

# EchoLUTION™

Viral RNA/DNA Kit

IVD



Highly pure nucleic acids in just a few minutes

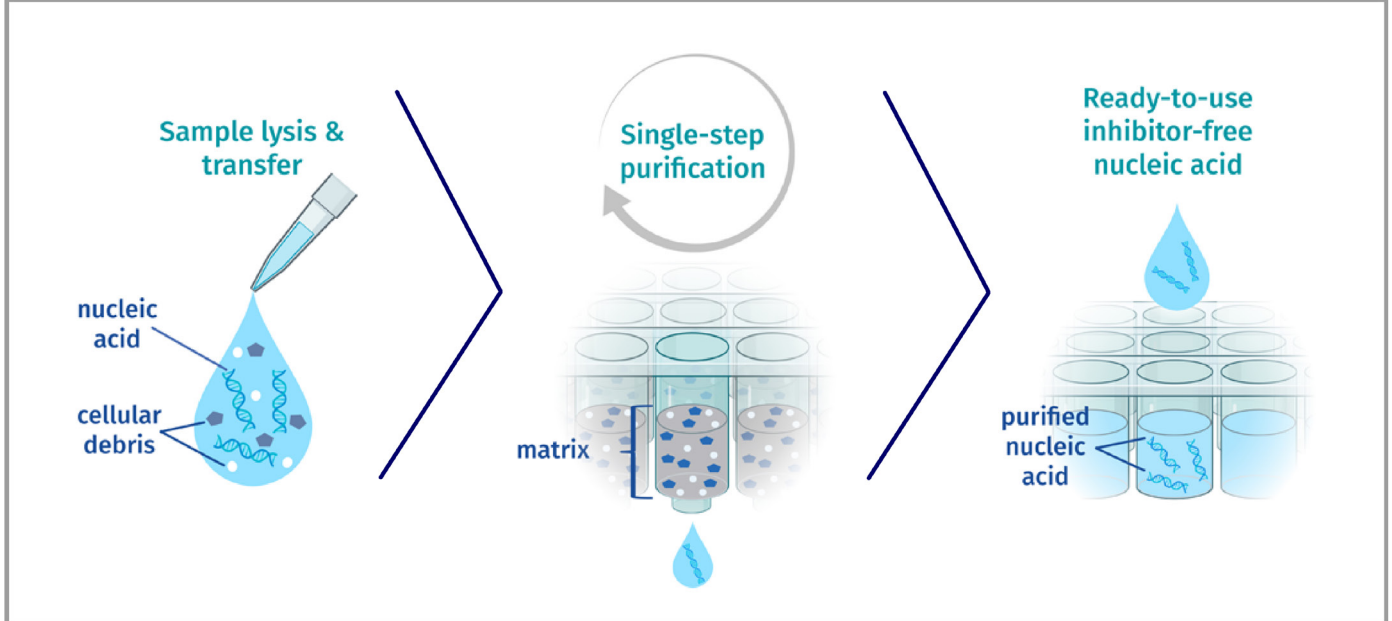
**The Nucleic Acid Experts.**

## Highly pure nucleic acids in just a few minutes

The EchoLUTION Viral RNA/DNA Kit is designed for reliable extraction of viral RNA and DNA and serves as an accessory for subsequent *in vitro* diagnostic analysis. This product enables viral nucleic acids extraction from respiratory viruses collected with naso-, and oropharyngeal swabs, and from enteropathogenic viruses contained in stool samples. The EchoLUTION technology is based on a tailored lysis step without incubation\* followed by nucleic acid purification in a single centrifugation step. Impurities are held back by the purification matrix while the viral RNA and DNA flows through untouched.

\*for respiratory viruses

### The EchoLUTION™ Technology



### The EchoLUTION™ Viral RNA/DNA Kit provides:

#### Convenience and speed

Single-step purification allows complete extraction of 2 x 96 swab samples within 20 minutes. Appropriate for any lab—from medium to high throughput

#### High compatibility

Compatible with nasopharyngeal swabs, oropharyngeal swabs, stool samples, and different types of non-chaotropic and chaotropic resuspension and transport media

#### Validation

IVDR-compliant, CE-marked, and FDA-listed. It can be integrated into diagnostic laboratory routines and ensures high-quality standards.

