ThermoFisher SCIENTIFIC

RT-LAMP solutions for viral pathogens

Fast, simple, and effective options for your research and surveillance

invitrogen

Accelerate your viral pathogen detection with new Invitrogen™ reverse transcriptase loop-mediated isothermal amplification (RT-LAMP) solutions, including master mix reagents and a colorimetric SARS-CoV-2 assay kit. This methodology allows for fast, simple, and specific DNA amplification under isothermal conditions utilizing a DNA polymerase with strong strand displacement activity. For amplification of RNA targets, a one-step reaction can be implemented by simply adding a reverse transcriptase to a LAMP reaction to create a cDNA template from RNA.

Researchers have options for their research with Invitrogen™ SuperScript™ IV RT-LAMP Master Mix and the Invitrogen™ Colorimetric ReadiLAMP™ Kit, SARS-CoV-2.

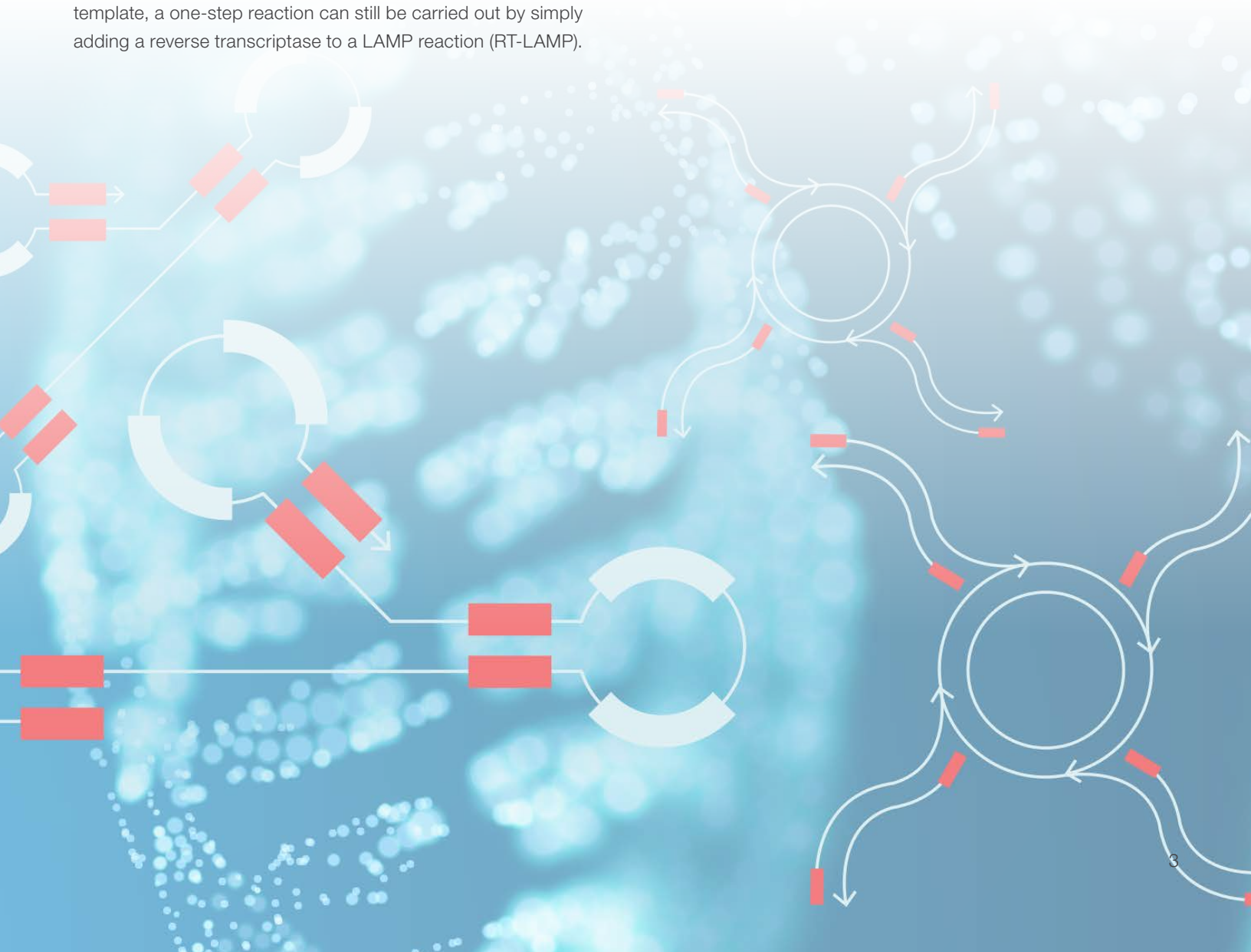
- SuperScript IV RT-LAMP Master Mix provides faster and simpler detection of viral pathogens, including SARS-CoV-2, the influenza and measles viruses, and other pathogens. The master mix reagents offer maximum flexibility to optimize your viral pathogen detection assays.
- The Colorimetric ReadiLAMP Kit, SARS-CoV-2 is applicable to SARS-CoV-2 research and surveillance. This endpoint colorimetric assay offers a simple workflow, rapid results, and the sensitivity needed for SARS-CoV-2 surveillance.

