

THE GlobalFiler KIT SYSTEM: ENABLING GREATER FLEXIBILITY-RESPONSES TO FEEDBACK FROM LABORATORIES

L. Pelleymounter, T. Wheeler, L. Calandro, S. Olson, A. Carbonaro, S. Wang, Thermo Fisher Scientific

With the U.S. CODIS Core Loci being expanded from 13 to 20 required loci¹, all CODIS laboratories have either transitioned or are in the process of transitioning to a new STR multiplex system in preparation for the switch deadline of January 1, 2017.

The GlobalFiler™ PCR Amplification Kit and GlobalFiler™ Express PCR Amplification Kit were launched in 2012 and 2013 respectively and are Thermo Fisher Scientific's NDIS approved option for US laboratories upgrading to meet the new CODIS requirements. The GlobalFiler PCR Amplification Kit was specifically developed for casework type samples, and the GlobalFiler Express PCR Amplification Kit is tailored to perform optimally in direct amplification mode to facilitate faster processing for database samples.

Since the launch of the GlobalFiler kits we have worked closely with laboratories who have implemented or evaluated one or both of the kits to gather feedback with the aim of further understanding how we could adapt the system to meet their requirements where necessary. We found that some laboratories required more flexibility in kit protocols in order to achieve desired outputs or meet efficiency goals.

In this presentation we describe workflow updates we have made in response to this feedback including development of a direct amplification protocol for reference samples using the GlobalFiler kit and optimization of the GlobalFiler Express kit protocol utilizing a PCR Enhancer to achieve higher first pass success rates with untreated paper substrates such as Bode Buccal Collectors. We have further enhanced the GlobalFiler kit workflow by evaluating higher cycle numbers to improve recovery of information from low level samples and lower cycle numbers to reduce the occurrence of off-scale data and artifacts. Data from studies conducted internally supporting these protocol updates is also presented.

1. Hares, Douglas R. Selection and implementation of expanded CODIS core loci in the United States. *Forensic Science International: Genetics*, Volume 17, 33 - 34