W10 When "Who" Doesn't Matter as Much as "How"—DNA Testimony Given Activity Level Propositions

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Learning Overview: After attending this workshop, attendees will understand the need to separate the ability to help answer the "who" question from the "how" or "when" questions. Attendees will realize that in relation to DNA findings, it is important to recognize that the value (i.e., likelihood ratio) of DNA profiles when considering the source of the DNA will generally be completely different from the value of these results when considering the activities that are alleged to have happened.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing guidance toward real-world testimony on how to handle DNA testimony when the court's interest is beyond that of an "inclusion" and its associated likelihood ratio.

In this workshop, we will see that if the DNA from a person is considered to be present on an item, there are important considerations that the forensic scientist should make to assist the court in assessing "how" or "when" this DNA was transferred. Because of their specialized knowledge on transfer, persistence, and prevalence of DNA, forensic scientists can and should share this with the court by considering their results in the light of the alleged activities. It should be clear, that the statistical evaluation of a DNA profile result, which contributes in addressing the question regarding *"whose DNA is it?"* is an entirely different question from *"how and when did the DNA get there?"* The "how" and "when" questions involve assessing the results while considering transfer and persistence of DNA, as well as considerations of background DNA and sometimes contamination. These issues are dealt with by assessing the biological results in the context of propositions that relate to a contested activity, the so-called Activity Level Propositions.

This workshop will use an interpretation framework and illustrate the difference between subsource and activity propositions, and how one can help address the issues in a case. It will provide guidance as to how a practitioner can present the evidence in a fair, balanced, logical, and transparent way to assist the court in its deliberations. This workshop will highlight that the findings—no matter how robust the results are given subsource level propositions—can potentially be misleading if used to answer activity propositions with vague responses such as "could have," "it's possible," or "maybe." This workshop will illustrate the traps that arise from conflating one level of proposition with another and outline the need for training in interpretation issues, given there are questions regarding transfer.[1] This workshop recognizes the challenges faced in giving testimony and demonstrates how tools such as Case Assessment and Interpretation and Bayes Nets can help address these challenges.[2,3] Testimony simulations will be presented to illustrate how to avoid classical pitfalls when testifying.

The workshop presenters include academics and specialists who have a wealth of experience in assisting court in complex DNA cases.

Reference(s):

1. Cook R., Evett I.W., Jackson G., Jones P.J., Lambert L.A. A hierarchy of propositions: Deciding which level to address in casework. *Science & Justice* 38(4) (1998) 231-239.
2. Cook R., Evett I.W, Jackson G., Jones P.J., Lambert J.A. A model for case assessment and interpretation. *Science & Justice* 1998; 38(3): 151-156.
3. Taylor D. and Champod C. Using Bayesian networks to track DNA movement through complex transfer scenarios. *FSI Genetics* 42 2019 p 69-80.

DNA, Testimony, Transfer

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