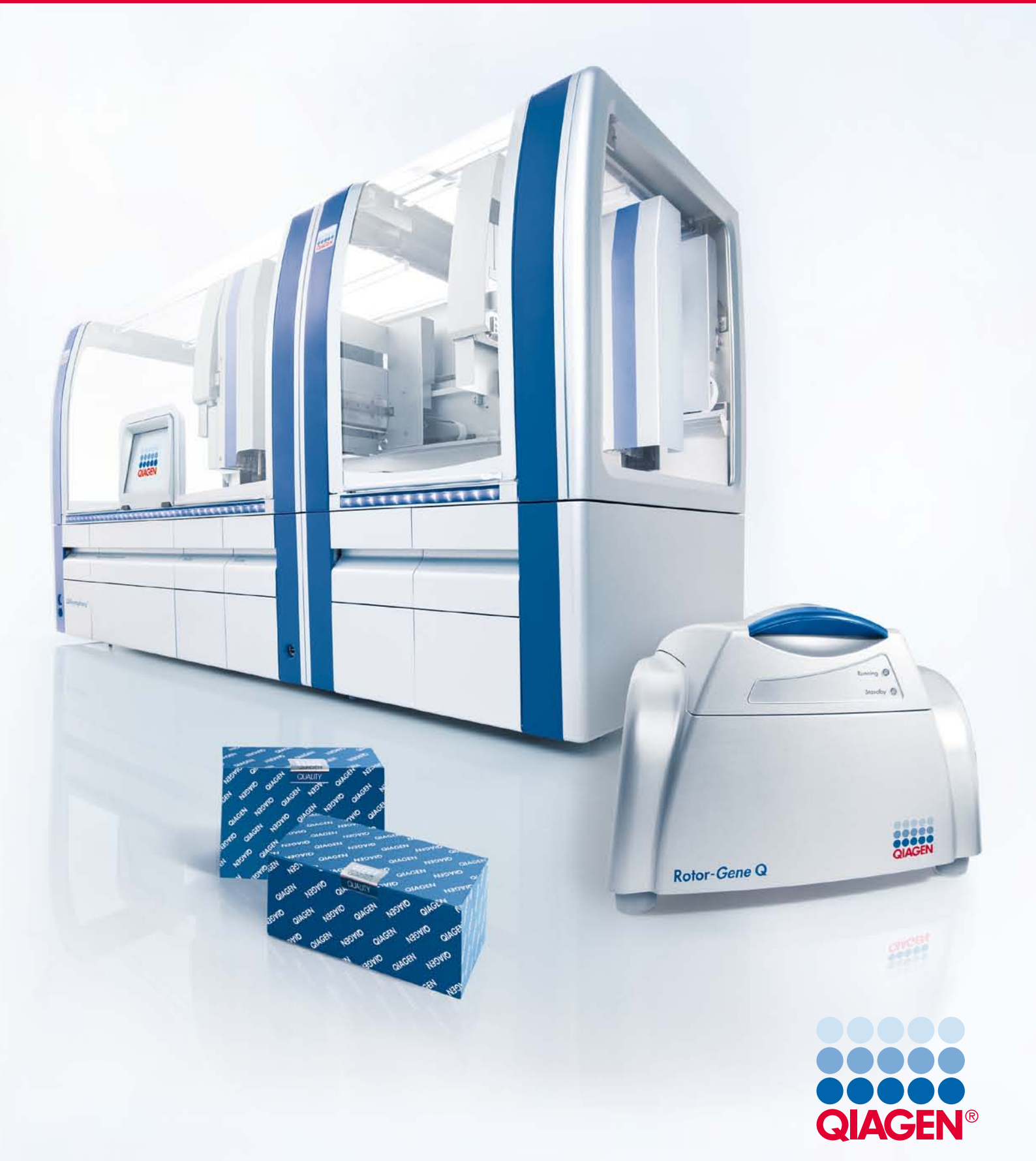
QIAsymphony® RGQ — Pure Performance

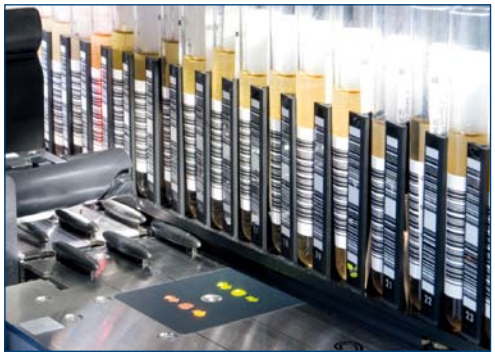


QIAGEN®

Sample & Assay Technologies

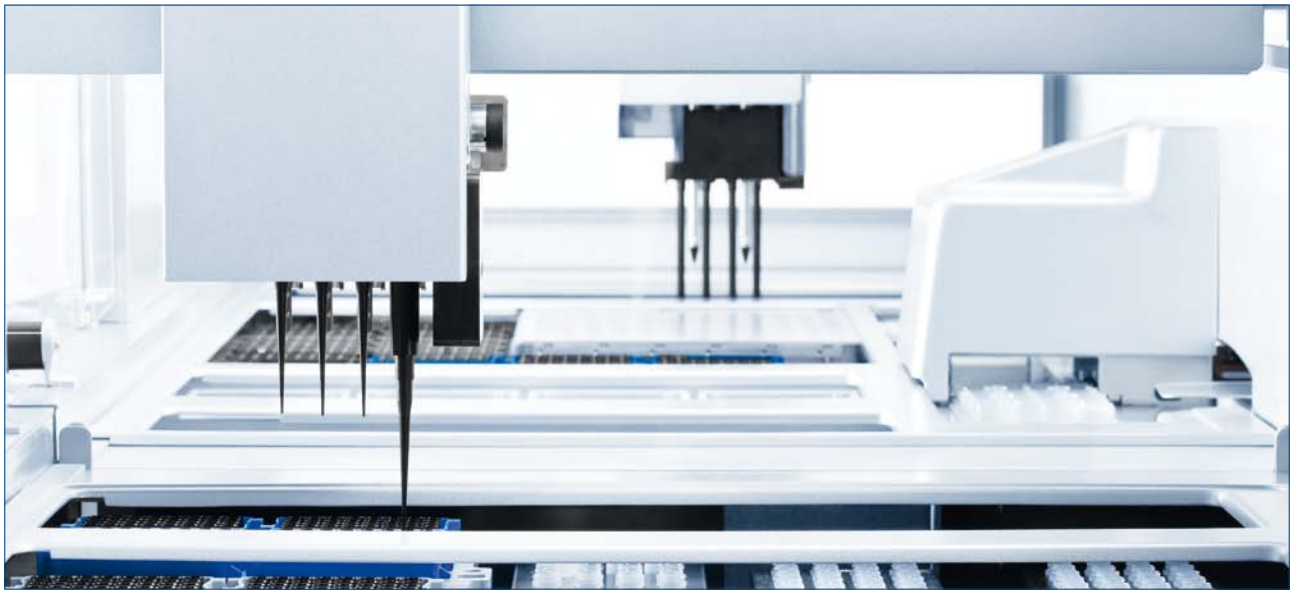
Relax and let QIAGEN® automate your complete workflow

QIAGEN now provides everything you need to standardize and fully automate your routine sample preparation and analysis workflow. With our dedicated range of QIAsymphony Kits, the QIAsymphony SP enables sample preparation of DNA, RNA, bacterial and viral nucleic acids, and 6xHis-tagged protein from a wide range of starting materials. The QIAsymphony AS extends the capabilities of the QIAsymphony SP by integrating automated PCR assay setup which, in combination with the Rotor-Gene® Q and QIAGEN real-time and end-point PCR kits, enables you to complete your automated PCR workflow and maximize your efficiency — from sample to result.



The QIAsymphony provides:

- Standardized sample preparation and PCR assay setup
- Built-in touchscreen and prefilled reagent cartridges for ease of use
- Liquid-level detection, active cooling, and UV lamp for decontamination
- Applications for certified QIAGEN and in-house assays
- Protocol customization service and support for in-house assays



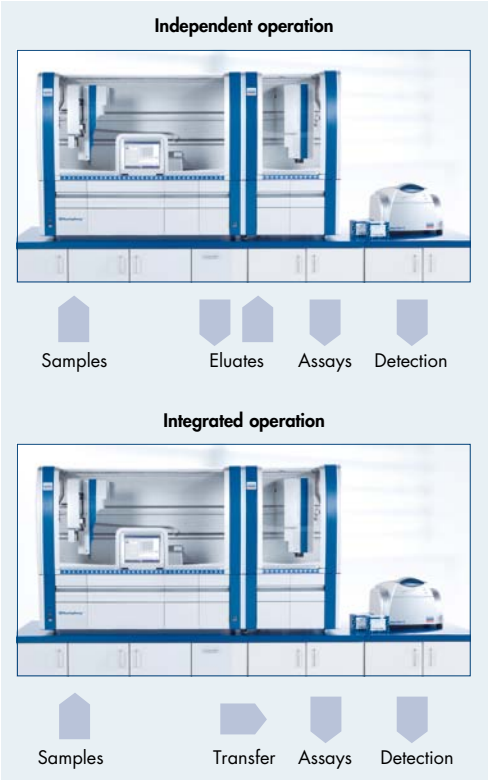
Cutting-edge system for standardized sample preparation and PCR setup

