

# Autopure LS<sup>®</sup> — Pure Capacity

New



Sample & Assay Technologies



The [Autopure LS](#) enables fully automated purification of genomic DNA from large-volume samples. Proven [Puregene®](#) chemistries and optimized protocols provide high yields of pure DNA from a broad range of sample types and sizes ([Table 1](#)). Purified DNA is of high quality and high molecular weight. Processing 8 or 16 samples per batch, the [Autopure LS](#) delivers the capacity and flexibility required by laboratories performing long-term DNA banking, linkage analysis, and population-based genetic association studies.



► **The Autopure LS enables:**

- Walkaway purification of DNA suitable for archiving
- Yields of up to 350 µg DNA per 10 ml blood
- DNA purification from a broad range of sample types and sizes
- Purification of highly stable DNA ready for use or archiving
- A streamlined, efficient workflow

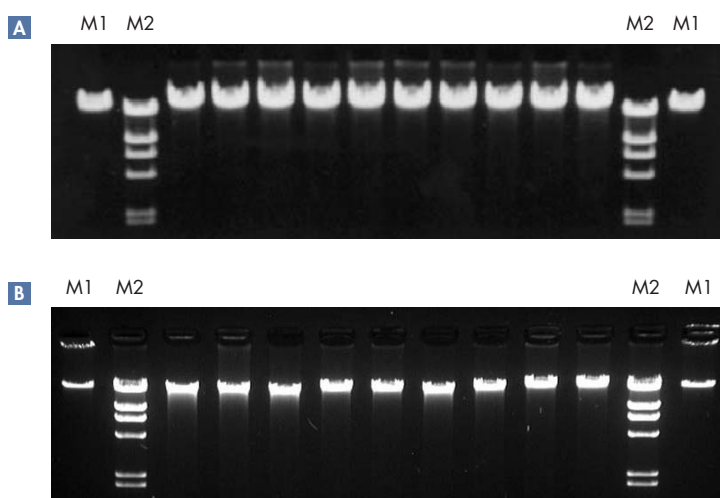
**Table 1. DNA purification from a wide range of samples and sizes**

Sample type	Sample size	Average DNA yield	Average $A_{260}/A_{280}$ ratio
Fresh or frozen whole blood	Up to 10 ml	35 µg/ml	1.84
Fresh or frozen buffy coat or packed cells	From up to 10 ml whole blood	35 µg/ml	1.84
Cultured cells in suspension or pellet	Up to $1.5 \times 10^8$ cells	Up to 1 mg	1.76
Cell lysates	1 ml, 5 ml, 10 ml	Yields vary depending on sample type and cell lysis volume	–

Custom protocols are available for other samples, such as compromised blood, clotted blood, cord blood, amniotic fluid, and buccal samples.

## Highly stable DNA suitable for archiving

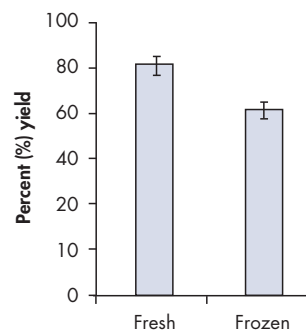
A critical factor for long-term DNA archiving is purification of DNA that is free of contaminants that could potentially result in DNA degradation. In addition, sensitive downstream applications demand use of DNA of the highest quality and molecular weight. The [Autopure LS](#), in combination with proven [Puregene](#) chemistries, enables purification of highly stable DNA well-suited for archiving. Results of stringent quality testing in what is believed to be the longest ongoing stability test demonstrate that DNA purified using the [Autopure LS](#) and stored for at least 16 years at 4°C shows no signs of degradation ([Figure 1](#)). Stored DNA performs as well today as it did immediately after purification in 1992.



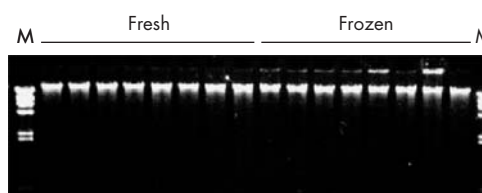
**Figure 1. Highly stable DNA.** DNA purified from human whole blood was analyzed by agarose gel electrophoresis **A** immediately after purification in 1992 and **B** after storage for 16 years at 4°C. **M1** and **M2**: Markers.

