



B210 Increasing DNA Recovery With Nylon Flock Swabs and One-Step Spin Baskets

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After attending this presentation, attendees will understand the salient features related to DNA recovery from forensic samples. Since swabbing is a routine method of sample recovery, the important features include collection efficiency, recovery of DNA from the collection device, elution strategies, and purity of the DNA.

This presentation will impact the forensic science community by stressing the importance of collection and extraction. Indeed, it is these processes that contribute substantially to the success of DNA typing, especially for low-quantity samples. Success of DNA typing is related to the amount of target material recovered from an evidentiary item.

While not considered as dynamic as the analytical phase, recovery and extraction of DNA are critical to the success of DNA typing. Successful typing can be increased by recovery of greater quantities of suitable-quality DNA. The features that favor collection of a stain at the crime scene often are the same ones that reduce successful recovery of DNA from a swab medium. The primary collection device in current use, the cotton swab, is designed to recover biological stain evidence with reasonable efficacy and is relatively inexpensive; however, the release of DNA from cotton is rather inefficient. There are other devices, such as the 4N6FLOQSwab™, composed of short nylon fibers arranged in a perpendicular fashion by flocking, which will not trap DNA within its matrix as cotton does. In addition, swab heads are often subjected to multi-step manipulations involving a spin basket device. One improvement on the process is the use of the Nucleic Acid Optimization (NAO™) basket, an insert which allows for one-step processing of the swab tips. This approach yields more DNA, reduces labor/processing time, and decreases the likelihood of sample contamination. These various devices have been compared to assess the efficiency of DNA recovery by direct deposit and/or swabbing of neat blood and diluted blood; dried blood, semen and saliva at various dilutions; and trace touch samples. In all cases, DNA recovery and, thus, typing results obtained with the 4N6FLOQSwab™ outperformed that of the cotton swab. These alternate devices also contribute to an efficient workflow.

This presentation will describe the important features to consider for an efficient process of DNA recovery and will present results from comparative testing. Attendees will benefit by becoming more aware of methods to enhance DNA typing success.

Swab, Basket, DNA Recovery