B10 DNA Profiles From Flip-Open Cell Phones

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The goal of this presentation is to demonstrate the best approach to analyzing flip-open cell phones for DNA evidence.

This presentation will impact the forensic community by demonstrating the need for taking swabs from a cell phone at multiple discrete locations, and analyzing them separately if such evidence is encountered in forensic cases.

Flip-open style cell phones were investigated for the potential to produce quality genetic profiles that could be used in forensic casework. Swabs were taken of the outside/back and the inside ear speaker of ten flip-phones on two occasions – prior to and seven days after cleaning with 95% ethanol. Buccal swabs were also taken of the owners to be used as references and each completed a general questionnaire about the regular use, care, and storage of the cell phone. Following a Chelex extraction and filtration through a YM-100 membrane, the samples were amplified with the AmpF*l*STR® ProfilerPlus® PCR Kit, using 28 or 35 cycles. STR profiles were then generated using an ABI Prism® 310 Genetic Analyzer and GeneMapper ID® analysis software v3.2. The phone profiles were compared to the references and to each other, to assess the quality and amount of contamination in the various samples. On average, the swabs taken of the outside location produced more complete profiles, but contained a higher number of drop-in alleles. However, the profiles within a given experimental condition showed wide variation, and were inconsistent and unpredictable. In addition, the cleaning with 95% ethanol was shown to be ineffective, indicating that DNA on a cell phone is extremely resilient. The findings of this study demonstrate the need for taking swabs from a cell phone at multiple discrete locations, and analyzing them separately if such evidence is encountered in forensic cases.

DNA, Cell Phone, Low Copy Number

 ** Presenting Author*