#### Reliable results

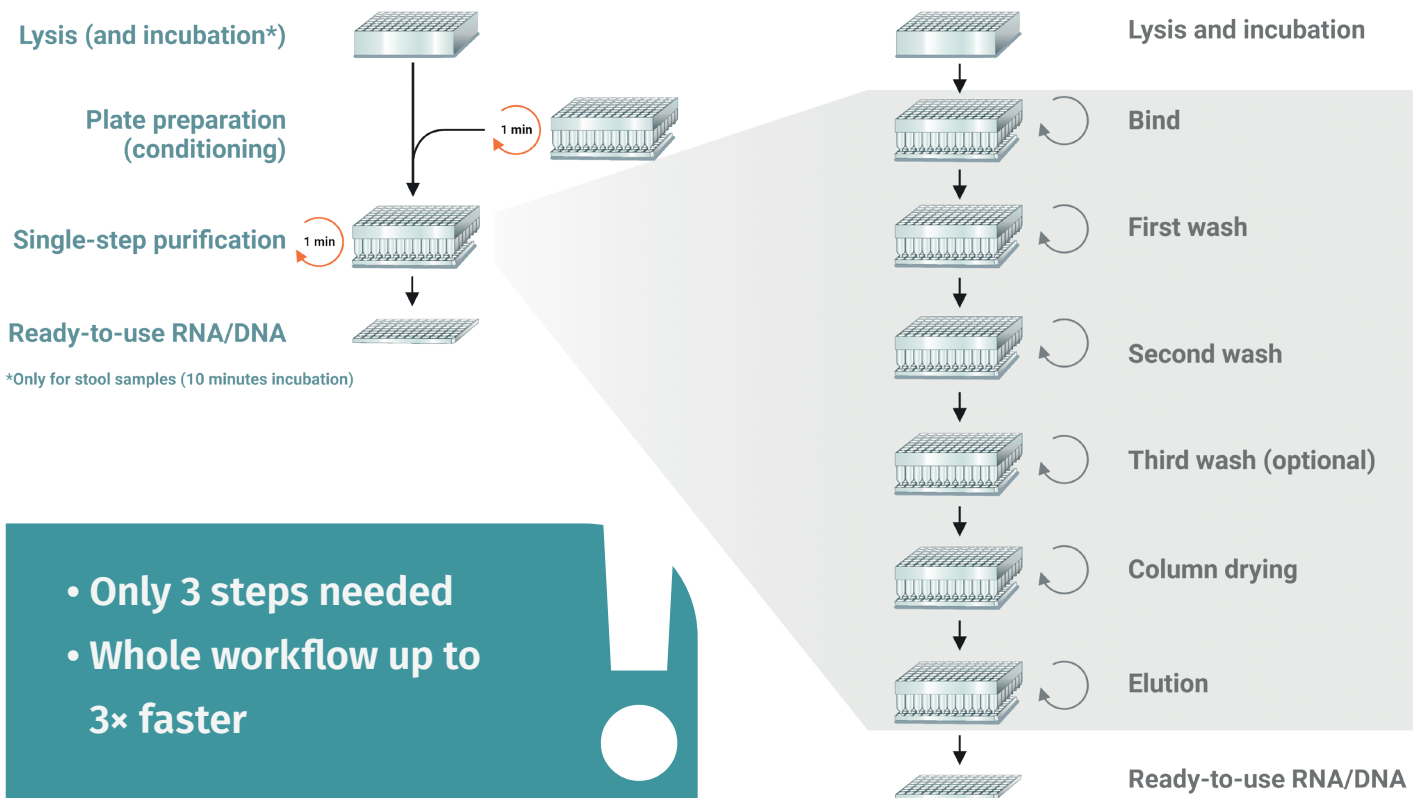
With no organic solvents added and by reliable removal of other inhibitors, kit usage results in high-quality viral RNA or DNA for downstream applications such as qPCR, and RT-qPCR.