The QIAsymphony system is highly suited for laboratories that analyze samples on a day-to-day basis. With predefined protocols and automatable QIAGEN kits for sample preparation and PCR setup, the QIAsymphony system will optimize your workflow and increase your laboratory's throughput. The QIAsymphony SP is already the first choice for many laboratories, enabling success in virus and bacterial analysis, gene expression analysis, and in forensics and genomics applications. The high level of standardization that the QIAsymphony system achieves allows you to directly compare your results with laboratories around the world. QIAGEN offers tailored IQ/OQ products to support laboratory certification for full instrument qualification.*

Modular system for maximum convenience and process safety

Laboratories already operating a QIAsymphony SP can easily upgrade their system onsite with a QIAsymphony AS module. The QIAsymphony AS directly interfaces with the QIAsymphony SP, delivering fast, highly reproducible PCR setup. To reduce manual handling steps and minimize the risk of sample contamination, samples processed on the QIAsymphony SP can be transferred automatically to the QIAsymphony AS (integrated operation). For extra flexibility, the QIAsymphony SP and AS can also be operated independently.† Samples that have been processed earlier in the day, or that have been processed on a different QIAsymphony SP, can be manually transferred to the QIAsymphony AS.

QIAsymphony workflows



* For a full list of QIAsymphony service agreements, please inquire.

