



W19 Think Tank on the Leading Edge of Forensic Science, Including Robotics, Drug Intelligence, Analytical Chemistry, Technology Rules, Bayesian Approach, Legal Technology Developments, Research and Development (R&D) in a Forensic Lab, Veterinary Forensics, and Aquatic Death Investigation

*Laura L. Liptai, PhD**, BioMedical Forensics Headquarters California/Florida, Moraga, CA 94556; *Annemieke de Vries, PhD**, Netherlands Forensic Institute, The Hague 2497 GB, NETHERLANDS; *Jeri D. Roper-Miller, PhD**, RTI International, Research Triangle Park, NC 27709; *Ivo Alberink, PhD**, Netherlands Forensic Institute, The Hague, Zuid-Holland 2497 GB, NETHERLANDS; *Sheila Willis, PhD**, National Institute of Standards and Technology, Gaithersburg, MD 20899; *Stephanie Domitrovich, JD, PhD**, Sixth Judicial District of Pennsylvania, Erie, PA 16501; *Andrea Zaferes, BA**, Dutchess County Medical Examiner Office/Team LGS, Shokan, NY 12481; *Arian C. Van Asten, PhD**, University of Amsterdam, Amsterdam 1098XH, NETHERLANDS; *Kevin W.P. Miller, PhD**, Hamilton Robotics, Reno, NV 89501; *Martha Smith-Blackmore, DVM**, Forensic Veterinary Investigations LLC, Boston, MA 02116; *Zeno J. Geradts, PhD**, Netherlands Forensic Institute, Den Haag, SH 2497 GB, NETHERLANDS

Learning Overview: After attending this presentation, attendees will better understand the various new advances in forensic science that promise to have an important impact on their work.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by discussing the absolute latest new developments in robotics, drug intelligence, analytical chemistry technology rules, Bayesian approach, legal technology developments, R&D in a forensic lab, veterinary forensics, and aquatic death investigations. This workshop will help attendees be on the leading edge.

The history of forensic science dates back thousands of years. Ancient Chinese were credited with being the first to attempt to define the difference between natural death and criminal intent. By the early 1800s, the recognition of fingerprint patterns was studied, but decades would pass before that observance was applied to criminal and personal identification. Now, in today's world, new developments are being established in a single year, not decades, but the real question is how long it will take for disruptive technologies and the leading edge to obtain general acceptance in the scientific community.

Legal technology developments and technology rules are expanded on by a prominent state judge with decades of experience so that the forensic community can keep up with the quickly advancing frontiers of legal technology and innovations. Analytical chemistry, statistical revelations, and R&D in the forensic lab are improving and expanding. However, the limitations and the error rates of the algorithms utilized need to be closely monitored. Artificial intelligence and robotic advancements may help us better monitor algorithm error rates.

Aquatic death/abuse investigations are also discussed to reveal how the investigators have been revolutionizing scene investigation standards. The use of proper and specialized training, while it may take up more time initially, will provide better accuracy and understanding of the common errors repeated for decades in scene and aquatic death investigations.

With regard to investigating animal abuse, neglect and cruelty will also be discussed, including how veterinarian forensic experts are able to properly interpret evidence and ensure animal welfare.

Drug intelligence has been an important topic of interest due to the increase of distribution of synthetic novel drugs. Exploration is needed in how government agencies, law enforcement officials, forensic laboratory personnel, medical examiners/coroners, researchers, and other experts can collaborate in order to respond to increasing problems that are seen with drug abuse.

This year's think tank is a collection of topics and speakers that will make us all work smarter in response to an awareness of what is happening on the leading edge of forensic science.

BioMedical Engineer, Drug Intelligence, Aquatic Death/Abuse Investigations