#### Sustainability

Up to 70 % less plastic consumption compared to other extraction methods

## The extraction workflow: faster and fewer steps

The tailored lysis step works without incubation (or a short incubation for stool samples), and the purified viral RNA or DNA is ready-to-use within 20–30 minutes depending on the sample type (swabs in medium, dry swabs, or stool samples).



- Only 3 steps needed
- Whole workflow up to 3× faster

### 1. Lysis (and incubation)

The LyseNtact Buffer New Formula immediately inactivates and lyses the viral particles. For respiratory viruses, no incubation is needed. For enteropathogenic viruses from stool samples, the Lysis Plate is incubated for 10 minutes at 95 °C, to ensure all viral capsides are disrupted.

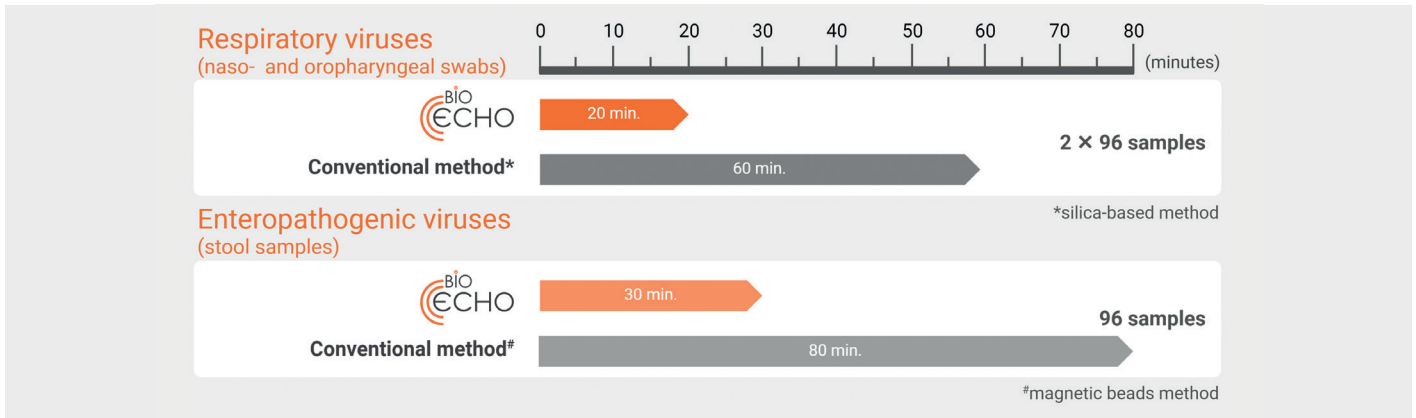
### 2. Single-step purification

Once the lysate is transferred onto the Purification Plate, it is purified in a one-minute centrifugation. The RNA/DNA passes through the purification matrix without further interaction while impurities and cellular debris are held back and removed.

### 3. Ready-to-use RNA/DNA

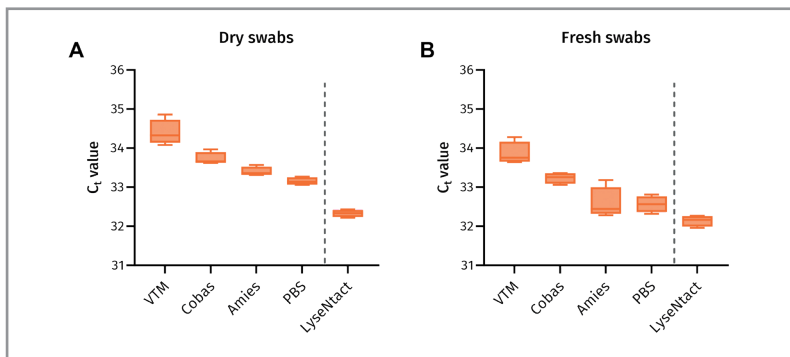
This innovative technology provides RNA/DNA that is ready-to-use for downstream applications.

