

# Validation of StockMarks for Dogs Genotyping Kit for Canine DNA Profiling in Forensics

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Given that pets live in close proximity to their owners, it is not uncommon to find canine DNA at crime scenes. As genetic and forensic technology advances, new non-human DNA profiling kits have been developed. The purpose of this research study is to assess the current and prospective reliability and robustness of the StockMarks® for Dogs Genotyping Kit (Applied Biosystems, Foster City, CA) in the amplification of microsatellite markers recommended by the American Kennel Club (AKC). Dogs will be sampled using buccal swabs to obtain the biological material for DNA typing. Once extracted and quantified the DNA will be amplified via PCR and sequenced through capillary electrophoresis. Several tests will be performed to evaluate the STR multiplex such as sensitivity testing, reproducibility studies, peak height ratio determination, artifact analysis and characterization, mixture analyses and species specificity. Current limitations of the StockMarks® for Dogs Genotyping Kit include the lack of a sex-determining marker which will be added as part of this research project. In addition, DNA from fecal samples will be tested as part of an innovative strategy to assess the performance of the kit. It is expected that the canine DNA samples will amplify successfully and consistently generate reliable and reproducible results from small amounts of genetic material. By identifying possible drawbacks and working to improve them, the validation studies will help optimize the kit in the hopes of making it more suitable for research and forensic case work, particularly for utilization at the International Forensic Research Institute (IFRI) of Florida International University.