



## Criminalistics Section – 2008

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### **B33 Extraction of High Quality Genomic DNA From Forensic Evidence Samples**

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After attending this presentation, attendees will learn about a new and unique method for extraction of genomic DNA from forensic evidence samples. The extraction method enables recovery of DNA from difficult forensic samples such as highly inhibited, degraded and those samples containing low quantities of DNA.

The presentation will impact the forensic science community by demonstrating a novel method developed specifically for extraction of genomic DNA from forensic evidence samples.

Isolation of DNA from forensic evidence samples is a challenging process which creates bottlenecks in the sample processing workflow. This is due to the large variation in sample types, possible exposure of the samples to environmental insults, presence of PCR inhibitors and limited starting material. A genomic DNA extraction method has been developed for lysis of various sample types, high recovery of DNA from samples that contain low quantities of DNA and effective removal of PCR inhibitors. The method employs a proprietary chemistry for cell lysis, and a proprietary process designed for purification of DNA. The process for extraction of DNA was optimized using multifactor variant analysis and guard band studies. Performance of the developed method for extraction of DNA was compared to traditional phenol/chloroform method and several commercially available kits. Sample types investigated include liquid blood, blood stains on denim, cotton fabric and FTA paper, buccal swabs, liquid saliva, semen stains on cotton fabric, and cigarette butts. Purified DNA was free of PCR inhibitors. DNA yields for all sample types tested were equal to or better than both phenol/chloroform extraction method and commercial kits tested, especially for lower input amounts. STR profiles generated with the AmpF!STR® Identifiler® genotyping system produced balanced profiles devoid of PCR artifacts. The extraction method is suitable for manual and automated processing.

**DNA Extraction, DNA Isolation, DNA Purification**