# Considerably faster compared to conventional methods



## Respiratory viruses

### High compatibility

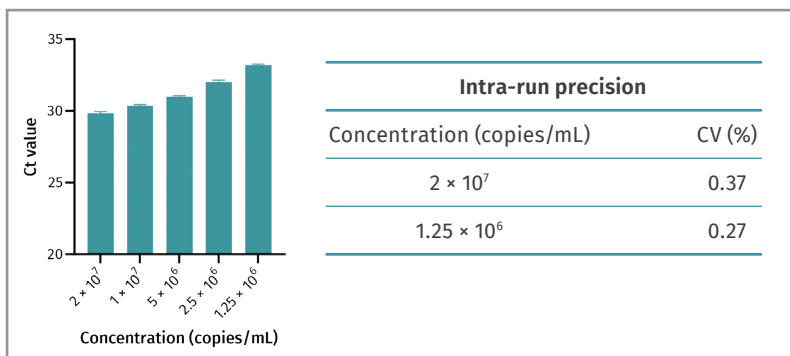


**Figure 1. qPCR assay demonstrates the compatibility of the EchoLUTION Viral RNA/DNA Kit with different transport/resuspension media and swab types.** Viral transport medium (VTM, inhouse) and Cobas® PCR Media (Roche®), as chaotropic media, and LMS-Swab Amies (Heinz Herenz) and PBS, as non-chaotropic media. The LyseNtact Buffer New Formula was used as resuspension medium, reducing the dilution of the sample, thus the Ct value. PCR assay with the RealStar® SARS-CoV-2 RT-PCR Kit 1.0 (altona® Diagnostics). N = 4 for each medium and lysis buffer.

**12 % IN GERMANY  
& 50 % IN AUSTRIA**

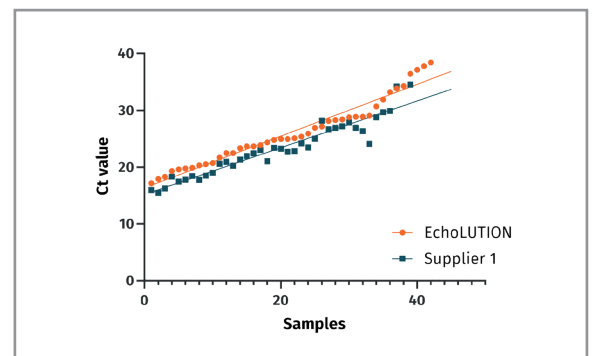
During the pandemic, up to 12 % and 50 % of SARS-CoV-2 PCR tests performed in Germany and Austria, respectively, used the EchoLUTION technology.

### High precision



**Figure 2. Ct values of a dilution series (1:1) demonstrate a good extraction efficiency and precision of the BioEcho kit.** RIDA®GENE SARS-CoV-2 (R-Biopharma®) was used to amplify the E gene. N=8 replicates for each dilution. Error bars represent standard deviation (SD). We assessed the intra-run precision test for high and low concentration, that revealed a coefficient of variability (CV) below 1 % indicating a high precision (table).

### Comparable performance



**Figure 3. The clinical performance between EchoLUTION and a magnetic beads-based kit for the extraction of SARS-CoV-2 RNA is similar.** The BioEcho kit (orange) and the magnetic beads kit (blue) were used to analyze 62 patients' samples for the detection of the RdRP gene.

# Enteropathogenic viruses

## Robust qPCR efficiency

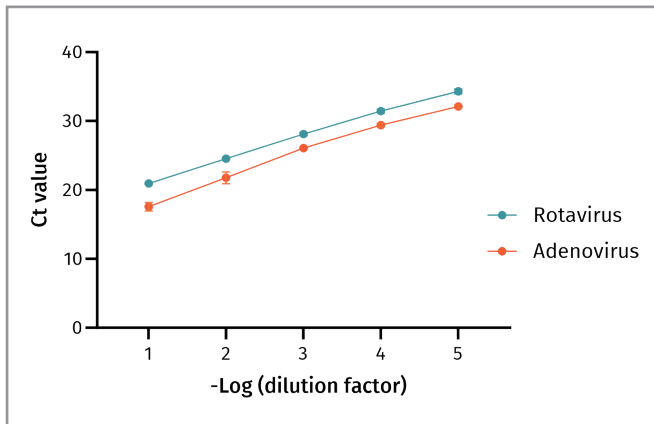


Figure 4. (RT)-qPCR of a dilution series from nucleic acids extracted using the EchoLUTION Viral RNA/DNA Kit. (RT)-qPCR quantification cycle (Ct) values are shown on a logarithmic scale. N = 8 replicates for each dilution and virus type.

