

# Bespoke forensics

Two Freedom EVO® platforms are speeding up processing of DNA evidence at the Miami Valley Regional Crime Laboratory, improving efficiency and helping staff to eliminate a six month backlog of cases since coming online.



Mark Squibb with the DNA section team

needs. Several manufacturers offered systems capable of automating DNA processing, but the Freedom EVO platform was the best fit for our laboratory and workflow."

The MVRCL chose two Freedom EVO workstations to perform a range of repetitive tasks, eliminating some of the laboratory's previous bottlenecks and freeing up staff to begin processing new cases. Mark continued: "We have a Freedom EVO 200 equipped with both Liquid Handling and Robotic Manipulator Arms that is geared towards nucleic acid extraction, quantitation and amplification set-up. Samples are then transferred to our Freedom EVO 150 platform, which automatically carries out the DNA amplification reactions. The amplification set-up and reactions are performed in microplates, but our Freedom EVO 200 also has the capacity to work with either tubes or microplates, giving us the flexibility to load samples onto the workstation in a variety of formats."

"The Freedom EVO's modularity has allowed us to build a system that will precisely match our workflow, both now and in the future, and process security is obviously enhanced by eliminating many of the manual processing steps. Because we funded the automation project through several successive rounds of federal grants, the platform's open architecture gave us the option to implement automation in stages, with the flexibility to adapt to changes in our workload over time. The forensic DNA community is ever-changing in terms of the technologies it uses, and we needed to make sure that our automated system could accommodate these changes, allowing us to implement new techniques as required."

"Although we have not yet fully automated the entire DNA processing workflow, we are already seeing the benefits in terms of

Miami Valley Regional Crime Laboratory (MVRCL) is a forensic science facility based in Dayton, Ohio, US. The MVRCL provides a full range of forensic services – including fingerprinting, DNA profiling, trace evidence, firearms, document testing, drug chemistry and toxicology – to a population of over a million people in the Montgomery County community and surrounding counties. In 2012, the Center's DNA section implemented automated liquid handling, using two Freedom EVO platforms to help staff deal with the laboratory's ever-increasing workload. Mark Squibb, Laboratory Supervisor and DNA Technical Leader for the section, explained: "We identified that automating certain elements of our workflow would be beneficial, eliminating hands-on processing for repetitive tasks. We wanted to develop an automated solution that could be integrated with our existing data management software to avoid the need to completely revalidate our workflow, and began looking at liquid handling workstations that met our specific



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throughput and turnaround times. Before automation, the backlog of new cases – cases that had not yet been started – was from several weeks up to three months. Cases are now processed within a week of receipt in the laboratory, usually within a couple of days. The efficiency gains from releasing staff to perform other tasks – many of which cannot be automated – have also been significant. This had led to an increase in throughput from around 50 cases a month to over 80.”

“Automation has also made the paperwork involved in processing each case easier, freeing up even more staff time. All of the Freedom EVOs’ sample handling and pipetting logs are automatically exported to our in-house software, ensuring a comprehensive audit trail and avoiding the risk of transcription errors. Although we have not yet chosen to implement automated barcode scanning for sample identification,

we have space on the decks of both instruments to do this in the future, should our sample numbers increase further.”

“Our Tecan workstations are now central to our DNA workflow. Automation has tackled several issues with a single solution, allowing us to eliminate many of the hands-on processing steps needed prior to sequencing DNA. Analysts now simply load samples onto a robotic workstation for processing, enabling them to address other bottlenecks within the laboratory. As a result, samples can now be collected, preserved and processed within a week,” Mark concluded.

To find out more on Tecan’s forensics solutions, visit [www.tecan.com/forensics](http://www.tecan.com/forensics)

To learn more about the Miami Valley Regional Crime Laboratory, go to [www.mcoho.org/government/mvrcl/](http://www.mcoho.org/government/mvrcl/)



Freedom EVOware® provides robust process security



MVRCL’s Freedom EVOs eliminate several bottlenecks in the laboratory