification, and Cas13-based detection of SARS-CoV-2. *bioRxiv* (2020).

## DOI

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## KEYWORDS

CRISPR, SARS-CoV-2, nucleic acid diagnostic

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## IMAGE ATTRIBUTION

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## MATERIALS

NAME	CATALOG #	VENDOR
Screw cap tube 5 mL sterile	1188R46	Thomas Scientific
FastAmp® Viral and Cell Solution for Covid-19 Testing Solution B	4633	
Reagent Mix A (In-tube SARS-CoV-2 resuspension mix)		
Lyophilized Reagent Mix B (In-tube SARS-CoV-2 detection mix)		

## STEPS MATERIALS

NAME	CATALOG #	VENDOR
FastAmp® Viral and Cell Solution for Covid-19 Testing Solution B	4633	
Screw cap tube 5 mL sterile	1188R46	Thomas Scientific
Reagent Mix A (In-tube SARS-CoV-2 resuspension mix)		
Lyophilized Reagent Mix B (In-tube SARS-CoV-2 detection mix)		

## MATERIALS TEXT

The necessary volume of FastAmp Viral and Cell Solution is provided in the tube used for sample collection. All enzymatic components, reagents, and compatible buffers required for SARS-CoV-2 detection are included within Lyophilized Reagent Mix B and are reconstituted with Reagent Mix A (see protocol for details). A transilluminator or equivalent blue light emitting device is needed to visualize the assay results. A smartphone or smart device is necessary for automated interpretation of the SARS-CoV-2 detection results using the HandLens application.

## EQUIPMENT

NAME	CATALOG #	VENDOR
13 x 12 cm mini Transilluminator	DR22A	

## SAFETY WARNINGS

Please take care with potentially infectious sample material that does not come into contact with the provided viral lysis solution contained within the saliva sample collection tube.

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## BEFORE STARTING

Download the HandLens application on the user-provided smart device (smartphone, tablet, etc.). Clean workspace with disinfectant prior to starting the protocol.

## Sample Collection and Viral Lysis

- 1 Expel approximately one drop of saliva into the sample collection tube and cap the tube.  
*Saliva collection tube contains necessary volume of FastAmp® Viral and Cell Solution.*



#### Screw cap tube 5 mL sterile

by Thomas Scientific

Catalog #: 1188R46



#### FastAmp® Viral and Cell Solution for Covid-19 Testing Solution B

Catalog #: 4633

- 2 Mix saliva sample and FastAmp® Viral and Cell Solution by vortexing the closed sample collection tube for **00:00:05**.
- 3 Wait **00:05:00**, incubating sample at **Room temperature**, before proceeding to Step 4.

### SARS-CoV-2 Detection

- 4 Pipette **15 µl** of Reagent Mix A into a single uncapped well of the 96-well plate containing lyophilized Reagent Mix B. Mix by pipetting up and down gently.



#### Reagent Mix A (In-tube SARS-CoV-2 resuspension mix)



#### Lyophilized Reagent Mix B (In-tube SARS-CoV-2 detection mix)

- 5 Add **5 µl** sample-viral lysis mix to Reagent Mix A and B well. Mix by pipetting up and down gently. Recap sample.
- 6 Wait **01:30:00**, incubating sample at **Room temperature**, before proceeding to Step 7.

### In-tube Fluorescent Readout and Automated Analysis

- 7 Visualize the fluorescence of the sample using a transilluminator or equivalent blue light emitting device.



13 x 12 cm mini Transilluminator  
Clare Chemical Research DR22A

- 8 With the user-provided smart device such as a smartphone, open the HandLens application and select in-tube as the test type.
- 9 Take a photo of the plate, and select upload. The result of the test will appear on the smart device screen.