



American Society of Crime Laboratory Directors

Research Priorities

2022-2024



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| General Forensics | Development and validation of standardized forensic methods and conclusions in impressions, patterns, and trace evidence disciplines |
| | Development, evaluation, and validation of massively parallel sequencing techniques for whole genome sequences, partial genome sequencing, and other forensic casework applications such as proteomics |
| | Development, evaluation, and validation of statistical or other computational methods to augment interpretation and quantitatively assess the value and strength of forensic evidence |
| | Evaluation of accuracy and reliability of forensic examinations as a function of evidence quantity, quality, or complexity |
| | Exploring the best ways to communicate results generated through statistical or other computational methods to non-technical audiences, such as investigators, litigators, and fact-finders |
| | Research to support the application of evaluative reporting (likelihood ratios/expanded conclusion scales) and testimony for forensic evidence other than DNA (e.g., trace materials) |
| | Development of local, National and International ground truth data sets across a range of evidence types for source and activity inferences |
| | Understanding the impact of various types of biases (beyond confirmation and contextual bias) on practical decision making across all practitioner types from the scene to the courtroom within the criminal justice system by exploring risk in decision-making and harnessing knowledge in other fields such as medicine, engineering and across the social sciences |
| Controlled Substances | Development of a standardized drying procedure for plant material to ensure consistent quantitative analysis of THC |
| | Error rate studies on qualitative analysis (single tests and schemes) in controlled substances |
| | Differentiation between THC-rich and CBD-rich cannabis plants in the field (more sensitive tests) and in the laboratory (more specific tests) |
| | Alternative methods beyond GC-MS to distinguish fentanyl-related substances (e.g., positional isomers, analogs) including FTIR, derivatization, color test, or other widely used forensic techniques |
| | Applications for DNA analysis of marijuana to identify cultivar for sourcing and linkage applications |



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| DNA/Biology | The ability to detect and locate sufficient biological material (e.g., epithelial cells, extracellular DNA) associated with touched or worn objects, that is not visible to the eye or with alternate light sources, for downstream DNA analysis |
| | Explore the use of Rapid DNA instruments for crime scene samples (e.g., touch DNA, sexual assault kits) with comparisons to traditional STR-typing methods |
| Questioned Documents | Validation of conclusion scale in forensic document examination |
| Pattern and Impression Evidence | Assessment of examiners' toolmark categorization accuracy |
| | Development, evaluation, and validation of methods to quantitatively assess the aptitude of candidates in pattern evidence disciplines |
| Trace Evidence | Development of an integrated and multidisciplinary approach for the advancement of data collection, data management and data analysis to aid interpretation of trace evidence |
| | Comprehensive GSR persistence study |
| | Specific identification of shooters via GSR |
| | Modelling the transfer and persistence of different trace evidence materials between a range of substrates |