

Next Generation Forensic DNA Instrumentation Solutions from Hamilton Robotics

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Within all areas of forensic science, there is a continual need for new strategies and techniques - and the development of matching instrumentation. The modern forensic DNA crime laboratory constantly seeks ways to reduce casework backlogs – and to rethink DNA sample preparation and analysis processing using instruments that are robust and performance-verified. Thus, it is crucial that this instrumentation be designed to not only meet the capacity, but also fit within the physical and technical support limitations of both small and large throughput forensic DNA laboratories. Over 120 Hamilton robotic installations in crime labs worldwide (such as Sorenson Forensics, Forensic Science Service (UK), French National Police, multiple German regional labs, AFDIL, San Bernardino County Sheriff, LIFE HID, U. of North Texas, and others) are being used to address daily sample processing needs and relieve backlogs. These installations have enabled forensic scientists to develop improved solutions for DNA processing and to shorten the time leading up to data analysis and reporting. Furthermore, the knowledge acquired from this large customer base has given Hamilton Robotics a remarkable position, gaining expertise for database, casework and reference sample processing. This experience has led to the automation of a sizeable number of widely used vendor kit assays - from DNA extraction to PCR setup, and additionally, CE setup.

At this time, Hamilton Robotics is introducing a range of dedicated solutions and new technologies for forensic DNA Analysis. These include:

- STARlet Forensic Workstation. Fully automates an entire suite of validated forensic DNA methods (DNA preparation, quantitation, normalization & dilution and STR setup methods). The STAR Autoload with barcode scanner option supports sample tracking for tubes, plates and reagent vials, adapting to the most stringent laboratory's workflow.
- FTA Card Puncher and Pipetting Workstation. Automated Hamilton FTA card puncher and liquid handling pipetting system with card cassette carriers, novel card gripper, and high resolution imaging and software system provides a walk-away card spot punching and nucleic acid sample processing solution.
- NIMBUS 4-Tip Robotic Workstation. Small footprint, low cost platform is ideal as a dedicated system for lower throughput PCR set up, DNA extraction or quantitation setup. Compact size and price make this a perfect post-PCR workstation for CE setup.
- Large Volume Processing. New large-volume magnetic bead extraction hardware with 5 mL disposable tips can be adapted for low abundant DNA sample processing in 15 or 50 mL tubes.
- Casework Lysis Processing Workstation. New dedicated solution automates sample lysis preparation using spin columns - a major bottleneck for casework DNA sample analysis. System features a novel design sample tube with built-in spin column assembly that is fully robot-compatible. Enables fully automated, contamination free casework processing with full sample tracking capability.
- New 2D Barcode Scanner Option. New carrier-based design for STAR platforms.