† The QIAsymphony SP and AS remain physically connected during independent operation.

Purification

Ass

Drug Development

Biomedical Research

Bioprocess Quality Control

Molecular Diagnostics

ay Setup

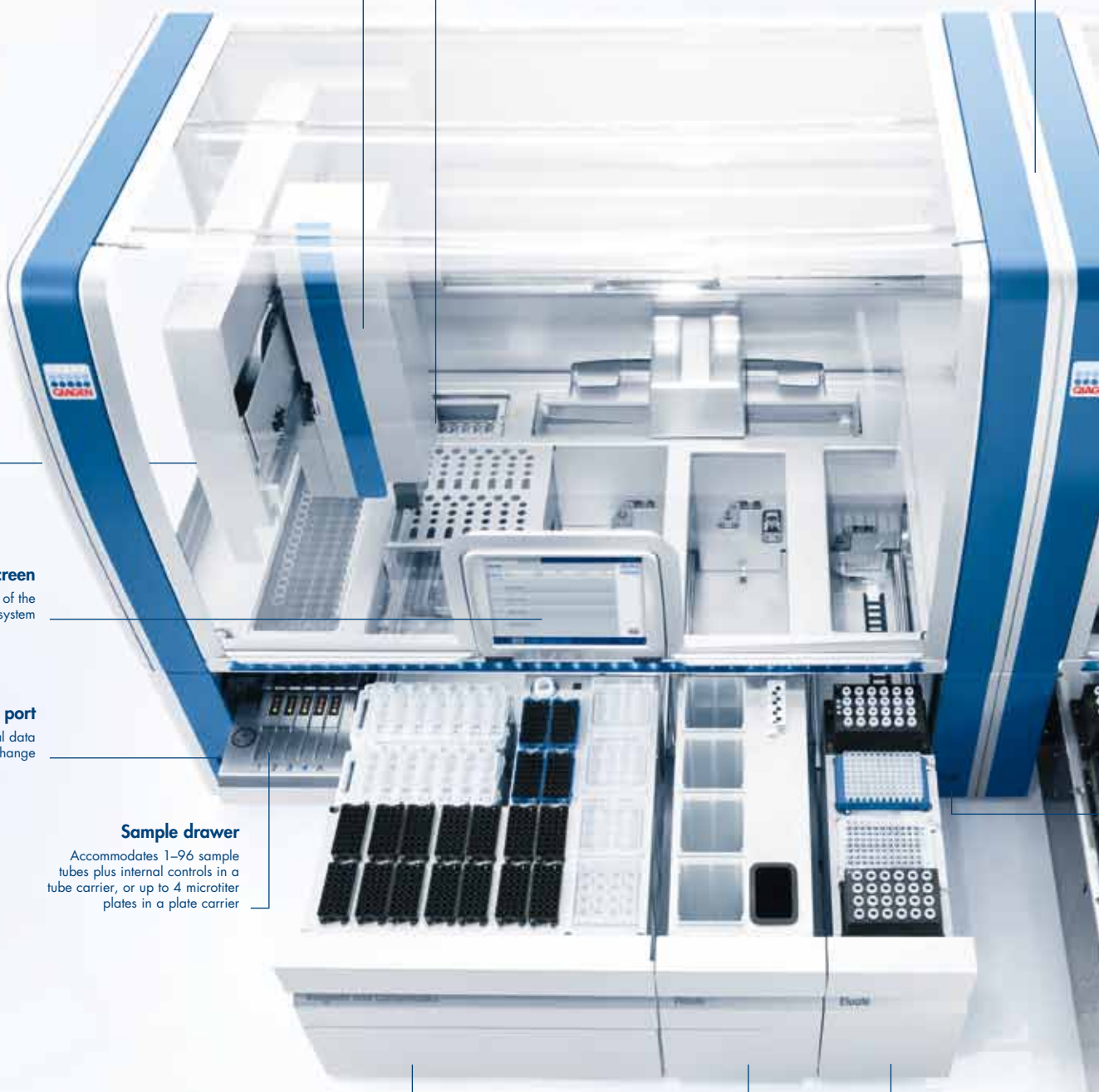
Detection

Food Safety Testing

Human Identity and Forensics

Veterinary Testing

Companion Diagnostics



Separation window and transfer module
Enables active transfer of eluates from the SP to the AS module

UV lamp
Decontaminates the worktable and minimizes sample cross-contamination

Robotic arm
4-channel with tip guards

Ethernet adapter
For connecting the QIAsymphony system to local networks

Touchscreen
For intuitive operation of the complete system

USB port
For bi-directional data exchange

Sample drawer
Accommodates 1–96 sample tubes plus internal controls in a tube carrier, or up to 4 microtiter plates in a plate carrier

Reagent and consumables drawer
Supports consumables and 2 reagent cartridges

Waste drawer
Stores solid and liquid waste separately

Eluate drawer
Provides a choice of elution formats, including cooling and transfer of eluate racks to the QIAsymphony AS from the rear position

Robotic arm
4-channel with tip guards

UV lamp
Decontaminates the worktable and minimizes sample cross-contamination

USB port
For connecting handheld bar code reader

Eluate and reagents drawer
Supports master mix, samples, reagents, and preracked consumables

Assays drawer
Provides active cooling of PCR assays

Unmatched flexibility:

