B7   Optimization of the Promega PowerPlex® 16 System for Testing of Bone Samples With Low Levels of DNA

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After attending this presentation, attendees will be shown the results of the optimization of the Promega PowerPlex® 16 system for use on skeletal samples.

This presentation will impact the forensic community and/or humanity by demonstrating the significant benefit for anyone performing DNA-STR analysis of bone samples.

The International Commission on Missing Persons has been given the task of identification of missing persons from throughout the former Yugoslavia. This identification process is challenging primarily because of the large number of missing persons, the relatively long length of time that has passed since persons have gone missing, the lack of medical records, and the large number of sets of co-mingled remains.

The process of reassembling bodies by DNA STR testing is often difficult because many of the less dense bones contain much lower levels of DNA. The low levels of DNA in many bones such as ribs, vertebrae, and pieces of skull bones makes the STR testing very difficult.

In order to optimize DNA STR testing procedure for bone samples with relatively little DNA researchers have investigated the effects of altering a number of parameters in the Promega PowerPlex® 16 system (PP16). The PP16 system has been optimized by altering the amount of primers added to the PCR reaction, increased amounts of *taq,* increasing the length of the extension cycle and concentration of the final amplified products.

As the DNA isolated from small amounts of bones is well below the recommended amount of DNA for the PP16 system all optimizations were validated to ensure that quality of the results. The optimizations of the PP16 system have been shown to increase the success rate of the testing from 0% using the PCR protocol in the PP16 manual to 30 – 40% with the modified protocol.

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