

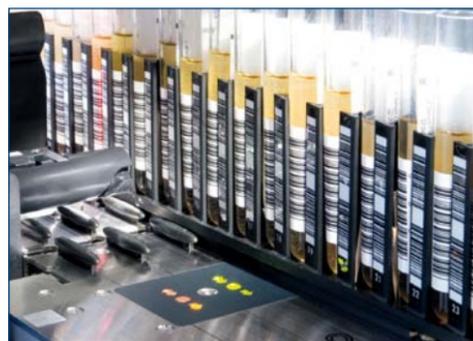
# QIASymphony® RGQ — Pure Performance





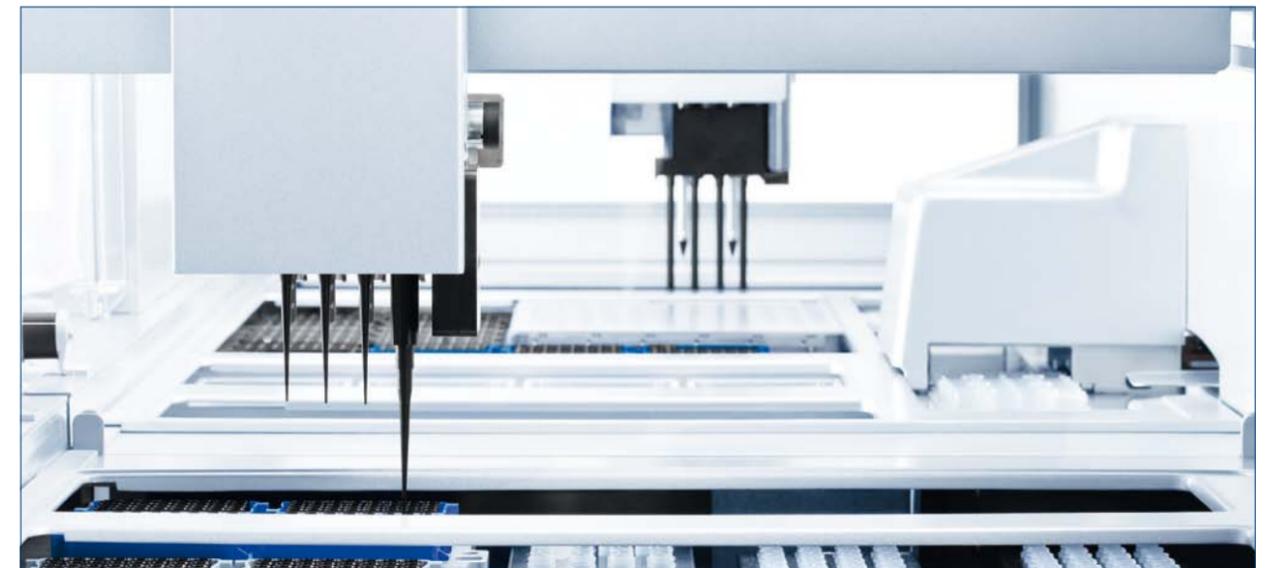
## Relax and let QIAGEN® automate your complete workflow

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 pre-filled reagent cartridges for ease of use
- Liquid-level detection, active cooling, and UV lamp for decontamination
- Applications for QIAGEN and in-house assays
- Protocol customization service and support for in-house assays



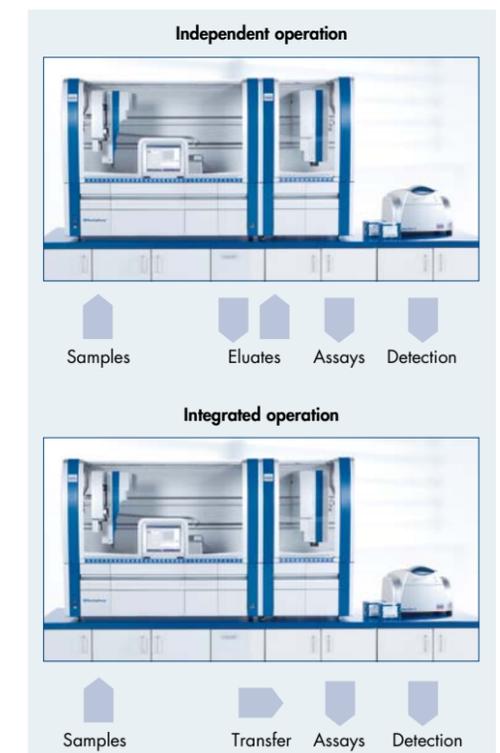
### Cutting-edge system for standardized sample preparation and PCR setup

