



# QIAGEN® virus kits

For purification of viral DNA and RNA from a wide range of sample types

Our proven QIAGEN virus kits set the standard for purifying viral DNA and RNA. They rapidly and efficiently deliver high-quality viral nucleic acids from a variety of sample materials, ready for use in a broad range of downstream applications.

The QIAGEN virus kits feature:

- Rapid and reliable purification of high-quality viral DNA and RNA
- Fast procedures and easy handling
- Highly efficient recovery of viral DNA and RNA
- High-quality DNA and RNA suitable for downstream applications
- No phenol-chloroform extraction or time-consuming alcohol precipitation

## Rapid and reliable purification

We provide a variety of QIAGEN virus kits for fast, efficient and easy purification of viral DNA and RNA. Protocols can be carried out manually (using either a microcentrifuge or a vacuum manifold\*) or automated on the QIAcube® Connect or with dedicated kits on the EZ2® Connect instruments. Manual protocols require minimal handling and can purify viral nucleic acids in less than an hour following sample lysis. Automated protocols enable walkaway processing. Both manual and automated procedures eliminate sample-to-sample cross-contamination, allow safe handling of potentially infectious samples and enable rapid processing of multiple samples in parallel.



### QIAamp Procedures

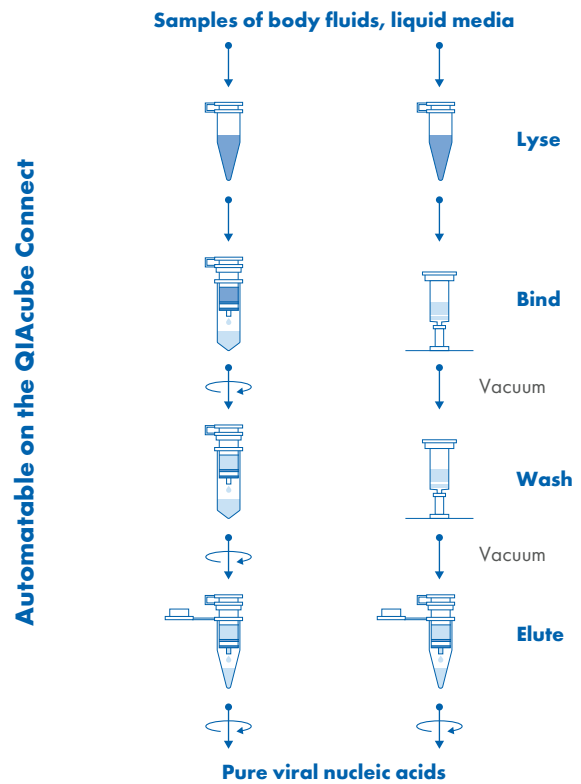


Figure 1. QIAamp virus kits procedure.

\* Requires use of the QIAvac 24 Plus with VacConnectors (see Ordering Information).

## Selecting the right kit for a wide range of sample materials

QIAamp® virus kits utilize the selective binding properties of the QIAamp silica membrane to isolate pure viral DNA and RNA. After lysis in an optimized buffer and adjustment of the binding conditions, the sample is loaded directly onto a QIAamp spin column. On the column, viral DNA

and RNA bind to the silica membrane, while contaminants are completely removed in two wash steps. Pure viral DNA and RNA are eluted in small volumes of a low-salt buffer or water, ready for use in downstream applications.