- 1–96 samples processed each run
- Sample volumes up to 2 ml
- Supports variety of sample tubes, microtiter plates, and blocks
- Continuous loading in batches of up to 24 samples
- Ability to run different protocols for each batch

Optimized workflow:

- Higher sample throughput per day
- Saves precious primary samples
- Optimal batch-to-batch reproducibility
- Standardized process permits global comparability of results
- LIMS compatibility
- User management for record of responsibility

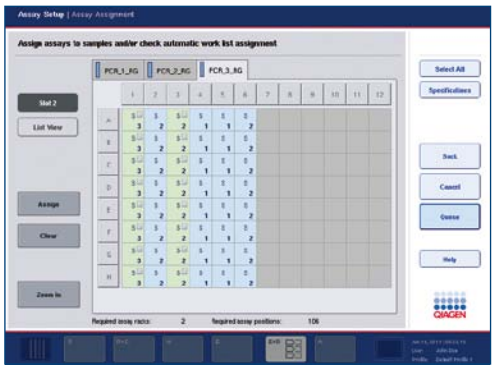
Convenience:

- Eluate splitting for different analysis panels
- Minimization of cross-contamination
- Active cooling of reagents and eluates
- Automatic inventory scanning
- Effective UV worktable decontamination
- Bar code reader for exact sample tracking

Sample information after sample loading.

Easy-to-use software

QIAsymphony operating software guides the user through setting up a sample preparation or assay setup run in a step-by-step fashion, with options to select and adapt standardized protocols. Required volumes of buffers, reagents, master mix, and controls are automatically calculated and the user is informed of the number and type of consumables to be loaded. Transfer of sample loading information from the QIAsymphony SP to the QIAsymphony AS is convenient and reduces the number of steps required for assay definition, thus minimizing the risk of error and sample loss.



Assay definition of 2 PCR assays.

Standardized data exchange permits LIMS compatibility

The QIAsymphony system provides standardized communication interfaces. Work lists and rack files can be imported to the QIAsymphony system, enabling automatic run definition before samples are received in the laboratory. After assay setup, sample lists can be exported to selected real-time PCR cyclers, including the Rotor-Gene Q. This bi-directional data exchange allows integration of QIAsymphony systems into laboratory information management systems (LIMS).

Reagent loading information for the QIAsymphony AS.

Seamless sample traceability

Bar code reading of samples and reagents enables full sample tracking throughout the entire purification and assay setup procedure. The QIAsymphony system provides chronological electronic documentation of results, including information about sample IDs, their positions on the worktable, and the lot number and expiration date of sample preparation and PCR reagents. Multi-level user management provides a record of which user was responsible for sample processing. Electronic result files can be automatically printed via a networked printer, or can be downloaded using a USB stick for archiving purposes.

Unrivalled application range on the QIAsymphony SP

QIAsymphony Kits — backed by QIAGEN Quality® — increase laboratory efficiency since just a few kits in combination with optimized protocols cover an extensive range of starting materials and applications (Table 1). Sample volumes of up to 2 ml, and up to 50 mg of tissue or 10^7 cells can be processed, providing increased nucleic acid yields for gene expression and genomics applications and higher sensitivity in virology and microbiology applications.

The QIAsymphony SP delivers pure performance in virus and bacteria applications and provides unrivalled flexibility for purifying DNA from blood, RNA from tissues and cells, or His-tagged proteins from *E. coli* or eukaryotic cells. For up-to-date information about QIAsymphony applications, visit www.qiagen.com/goto/QIAsymphony.

Innovative reagent cartridges for ultra-efficient purification

QIAsymphony Kits are safe and exceptionally easy to use. Ready-to-run, bar code-labeled reagent cartridges are prefilled with all reagents required for the purification procedure, including accessory enzymes. Worktable setup is rapid and saves you valuable time. Simply place up to 2 reagent cartridges in the QIAsymphony drawer. The reagent cartridges can be either from the same kit or different kits, enabling different purification procedures to be performed within the same run of 96 samples. Reagent cartridges are automatically opened by the instrument and reagent volumes only for the selected number of samples are used, giving you complete cost control.

Table 1. Dedicated QIAsymphony Kits for a wide range of starting materials

QIAsymphony Kit	Starting material and amount
QIAsymphony Certal® Residual DNA	Purification of DNA from up to 1000 µl biological process samples
QIAsymphony Certal Vaccine NA	Purification of viral nucleic acids from up to 1000 µl biological process samples
QIAsymphony DSP AXpH DNA	Purification of DNA from liquid-based cytology samples using AXpH technology
QIAsymphony DSP DNA	Purification of DNA from up to 1000 µl human whole blood, 400 µl buffy coat, 50 mg tissue, or 1×10^7 cells
QIAsymphony DNA Investigator®	Purification of reference and casework samples for human identity testing and forensics
QIAsymphony DSP Virus/Pathogen	Purification of viral nucleic acids from up to 1000 µl plasma, serum, or CSF. Purification of viral nucleic acids and bacterial DNA from up to 800 µl respiratory samples, urine, transport media, or air-dried swabs
QIAsymphony *mericon*® Bacteria	Purification of bacterial DNA from 500 µl enrichment culture
QIAsymphony Ni-NTA Denaturing	Purification of 6xHis-tagged proteins from up to 5 ml *E. coli* or up to 2.5×10^7 eukaryotic cells
QIAsymphony Ni-NTA Native	Purification of 6xHis-tagged proteins from up to 5 ml *E. coli* or up to 2.5×10^7 eukaryotic cells
QIAsymphony PAXgene® Blood RNA*	Purification of cellular RNA from 2.5 ml human whole blood collected in PAXgene Blood RNA Tubes
QIAsymphony RNA	Purification of total RNA and miRNA from up to 50 mg tissue, FFPE tissue, or 1×10^7 cells

* Up to 48 samples can be processed per run.

