G48 A Historic Perspective of Bitemark Analysis and Bitemark Comparison

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Learning Overview: After attending this presentation, attendees will possess a historic perspective of bitemark analysis and bitemark comparison.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the myriad of changes that have occurred from the 1970s to today. These include, but are not limited to, the American Board of Forensic Odontology (ABFO) establishing a Research Committee, the Standards, Methods, and Procedures Committee, the Bitemark Evidence and Patterned Injury Committee, the Certification and Examination Committee, and Bitemark Workshops.[1] As well, the American Society of Forensic Odontology (ASFO), the American Academy of Forensic Sciences (AAFS) Odontology Section, and the ABFO are all involved in continuing education for their members.

The influence of 2009 National Academy of Sciences (NAS) recommendations, the National Institute of Justice (NIJ), the President's Council of Advisors on Science and Technology (PCAST) conclusions, the Texas Forensic Science Commission report, and finally the National Institute of Standards and Technology (NIST) Organization of Scientific Area Committees (OSAC) efforts to open dialogue and promote consensus are discussed.[2-5]

The role that universities worldwide have contributed, the textbooks and scientific articles published, and the research in the field since the 1970s is ever expansive and contributes to the advancement of bitemark evidence.

For some, bitemark analysis was synonymous with bitemark comparison in the 1970s, and wrongful convictions resulted. For others, the exaggeration of claims of certainty of identification were not justified. Fortunately to date, there have been no reported, nor cited, wrongful convictions involving bitemark evidence anywhere else in the world other than in the United States. This suggests that a multitude of domestic systemic problems contributed to wrongful convictions of bitemark evidence in the past.[6]

If class and individual characteristics exist, and both sufficient quality and quantity of information is present (evidentiary value), a diagnosis can be made that the pattern was created by teeth or was not. On the other hand, there may be insufficient information to arrive at a diagnosis. Bitemark comparison may or may not follow, depending on circumstance.

In conclusion, bitemark analysis and bitemark comparison are two different topics requiring individual assessment. With the advent of DNA, and the new algorithms for bitemark analysis and for bitemark comparison, a completely different paradigm exists from that of the 1970s.

Reference(s):

1. *American Board of Forensic Odontology Diplomates' Reference Manual*, February 2018 Edition. American Board of Forensic Odontology, Inc.
2. Committee on Identifying the Needs of the Forensic Science Community, National Research Council of the National Academies. Strengthening Forensic Science in the United States: A Path Forward. Washington, DC, *The National Academies Press*, 2009.
3. *The President's Council of Advisors on Science and Technology (PCAST) Final Report*, Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, September 2016.
4. *The President's Council of Advisors on Science and Technology (PCAST) Final Report*, Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Addendum Report, January 6, 2017.
5. *The Texas Forensic Science Commission. Forensic Bitemark Comparison Complaint Filed by National Innocence Project on Behalf of Steven Mark Chaney—Final Report*. April 12, 2016.
6. Epidermis and Enamel: Insights into Gnawing Criticisms of Human Bitemark Evidence. *Am J Forensic Med Pathol*, 20018 39:2:87.

Forensic Odontology, Bitemark Analysis, Bitemark Comparison

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