Applications	Sample type	Manual										Automatable on QIAcube Connect			Fully automated on EZ2 Connect			
		QIAamp Viral RNA Mini Kit (Page 5)	QIAamp MinElute® Virus Spin Kit (Page 6)	QIAamp MinElute Virus Vacuum Kit (Page 8)	AllPrep® PowerViral Media Kit (Page 8)	QIAamp PowerViral DNA/RNA Kit (Page 7)	QIAamp Viral RNA Mini Kit (Page 7)	QIAamp MinElute Virus Spin Kit (Page 5)	AllPrep PowerViral Media Kit (Page 6)	QIAamp PowerViral DNA/RNA Kit (Page 8)	EZ1&2® Virus Mini Kit (Page 7)	EZ1&2® Virus Mini Kit v2.0 (Page 4)						
Viral RNA purification	Human plasma, serum and CSF	•										•						
	Swabs	•																
Viral RNA and DNA copurification	Human plasma and serum		•	•								•						•
	Human CSF and other cell-free body fluids		•	•								•						•
	Waste water and stool																	•
Viral DNA purification	Liquid transport media																	•
	Urine																	•

	Sample input volume						Processing	
	140 µL*	200 µL	250 µL	500 µL	1 mL	up to 5 mL	Spin	Vacuum
QIAamp Viral RNA Mini Kit	•						•	•
QIAamp MinElute Virus Spin Kit		•					•	
QIAamp MinElute Virus Vacuum Kit				•	•†			•
QIAamp MinElute Media Kit			•					•

\* Or up to 560 µL if multiple loading

† With user-developed protocol

# Fully automated purification of viral nucleic acids

The QIAcube® Connect (Figure 2) brings full automation to viral nucleic acid purification, streamlining workflows for the QIAamp MinElute Virus Spin Kit, QIAamp MinElute Media Kit and QIAamp Viral RNA Mini Kit. It mirrors the manual bind-wash-elute process, delivering consistent, high-quality results and reducing hands-on time – so you can dedicate more resources to downstream analysis. The standardized, automated purification procedure also minimizes human error, ensuring reproducible results across experiments and labs.



**Figure 2. Fully automated spin-column based nucleic acid purification.** The QIAcube Connect enables walkaway automation of many QIAGEN spin-column procedures. Visit [www.qiagen.com/MyQIAcubeConnect](http://www.qiagen.com/MyQIAcubeConnect) for more information.

## Walkaway spin-column processing

The fully automated QIAcube Connect, equipped with a 12-bucket centrifuge, eliminates manual centrifugation steps, giving you more time for other tasks. Innovative disposable rotor adapters hold spin columns and collection tubes in the centrifuge. Nucleic acids of high purity are eluted into collection tubes, ready for use in sensitive downstream applications.

The QIAcube Connect is preinstalled with protocols for purification of viral nucleic acids, genomic DNA, plasmid DNA, RNA and proteins. The range of protocols available is continually expanding, and additional QIAGEN protocols can be downloaded free of charge at [www.qiagen.com/MyQIAcubeConnect](http://www.qiagen.com/MyQIAcubeConnect).

# High-quality nucleic acids purification fully automated in three easy steps

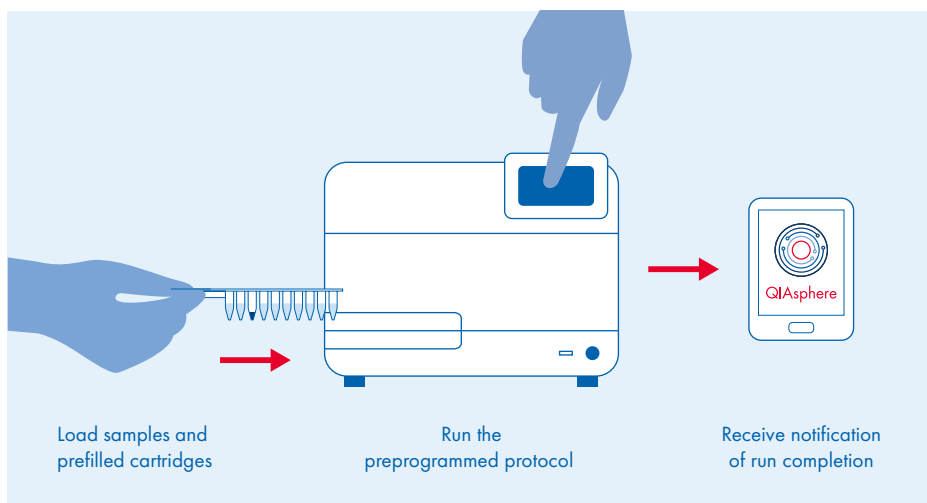
The EZ2 Connect streamlines sample processing with prefilled cartridge-based workflows, handling up to 24 samples simultaneously (Figure 3). This benchtop system automates key pretreatment steps by piercing sealed cartridges, heating samples for incubation and precisely dispensing beads, buffers and enzymes. Its intuitive touchscreen makes operation simple, even for beginners and advanced users. Plus, with remote connectivity, you can monitor runs and manage the instrument from anywhere outside the lab (Figure 4). No matter your sample type – FFPE, liquid biopsy, trace samples, cells, tissue, whole blood or others –

