

DIFFERENTIAL EXTRACTIONS WITHOUT MIXTURES VALIDATION OF THE ERASE SPERM ISOLATION KIT

Kim Gorman¹, Brian Hoey²

¹Paternity Testing Corporation

²Missouri State Highway Patrol Crime Laboratory

Sexual assault evidentiary samples often result in sperm fraction DNA mixtures. The mixture profiles are difficult to deal with statistically and they can make court room explanations much more complicated than testifying to a single source profile.

The Erase Sperm Isolation Kit eliminates mixtures in nearly all samples. After separation of the epithelial and sperm cells by a preferential lysis, most of the aqueous layer is removed for epithelial fraction DNA analysis. The remaining epithelial DNA in the sperm fraction is destroyed using a nuclease. Only DNA from intact sperm cells remains.

Even when there are relatively few sperm cells and overwhelming quantities of epithelial DNA, this method produces a single source male profile. When the standard differential extraction method is only able to obtain trace profiles of the male along with a predominately epithelial profile, using the Erase method will often result in a full male profile with no, or negligible, epithelial contamination.

This method requires little hands on time for individual tube preparation and is very adaptable to automation with basic liquid handling robots.