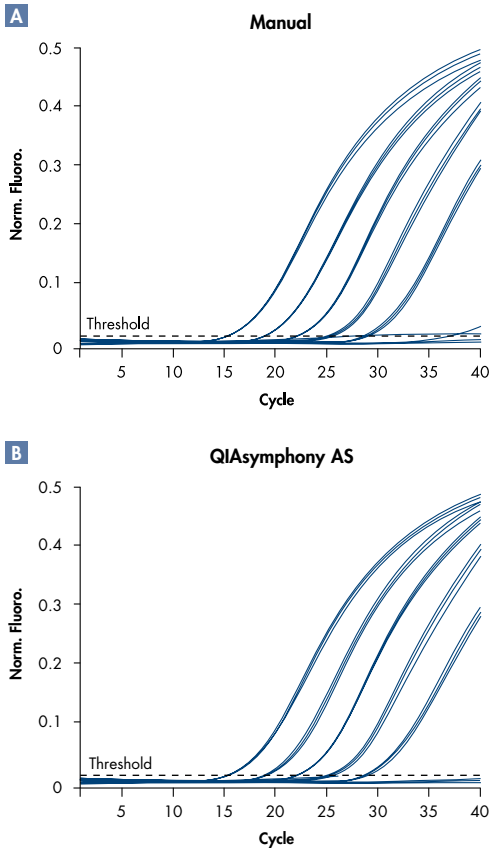


Figure 1. Highly reproducible assay setup. A serial dilution of leukocyte cDNA (100 ng to 0.01 ng) was performed A manually and B using the QIAsymphony AS. GAPDH was amplified from these dilutions, using the Rotor-Gene Q and the Rotor-Gene Probe PCR Kit. Reactions were set up in replicates of 4 in Strip Tubes.

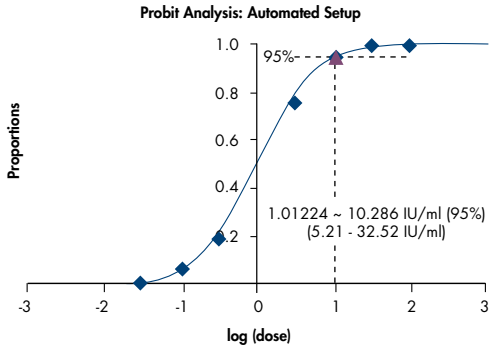


Figure 2. Automated assay setup is as sensitive as manual assay setup. Half-log dilutions of WHO HBV standard (n=8) were performed in replicates of 8. Assay setup was performed manually and using the QIAsymphony AS. Amplification was performed using the Rotor-Gene Q and a validated, in-house real-time PCR assay. Automated and manual assay setup were equally sensitive. Manual setup: 1.04698 ~ 11.142 IU/ml, (6.039–33.22 IU/ml)

Transfer your purified samples directly to the QIAsymphony AS

The QIAsymphony AS can simplify your routine work processes — even setting up complex PCR assays is fast and easy. Manual pipetting steps that are prone to human error are eliminated, so the QIAsymphony AS delivers more accurate pipetting on a day-to-day basis than even highly experienced laboratory staff (Figures 1 and 2). Pipetting of master mix and sample transfer for 96 samples takes less than 25 minutes, leaving you and your staff with more valuable time for other tasks.

The QIAsymphony AS is provided with predefined protocols, specifically designed for use with QIAGEN's expanding portfolio of real-time, end-point, and *artus*® PCR kits (Table 2). Standardized pipetting schemes can be adapted as required by QIAGEN customization services. A choice of output adapters enables use of different real-time PCR cyclers (e.g., Rotor-Gene Q, 96-well cyclers, 32-capillary cyclers) for detection. You can now relax and let QIAGEN's automated solutions do the hard work for you — prepare your samples on the QIAsymphony SP and then directly transfer your eluates to the QIAsymphony AS for assay setup. To use the Rotor-Gene Q for detection, simply set up your PCRs in Strip Tubes or Rotor-Discs. Your workflow has never been easier!

In-house pathogen detection assays

If you design your own in-house pathogen detection assays, QIAGEN can help you increase the number and type of assays you can do — without the need for tedious optimization steps. Our optimized master mixes, along with our commitment to high-quality manufacturing and Good Manufacturing Practice (GMP) principles, allow you to achieve reliable results with high process safety based on an internal control. From efficient purification of pathogen nucleic acids to reliable analysis using real-time RT-PCR kits such as the QuantiFast Pathogen +IC Kits and the QuantiTect Virus Kits, QIAGEN can cover each step of your laboratory procedure.