EZ2 Connect kits come with preprogrammed protocols tailored to your needs. Designed for efficiency, reproducibility and flexibility, the EZ2 Connect helps your lab keep up with demanding workflows. The EZ2 Connect protocols can be downloaded for free at [www.qiagen.com/MyEZ2Connect](http://www.qiagen.com/MyEZ2Connect).

The EZ1&2 Virus Mini Kit v2.0 provides a fully automated procedure for simultaneous purification of viral DNA and RNA from serum, plasma, cerebrospinal fluid (CSF), urine, respiratory samples and other cell-free body fluids on the EZ2 Connect.



**Figure 3. End-to-end automation of nucleic acid extraction, from reagent setup to elution.** The EZ2 Connect is a fully automated benchtop system for hands-free nucleic acid extraction with prefilled cartridges and remote monitoring. Visit [www.qiagen.com/MyEZ2Connect](http://www.qiagen.com/MyEZ2Connect) for more information.



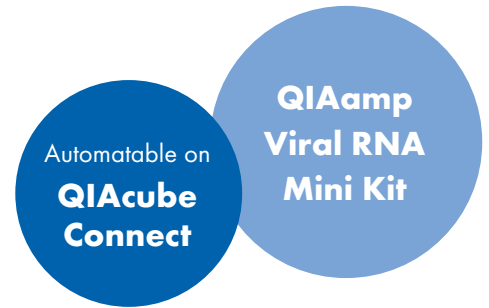
**Figure 4. Three simple steps for isolating DNA and RNA.** Following the touchscreen instructions, the user loads labware and samples, selects a preinstalled protocol and starts the run. The EZ2 Connect then automates lysis, washing, binding and elution. Once complete, the QIASphere App notifies the user that the purified nucleic acids are ready for collection.

# Rapid and reliable isolation of viral RNA

The QIAamp Viral RNA Mini Kit simplifies the purification of viral RNA from swabs and cell-free body fluids such as plasma, serum and urine with fast spin-column or vacuum procedures.

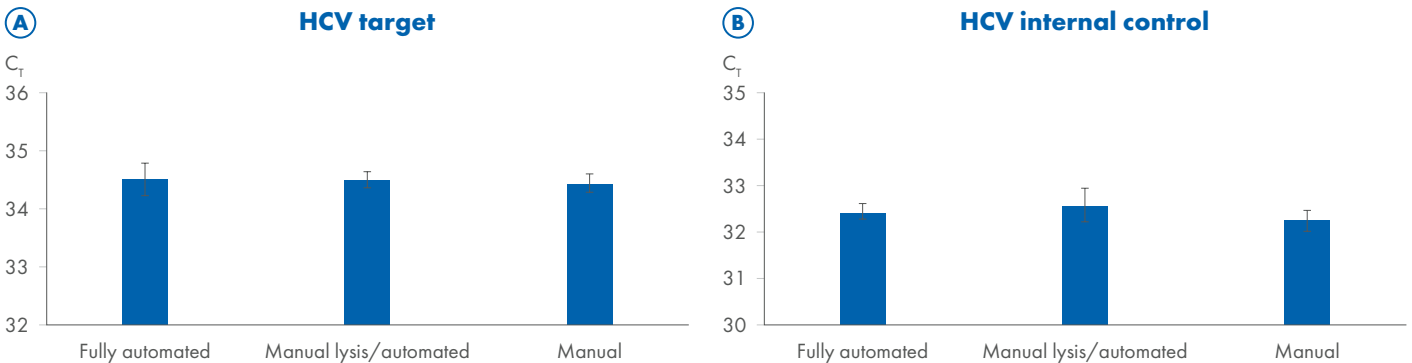
The QIAamp Viral RNA Mini Kit delivers:

- Rapid isolation of high-quality, ready-to-use RNA
- Highly efficient recovery (>90%) of viral RNA at any titer (Table 1)
- No organic extraction or alcohol precipitation
- Complete removal of contaminants and inhibitors



Proven QIAamp silica-membrane technology enables rapid isolation of viral RNA in as fast as 20 minutes. The high-quality viral RNA performs well in a wide range of downstream applications, including viral genotyping, viral epidemiology and infectious disease research. Purification can be fully automated on the QIAcube Connect (Figure 5).

To determine viral RNA recovery, 140 µL acid citrate dextrose plasma samples with known HIV-1 RNA copy numbers were applied to QIAamp spin columns (Table 1). A modified protocol involving two elutions was used to determine the efficiency of the spin columns. HIV RNA was detected by RT-PCR-chemiluminescent assay (data excerpted from Lin HJ, Twandee T, Hollinger FB. *J Med Virol.* 1997;51:56–63).



**Figure 5. Comparison of automated and manual purification of HCV RNA using the QIAamp Viral RNA Mini Kit.** Negative human plasma was spiked with  $5 \times 10^4$  IU/mL HCV, and viral RNA was purified in 6-fold replicates using the QIAamp Viral RNA Mini Kit following either the manual protocol, manual lysis followed by automated purification or the fully automated protocol on the QIAcube. HCV RNA was detected using an in-house, real-time PCR assay on the Rotor-Gene® 3000.

**Table 1. Example of viral RNA recovery**

HIV-1 sample (copies/mL)	Theoretical number of HIV-1 copies in sample	HIV-1 RNA recovered in first elution	
		% Recovery (mean ± SD)	Number of copies recovered
650	91	96 ± 4.6	87
1300	182	98 ± 2.8	178
13,000	1820	98 ± 1.4	1780
130,000	18,200	95 ± 1.0	17,290
1,000,000	140,000	91 ± 2.8	126,800

# Simultaneous purification of viral DNA and RNA from plasma, serum and cell-free body fluids

QIAamp MinElute Virus kits simplify the purification of viral DNA and RNA using spin-column or vacuum-based methods.

QIAamp MinElute Virus kits provide:

- Rapid purification of high-quality viral DNA and RNA
- No organic extraction or alcohol precipitation
- Consistent, high yields
- Complete removal of contaminants and inhibitors

The QIAamp MinElute Virus Spin Kit uses sample volumes up to 0.2 mL, whereas the QIAamp MinElute Virus Vacuum Kit can be used with starting sample volumes up to 1 mL (with user-developed protocols). Both kits combine the selective binding properties of a silica-based membrane with flexible elution volumes between 20 and 150  $\mu$ L. Manual processing time is less than an hour. The purification process with the QIAamp MinElute Virus Spin Kit can be fully automated on the QIAcube Connect. Alternatively, the samples can be lysed manually, followed by automated purification on the QIAcube Connect. Automated processing time is less than an hour.