## High yields of pure genomic DNA

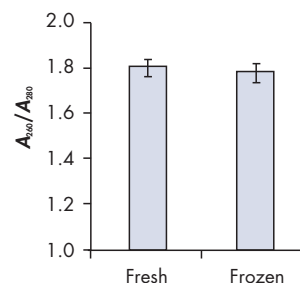
The [Autopure LS](#) enables purification of high yields of DNA from human whole blood — even from samples that have been frozen and thawed ([Figure 2](#)). The standardized, automated procedure enables reproducible purification of high-quality DNA demonstrated by molecular weights of 100–200 kb ([Figure 3](#)) and  $A_{260}/A_{280}$  ratios of 1.7 to 1.9 ([Figure 4](#)).



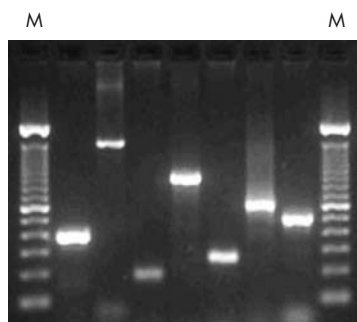
**Figure 2. High DNA yields.** DNA purified from fresh and frozen (–80°C) human whole blood was analyzed spectrophotometrically. DNA yields were higher for fresh samples than for frozen.



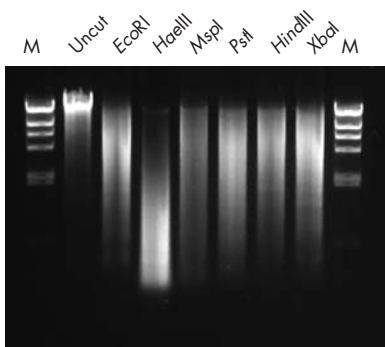
**Figure 3. High molecular weight DNA from fresh and frozen blood samples.** DNA was purified from 10 ml replicates of fresh or frozen (–80°C) human whole blood samples. Purified DNA was analyzed by agarose gel electrophoresis. **M**: Markers. DNA from both fresh and frozen samples exhibited the expected molecular weight (50 kb or greater), with typical weights in the 100–200 kb range.



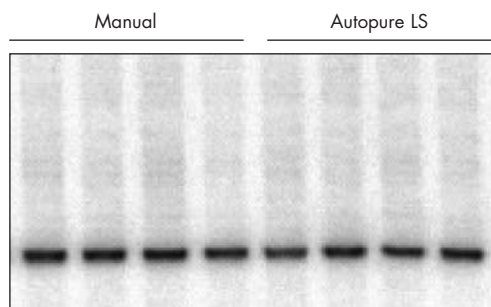
**Figure 4. Pure DNA from fresh and frozen blood samples.** DNA purified from fresh and frozen (–80°C) human whole blood was analyzed spectrophotometrically. Quality as measured by  $A_{260}/A_{280}$  ratios was nearly identical for fresh and frozen samples.



**Figure 5. Successful PCR.** DNA purified from human whole blood was analyzed using PCR amplification with primers specific for 7 different loci. **M:** Markers. DNA was successfully amplified and amplicons of the expected sizes (198–1501 bp) were detected for all loci tested.

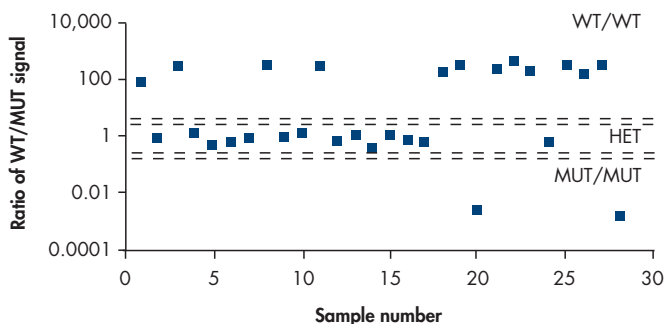


**Figure 6. Efficient restriction digestion.** DNA purified from 10 ml replicates of human whole blood samples was digested with 6 restriction endonucleases and analyzed by gel electrophoresis. **M:** Markers. Efficient digestion of the DNA was observed with all enzymes tested.



**Figure 8. Reliable Southern analysis.** DNA was purified from 10 ml replicates of human whole blood samples using either the manual Puregene method or the Autopure LS instrument. Purified DNA was analyzed by Southern blotting using a probe specific for the T cell receptor J2 locus. DNA purified with the two methods performed equivalently.

