EVALUATION OF SHEDDER STATUS BY CELL COUNT AND DNA QUANTITY

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The concept of shedder status, the idea that individuals leave behind a lot or little DNA after touching an item, was introduced into the forensic DNA field in 2002 by Lowe, et al. Since that time, many additional studies have been carried out to assess whether shedder status is consistent for an individual, and to evaluate whether shedder status is correlated with variables including the individual's age or gender, the time since most recent hand washing, and whether the item was touched with the dominant or non-dominant hand, with no definitive resolution. In these studies, shedder status evaluation was based on either the quantity of DNA recovered or the quality and completeness of the profile obtained. A recent paper, "Shedding light on shedders", indicated that a simple test, utilizing an inexpensive fluorescent dye that binds preferentially to human DNA, Diamond™ Nucleic Acid Dye, can quickly and directly determine anindividual's shedder status. Further, the article's authors reported that shedder status was consistent using this method when individuals are assessed at least 60 minutes after hand washing. To evaluate the newly described method for assessing an individual's shedder status and evaluate whether cell densities correlated with DNA quantity recovered, a small study was conducted. Fingerprints from 20 donors were collected on glass slides one hour after hand washing on five different occasions per donor. Donors to this study were separated into one of three groups. Group 1 provided samples to evaluate the depletion of cells after sequential thumbprint deposits. Group 2 provided fingerprint samples from each finger to evaluate consistency across all fingers. Group 3, comprising half of the donor pool, provided thumbprints only to increase the donor variation within the study. Each fingerprint was stained, imaged at 50xmagnification, and the number of cells observed per mm^2 was averaged from five points per print.Results in this study indicate more day-to-day variability than was previously reported and do notprovide evidence for a strong correlation between the cell count-based shedder status and the observed DNA recovery or profile results.