

GETTING MORE OUT OF YOUR VALIDATION DATA

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Validations for new quantitation and STR kit chemistries, while exciting and helpful in the long run, are generally considered a necessary evil for most forensic labs. To meet the FBI Quality Assurance Standards (QAS) and ASCLD guidelines, generally a significant number of samples are processed to generate sufficient data. There is additional responsibility to set new target DNA inputs and analysis thresholds, and it's easy to see why most labs look at validation reports as a "one and done" document to be completed and only addressed again for testimony or audits. So why not get more out of it if you can? While each experiment study may be performed to meet specific standards like sensitivity, reproducibility, repeatability etc., there is often additional useful information that can be extracted from the same data. For example, data to establish and apply additional quantification data thresholds to triage poor quality samples from processing through STR data collection. "Stop at Quant" thresholds can save laboratories a great deal of time and money by allowing analysts to be more selective as to what is worth further testing, and what is to "await future technology". Similarly, Autosomal to Y STR ratio data can be used to establish mixture thresholds that may determine the likelihood of resolving the male contributor from a high female-to-male mixture as can be the case in many sexual assault cases. Outlined here are some potential considerations and tips on validation design and data mining that will assist laboratories in developing more efficient processing techniques based on data already generated. It also includes tips for different threshold generation that will allow labs to better determine which samples will result in the most probative data for the case, while off-loading samples that would never have given helpful information to begin with. These techniques can save vast amounts of time and money, all from little to no additional data collection during or after your initial validation.