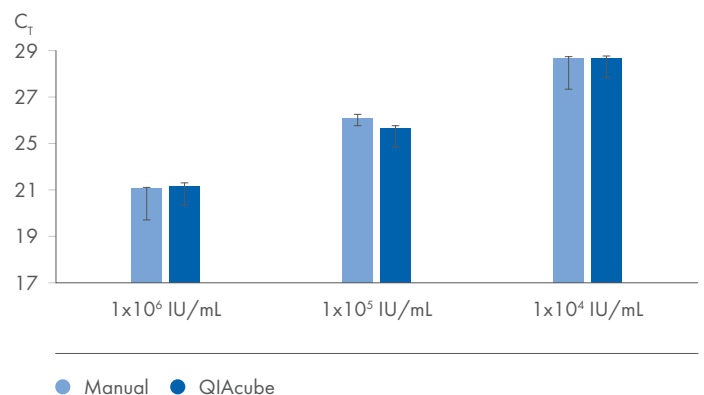
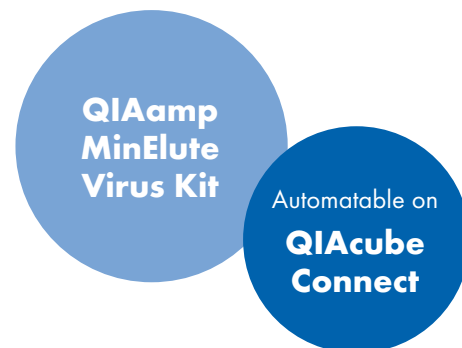
**Table 2. Detection rate of viral DNA isolated with the QIAamp MinElute Virus Spin Kit automated on the QIAcube instrument.**

Virus titer (IU/mL)	HBV	
	Replicates	Hits
100.0	8	8
50.0	8	8
25.0	8	8
12.5	8	8
6.3	8	8
3.1	8	3
1.6	8	1
0.0	8	0

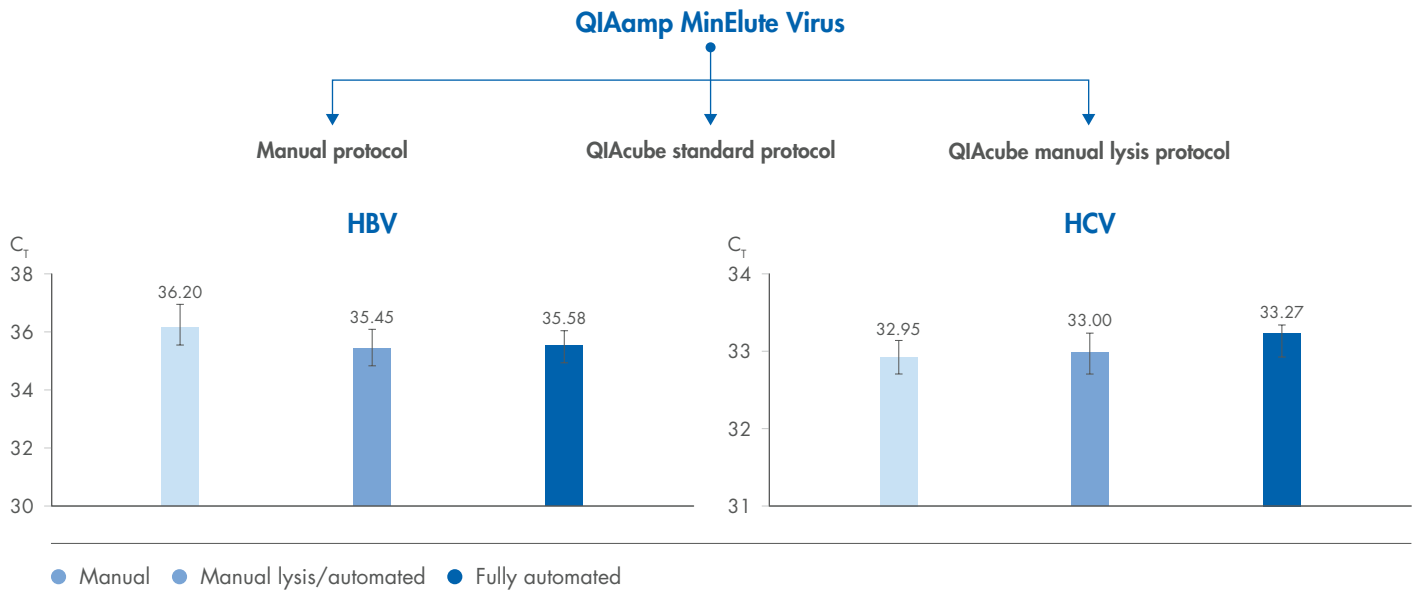
Sensitivity, serial dilutions of a HBV standard in negative EDTA plasma were processed on the QIAcube. Viral DNA was detected using an in-house HBV PCR assay. Internal controls were added to all samples and were positively detected.

