



B192 Evaluating and Enhancing the Forensic Sciences: Scientific Foundations and Best Practices

Bruce Budowle, PhD, FBI Laboratory, 2501 Investigation Parkway, Quantico, VA 22135; and JoAnn Buscaglia, PhD*, FBI Laboratory, Counterterrorism & Forensic Science Research Unit, FBI Academy, Building 12, Quantico, VA 22135*

After attending this presentation, attendees will learn the salient issues identified at a mini-forum assessing the validity of the scientific foundations and current practices of some of the experientially based forensic disciplines, including mechanisms to facilitate enhancing the forensic sciences under consideration and developing strategies for improvement.

While the fundamentals of experientially based forensic analyses are sound, improvements can be made. Critical self-evaluation, scientific exchange, and research are the best methods to identify gaps and enhance forensic practices. This presentation will impact the forensic community and/or humanity by providing the forensic science community with results of such an evaluation, as well as a mechanism for open discussion and collaboration, to facilitate improvements in forensic practices.

Forensic scientists routinely perform comparisons between evidence and reference samples to render interpretations/opinions for exculpatory and inculpatory purposes. The underlying premise for such identifications is that, depending on the quality and quantity of the forensic evidentiary materials, distinguishing features can be exploited for various degrees of source attribution. In the 21st century, new technologies, advanced automation, and sophisticated computer analysis capabilities permit higher standards for scientific practices and critical assessment and testing of accepted practices. Opportunities exist now more than ever before to improve forensic practices. Therefore, forensic scientists should consider periodically evaluating the validity of the scientific foundations of the forensic sciences, the practices currently used, and developing strategies for improvement. Research should be pursued to challenge past practices and develop new and, hopefully, improved approaches.

With such opportunities, the forensic science community should coordinate and collaborate to attain the best practices possible. In this regard, the Forensic Science Service and the FBI Laboratory co-organized a mini-forum, in conjunction with the EAFS2006 conference, on evaluating the scientific foundations of some of the experientially based forensic disciplines. The goals of this mini-forum were to: 1) identify gaps in the foundations of scientific practices; 2) foster relationships to effectively leverage resources both intellectually and economically; 3) develop strategies for better communication internationally for terminology and peer review; 4) exchange and assess research and development and current practices; and 5) establish mechanisms for collaboration to avoid duplication of efforts. The disciplines that were addressed are: 1) latent prints; 2) handwriting comparisons; 3) impression evidence (tool marks, shoes, tires, etc); and 4) trace evidence (e.g., hairs, fibers, glass).

While the fundamentals of experientially based forensic analyses are sound, improvements can be made. Fostering scientific exchange and critically evaluating disciplines is the best avenues for enhancing forensic practices. To continue the process of critical self-evaluation of this science, the salient issues identified at the mini-forum and mechanisms to facilitate enhancing the forensic sciences under consideration will be discussed. An open discussion and collaboration among forensic scientists is necessary to foster scientific exchange and critically evaluate this discipline. This presentation will consist of brief oral presentations with an expert panel exchange, which is designed to encourage open discussion and attendee participation.

Impression Evidence, Handwriting, Trace Evidence