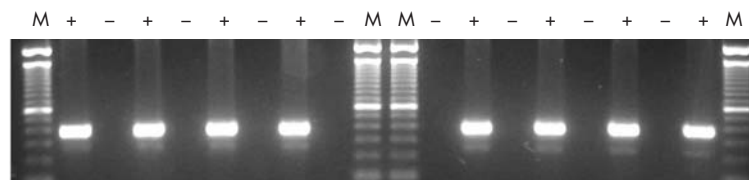
The [Autopure LS](#) purifies high-performance DNA, suitable for use in the most sensitive downstream applications, including PCR ([Figure 5](#)), restriction digestion ([Figure 6](#)), SNP analyses ([Figure 7](#)), and Southern blotting ([Figure 8](#)).



**Figure 7. High performance in SNP analysis.** DNA purified from 28 different human whole blood samples was analyzed using the Invader<sup>®</sup> MTHFR SNP assay. SNP genotypes were successfully determined for all samples.

## Exclusion of sample carryover

Lack of sample-to-sample carryover is a prerequisite for reliable results. To evaluate the risk of sample-to-sample carryover, the automated purification procedure on the [Autopure LS](#) was subjected to rigorous testing using an alternating checkerboard setup of negative and positive samples. All of the positive samples were detected by PCR analysis. All negative samples, in the checkerboard runs, were unresponsive ([Figure 9](#)). This demonstrates that the robust and standardized procedure minimizes the risk of sample-to-sample cross-contamination.



**Figure 9. No detectable cross-contamination.** Genomic DNA was purified from human whole blood samples and PBS samples, arranged in a checkerboard pattern using the automated procedure on the Autopure LS. After PCR, samples were analyzed by agarose gel electrophoresis. +: Human whole blood; -: PBS samples; **M:** Markers. No DNA was detected in PBS samples.



# Convenient control and sample tracking

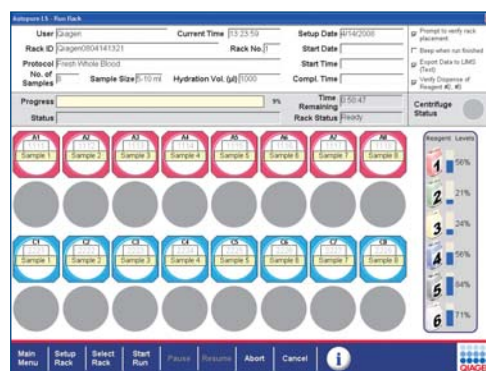


## ► Easy-to-use Autopure software

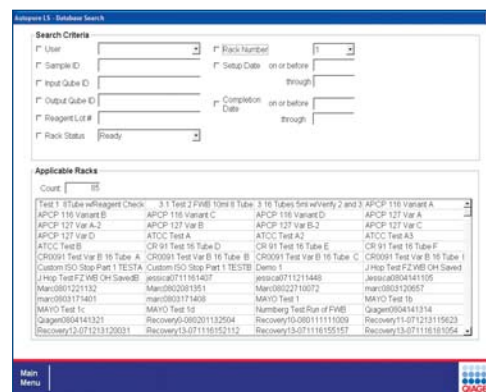
The [Autopure software](#) provides diagnostic and troubleshooting functions that make it easy for users to view the state of the instrument, including current step being processed, protocol status, and reagent fluid levels.

## Effortless data management

To simplify data collection, information from each run is automatically stored in an integrated, searchable database. The software enables researchers to easily export collected data to a LIMS (Laboratory Information Management System). In addition, certain rack data can be imported into the "Setup Rack" screen enabling more convenient instrument setup. Bar coded tubes are automatically tracked, providing a complete chain-of-custody record for all samples.



**Figure 10. Monitoring process screen.** As the instrument starts processing the rack, the progress of the step being executed is displayed on the "Run Rack" screen. The time remaining is displayed at the top right corner of the screen.



**Figure 11. Search database screen.** The Autopure LS Rack Report stores protocol descriptions, including the sample type, sample size, and number of samples, as well as identifiers of samples and input and output caps. The Rack Report also indicates processing run information, including reagent lot numbers, start date and time, completion time, logged errors during a run, and operator identifier. Rack Reports are stored in a searchable database on the Autopure LS.



## ► Unrivaled instrument and application support

[QIAGEN Instrument Service](#) provides comprehensive support services for your [Autopure LS](#) to ensure the continued success of your automated applications.

[QIAGEN Instrument Service](#) offers a wide range of flexible Service Support products, giving you peace of mind and letting you enjoy complete coverage and cost control. Our Application Services and Training Programs give you the freedom and flexibility to adapt your system to specific or changing research needs. With ISO 9001/ISO 13485 certification and an international team of highly qualified and experienced Support Specialists, we deliver the high-quality service that you deserve and that your applications demand.