Technology overview

LAMP technology for viral pathogen research and surveillance

LAMP technology uses a strand-displacing DNA polymerase and four to six primers to rapidly amplify DNA at a single temperature. By eliminating temperature cycling, a LAMP reaction may be performed with an inexpensive heat source rather than requiring a thermal cycler or qPCR instrument. The LAMP reaction is also easier to perform and interpret than qPCR, with novice users obtaining clear “yes” and “no” detection results typically within 30 minutes. These results may be visually interpreted with the naked eye based on turbidity, colorimetric dye, or fluorescence intensity changes. Finally, LAMP is more tolerant of matrix inhibitors found in diverse sample types, allowing many crude samples to be directly assayed without prior nucleic acid purification. For amplification of an RNA target to create a cDNA template, a one-step reaction can still be carried out by simply adding a reverse transcriptase to a LAMP reaction (RT-LAMP).

SARS-Related Coronavirus 2 (SARS-CoV-2) research and surveillance continues to be paramount, especially given the proportion of asymptomatic individuals, emergence of viral variants, and desire to return to work and school. Several RT-LAMP products have been developed to rapidly, robustly, and specifically detect SARS-CoV-2 and other viral pathogens. The RT-LAMP solutions offered by Thermo Fisher Scientific include the SuperScript IV RT-LAMP Master Mix reagents and the Colorimetric ReadiLAMP Kit, SARS-CoV-2, an all-inclusive SARS-CoV-2 detection assay kit.



[Accelerate detection of viral pathogens, eclipse SARS-CoV-2]

SuperScript IV RT-LAMP Master Mix is an RT-LAMP–based solution for faster and simpler detection of viral RNA, including that from SARS-CoV-2, the influenza and measles viruses, and other pathogens. This master mix allows maximum flexibility to optimize your assay development for a variety of targets and is compatible with multiple methods for evaluating results, such as endpoint visualization and real-time fluorescence detection with Invitrogen™ SYTO™ 9 Green Fluorescent Nucleic Acid Stain.

SuperScript IV RT-LAMP Master Mix facilitates detection of DNA targets, enabling a wider range of applications for your research and surveillance of pathogens.