Table 2. Automate proven QIAGEN PCR kits with the QIAsymphony AS*

Application	Method	Kit	Description
Gene expression analysis	Real-time RT-PCR	Rotor-Gene kits for SYBR® green or probe detection	Rapid and reliable qRT-PCR on the Rotor-Gene Q
	Real-time RT-PCR	RT² Profiler PCR Arrays for SYBR green detection	Pathway-focused qRT-PCR
Pathogen detection	Real-time PCR and RT-PCR	QuantiFast® Pathogen +IC Kits	Highly sensitive detection of pathogen RNA or DNA using an internal control
	End-point RT-PCR	QIAGEN OneStep RT-PCR Kit	Highly sensitive detection of viral RNA
	Real-time PCR and RT-PCR	*cador*® veterinary†	Ready-to-use, validated real-time PCR assays to detect veterinary pathogens
	Real-time PCR and RT-PCR	*artus* PCR and RT-PCR Kits‡	Ready-to-use real-time PCR assays for pathogen detection
Pathogen typing	High-resolution melting (HRM®)	Type-it® HRM PCR Kit	Detection of gene mutations and SNPs by high-resolution melting analysis
Food safety testing	Primer-based real-time PCR Probe-based RT-PCR	*mericon* food testing kits	Automated pathogen DNA extraction from primary bacterial enrichment cultures and real-time PCR assays to detect pathogens
Genotyping	PCR	Type-it Fast SNP Probe PCR Kit	SNP genotyping using TaqMan® or TaqMan MGB™ probes
	High-resolution melting	Type-it HRM PCR Kit	Detection of gene mutations and SNPs by high-resolution melting analysis
Methylation analysis	High-resolution melting	EpiTect® HRM PCR Kit	Portfolio of real time PCR kits and assays for highly sensitive quantification of specific methylated regions
	Probe based real-time PCR	EpiTect MethyLight PCR Kit	Optimized HRM PCR kits for sensitive detection and screening of differential methylated regions
Residual DNA detection	Real-time PCR using probes	Certal Residual DNA Detection Kit	Sensitive probe-based detection of residual host cell DNA, including an internal control

* For a full list of QIAGEN PCR kits, including kits for genotyping and other specialized applications, visit www.qiagen.com/goto/PCR. For availability of QIAsymphony AS protocols, please inquire. † *cador* veterinary PCR and RT-PCR Kits are not available in the US or Canada. ‡ *artus* PCR and RT-PCR Kits are not available in the US.

Bioprocess quality control

When working with biopharmaceuticals, it is essential to evaluate the purification process and the final therapeutic material. Quantitative data of sufficient sensitivity is needed to fulfill regulatory (e.g., FDA) requirements. QIAGEN's integrated system for molecular testing — the QIAsymphony RGQ — delivers optimized and ready-to-use solutions for automated purification and quantification of residual host-cell DNA and viral nucleic acids. This includes sample preparation on the QIAsymphony SP using QIAsymphony Certal Kits, assay setup on the QIAsymphony AS, and detection on the Rotor-Gene Q PCR cycler in combination with Certal Detection Kits. This workflow ensures the generation of sensitive and reliable results, regardless of whether the starting material is derived from bioprocess purification buffer, cell culture supernatant, or vaccine preparations. For downstream detection, QIAsymphony Certal Detection Kits enable highly sensitive detection of residual genomic DNA from CHO and Vero cell lines using quantitative PCR. DNA amounts down to 0.1 pg can be reliably purified (Figure 3). The Certal Internal Control and the Certal Residual DNA Positive Control are additional options for quality control supporting the interpretation of results for detection false negative samples.

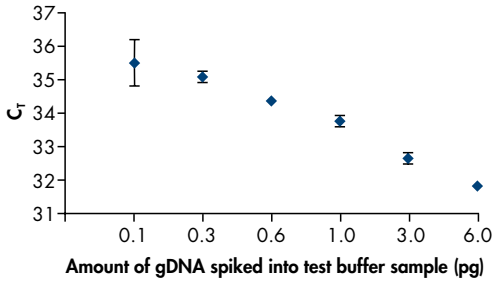
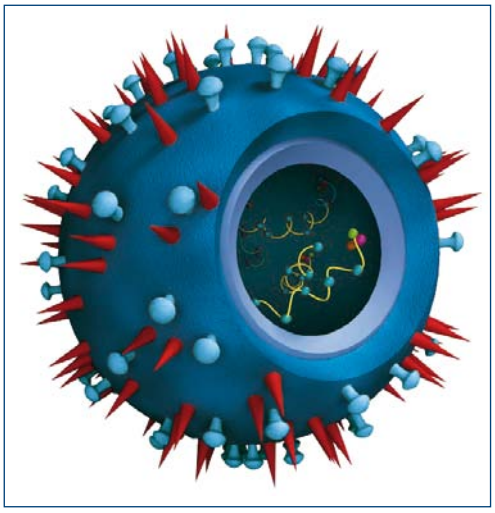


Figure 3. Reliable purification of small quantities of residual host-cell DNA. Genomic CHO DNA was spiked into buffer AEX to create 6 test buffer samples. 4 replicates from each of the 6 test buffer samples were purified and analyzed by qPCR in triplicate using the Certal CHO Detection Kit. The graph shows the means of the replicates and their standard deviations, indicating a low limit of detection.

