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Evaluation of a novel material, diomics X-Swab™, for collection of DNA

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Success of DNA typing is related to the amount of target material recovered from an evidentiary item. Generally, the more DNA that is recovered, the better the chance is of obtaining a typing result that will be robust and reliable. One method of collecting stain materials is by swabbing. Recovery of DNA from a number of commercially-available swabs is not an efficient process. The X-Swab™ (Diomics Corporation, La Jolla, CA) is a unique bio-specimen collection material, which can be dissolved during certain extraction conditions. Therefore, more DNA may be collected from a substrate and be released from the swab matrix than other swabs. The ability to recover DNA from the X-Swab and success in STR typing were compared with the Copan 4N6FLOQSwab™ (Brescia, Italy), a device which utilizes a proprietary flocked-swab technology to maximize DNA collection and elution efficiency. Both types of swabs were impregnated with known amounts of DNA and body fluids and allowed to air dry. In addition, blood was placed onto glass slides, allowed to dry and collected using both types of swabs. DNA recovery was assessed by DNA quantitation and by STR typing. Results demonstrated that the X-Swab material yielded greater DNA recovery, particularly of low quantity samples, compared with the 4N6FLOQSwab. Results also indicated that the X-Swab material itself enhances yield of PCR products.

Biography

Pamela L Marshall has been involved in the field of forensic analysis since 2002. After completion of her Master's degree in Forensic Genetics in 2002, she worked as a Forensic Scientist III at the Maryland State Police Forensic Sciences Division from 2003-2007. She was the Sexual Assault Forensic Examiner (SAFE) Coordinator for the state, helped to promote 120-hour SAFE collection legislation, and assisted in the training of over 200 SAFE nurses. She has extensive teaching experience and has taught graduate-level coursework in the forensic disciplines of serology, DNA, and microscopy. She has also worked as a Forensic Biologist at the Southwestern Institute of Forensic Science, located in Dallas, Texas. She recently travelled abroad to Luanda, Angola, Africa for three weeks in order to train six analysts in forensic DNA analysis. She has been a member of the Mid-Atlantic Association of Forensic Scientists, an Associate Member of the International Association of Forensic Nurses, and is a current Associate Member of the American Academy of Forensic Science. She holds an additional Master's degree from the University of North Texas Health Science Center at Fort Worth, TX, in Biochemistry and is currently a PhD Candidate in Forensic and Investigative Genetics. She will graduate with her PhD in May, 2014. Her research interests include low copy number DNA, pressure cycling technology, and PCR enhancement.

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