

# Life

IN THE

## Investigational Fast Lane

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### INTRODUCTION:

There are various types of potential evidence that can be collected at a crime scene. Unfortunately, not all the biological evidence collected will turn out to be what was expected, let alone deliver a usable DNA profile, and this can greatly impact the cost, speed and effectiveness of investigations. A small number of Sheriff's Offices are now becoming trailblazers, having turned to a new technology that is helping to reduce both inappropriate sample submissions, as well as, their need to turn to private labs. They are finding they get results quicker: *Welcome to life in the investigational fast lane.*

Current forensic analysis is a laboratory based process which requires trained personnel, and can be very labor intensive. The high demand for DNA evidence in criminal investigations can lead to backlogs, and budgetary requirements may mean that only a limited number of samples are processed for each case, at any one time. This inevitably leads to delays in arrests and convictions, especially if the wrong samples get submitted the first time around. Potential DNA evidence may even be overlooked, meaning criminals can be left free to commit further offences.

There have been a number of attempts to reduce DNA evidence backlogs through use of rapid DNA technologies. However, these systems are relatively expensive to purchase and operate, and are not particularly appropriate for screening large numbers of evidence items or crime scene stains. In contrast, the ParaDNA System is designed to deliver cost effective analysis of biological evidence by non-expert users.

This simple approach gains quicker investigational resolution by delivering a method to remove inappropriate samples, prioritizing submissions of those remaining and even delivering early 'investigational intelligence' within hours of a crime. Samples can be processed at the scene, or at appropriate police screening facilities. Different test options are available, with one format delivering actual snippets of DNA profile information that can be used to highlight the difference between victim





Stephanie Regan, Crime Scene Specialist,  
Kauai Police Department

and suspect DNA. The most recently added test option identifies types of body fluid sampled, with the aim of supporting the triage of sexual assault cases. With only about 2-3 minutes hands on time per item, it is possible to determine if human DNA is present, the source of the DNA, and some idea of the number of individuals at scene. Some Sheriff's Offices are already using the approach to support gaining buccal and arrest warrants within days of a crime taking place. We interviewed current users in the US to find out more:

***How did you learn about ParaDNA Instruments and why did you decide to buy?***

"In our department, as with many departments, decisions for DNA submissions were made based on case type and the investigators' understanding of what types of items are likely to contain biological material. With over 50% of items nationwide yielding unusable profiles and even the most knowledgeable investigators not able to greatly sway this statistic, we were hoping to identify a way to triage evidence which would be most likely to provide useful results. With the combination of the two tests available at the time, our department, prosecutors and county could see the enormous potential the system had to offer, at a very reasonable cost." (SR)

"I read about the instrument in a forensic magazine, and thought it sounded amazing. We decided to attend a product demo and found that the machine was the perfect tool to bring our serology lab to the next level. We wanted the capability to "weed-out" DNA swabs/samples which had no DNA, or only our victim's DNA." (CD)

***Is your use of the technology evolving?***

"Our use of technology is certainly evolving. The use of the ParaDNA instrument is a huge leap forward from the conventional serology we were previously completing. As we continue to use the instrument, our goal is to continue to build our local database and begin to more successfully search against it in house." (HW)

***What benefits have using ParaDNA Tests brought to your agency?***

"We've saved thousands of dollars through identifying items with minimal evidentiary value that didn't need confirmatory testing. We utilized profiles determined by the ParaDNA Intelligence Test in multiple property cases to obtain search warrants for the suspect's buccal sample, also linking them to separate incidents. Furthermore, we have been able to quickly link a suspect to the scene of a sexual assault case, again allowing us to obtain a search warrant for a suspect buccal. Finally, in a recent homicide, immediate analysis of cigarette butts at the scene identified potentially probative items out of a vast number of cigarettes left around the area." (SR)

***What are the most common case/samples types you process using ParaDNA?***

"For the Intelligence tests, this has been suspected blood. Having suspect and victim standards allows us to determine to whom each sample belongs and adjust our submission strategies accordingly. For the Screening test, our most common samples have been touch or user DNA swabs typically from firearms or vehicle interiors." (HW)

***What was your experience of implementing the technology?***

"We collaborated with our state laboratory, who certifies us to perform our work. Ultimately, the state laboratory issued a letter of support for the ParaDNA Instrument. The ParaDNA Screening Instrument itself is very simple to use. The training was sufficient and well-done. Honestly, anybody working in a forensic/evidence unit can learn to operate the machine. It's extremely user-friendly." (CD)

"Our implementation began with in-house training that provided ample practice to those who were going to utilize the system. LGC's support has not stopped there. They continue to push the system to perform even better, provide more information and incorporate the specialized requests of our department. (SR) ✨