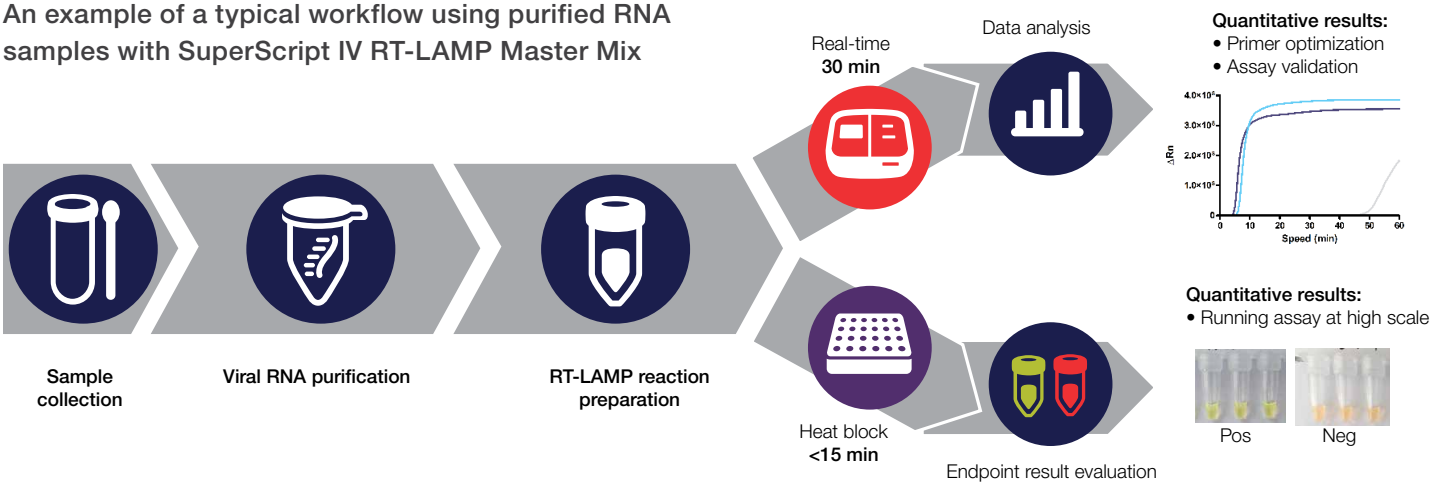
Highlights

- **Faster**—viral pathogen detection in as little as 5 minutes with evolved Bst DNA polymerase
- **Efficient**—one-step reaction for reverse transcription of RNA to cDNA with Invitrogen™ SuperScript™ IV Reverse Transcriptase
- **Sensitive**—enhanced sensitivity and specificity utilizing Invitrogen™ RNaseOUT™ Recombinant Ribonuclease Inhibitor and an optimized buffer
- **Simpler**—streamlined workflow that includes a single-tube format and only requires a 65°C heating block
- **Flexible**—several options for evaluating results, including real-time and endpoint detection methods

SuperScript IV RT-LAMP Master Mix includes SYTO 9 Green Fluorescent Nucleic Acid Stain

RT-LAMP workflow for research or assay development to detect viral pathogens

An example of a typical workflow using purified RNA samples with SuperScript IV RT-LAMP Master Mix



SuperScript IV RT-LAMP Master Mix

The following application notes demonstrate outstanding RT-LAMP performance and include generation of a new positive RNA control for more accurate assay development.

Proven performance—when tested with RNA purified from negative SARS-CoV-2 clinical samples, the SuperScript IV RT-LAMP Master Mix demonstrated 100% specificity. When tested with RNA from positive SARS-CoV-2 clinical samples, it demonstrated the fastest amplification speed (≤10 min).

Positive RNA control—a positive synthetic RNA control can be generated using Invitrogen™ GeneArt™ Strings™ DNA Fragments for use during your RT-LAMP assay development to validate results.

For greater flexibility, utilize our stand-alone reagents with the **RT-LAMP protocol and application note** for fast and simple detection of viral pathogens, including SARS-CoV-2, at **thermofisher.com/lamp**.

