UNLOCKING INFORMATION IN A POWERPLEX® 16 HS THRESHOLD VALIDATION DATA SET WITH THE USE OF LAB RETRIEVER

Jillian Fesolovich[1], Megan Boll[1], Kirk Lohmueller[2], Norah Rudin[3], Keith Inman[4]

[1]NMS Labs
[2]University of California, Los Angeles
[3]Forensic DNA Consultant, Mountain View, CA
[4]California State University, East Bay

Lab Retriever is a software program used to calculate likelihood ratios incorporating a probability of drop-out $P(D_o)$ via an easy to use interface. Validation of the PowerPlex® 16 HS amplification kit produced a data set containing data from identical amplification replicates as well as multiple injection times. An empirical analytical threshold was derived by examining multiple negative controls for the highest non-artifactual peak, then multiplying the height of that peak by 2. Although a default $P(D_o)$ calculator is readily available with the Lab Retriever software, it is desirable to determine lab and system-specific $P(D_o)$ calculators. Using the data set for PowerPlex® 16 HS generated by NMS Labs, and with the assistance of Logic Drop, a logistic regression tool created in R-code, a system-specific algorithm was generated. This information was formatted into an easy to use calculator in Microsoft® Excel, which was used for validation of the Lab Retriever software. This presentation will describe the threshold validation study design, data generated from Logic Drop, as well as the use and validation of Lab Retriever. Analysis of calculated likelihood ratios and $P(D_o)$ will be explored, and the common belief that increasing injection time on a genetic analyzer will yield more information will be dispelled.