One Workflow, Multiple Viruses

Solutions developed to simplify, accelerate and customize your PCR-based SARS-CoV-2 research and epidemiology

How can we better respond to the changing landscape of SARS-CoV-2 and the COVID-19 pandemic?

Scalable, fast and sensitive PCR-based pathogen detection and mutation verification workflows are critical, but that's not enough.

According to some recent studies[1, 2], the 2021-22 flu season is expected to be strong, and there's an increasing overlap in symptoms between the predominant SARS-CoV-2 variants and Influenza or Respiratory Syncytial Virus (RSV). Therefore, the research challenge will be to confidently discriminate between the different co-circulating viruses.

Why partner with us?

High speed and throughput

- Time to result <1 hour
- Automation on your platform of choice*
- Process up to 2600 samples per cycler per eight-hour shift (if using one automated liquid handler)

Simplicity

- Three-step end-to-end liquid-based workflow
- No separate RNA extraction step
- Compatibility with most cyclers and all non-fixation transport media

Cost-efficiency

- No specific equipment and software or personnel training
- High savings on plastics – less to buy and less to waste
- Affordable running cost per sample

Customization capabilities

- Flexible identification of SARS-CoV-2 mutations
- Easy detection of Influenza A, B, RSV A/B and SARS-CoV-2 in one reaction
- Compatibility with swabs, saliva (incl. Lolli-PCR-Test) and gargle samples

High assay performance

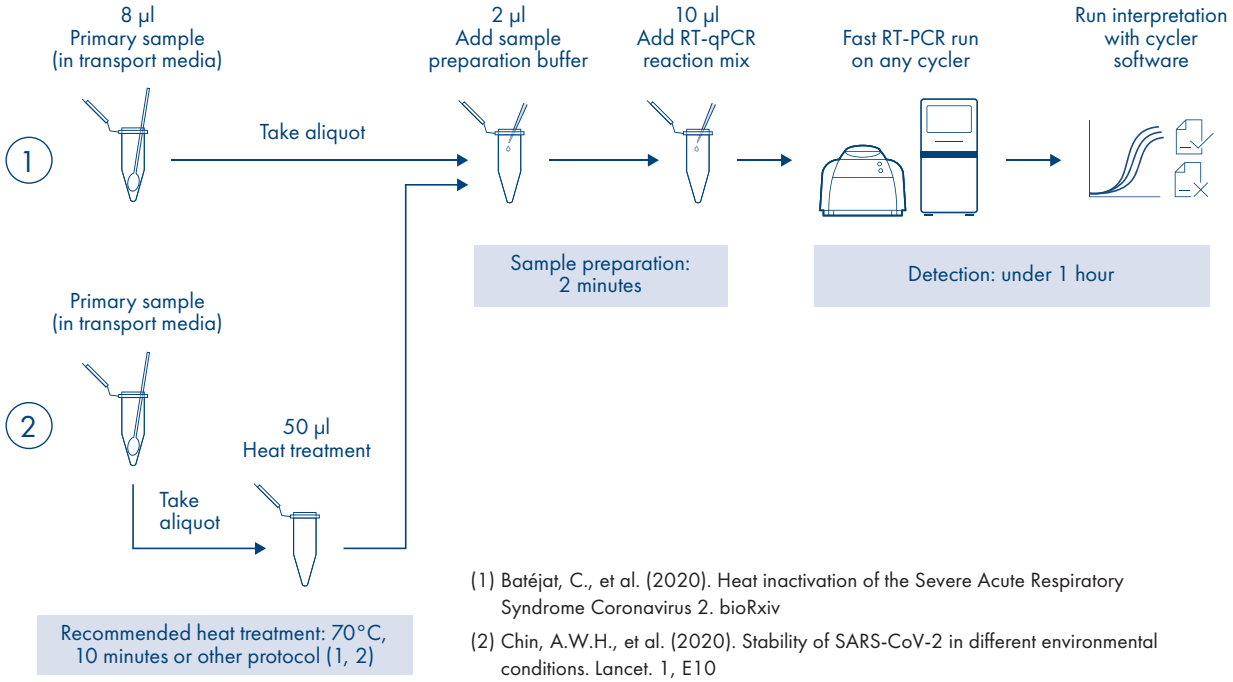
- Analytical sensitivity down to 8 copies/reaction
- Significantly reduced experiment repetition due to RNA protection and the unique liquid-based workflow
- High specificity of virus mutation detection

* TECAN, Hamilton, Eppendorf, Analytic Jena, QIAsymphony SP/AS, QIAgility, etc.