The purified viral nucleic acids can be used in a wide range of downstream applications, including:

- PCR, qPCR and dPCR of DNA viruses (Figures 6 and 7, Table 2)
- RT-PCR and qPCR of RNA viruses (Figure 7)
- Next-generation sequencing



**Figure 6. Comparison of automated and manual purification of viral DNA from plasma using the QIAcube and QIAamp MinElute Virus Spin Kit.** Parvovirus B19 negative samples of plasma were spiked with 8.7 x 10<sup>6</sup> IU/mL elutions volume of parvovirus B19 control DNA. Isolated parvovirus B19 was detected with an in-house parvovirus B19 PCR assay.



**Figure 7. Comparison of manual and automated purification of HBV DNA and HCV RNA from plasma using the QIAamp MinElute Virus Kit.** Negative human plasma was spiked with  $1 \times 10^4$  IU/mL HBV or  $5 \times 10^4$  IU/mL. Samples were purified in 6-fold replicates using the QIAamp MinElute Virus Spin Kit following either the manual protocol, manual lysis followed by automated purification or the fully automated protocol on the QIAcube. Isolated HBV DNA was detected using an in-house HBV PCR assay on the Rotor-Gene 3000. Isolated HCV RNA was detected using an in-house, real-time RT-PCR assay on the Rotor-Gene 3000.

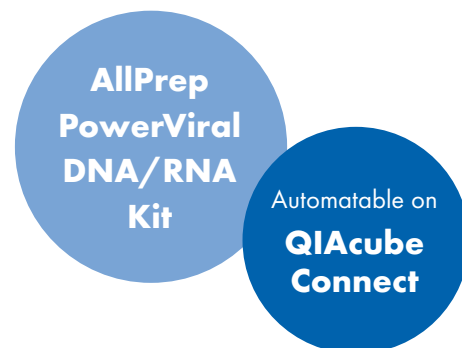
## Easy viral and bacterial nucleic acid isolation from wastewater and stool samples

The AllPrep PowerViral DNA/RNA Kit is designed for fast and easy purification of viral and bacterial total nucleic acids even from samples high in PCR inhibitors. Such samples include wastewater, stool, biosolids and gut material.

The AllPrep PowerViral DNA/RNA Kit provides:

- Optimized bead beating technology for lysis of the toughest samples
  - High yields and reproducible results
- Inhibitor Removal Technology<sup>®</sup> to eliminate inhibitory substances

Our Inhibitor Removal Technology ensures complete removal of inhibitory substances often contained in materials, such as undigested plant material in the gut or heme compounds from lysed red blood cells which are abundant in stool. The result is DNA and RNA from virus and bacteria that is ready to use in the most demanding downstream applications. Nucleic acids are eluted in RNase-free water and ready to use in PCR, cDNA synthesis, RT-qPCR, RNA-seq, Sanger sequencing or next-generation sequencing.



# Purification of DNA from liquid media

The QIAamp MinElute Media Kit provides a convenient vacuum procedure for purification of nucleic acids from liquid media.

