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Microbial forensics: Present and future

Microbial forensics, emerged from the creation of the first-ever Weapons of Mass Destruction (WMD) forensic investigative program in the FBI Laboratory in 1996. At the beginning, this program was an interagency endeavor involving the FBI, Department of Defense military medical laboratories, Centers for Disease Control and Department of Energy National Laboratories. Today, the forensic characterization and source attribution of biological weapons and associated forensic evidence is a very important priority in U.S. biodefense planning and preparedness. Concomitantly, the Federal interagency involved in this arena has become a “whole of Government” enterprise. The science of microbial forensics draws upon a variety of disciplines and capabilities and is designed, developed, validated and applied to inform investigative, intelligence, legal and policy questions and support decision making. Microbial forensics seeks to address requirements of sound science, but also those of the users of the information. The soundness of the science is an end-to-end proposition, from sample collection through reporting and interpretation of results and communication of conclusions. Microbial forensics is rapidly evolving and has and will continue to leverage advancing methods and technologies developed for other purposes which exploit biological, genomic, biochemical, chemical and physical information of forensic value for both sample characterization and also intercomparison that can be usefully and validly interpreted. Even with powerful current and emerging analytical and knowledge exploitation capabilities, the field is confronted by gaps, opportunities and “grand scientific challenges” which overlap with those of other fields and some of which converge on the limits of scientific knowledge.

Biography

Randall Murch is Professor in Practice at Virginia Tech University. Prior to Virginia Tech, he was with the U.S. Federal Bureau of Investigation for 23 years and served in a variety of investigative, forensic and technical, supervisory and management roles and positions. He is a well-recognized expert in microbial forensics, created the national capability while in the FBI, and has worked with other leaders in government, academia, the National Laboratories and private sector to mature and evolve it. He has published and presented extensively in this field, and others. He holds B.S., M.S. and PhD degrees in the Life Sciences.

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