



## F4 The Defense Lawyer Perspective on Uncertainty in Probabilistic Genotyping

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**Learning Overview:** After attending this presentation, attendees will better understand: (1) why the sources of uncertainty in probabilistic genotyping may mean different things to defense attorneys than to lab analysts; (2) the various sources of uncertainty that defense lawyers must incorporate into their understanding of forensic DNA case results; and (3) the importance of clear communication and transparency about the sources of uncertainty in promoting just outcomes in the criminal justice system.

**Impact on the Forensic Science Community:** This presentation will increase awareness among attorneys about the sources of uncertainty in probabilistic genotyping and encourage laboratories to adopt practices to better communicate uncertainty in their results.

In the criminal justice system, defense attorneys are always the last to know. They typically meet their clients after an investigation and arrest has occurred, and they receive the DNA casefile and reports at the end of the testing and interpretation process—once prosecutors have put together their case against the accused, and labs have examined and interpreted the forensic evidence. The defense is almost always excluded from the process of scientific interpretation and has to try to make sense of the already-completed forensic product. On the path to generating the final likelihood ratio results, laboratories may encounter various sources of uncertainty inherent in probabilistic genotyping systems. These include: (1) communicating the meaning and limitations of likelihood ratios; (2) different results among software programs; (3) unexpected occurrences in the results; (4) proposition setting and other user-defined choices in running probabilistic genotyping software; (5) the modeling of relatedness; and (6) bugs in the software. Sometimes these uncertainties are explicitly disclosed in the casefile, but sometimes they are not. Sometimes they are disclosed but buried deep in the casefile, and would escape the notice of even the most diligent attorney.

In this new scientific frontier, defense lawyers should be aware of and understand the reality of these uncertainties in order to mount a vigorous defense of the accused. Thorough investigation, case preparation, and courtroom litigation requires lawyers to first recognize the uncertainty and then decide what questions to ask. This presentation will encourage lawyers to ask some essential questions: Is uncertainty from the defense perspective the same as uncertainty from the laboratory's perspective? What are the causes and effects of uncertainty that defense attorneys must consider? What is the relationship between scientific uncertainty and the presumption of innocence?

This presentation will also advocate for greater transparency and communication by laboratories around points of uncertainty. It will encourage laboratories to ask some essential questions: What if communication with defense attorneys was frequent and open? What if error was immediately disclosed without fear? What might best practices around communicating uncertainty look like?

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### **Uncertainty, Probabilistic Genotyping, Communication**