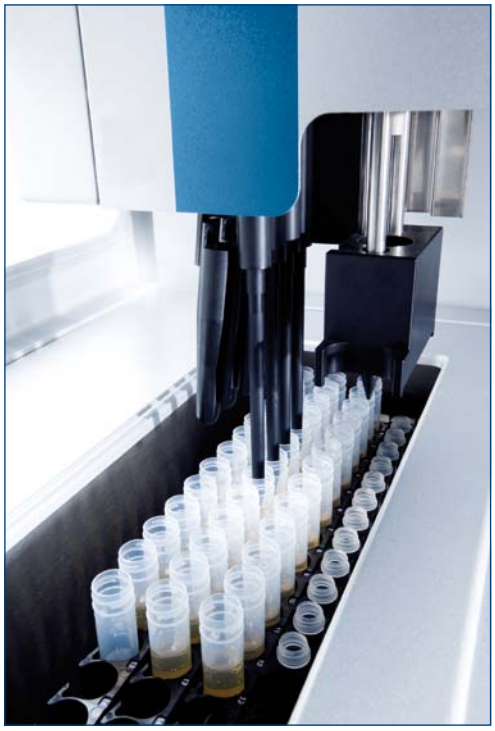


Molecular diagnostics

High-quality viral DNA and RNA, and bacterial nucleic acids can be purified from a wide range of sample types (Table 3 and Figure 4) using QIAsymphony DSP Virus/Pathogen Kits on the QIAsymphony SP. Optimized protocols deliver high yields of pure nucleic acids, and flexible elution volumes support your downstream assays. The QIAsymphony SP is provided with standardized sample preparation protocols that define sample transfer, purification, and then elution. For purification of difficult samples or inactivation of samples, additional lysis procedures can be combined with the purification protocols.

Table 3. Successful purification of a wide range of respiratory viruses from different sample types using the QIAsymphony SP

Respiratory virus	Sample type
Adenovirus	Aspirates, swab
HSV1	Swab
Influenza A/B	Aspirates, BAL, sputum, swab, pharyngeal lavage
hMPV	Nasal secretion
Paraninfluenzavirus 1–4	Aspirates, BAL, nasal secretion, swab
Coronavirus	Aspirates, nasal secretion, sputum, swab
Rhinovirus	Nasal secretion, tracheal and pharyngeal lavage
Enterovirus	Nasal secretion, pharyngeal lavage
RSV	Aspirates, sputum, swab, nasal secretion, pharyngeal lavage
Bocavirus	Nasal secretion, tracheal and pharyngeal lavage



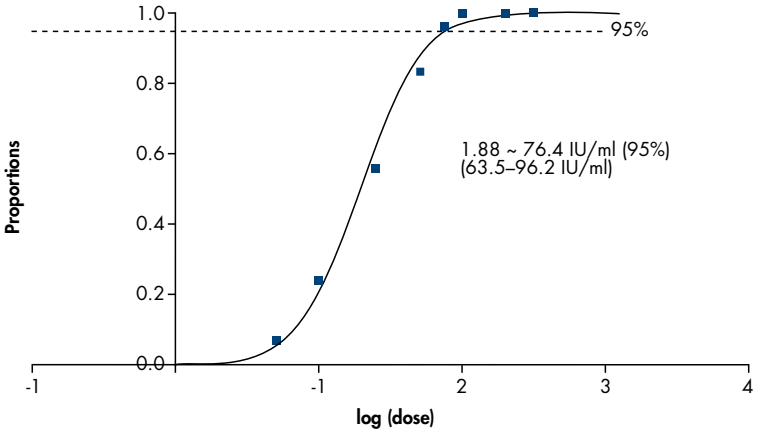


Figure 4. Probit analysis: HI Virus-1 (Rotor-Gene Q). Analytical sensitivity in consideration of the purification (QIAsymphony DSP Virus/Pathogen Kit) of the *artus* HI Virus-1 QS-RGQ Kit* on the Rotor-Gene Q.

* The *artus* HI Virus-1 QS-RGQ Kit may not be available in all countries. Please contact QIAGEN or your local QIAGEN distributor for availability.

Food safety testing

QIAGEN's *mericon* portfolio of food safety testing products is one of the broadest on the market. Combining innovative technology with expertise in molecular testing for the crucial issues of public safety and quality control, these high-quality solutions yield rapid and sensitive results from a wide range of starting materials.

The *mericon* portfolio includes solutions for safe and reliable identification of a broad range of food pathogens, such as *Salmonella* spp., *Listeria* spp., *Campylobacter* spp., verotoxin-producing *Escherichia coli*, *Cronobacter* spp., *Staphylococcus aureus*, *Legionella* spp., *Shigella*, and *Yersinia enterocolitica*.

Testing for food pathogens can be automated using the QIAsymphony RGQ and *mericon* products.

- Automated pathogen DNA extraction
- Automated PCR assay setup on the QIAsymphony AS module
- Pathogen detection on the Rotor-Gene Q

The QIAsymphony RGQ is a unique integrated workflow solution for food safety testing. It provides standardized analyses and can increase your laboratory's throughput, as it takes just one or two working days to go from sample to result. The continuous sample-loading feature of the QIAsymphony SP further increases laboratory efficiency by reducing instrument downtime to a minimum. The workflow setup is flexible and tailored to fit the specific needs of modern food safety laboratories.

Human identity and forensics

QIAsymphony offers unequalled quality in DNA purification and assay setup in human identity and forensics analyses. Blood, buccal swabs, and forensic stains can be used as sample material for automated purification of total DNA using the QIAsymphony DNA Investigator Kit. Suitable yields of DNA can be obtained from very small amounts of starting sample material (Figure 5). Furthermore, QIAGEN has a comprehensive assay portfolio for DNA quantification and DNA genotyping with the most versatile coverage of autosomal, gonosomal, and bi-allelic markers recommended by international standards such as ESS, ISSOL, and CODIS. Automated reaction setup on the QIAsymphony results in an integrated workflow that further streamlines the use of Investigator PCR Kits and provides rapid, reliable, and accurate analyses.

