SWGDAM Position Statement on Formal Activity Level Reporting (ALR)[1]

The Scientific Working Group on DNA Analysis Methods (SWGDAM) is a group of scientists representing federal, state, and local forensic DNA laboratories in the United States. SWGDAM is often asked to develop documents that provide direction and guidance to the forensic science community. The SWGDAM Activity Level Working Group drafted this Position Statement, which was approved by the SWGDAM Executive Board on November 3, 2025, and by the SWGDAM Membership December 2, 2025.

In U.S. courts there is considerable interest in questions of "how" or "when" DNA was deposited or transferred, especially in cases where the presence of trace DNA evidence is a relevant issue.[2] The type of forensic evaluation that seeks to answer these questions is broadly referred to as "activity level reporting" (hereafter "ALR"). In many cases, plausible explanations for "how" and "when" DNA was deposited may be more relevant to the legal parties and their respective "theories of the case" than the question of "who" deposited the DNA. Consequently, the parties may ask a testifying DNA analyst to offer an opinion about alleged activities, either by answering general questions about DNA transfer, persistence, prevalence, and recovery (hereafter

[1] Reviewed and Approved by the SWGDAM Executive Board on November 3, 2025, and by the SWGDAM Membership on December 1st, 2025.

[2] Yang, et al. *American forensic DNA practitioners' opinion on activity level evaluative reporting*. J Forensic Sci. 2022; 67:1357-1369, https://onlinelibrary.wiley.com/doi/10.1111/1556-4029.15063; *see also* Dawson, et al. *DNA analyst's experiences with human factors: A quantitative and qualitative snapshot*. J Forensic Sci. 2025; 70:1414-1423 https://onlinelibrary.wiley.com/doi/10.1111/1556-4029.70064.

"TPPR"), or by testifying to case-specific explanations or propositions.[3] The overall effect of TPPR testimony may, when taken together with other evidence in the case, tend to make the positions of the parties more or less likely.[4] The weight that a judge or jury gives to a DNA analyst's TPPR testimony may be a deciding factor in the outcome of a trial.

Formal ALR, in its Present Form, is Not Suitable for Use in the U.S. Criminal Justice System.

For purposes of this document, 'formal ALR' refers to an evaluation of the biological findings given activity level propositions performed in advance of trial, using a Bayesian logical framework, technically reviewed and provided to relevant parties in a laboratory report.[5] SWGDAM has identified significant scientific, practical, and legal impediments to the adoption of formal ALR in its current form. What follows is not a comprehensive explanation of SWGDAM's wide-ranging concerns, but instead serves to highlight some of the significant barriers that the implementation of formal ALR in the U.S. would face.

[3] Questions of DNA TPPR are important in cases where the biological findings result from "trace" quantities of DNA not attributable to a specific cell type or body fluid. If a body fluid is detected, questions may focus on different explanations for how or when the body fluid was deposited and through what mechanism transfer occurred (e.g., direct versus indirect transfer).
[4] For the purposes of this Position Statement, the term "proposition" is used synonymously with the term "hypothesis," represented by the notation H_d.
[5] *See* Hicks, et al. *A Logical Framework for Forensic DNA Interpretation*. Genes 2022, 13, 957, https://doi.org/10.3390/genes13060957.

These problems fall into three general categories:

First, there are significant **scientific** issues with implementing formal ALR. There is no consensus in the U.S. on the appropriate sampling model to use when conducting formal ALR evaluations, and there are no set definitions for the various parameters that laboratories must use to employ these models, making comparisons between laboratories difficult or impossible. To date, several published DNA TPPR studies have been conducted under controlled conditions; however, these studies rarely replicate actual casework scenarios and employ a diverse range of experimental designs, methodologies, and sample sizes, resulting in significant gaps in relevant and usable data. In addition, no published standards or guidelines specify the necessary elements of an appropriate formal ALR validation study. There is also no published guidance for U.S. laboratories to follow when communicating the results of formal ALR evaluations, nor are there standards or guidelines for establishing the quality assurance measures needed to implement formal ALR.[6]

Second, laboratories that implement formal ALR would face significant **practical** issues with its routine use in the adversarial U.S. criminal justice system. In a criminal case, the defense has no legal obligation to share its activity level proposition(s) with the prosecution's expert. As such, a formal ALR expert would be required to speculate about what the defense propositions (H_d) might be, resulting in an irrelevant evaluation.

[6] Formal ALR expertise requires knowledge of DNA TPPR, understanding statistical dependencies between items of evidence, making appropriate assumptions, selecting relevant data, assigning and calculating probabilities, creating Bayesian networks, conducting sensitivity analyses, and correctly applying the Bayesian logical framework to biological results in a valid and reliable manner.

Given the dynamic nature of criminal litigation in the U.S., the defense can, without notice, disclose, revise, or refuse to reveal its activity level theory at any time before or during trial, directly affecting the relevance of the proposition, the conditional probability of the evidence, and the resulting Likelihood Ratio (LR). Late-stage disclosures by the defense would likely require the prosecution's expert to conduct a new formal ALR evaluation and issue a new laboratory report. Given the frequent litigation of DNA transfer issues in U.S. courts, the complexity of formal ALR evaluations, the time needed for the completion, and the expected pace of demand by the criminal justice system, adoption of formal ALR would prove to be unsustainable in the current U.S. legal system.

Third, experts who attempt to offer formal ALR opinions in U.S. courts would face significant **legal** issues with the admissibility of their findings. In the U.S. system, the government bears the burden of proof. This burden would require the prosecution to offer evidence that supports H_d during its case in chief. However, the prosecution rarely has access to the information and evidence needed to support an H_d, preventing it from laying the legally required factual foundation that must precede its expert's formal ALR opinion. A proper and timely defense objection would result in the exclusion of the conditional probability of the evidence, the prosecution's proxy H_d, and the activity level LR, which would nullify the entire evaluative framework.[7]

[7] Ted Robert Hunt, *Activity Level Testimony in U.S. Courts: A Legal Problem*, 74 Kan. L. Rev. 1 (2025).

SWGDAM Will Continue to Monitor Developments and Make Recommendations as Necessary.

The above illustrate significant impediments to adoption of formal ALR in its current form. SWGDAM will continue to monitor developments with formal ALR and, if appropriate, make recommendations in the future. Since analysts will continue to face questions related to TPPR, the SWGDAM Chair will task an existing SWGDAM committee or working group with exploring alternatives to the formal ALR approach.