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

Assay Setup

Detection



Biomedical  
Research

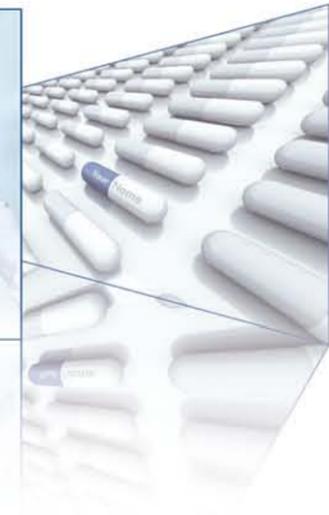
Bioprocess  
Quality Control

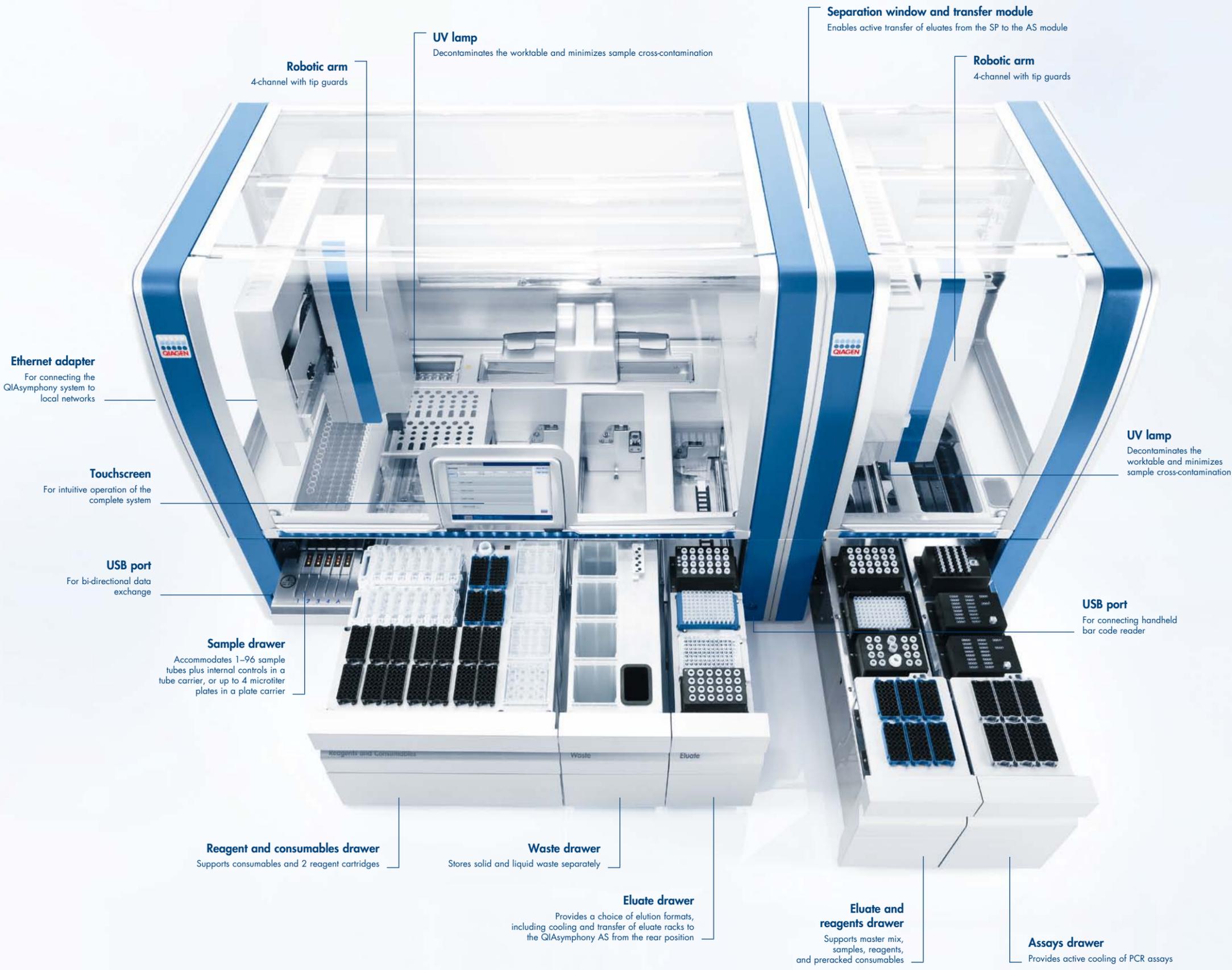
Food Safety  
Testing

Human Identity  
and Forensics

Animal Pathogen  
Testing

Drug  
Development





**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

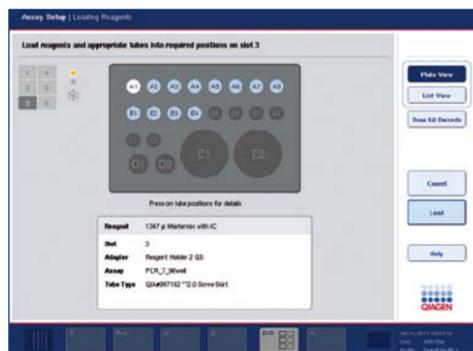




Sample information after sample loading.



Assay definition of 2 PCR assays.



Reagent loading information for the QIASymphony AS.

### 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.

### 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).

### 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<sup>7</sup> 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](http://www.qiagen.com/goto/QIASymphony).

### Innovative reagent cartridges for ultra-efficient purification

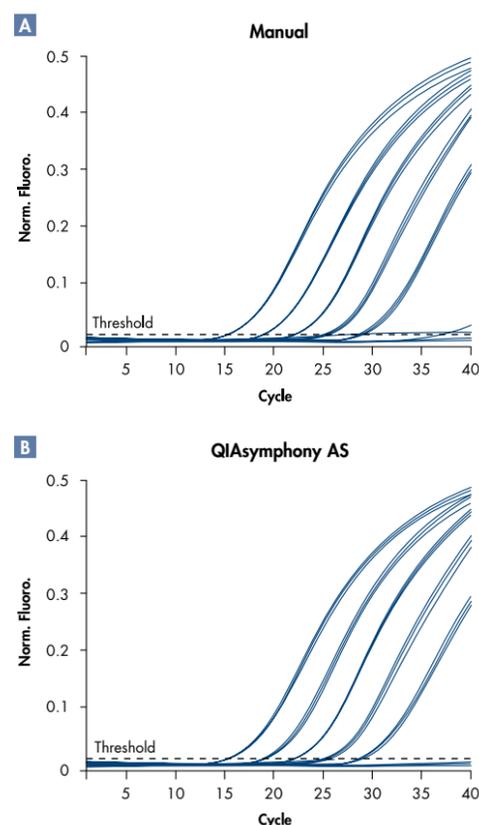
QIASymphony Kits are safe and exceptionally easy to use. Ready-to-run, bar code-labeled reagent cartridges are prefilled with all reagents required for the purification procedure, including accessory enzymes. Worktable setup is rapid and saves you valuable time. Simply place up to 2 reagent cartridges 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 x 10 <sup>7</sup> 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 merican® Bacteria	Purification of bacterial DNA from 500 µl enrichment culture
QIASymphony Ni-NTA Denaturing	Purification of 6xHis-tagged denatured proteins from up to 5 ml <i>E. coli</i> or up to 2.5 x 10 <sup>7</sup> eukaryotic cells
