



A23 Using DNA Analysis to Assist in the Investigation of Stolen Vehicles

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After attending this presentation, attendees will understand the investigative value of DNA evidence in recovered stolen vehicles and which types of evidence generate the best results for CODIS entry.

This presentation will impact the forensic community by showing the investigative value of DNA evidence in recovered stolen vehicles.

In 2007 Las Vegas was ranked the number one city in the country in auto thefts per capita by the National Insurance Crime Bureau. At this time there was a particularly high number of Honda vehicles being stolen. In an attempt to combat this growing problem, members of the Las Vegas Metropolitan Police Department Forensic Laboratory's Biology/DNA Detail collaborated with the department's Auto Theft and Crime Scene investigators to target the collection of DNA swabs from areas of the vehicles where thieves would most likely touch: steering wheels, gear shifts and rear view mirrors. In addition, if there were any personal items left in the vehicles that did not originate from the owners, those items were also submitted for DNA analysis. Because detectives often have no tangible leads to begin investigating suspects involved in an auto theft, a DNA profile eligible to be entered into CODIS could help solve these cases.

Over 200 evidence samples were collected from 87 recovered stolen vehicles. Approximately one-third of these samples were swabs collected from steering wheels, one-third were swabs collected from gear shifts and rear view mirrors and the remaining one-third were personal items left in the vehicles and other areas with obvious biological evidence such as blood. Reference samples were only available from sixteen of the vehicle drivers and three possible suspects. All evidence samples were extracted using organic methods, quantitated using real-time PCR, amplified with a fifteen locus STR amplification kit and analyzed using capillary electrophoresis. Reference samples were processed similarly with the exception of being extracted using non-organic extraction methods.

The majority of the DNA profiles obtained from the swabs collected from the steering wheels, gear shifts and rear view mirrors were consistent with mixtures of at least three individuals. With very few reference standards available from vehicle drivers a putative perpetrator profile was not able to be deduced for searching in CODIS. Approximately one-fourth of samples produced inconclusive or no DNA profile results. However, the majority of personal items left in the vehicle yielded single source DNA profiles eligible for upload to CODIS.

Based on the results of the study, it was concluded that personal items and obvious biological evidence yield the highest success rate in generating CODIS eligible profiles. Without the submission of vehicle owner standards, DNA mixture profiles obtained from steering wheels and other car parts are of limited investigative help.

DNA, Auto Theft, CODIS