The QIAamp MinElute Media Kit provides:

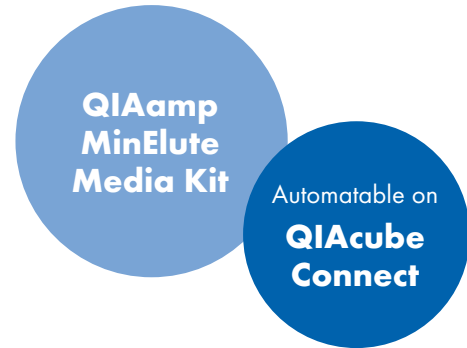
- Purification from a variety of liquid media, such as cervical swab transport media
- Time-saving vacuum procedure for convenient handling and ease-of-use
- Flexible elution volumes from 20 to 150  $\mu\text{L}$
- High-quality DNA with efficient removal of alcohols and other contaminants

The QIAamp MinElute Media Kit uses well-established technology for purification of nucleic acids. The kit combines the selective binding properties of a silica-based membrane with flexible elution volumes of between 20 and 150  $\mu\text{L}$ . The kit is suitable for use with liquid media containing nucleic acids, such as cervical swab transport media (e.g., PreservCyt<sup>®</sup> or SurePath<sup>®</sup> solution). Nucleic acids are eluted in Buffer AVE and are ready for direct storage or use in amplification reactions. Purified nucleic acids are free of proteins, nucleases and other impurities.

Purification of DNA using the QIAamp MinElute Media Kit can be automated on the QIAcube Connect.

The QIAamp MinElute Media Kit can be used for purifying cellular, bacterial and viral nucleic acids from a variety of sources, including:

- Liquid cytology media containing alcohol (e.g., PreservCyt and SurePath)
- Phosphate-buffered liquid transport media (e.g., M4RT)



## Ordering Information

Product	Contents	Cat. no.
<b>QIAamp Viral RNA Mini Kit – for isolation of viral RNA from cell-free body fluids</b>		
QIAamp Viral RNA Mini Kit (50)*	For 50 RNA preps: 50 QIAamp Mini Spin Columns, Carrier RNA, Collection Tubes (2 mL), RNase-free Buffers	52904
QIAamp Viral RNA Mini Kit (250)*	For 250 RNA preps: 250 QIAamp Mini Spin Columns, Carrier RNA, Collection Tubes (2 mL), RNase-free Buffers	52906
QIAamp 96 Viral RNA Kit (10)	For 960 preps: QIAamp 96 Plates, Buffers, Carrier RNA, TopElute Fluid. Please note: Airpore Tape Sheets are required to process the QIAamp 96 Viral RNA Kit on a centrifuge. These are currently not included in the kit and must be ordered separately. One pack of fifty AirPore Tape Sheets (cat. no. 19571) is needed to process 960 preps with one QIAamp 96 Viral RNA Kit (10) using a centrifuge.	52962
QIAamp Viral RNA Mini QIAcube Connect Kit (240)	For 240 viral RNA preps: QIAamp Mini Rotor Adapters, carrier RNA and RNase-free reagents and buffers. Rotor adapters are preloaded with spin columns and elution tubes.	52926
<b>QIAamp MinElute Virus Spin Kit – for simultaneous purification of viral DNA and RNA from plasma, serum and cell-free body fluids using spin processing</b>		
QIAamp MinElute Virus Spin Kit (50)*	For 50 minipreps: 50 QIAamp MinElute Columns, QIAGEN Protease, Carrier RNA, Buffers, Collection Tubes (2 mL)	57704
<b>QIAamp MinElute Virus Vacuum Kit – for simultaneous purification of viral DNA and RNA from plasma, serum and cell-free body fluids using vacuum processing</b>		
QIAamp MinElute Virus Vacuum Kit (50)	For 50 minipreps: 50 QIAamp MinElute Columns, QIAGEN Protease, Carrier RNA, Buffers, Extension Tubes (3 mL), Collection Tubes (1.5 mL)	57714
<b>AllPrep PowerViral DNA/RNA Kit – for isolating viral or bacterial total nucleic acids from waste water and stool samples</b>		
AllPrep PowerViral DNA/RNA Kit (50)	For 50 preps: 50 PowerBead Tubes, 50 MB Spin Columns, Buffers, RNase-Free Water, Collection Tubes (2.2 mL), Collection Tubes (2 mL)	28000-50
<b>QIAamp MinElute Media Kit – for purification of DNA from liquid media</b>		
QIAamp MinElute Media Kit*	For 50 minipreps: 50 QIAamp MinElute Columns, QIAGEN Proteinase K, Carrier RNA, Buffers, Extension Tubes (3 mL), Collection Tubes (1.5 mL)	57414
<b>QIAcube Connect – for fully automated sample prep using spin-column kits</b>		
QIAcube Connect†	Instrument, connectivity package, 1-year warranty on parts and labor	9002864
Starter Pack, QIAcube	Filter-tips, 200 µL (1024); 1000 µL Filter-Tips (1024); 30 mL Reagent Bottles (12); Rotor Adapters (240); 1.5 mL Elution Tubes (240); Rotor Adapter Holder (1)	990395

