

# Perfect chemistry

Italy's Reparto Investigazioni Scientifiche has invested in an HID EVOLution™ to aid analysis of DNA from crime scene samples, providing the process security that is essential in any forensic science laboratory.



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Reparto Investigazioni Scientifiche (RIS) in Rome is one of four scientific investigation departments of the Italian military police, the Carabinieri. The laboratory comprises 20 technicians and six supervisors, and is responsible for the forensic analysis of DNA evidence from crime scenes across central and parts of southern Italy, as section commander of biology Andrea Berti explained: “We analyze a wide range of sample types that can potentially be found at a crime scene – such as blood, saliva and contact traces – for DNA. We also carry out research projects, helping to develop and test new products for DNA and RNA analysis. As part of this research, we have worked with the European DNA Profiling (EDNAP) group analyzing RNA samples, the University of Rome ‘Foro Italico’ to test forensic applications of next generation sequencing, and the University of Florence for anthropological analysis of mitochondrial DNA.”

“Typically, we handle around 100 cases – in the region of 400 to 500 samples – in a single month, a large number of them low copy number DNA samples. Like many laboratories, we need as much walkaway time as possible,

and believe that any manual operation that can be performed just as well – or better – using automation should be transferred to an automated platform. Previously, we relied on a small automated platform for sample extraction, but this had a very limited capacity, and so we invested heavily in higher throughput systems for our DNA analyses, installing the HID EVOLution alongside instruments from other manufacturers to give us the flexibility to run automated protocols for the entire range of chemistries used in forensics.”

Andrea continued: “The HID EVOLution was chosen because it is a system that I know well, and which is extremely robust. All the features and applications of the instrument were explained to us by the Tecan team, and the collaboration between Tecan and Life Technologies was a great advantage, meaning that validated, optimized protocols were available for the kits we use: the PrepFiler® Automated Forensic DNA Extraction Kit, the Quantifiler® Duo DNA Quantification Kit, and the AmpFℓSTR® NGM™ Kit. The system was installed during summer 2014, and specialists from Tecan and Life Technologies helped



The RIS team with the HID EVOLution

us to set up the platform. This support was really important, ensuring that all our files are correctly imported and exported for real-time PCR quantification and DNA normalization. Training in the use of the instrument was also provided; this was very professionally delivered, with the Tecan technician working hard to solve any difficulties quickly. We now have two members of staff who are specialists in the use of the system and understand the platform perfectly, enabling them to help their colleagues carry out DNA analyses.”

“In any laboratory, and especially accredited laboratories, process security is essential. Automation allows us to process a lot of samples, and all the relevant information – including sample volumes, extraction protocols and quantification methods – must be recorded. The HID EVOLution offers complete sample tracking, helping to increase the quality of the information and documentation generated for each sample, which is so important. It allows the laboratory to follow the progress of a sample through the entire workflow, store the data, and print a report, making data management so much easier; I can always be sure that I am reading all the documentation relating to a particular sample.”

“RIS is an ISO 17025 accredited laboratory and, as such, must be very clear about the technologies and methods it uses for DNA analysis. Since the HID EVOLution was installed, we have validated the system in our laboratory, analyzing different sample types to demonstrate the performance of the instrument. The results were compared to our other, already accredited, methods and the data analyzed, and we are really pleased with the results. The validation report was accepted by the accreditation committee and, since December 2014, the Tecan workflow has been included in our schedule of ISO 17025 accredited methods,” concluded Andrea.

To find out more about Tecan’s HID EVOLution, visit [www.tecan.com/hid](http://www.tecan.com/hid)

To find out more about RIS, visit [www.carabinieri.it/arma/oggi/indagini-scientifiche](http://www.carabinieri.it/arma/oggi/indagini-scientifiche)