QIASymphony Ni-NTA Native	Purification of 6xHis-tagged native proteins from up to 5 ml <i>E. coli</i> or up to 2.5 x 10 <sup>7</sup> 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 x 10 <sup>7</sup> 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.

## 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 (Figure 1). 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 and endpoint PCR Kits. 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 identification assays

If you design your own in-house pathogen identification 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.

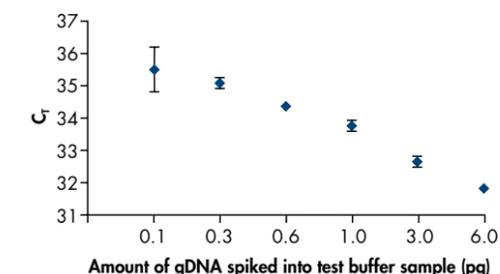
**Table 2. Automate proven QIAGEN PCR kits with the QIASymphony AS\***

Application	Method	Kit	Description
Gene expression analysis	Real-time RT-PCR	Rotor-Gene kits for SYBR® Green or probe-based detection	Rapid and reliable qRT-PCR on the Rotor-Gene Q
	Real-time RT-PCR	RT <sup>2</sup> Profiler PCR Arrays for SYBR Green detection	Pathway-focused qRT-PCR
Pathogen identification	Real-time PCR and RT-PCR	QuantiFast® Pathogen +IC Kits	Highly sensitive detection of pathogen RNA or DNA, including an internal control
	End-point RT-PCR	QIAGEN OneStep RT-PCR Kit	Highly sensitive detection of viral RNA
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	Real-time PCR	mericon food testing kits	Real-time PCR assays to detect food-borne pathogen DNA
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	Optimized HRM PCR kits for sensitive detection and screening of differential methylated regions.
	Probe-based real-time PCR	EpiTect MethylLight PCR Kit EpiTect MethylLight Assays	Portfolio of real-time PCR kits for highly sensitive quantification of specific methylated regions and SNPs
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](http://www.qiagen.com/goto/PCR). For availability of QIASymphony AS protocols, please inquire.