	Slope	% Efficiency
Adenovirus	3.67	89.6
Rotavirus	3.36	98.4

Table 1. The qPCR efficiency (%) has been calculated based on the slope of the log linear regression. Samples isolated with the EchoLUTION kit exhibit a reliable qPCR efficiency. Optimal efficiency lies between 90 – 110 %.

## Equivalent performance to standard extraction method

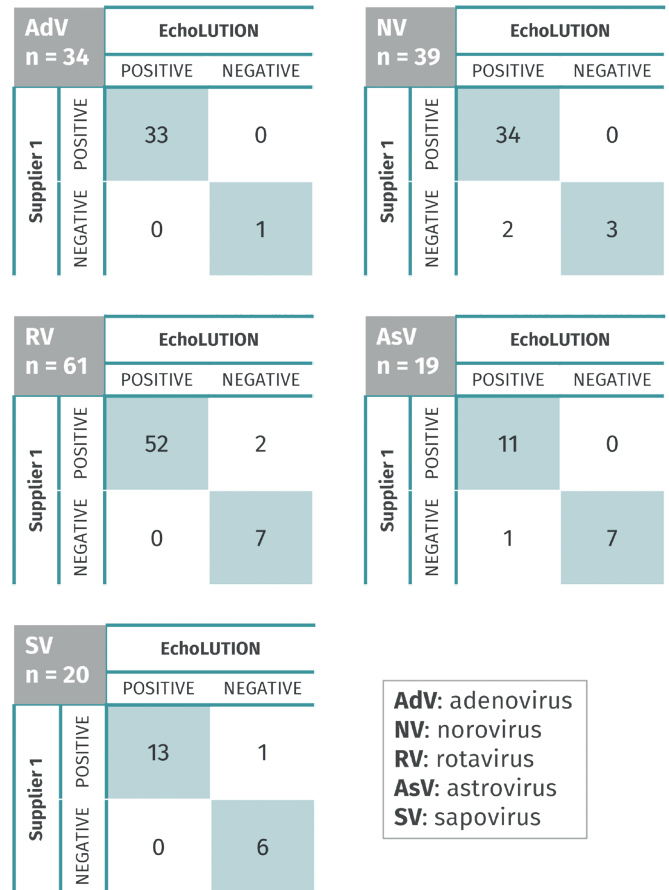


Figure 5. Clinical results based on the qPCR data for each test parameter. Data are represented as a paired matrix to compare the performance of EchoLUTION and a magnetic beads-based kit for all the samples. Samples with the same results from both methods are depicted in light blue background, and samples with different results in white.

## Easy to integrate, high compatibility, and premium quality

**Sample type:**  
Naso- and oropharyngeal swabs, or stool samples

**Elution volume:**  
90 µL

**Sample input:**  
Respiratory and enteropathogenic viruses

**Processing:**  
Manual through centrifugation\*

\* For automation, please contact us



## Ordering information

Product	Reactions	Product No.
EchoLUTION Viral RNA/DNA Kit	2 × 48	012-051-002-Dx
	8 × 48	012-051-008-Dx
	16 × 48	012-051-016-Dx
	2 × 96	012-102-002-Dx
	8 × 96	012-102-008-Dx
	16 × 96	012-102-016-Dx



During the pandemic, we sequenced many SARS-CoV-2 samples to gain more insights on the genetic basis of current SARS-CoV-2 variants. Using the EchoLUTION Viral RNA/DNA Swab Kit significantly reduced the time required to extract the SARS-CoV-2 RNA and resulted in high-quality RNA to ensure robust sequencing results.

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