

HUMAN HEALTH

ENVIRONMENTAL HEALTH



JANUS

FORENSIC WORKSTATION
FOR HIGH THROUGHPUT
DNA SAMPLE PROCESSING



JANUS® Automated Workstation


PerkinElmer[®]
For the Better



NOW, HERE'S AN AUTOMATION TOOL DESIGNED FOR THE UNIQUE NEEDS OF THE FORENSIC LAB

The JANUS® Forensic Workstation from PerkinElmer® streamlines DNA isolation, quantitation and PCR setup procedures to increase productivity, eliminate human error, reduce contamination, and increase data integrity and traceability. You'll realize higher throughput sample processing along with reliable and high quality Short Tandem Repeat (STR) typing analyses.

The Forensic Workstation comes with built-in automated DNA protocols that let you:

- Save hours on forensic DNA isolation – extracts DNA from virtually any type of casework or database forensic sample.
- Speed up real-time quantitative PCR (RT-QPCR) – quickly determine sample suitability for forensic DNA typing.
- Ensure successful downstream STR typing analysis – automate DNA normalization for widely varying concentrations of DNA (10,000-fold range) and PCR setup.

Streamline sample processing with proven JANUS performance

The JANUS platform is known for its reliability, flexibility and user-friendly software, and has become a hallmark robotic system for genomic, life science and pharmaceutical laboratories around the world. The powerful JANUS Forensic Workstation is a fully automated sample preparation and liquid handling robotic system that will seamlessly streamline the processing of casework and database samples in forensic laboratories.

- Provides automated protocols and the necessary hardware to conduct the fundamental processes of DNA analysis.
- Reliably performs tedious and repetitive tasks often associated with these applications.
- Provides protocols to extract DNA from various sources to deliver reliable, consistent, automated DNA isolation in microplate or single tube format for rapid throughput with decreased human error.
- Isolates DNA from various sample types in the same plate.
- Automates all DNA sample processing including DNA isolation, quantitation, normalization and PCR setup for STR DNA typing analysis.

Forensic applications-ready workstation

The following walk-away, automated protocols are available for all the procedures necessary to prepare samples for forensic DNA typing:

- DNA isolation
- DNA quantification
- DNA normalization and dilution
- PCR setup for STR DNA typing analysis

Save hours on forensic DNA isolation

Automating DNA isolation using the Forensic Workstation and a Promega® DNA IQ™ System protocol increases throughput at least 10-fold compared to manual processing. This solution automates the pipetting, magnetic separation, heating, and shaking/mixing steps of the DNA IQ™ protocol, improving performance and increasing productivity. DNA is extracted from 96 casework samples in approximately two hours. DNA contained in saliva or blood-stained Whatman® FTA® card punches can also be processed with high reliability using the Forensic Workstation.

Speed up QPCR

The Forensic Workstation quickly prepares DNA samples for RT-QPCR analysis using the ABI Quantifiler® Kit (1-2 µl DNA additions). Both human DNA and Y-specific DNA sequences can be quantified in the same plate. Additionally, we have automated the Centre for Forensic Sciences (CFS, Toronto, ON) QPCR method using only 5 µl of DNA sample. Eighty samples (plus sixteen standards) can be processed in approximately thirty

minutes, providing rapid quantitation of DNA in samples and determination of suitability for forensic DNA typing. Once QPCR DNA concentrations are obtained, JANUS can then provide downstream processing such as DNA normalization protocols.

Ensure successful downstream STR typing analysis

To ensure successful downstream STR typing analysis, the Forensic Workstation automates DNA normalization and PCR setup. The protocol carries out all steps for forensic DNA normalization and PCR setup using the ABI AmpFLSTR® Profiler Plus® Amplification Kit.

Using the results from the QPCR analysis, the workstation dilutes and normalizes all DNA samples to a fixed concentration. It creates the PCR master mix and assembles reactions in a 96-well PCR plate by using automated protocols. Processing time is less than forty minutes for eighty samples and two DNA control standards. The process is easily amenable for use with any commercial forensic STR and Y-STR analysis kit such as Promega® PowerPlex®, ABI COfiler® and ABI Identifiler® Kits.