## 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 2). 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 2. Reliable purification of small quantities of residual host-cell DNA.** Genomic CHO DNA was spiked into buffer AEX to create 6 test buffer samples. Four 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.



## 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*.

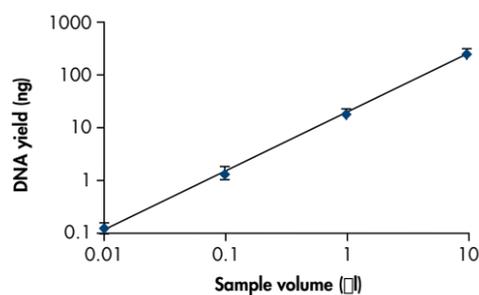
Testing for food pathogens can be automated using the QIASymphony RGQ and *mericon* products.

- 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

The QIASymphony SP offers excellent quality in DNA purification for 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 sample material (Figure 3). Furthermore, QIAGEN has a rapid and sensitive solution for the critical quantification step of the forensic workflow. Quantify human DNA in 48 minutes with the Investigator Quantiplex Kit and human/male DNA in 51 minutes with the Investigator Quantiplex HYres Kit using the Rotor-Gene Q real-time PCR cyclers. Automated reaction setup on the QIASymphony AS allows for an integrated workflow that further streamlines your human identity and forensics testing.



**Figure 3. 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.
<b>QIASymphony RGQ, System</b>		
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 cyclers and High Resolution Melt analyzer with 5 channels	9001580
<b>Related Products</b>		
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 (192)	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.

† Available in 2013.

## Ordering Information

Product	Contents	Cat. no.
<b>Related Products</b>		
QIASymphony <i>mericon</i> 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](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

Visit [www.qiagen.com/goto/QIASymphony](http://www.qiagen.com/goto/QIASymphony) to find out more!

Trademarks: QIAGEN®, QIAGEN Quality®, QIAamp®, QIASymphony®, *artus*®, *cador*®, Certal®, EZ1®, HRM®, Investigator®, *mericon*®, QuantiFas®, 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:**

The purchase of this product (Rotor-Gene Q, Rotor-Disc) includes a limited, non-transferable license to certain patents (see details below) surrounding rapid polymerase chain reaction (PCR) methods and instrumentation, the use of SYBR® Green I in PCR reactions, melting curve analysis, analysis methods of DNA melting data, specifically high resolution melting (HRM) and others.

Rotor-Gene Q. For applicable countries: The purchase of this product includes a limited, non-transferable license to one or more of US Patents Nos 6,787,338; 7,238,321; 7,081,226; 6,174,670; 6,245,514; 6,569,627; 6,303,305; 6,503,720; 5,871,908; 6,691,041; 7,387,887; and U.S. Patent Applications Nos. 2003-0224434 and 2006-0019253 and all continuations and divisionals, and corresponding claims in patents and patent applications outside the United States, owned by the University of Utah Research Foundation, Idaho Technology, Inc., and/or Roche Diagnostics GmbH, for internal research use or for non-in vitro diagnostics applications. No right is conveyed, expressly, by implication or estoppel, for any reagent or kit, or under any other patent or patent claims owned by the University of Utah Research Foundation, Idaho Technology, Inc., and/or Roche Diagnostics GmbH, or by any other Party. For information on purchasing licences for in-vitro diagnostics applications or reagents, contact Roche Molecular Systems, 4300 Hacienda Drive, Pleasanton, CA 94588, USA.

Rotor-Gene Q. For applicable countries: This real-time thermal cycler is licensed under pending U.S. Patent rights for an apparatus or system covering automated thermal cyclers with fluorescence detectors and seeking priority to U.S. Serial No. 07/695,201 and corresponding claims in any foreign counterpart patent thereof owned by Applied Biosystems LLC, in all fields, including research and development, all applied fields, and human and animal in-vitro diagnostics. No rights are conveyed expressly, by implication or estoppel to any patents on real-time methods, including but not limited to 5' nuclease assays, or to any patent claiming a reagent or kit. For further information on purchasing additional rights, contact the Director of Licensing at Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California, 94404, USA.

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