



### F13 Coordinating the DNA and Pattern Analysis Studies in Bite Mark Cases

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After attending this presentation, attendees will be able to consider the applicability of a proposed method for coordinating the DNA study and the pattern analysis study in a bite mark investigation. The goal is to carefully serve the interests of justice, while providing the conscientious odontologist with some shelter from the turmoil that ensues when DNA and bite mark pattern analysis point in different directions. This occurs when, for example, pattern analysis indicates that Mr. A is the biter, but DNA study determines that the saliva recovered from the bite mark is from Mr. B. In such apparent conflicts the DNA studies have been viewed by the justice system as having the greater validity.

This presentation will impact the forensic community and/or humanity by reemphasizing the need for continuing research and careful attention to proper procedures in all areas of forensics, while demonstrating a method that may enable the conscientious odontologist to honestly and ethically decrease the likelihood for unnecessary conflict, damage to reputation, and possibly litigation in cases in which pattern analysis and DNA studies do not agree.

The proposed method treats the pattern analysis and DNA investigation as parts of a unified approach to the bite mark study, rather than as isolated procedures. It will be described in relation to a case.

In an investigation involving the death of a young child, bite mark evidence was a major issue. Two forensic odontologists concluded that the defendant in the case was the only one of the six individuals with reported access to the child whose teeth could have made the bite marks on the child's body. They concluded their first report with the statement that DNA evidence was also being studied, that such evidence is valuable, and that the bite mark investigation could not be considered complete until the DNA report had also been considered. They indicated that the current report should be considered preliminary, and might be further validated or possibly rebutted by the DNA evidence. Months later, the DNA report indicated that the DNA profile from the bite mark was the same as that of the defendant, occurring only once in approximately 7.4 trillion males.

In this case the DNA evidence helped to validate the pattern analysis. But if there had been a disparity in the findings, the stage had already been set for a collegial and cooperative evaluation of the apparent discrepancy. In the worst case, the pattern analysis might have to yield to the DNA findings on the basis of DNA's well-researched error rates and other data, including population studies of ethnic groups. But here, too, the impact of the disparity would be minimized by the honest and candid discussion "up front" regarding the relative advantages and limitations of pattern analysis. Importantly, the odontologist would not be tempted to defend a questionable position because he had locked himself into it. He/she would be free to move, without embarrassment, wherever the evidence might lead.

Some might feel that the above approach unduly denigrates bite mark evidence. But after the defendant was convicted in this case, the prosecutor went so far as to write a letter to the Chief Medical Examiner lauding the value and importance of the bite mark evidence. And prior to trial she beat back defence's efforts to exclude the bite mark evidence because it would "unduly influence the jury." Also, during trial she declined the defence's repeated offer to stipulate to the odontologist's testimony because the prosecutor wanted the judge (who tried the case) to see the odontologist's exhibits of the pattern analysis. Clearly, the pattern analysis was regarded as powerful evidence by both the prosecution and defence attorneys despite the cautionary words that had been offered in the odontologists' report.

#### **Bite Marks, Pattern Analysis, DNA**