Accelerate your SARS-CoV-2 RNA detection with the QIAprep&amp® Viral RNA UM Kit

The QIAprep&amp Viral RNA UM Kit combines a unique liquid-based sample preparation step completed in two minutes with a one-step RT-qPCR in a single end-to-end procedure to deliver results in under one hour.

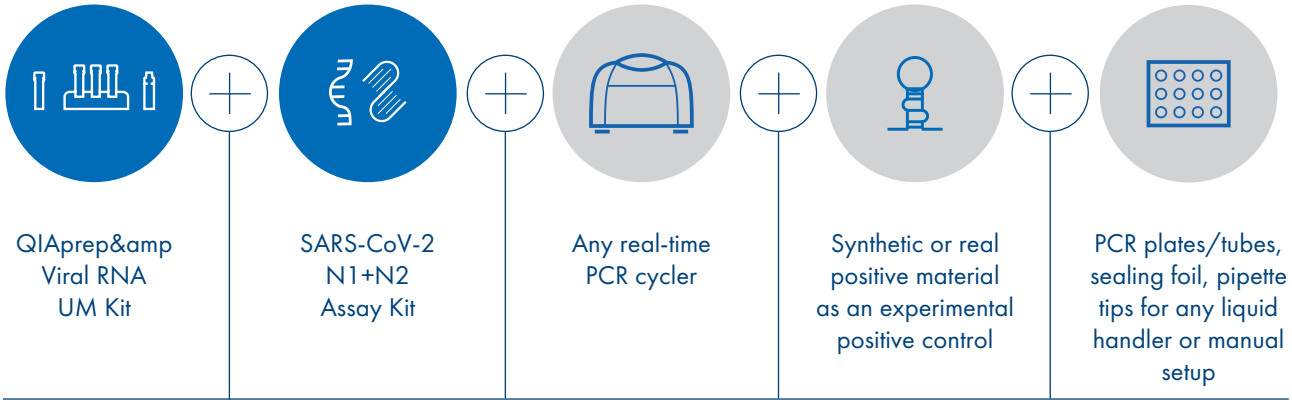
Follow a simple three-step protocol



(1) Batéjat, C., et al. (2020). Heat inactivation of the Severe Acute Respiratory Syndrome Coronavirus 2. bioRxiv

(2) Chin, A.W.H., et al. (2020). Stability of SARS-CoV-2 in different environmental conditions. Lancet. 1, E10

All you need for SARS-CoV-2 viral RNA detection are:



Customize your SARS-CoV-2 mutation identification with wet-lab verified genotyping assays

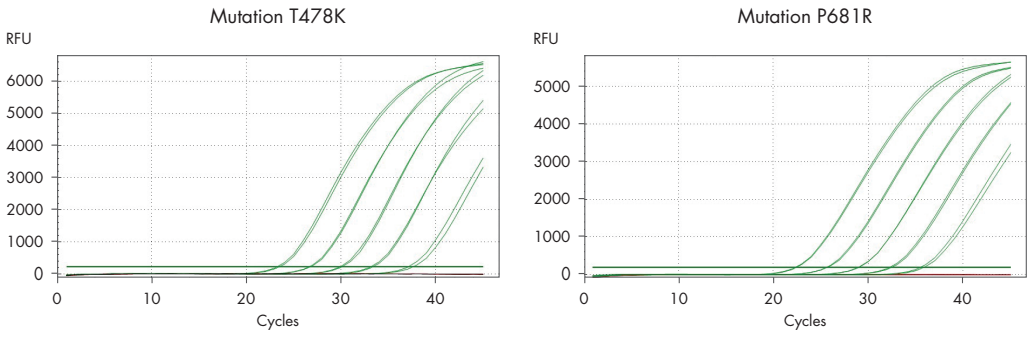
For labs that need to monitor currently relevant variants, QIAGEN® leverages its expertise in assay design and has developed highly sensitive and specific single assays to identify mutations targeting those variants and the respective controls. Choose relevant mutations and controls to design your experiments flexibly to match your research goals.