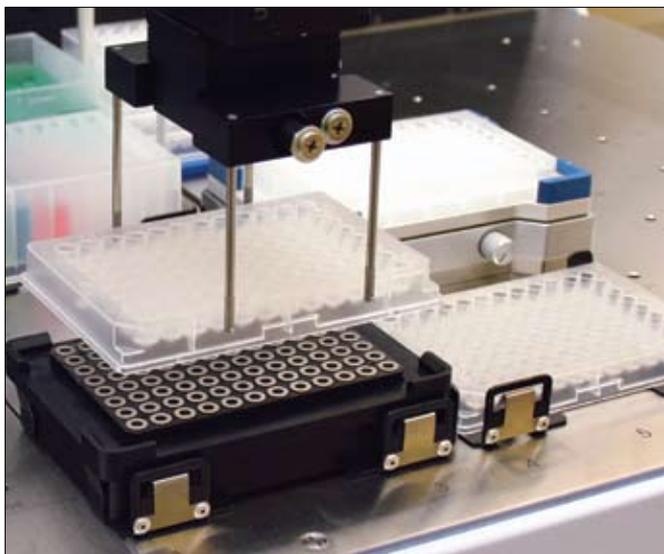


Figure 1. The JANUS Gripper provides full automation of applications by providing on and off deck labware movement between a variety of peripheral devices. The toroid magnet, designed specifically with automation in mind, effectively captures paramagnetic particles for efficient washing and elution steps within the DNA IQ™ application.



Figure 2. The JANUS Varispan arm (8-tip shown), provides the flexibility and pipetting precision needed for full forensic application processing from DNA purification and normalization to PCR master mix creation and PCR setup.

Move your forensic lab forward with JANUS automation

The Forensic Workstation is the answer to your DNA sample processing challenges. You'll eliminate backlog and improve quality and consistency with the proven user-friendly automation this instrument provides. It's everything you need when you cannot do without:

Enhanced reliability for error-free processing and superior data quality

- Delivers consistent, reliable and proven protocols from DNA isolation to PCR setup.
- Reduces human handling to help eliminate contamination.
- Ensures sample integrity with no cross-contamination or carry-over from adjacent wells.
- Handles automated spotting of barcode-labeled blood samples onto FTA® cards for database archival of convicted offender whole blood samples.

More flexibility to handle several protocols and higher throughput reducing processing times and backlog

- Analyzes 96 forensic DNA samples in approximately two hours – a 10-fold increase in throughput when compared to manual processing.
- Processes numerous sample types, including swabs, fabric, whole blood, blood stains, and gum.
- Varispan™ feature enables reformatting of samples from tubes to microplates.
- Handles magnetic particle or filtration-based protocols for either large database or small casework samples.
- VersaTip® PLUS technology enables use of disposable or fixed washable tips and changes "on-the-fly" between or within an assay; several volume options available. Disposable filter tips reduce sample cross-contamination.

- Delivers high throughput processing with either 4-tip or 8-tip JANUS configurations.
- Independently programs heating of up to 4 microplates from ambient to 105 °C with the heater option.

Reliable security and safety for preserving the chain of evidence throughout the process

- 21 CFR Part 11 compatibility ensures security of the system throughout the process by providing electronic signature, instrument access security, data security and audit logs.
- Includes Microsoft® Access® database software for real-time, user-friendly cataloging capability to store run log files related to the protocol for auditing, post-run analysis, transfer of data to Excel® for manipulation, and to provide input data for other instruments.
- Real-time error feedback with Liquid Level Sensing (LLS) detects and pauses the protocol if a malfunction is detected, saving time and precious reagents.
- Reagent batch ID entry allows for assigning reagent lot numbers to reagent troughs for tracking and report generation. Assign and record batch ID's for all the reagents used in a protocol for easy reproducibility at a later date.

Automation designed to improve forensic laboratory productivity

With ever increasing demand on analysis of DNA evidence for database and casework samples, automation has become a necessity. The Forensic Workstation from PerkinElmer provides a complete automation solution for meeting today's demand for forensic DNA analysis. Not only is the workstation reliable and flexible, it increases throughput, minimizes human error and provides superior data quality to manual processing. It comes with standardized protocols for a variety of procedures that will simplify sample handling, DNA extraction, quantification and PCR setup in a timely fashion. The Forensic Workstation is the answer to reducing your backlog without compromising quality.

To learn more about the JANUS Forensic Workstation and our automated liquid handling solutions, visit www.perkinelmer.com/labautomation.

PerkinElmer, Inc.
940 Winter Street
Waltham, MA 02451 USA
P: (800) 762-4000 or
(+1) 203-925-4602
www.perkinelmer.com



For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

Copyright © 2007-2009, PerkinElmer, Inc. All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc. All other trademarks are the property of their respective owners.

007147B_01

Printed in USA