Ordering information

Product	Size	Cat. No.
SuperScript IV RT-LAMP Master Mix	100 reactions	A51801
	400 reactions	A51802
	1,000 reactions	A51803

Stand-alone, lyo-ready enzymes are available for large volume orders: go to **thermofisher.com/lyo-ready** or email us at **mdxenzymes@thermofisher.com**

To order the SuperScript IV RT-LAMP Master Mix, go to **thermofisher.com/rtlampmastermix**

[Simplify and accelerate surveillance, eclipse SARS-CoV-2]

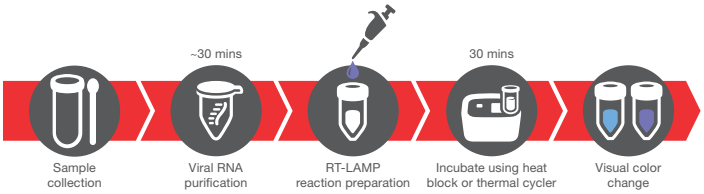
Introducing a LAMP kit that enables accurate and affordable SARS-CoV-2 detection in as little as 30 minutes

Optimize SARS-CoV-2 detection with fast, affordable, on-site surveillance using the new Invitrogen™ Colorimetric ReadiLAMP™ Kit, SARS-CoV-2. The colorimetric loop-mediated isothermal amplification (LAMP) technology delivers robust, reproducible results with high sensitivity and viral variant coverage. Two protocols are provided, allowing the user the ultimate flexibility in sample type and workflow.

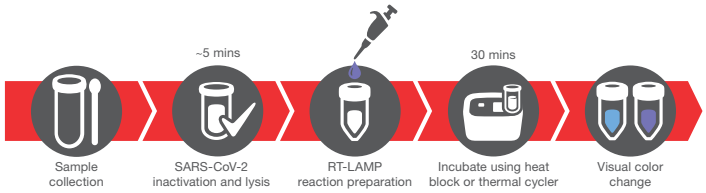
The Colorimetric ReadiLAMP kit offers:

- **Simplicity**—fast and simple protocols producing easy-to-read visual results
- **A wide range of sample types**—raw saliva, preserved saliva, nasal swabs, and nasopharyngeal swabs in serum-free viral transport medium
- **Sensitivity**—enables maximum sensitivity by allowing purified RNA sample input of up to 50% of LAMP reaction volume
  - Direct: ≤250 copies/25 µL LAMP reaction
  - Purified RNA: ≤100 copies/25 µL LAMP reaction
  - Coverage of >98% of deposited SARS-CoV-2 genomes, including viral variants
- **Efficient processing**—allows users to optimize their workflow for variable sample numbers (1–96 sample batches) and consumable types (individual tubes, strip tubes, 96-well plates) for efficient sample processing and rapid turnaround time
- **Protocol flexibility**—choose from 2 workflows:
  - Direct LAMP assay for results in about 30 minutes using crude/raw saliva or transport media samples
  - Purified RNA–based LAMP assay for results in about 60 minutes; 30 minutes for purification and 30 minutes for LAMP assay

Choose one of two workflows:



Complete workflow for purified RNA samples



Direct assay for crude sample types

Ordering information

	100-reaction kit	1,000-reaction kit
		
Cat. No.	A52539	A52544
Reactions	100 reactions	1,000 reactions
Kit contents	Enzyme mix (10X), 250 µL LAMP buffer (5X), 500 µL SARS-CoV-2 primer mix (5X), 500 µL Human control primer mix (5X), 250 µL SARS-CoV-2 Control RNA, 20 µL	Enzyme mix (10X), 2.5 mL LAMP buffer (5X), 5.0 mL SARS-CoV-2 primer mix (5X), 5.0 mL Human control primer mix (5X), 2.5 mL SARS-CoV-2 Control RNA, 200 µL
Controls	SARS-CoV-2 Control RNA and human control primers (endogenous control)	
Kit storage temperature	–20°C	
Sample types	Saliva and swabs	
Test format	1–96 samples at a time	
Instrument required	65°C heating block with heated lid or thermal cycler	
Detection	Colorimetric metal indicator	
Regulatory classification	For research use only (RUO)	

To order the Colorimetric ReadiLAMP Kit, SARS-CoV-2, go to **thermofisher.com/readilamp**

Find out more at **thermofisher.com/rtlamp**

invitrogen