Variants of Concern	B.1.1.7 (UK, Alpha)	P.1 (JP/BR, Gamma)	B.1.351 (ZA, Beta)	B.1.427 (US-CA, Epsilon)	B.1.429 (US-CA, Epsilon)	B.1.617.2 (IN, Delta)	B.1.617.1 (IN, Kappa)	B.1.621 (CO, Mu)	P.3 (PH, Theta)	B.1.1.529 (ZA, Omicron)
N501Y	✓	✓	✓					✓	✓	✓
E484K		✓	✓					✓	✓	
E484Q							✓			
P681R						✓	✓			
L452R				✓	✓	✓	✓			
T478K						✓				✓
K417N			✓							✓
K417T		✓								
T20N		✓								
Del HV 69/70	✓									✓
P681H	✓									✓

To increase the level of confidence, we recommend using more than one assay for mutation detection (e.g., to detect the new variant Omicron, the preferred combination is K417N+Del HV 69/70. To accurately and reliably detect Delta, use T478K+P681R and/or L452R). Separate controls are available for N1 and N2 genes, E gene and RdRp.

The SARS-CoV-2 locked nucleic acid (LNA®)-based qPCR genotyping assays ensure a robust and reliable mutation detection and clear discrimination between the wild-type and the respective mutation.

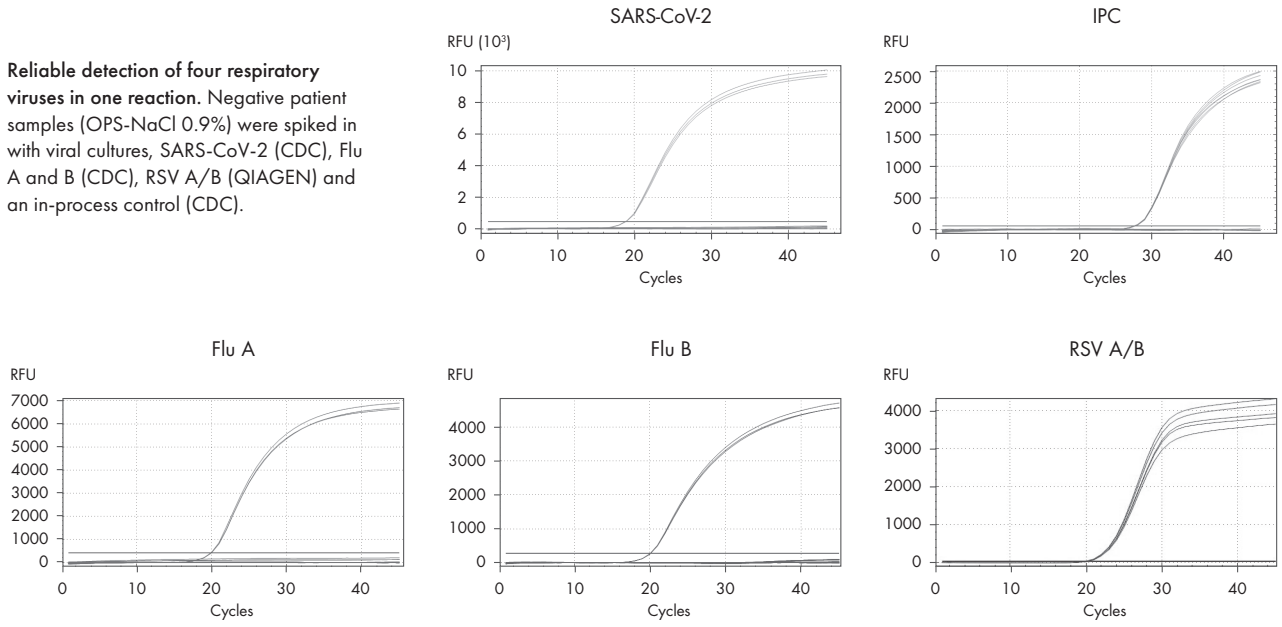
In green: amplification curves from dilution series (10^5–10^1 cp/rxn, in duplicates) of in-vitro transcripts (IVTs) bearing the SARS-CoV-2 mutations T478K and P681R, respectively. In red: amplification curve of an IVT of the corresponding WT sequence from SARS-CoV-2 at 10^7 cp/rxn. In black (overlapping with the red line) is the NTC.