\* Fully automatable on the QIAcube Connect. See [www.qiagen.com/MyQIAcubeConnect](http://www.qiagen.com/MyQIAcubeConnect) for protocols.

† All configurations include a QIAcube Connect robotic workstation for automated purification of DNA and RNA using QIAGEN spin-column kits, a QIASphere Base to connect to local network, a barcode reader and 1-year warranty on parts and labor.



## Ordering Information

Product	Contents	Cat. no.
<b>QIAcube Connect – for fully automated sample prep using spin-column kits</b>		
QIAamp MinElute Virus Accessory Set	Additional Buffers and Reagents; for use with at least 9 x QIAamp MinElute Virus Spin Kits (50), catalog number 57704, on the QIAcube Connect	1043367
QIAamp Viral RNA Mini Accessory Set	Additional Buffers and Reagents; for use with at least 11 x QIAamp Viral RNA Mini Kits (50), catalog number 52904, or 5 x QIAamp Viral RNA Mini Kits (250), catalog number 52906, on the QIAcube Connect	1048147
<b>EZ2 Connect – for end-to-end automation of nucleic acid extraction, from reagent setup to elution</b>		
EZ2 Connect	Benchtop instrument for automated isolation of nucleic acids from up to 24 samples in parallel, using sealed prefilled cartridges; includes 1-year warranty	52904
EZ1&2 Virus Mini Kit v2.0 (48)	For 48 preps: Reagent Cartridges (Virus Mini v2.0), Disposable Filter-Tips, Disposable Tip-Holders, Sample Tubes (2 mL), Elution Tubes (1.5 mL), Buffer AVE, carrier RNA	955134
<b>QIAvac 24 Plus – for fast vacuum-driven processing of up to 24 spin columns</b>		
QIAvac 24 Plus	Vacuum manifold for processing 1–24 spin columns: includes QIAvac 24 Plus Vacuum Manifold, Luer Plugs, Quick Couplings	19413
VacConnectors (500)	500 disposable connectors for use with QIAamp spin columns on luer connectors	19407
Vacuum Pump	Universal vacuum pump (capacity 34 L/min, 8 mbar vacuum abs.)	9003250
QIAvac Connecting System	System to connect vacuum manifold with vacuum pump: includes Tray, Waste Bottles, Tubing, Couplings, Valve, Gauge, 24 VacValves	19419
Vacuum Regulator	For use with QIAvac manifolds	19530
VacValves (24)	24 valves to regulate sample flow rate; for use with the QIAvac 24 Plus	19408

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For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at [www.qiagen.com](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.



Scan the QR code or use the link to learn more: [www.qiagen.com/viruskits](http://www.qiagen.com/viruskits)



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