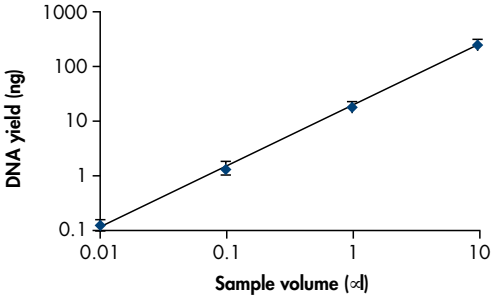


Figure 5. DNA is purified from small amounts of sample material. Serial dilutions of blood samples were extracted using the QIAsymphony SP and the DNA Investigator kit. Extracted DNA was quantified by real-time PCR.

Ordering Information

Product	Contents	Cat. no.
QIAsymphony RGQ, System		
QIAsymphony SP	QIAsymphony sample prep module, 1-year warranty on parts and labor	9001297
QIAsymphony AS	QIAsymphony assay setup module, 1-year warranty on parts and labor	9001301
Rotor-Gene Q 5plex HRM	Real-time PCR cycler and High Resolution Melt analyzer with 5 channels	9001580
Related Products		
QIAsymphony Cabinet SP/AS	For correct positioning of the QIAsymphony SP/AS instruments	9020246
QIAsymphony DSP Virus/Pathogen Mini Kit (192)	For 192 preps: Includes 2 reagent cartridges and enzyme racks and accessories	937036
QIAsymphony DSP Virus/Pathogen Midi Kit (96)	For 96 preps: Includes 2 reagent cartridges and enzyme racks and accessories	937055
QIAsymphony DSP DNA Mini Kit (192)	For 192 preps: Includes 2 reagent cartridges and enzyme racks and accessories	937236
QIAsymphony DSP DNA Midi Kit (96)	For 96 preps: Includes 2 reagent cartridges and enzyme racks and accessories	937255
QIAsymphony DNA Mini Kit (192)*	For 192 preps of 200 µl each: Includes 2 reagent cartridges and enzyme racks and accessories	931236
QIAsymphony DNA Midi Kit (96)*	For 96 preps of 1000 µl each: Includes 2 reagent cartridges and enzyme racks and accessories	931255
QIAsymphony DNA Investigator Kit	For 192 preps from casework and reference samples: Includes 2 reagent cartridges and enzyme racks and accessories	931436
QIAsymphony RNA Kit (192)	For 192 preps: Includes 2 reagent cartridges and enzyme racks and accessories	931636
QIAsymphony PAXgene Blood RNA Kit (96)	For 96 preps: Includes 2 reagent cartridges and enzyme racks and accessories	762635
QIAsymphony Certal Residual DNA Kit (96)	For 96 preps of 1000 µl each: Includes 2 reagent cartridges and enzyme racks and accessories	931855
QIAsymphony Certal Vaccine NA Kit (96)	For 96 preps of 1000 µl each: Includes 2 reagent cartridges and enzyme racks and accessories	931955
Certal CHO Detection Kit (100)	Reagents and controls for 100 x 25 µl reactions: Certal Residual DNA PCR Master Mix, Uracil-N-Glycosylase, Internal Control DNA and Assay, CHO DNA Control and CHO-Assay, High ROX dye solution, ROX dye solution, Nucleic Acid Dilution buffer, TE Buffer	211822
Certal Vero Detection Kit (100)	Reagents and controls for 100 x 25 µl reactions: Certal Residual DNA PCR Master Mix, Uracil-N-Glycosylase, Internal Control DNA and Assay, Vero DNA Control and Vero-Assay, High ROX dye solution, ROX dye solution, Nucleic Acid Dilution buffer, TE Buffer	211842

* Available until mid-2013.

Ordering Information

Product	Contents	Cat. no.
Related Products		
QIAsymphony *mericon* Bacteria Kit (360)	For 360 preps of 500 µl each: Includes 2 reagent cartridges and enzyme racks and accessories	931156
QIAsymphony DSP AXpH DNA Kit (192)	For 192 DNA preps: Includes 2 reagent cartridges and enzyme racks and accessories	937156
QIAsymphony Ni-NTA Denaturing Kit	For 384 micro-scale preps or 48 medium-scale preps: Includes 2 reagent cartridges and enzyme racks and accessories	932836
QIAsymphony Ni-NTA Native Kit	For 384 micro-scale preps or 48 medium scale preps: Includes 2 reagent cartridges and enzyme racks and accessories	932636

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 or can be requested from QIAGEN Technical Services or your local distributor.

Visit www.qiagen.com/goto/QIAsymphony to find out more!

Trademarks: QIAGEN®, QIAGEN Quality®, QIAamp®, QIAsymphony®, *artus*®, *cador*®, Certal®, EZ1®, HRM®, Investigator®, *mericon*®, QuantiFast®, QuantiTect®, Rotor-Disc®, Rotor-Gene®, Type-it® (QIAGEN Group); PAXgene® (PreAnalytiX GmbH); Sybr®(Molecular Probes Inc.); TaqMan® (Roche Group); MGB™ (Epoch Biosciences).

NOTICE TO PURCHASER:

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