Expand your SARS-CoV-2 research to other respiratory viruses

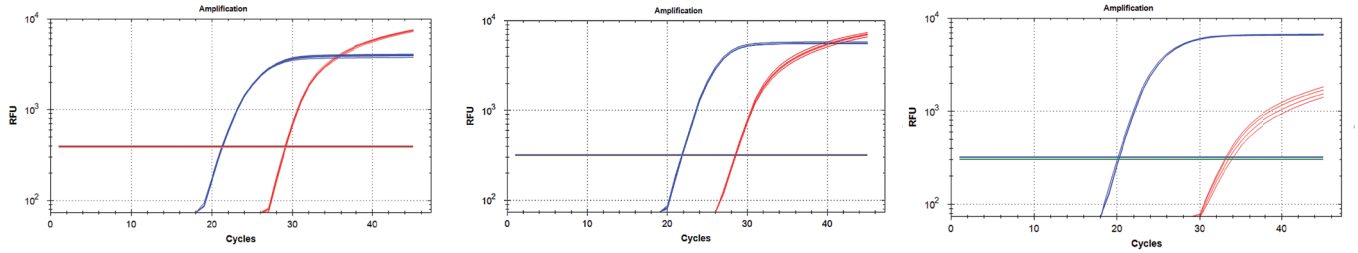
A highly specific and sensitive multitarget detection assay has been developed to provide confidence in differentiating between multiple respiratory viruses this flu season. In a single real-time PCR reaction using your current lab equipment, the multiplex assay can detect and discriminate between Influenza A, Influenza B, RSV A/B and SARS-CoV-2 in under one hour – all while maintaining the workflow simplicity and research costs.

Reliable detection of four respiratory viruses in one reaction. Negative patient samples (OPS-NaCl 0.9%) were spiked in with viral cultures, SARS-CoV-2 (CDC), Flu A and B (CDC), RSV A/B (QIAGEN) and an in-process control (CDC).

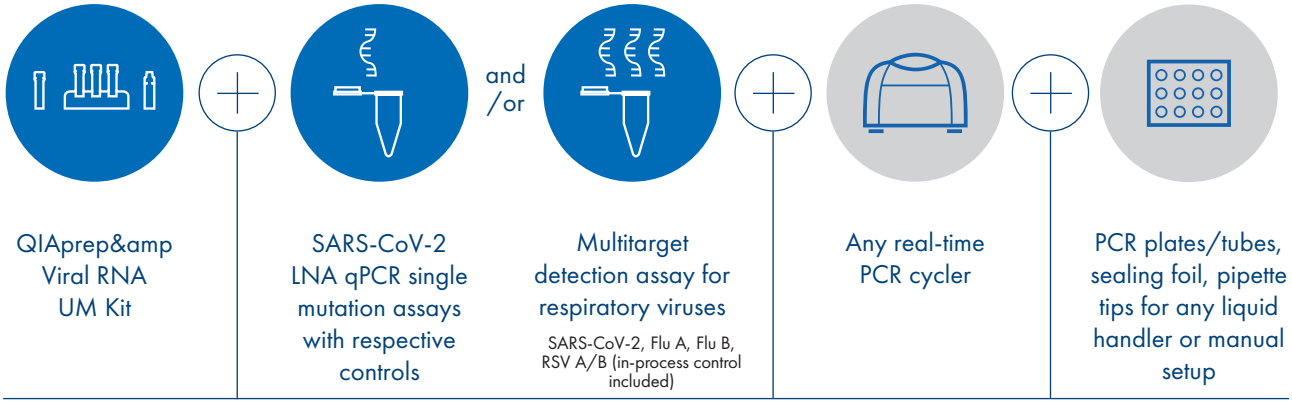


Reliable detection of low abundant targets in presence of high abundant targets in samples containing two viruses.
In vitro transcribed (IVT) RNA containing viral sequences diluted in NaCl 0.9% to assess co-infection.

1x10⁶ copies	High: RSV A/B	High: Influenza A	High: Influenza B
1x10³ copies	Low: SARS-CoV-2	Low: SARS-CoV-2	Low: Influenza A



All you need for identification of SARS-CoV-2 mutations and simultaneous detection of the seasonal respiratory viruses are:



To order the QIAprep&amp Viral RNA UM Kit, visit: **www.qiagen.com/qiaprepamp-viral-rna-um-kit**

To order the SARS-CoV-2 N1+N2 Assay Kit, visit: **www.qiagen.com/sars-cov-2-n1n2-assay-kit**

To order the mutation detection assays and the multitarget detection assay for respiratory viruses, visit our partner biomers.net:
www.biomers.net/products/Catalog_Products/Primers-for-QIAGEN- SARS-CoV-2-Assays
www.biomers.net/products/Catalog_Products/Multitarget_Assay_QIAGEN

References

1. Lee, K. et al. Predicting the impact of low influenza activity in 2020 on population immunity and future influenza season in the United States. medRxiv 2021
2. Krauland, M.G. et al. Agent-based Investigation of the Impact of Low Rates of Influenza on Next Season Influenza Infections. medRxiv 2021

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