



B174 Extraction and Amplification of Nuclear DNA From Shed Dog Hairs

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Attendees will learn how to successfully extract and amplify several highly variable canine microsatellites for unique identity testing from shed dog (*Canis familiaris*).

Upon completion of this research DNA profiles of unrelated dogs from different breed origin will be produced. This will not only provide verification of identity but will also display genetic diversity within inbred dogs. This presentation will impact the forensic community and/or humanity by providing a valuable asset to forensic science by opening new possibilities for linking suspects to crime scenes or victims.

Hypothesis: That it is possible to extract genomic DNA from shed dog hairs to facilitate the animal's identification, parentage verification, and possibly link suspects to crime scenes or victims. At present, very little effort has been made to extract nuclear DNA from dog's hair and in previous studies this has often been proven unsuccessful. This study, however, provides information on the retrieval of genomic DNA from shed dog hairs and has shown that though difficult it is indeed possible.

Text: DNA profiling of STR loci is now well established and extensively used for human identity testing such as identification of missing persons, investigation of crimes, cases of disputed paternity, investigation of mass disaster, and solving historic cases. However, the process of individual genetic identification has not been limited to human; attention has been paid to other organisms, including farm animals and pets. In addition to parentage verification and identification, nuclear and mitochondrial DNA profiling of animal samples (blood, saliva, tissues, and hairs) has contributed to homicide investigations and convictions.

Shed animal hair is one of the most common biological materials recovered during forensic evidence collection. Extraction and successful PCR amplification of DNA from recovered hair could provide powerful intelligence to aid criminal investigations. Previous studies have however, shown that shed hairs contain only minute amounts of undegraded DNA, therefore analysis of nuclear DNA is mostly unsuccessful. This paper however, presents results of genetic profiling of nuclear DNA extracted from naturally shed dog hairs. Experimentation with three different extraction methods was undertaken, a modified Chelex extraction method proved the most successful in extracting amplifiable nuclear DNA. Modifications of the Chelex extraction include pre-extraction preparation with proteinase K, incubations at 56°C and 100°C plus micro-concentration of the solution. The quantity of extracted nuclear DNA was shown to be adequate for PCR based typing at 3 loci. This study shows that nuclear DNA can reproducibly be obtained from shed dog hairs.

Dog Hair, DNA Extraction, DNA Profiling