



B165 Combining FSS-i³ Software With New Analytical Capabilities

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After attending this presentation, participants will understand a new analytical approach that combines the processing strengths of the FSS i-cubed Software in order to increase the efficiency of data analysis and reporting in our laboratory.

This presentation will impact the forensic science community by demonstrating how large and diverse workloads require new reliable and efficient approaches to data analysis and reporting.

The rise in use of STR multiplex systems over the last fifteen years and the growth of the CODIS national database in the last ten has provided a fantastic tool for law enforcement through the use of DNA. At the same time, the number of samples requiring analysis, the diversity of sample sources, and analytical methods available to create and report profiles has increased significantly. This laboratory alone will create approximately 200,000 DNA profiles this year for numerous institutions that provide a diverse sample types, different requirements for extraction, quantification, and STR multiplex systems. This large diverse work load requires new and efficient approaches to analysis and data reporting.

Several computer software systems have provided new tools for forensic data review. The FSS i³ software offers great advantage in correctly calling DNA profiles without human intervention. However, significant human time and effort results from the necessity to review GeneMapper profiles for samples that the FSS i³ software puts into an unresolved “to be reviewed” category without definitive calls. It was found that the same criteria were being used repeatedly to call most of these unresolved samples.

To minimize the data analysis required to accomplish our analytical goals, we have combined the most valuable data and processing strengths of FSS i³ software with our internally developed add-on analytical programming. This combined artificial intelligence works through our LIMS and provides additional characterization of FSS i³ output more in line with our diverse analytical requirements and adapts output to the terminology used by our analysts. To summarize, the BodeChecks software solution accomplishes the following tasks with almost no human effort.

- Greater than 99.8% correct allele calls.
- Correct allele calls in circumstances that FSS i³ provides uncertainty.
- Increased concordance (compared with GeneMapper ID or FSS i³) between analyst and software conclusions.
- More refined description of reasons for failed samples.
- Unification of BodeChecks rejection code language with that of the Analysts.
- Automated determination of reprocessing pathways for failed samples.
- Significantly decreased analysis time.

No review of GeneMapper ID electropherograms or FSS i³ “spikograms” is required. How this is accomplished will be described, show how it increases quality checks in our work, and compare allele determination performance versus GeneMapper ID and FSS i³ software.

Expert System, FSS I-Cubed, LIMS