## Budget with absolute certainty

With our warranty extension options, ownership of laboratory instruments is made easy. A Warranty PLUS Service Support Agreement gives you greater financial control and allows defined budgeting, meaning you will never be surprised by unexpected service costs. In addition, you immediately benefit from enhanced warranty coverage.

**Table 2. Instrument specifications**

<b>Dimensions</b>	173 cm (H) x 191 cm (W) x 84 cm (D) 68.25 in. (H) x 75 in. (W) x 31.25 in. (D)
<b>Weight (uncrated)</b>	689 kg (1500 lbs)
<b>Required clearances</b>	
<b>Rear</b>	20.5 cm (8 in.)
<b>Right</b>	15 cm (6 in.)
<b>Left</b>	61 cm (24 in.)
<b>Front</b>	122 cm (48 in.)
<b>Environmental requirements</b>	
<b>Temperature</b>	20–25°C (68–76°F)
<b>Humidity</b>	20–75%, noncondensing
<b>Electrical requirements</b>	200–240 VAC, 3840 VA, 50/60 Hz, 1-phase
<b>Batch size</b>	8 or 16 samples
<b>Sample processing</b>	Samples are processed in Autopure Qubes®, specially designed 50 ml polypropylene tubes with quarter-turn caps and a square flange for precise positioning and handling. Autopure Qubes are fitted for bar code tracking.
<b>Installation and training</b>	Onsite
<b>Required maintenance</b>	
<b>Daily</b>	None required
<b>Weekly</b>	Centrifuge maintenance
<b>Annually</b>	Preventive maintenance

## A Warranty PLUS Service Support Agreement enables:

- Complete coverage and cost control
- Immediate access to priority response times
- Optimal instrument performance
- Reduced service costs

For more information about our products for service and support, visit [www.qiagen.com/Service](http://www.qiagen.com/Service).

## Ordering Information

Product	Contents	Cat. no.
▶ Autopure LS	Robotic workstation for automated purification of genomic DNA using Autopure reagents, 1-year warranty on parts and labor	9001340
<b>Accessories</b>		
▶ Autopure Waste Container	Waste container for the Autopure LS	9017686
▶ Autopure Pro-K Pump	Optional proteinase K dispensing system; for use with the Autopure LS	9017687
▶ Autopure Glycogen Solution (5 ml)	5 ml Autopure Glycogen Solution	949002
▶ Autopure RBC Lysis Solution (9500 ml)	9500 ml Autopure RBC Lysis Solution	949004
▶ Autopure Cell Lysis Solution (3800 ml)	3800 ml Autopure Cell Lysis Solution	949006
▶ Autopure Precipitation Soln. (3800 ml)	3800 ml Autopure Precipitation Solution (for proteins)	949008
▶ DNA Hydration Solution (500 ml)	500 ml DNA Hydration Solution	158916
▶ Autopure Proteinase K Solution (3500 µl)	3500 µl Autopure Proteinase K Solution	949012
▶ Autopure RNase A Solution (19 ml)	19 ml Autopure RNase A Solution	949014
▶ Autopure 100% Isopropanol (3800 ml)	3800 ml Autopure 100% Isopropanol	949016
▶ Autopure 70% Ethanol (3800 ml)	3800 ml Autopure 70% Ethanol	949018
▶ Autopure Qubes E (192)	192 Autopure Qubes E and Caps	949020
▶ Autopure Qubes D (192)	192 Autopure Qubes D and Caps	949022
<b>Warranty extensions</b>		
▶ Warranty PLUS 2 Premium, Autopure	3-year warranty, 1 preventive maintenance visit per year, 24-hour priority response, all labor, travel, and repair parts	9240379
▶ Warranty PLUS 2, Autopure	3-year warranty, 1 preventive maintenance visit per year, 48-hour priority response, all labor, travel, and repair parts	9240380
▶ Warranty PLUS 1, Autopure	2-year warranty, 1 preventive maintenance visit per year, 48-hour priority response, all labor, travel, and repair parts	9240381

The Autopure LS instrument is intended to be used only in combination with Autopure reagents for applications described in the *Autopure LS User Manual*.

**Call your QIAGEN sales representative today and find out how automated DNA purification can streamline your workflow and improve your productivity!**

Trademarks: QIAGEN®, Autopure LS®, Puregene®, Qubes® (QIAGEN Group); Invader® (Third Wave Technologies).  
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**Canada** = Orders 800-572-9613 = Fax 800-713-5951 = Technical 800-DNA-PREP (800-362-7737)

**China** = Orders 0086-21-3865-3865 = Fax 0086-21-3865-3965 = Technical 800-988-0325

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