

National Institute of Justice

Forensic Science Research and Development Symposium



American Academy of Forensic Sciences
73rd Annual Scientific Meeting

Tuesday, February 16, 2021
Virtual Event

NIJ | National Institute
of Justice

STRENGTHEN SCIENCE. ADVANCE JUSTICE.



Forensic Technology

CENTER OF EXCELLENCE

A program of the National Institute of Justice

AGENDA

Short Agenda

Track I

10:00–10:10	Welcome and Opening Remarks
10:10–1:50	Session I—Seized Drugs and Toxicology
2:00–2:10	Welcome and Opening Remarks
2:10–5:40	Session II—Forensic Anthropology and Forensic Pathology

Track II

10:00–10:10	Welcome and Opening Remarks
10:10–1:40	Session I—Impression and Pattern Evidence/Trace Evidence
2:00–2:10	Welcome and Opening Remarks
2:10–5:40	Session II—Forensic Biology/DNA

Full Agenda

Tuesday, February 16: 10:00 a.m.–5:40 p.m. Eastern Time

TRACK I

10:00–1:50	Session I—Seized Drugs and Toxicology Moderated by NIJ Program Manager Frances Scott
10:00–10:10	Welcome and Opening Remarks Lucas Zarwell and Frances Scott, NIJ
10:10–10:30	Rapid Forensic Identification of Psychoactive Plant Types by Multivariate Data Analysis of a DART-MS Plant Database, Featuring a User-Friendly Graphical User Interface—2015-DN-BX-K057 Rabi Ann Musah, University at Albany, State University of New York
10:30–10:50	Increasing Safety, Speed, Sensitivity, and Selectivity of Controlled Substance Analysis—2018-DU-BX-0165 Amber Burns, Maryland State Police
10:50–11:10	Determining the Quality of Mass Spectral Library Searches Using a Quantitative Reliability Metric—2018-DU-BX-0184 Preshious Rearden, Houston Forensic Science Center
11:10–11:30	Characterization of the Vapor Profile of Fentanyl and Related Analogs for Instrumental and Canine Detection—IAA-2019-20310-DC-DU Laurn E. DeGreeff, Naval Research Laboratory

11:30–11:50—Q&A

11:50–12:10—BREAK

TRACK I

- 12:10–12:30 **Chemical Foundations for a Cannabis Breathalyzer: Vapor Pressure Measurements and a Pilot Breath Collection Study—NIST IAA DJO-NIJ-19-RO-0008**
Tara Lovestead, National Institute of Standards and Technology
- 12:30–12:50 **Evaluation of Pre-Treatment Parameters in Forensic Hair Testing Using Statistical Design of Experiments (DoE)—NIJ-2018-75-CX-0037**
Brianna Spear, Florida International University
- 12:50–1:10 **Identification of Phase II Opioid Metabolites in Human Hair—2019-DU-BX-0021**
Megan Grabenauer, RTI International
- 1:10–1:30 **Development and Validation of Two Automated Sample Preparation Techniques for the Comprehensive Screening for Biological Matrices Using Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry: A Correlative Analysis of Drug Recognition Expert Evaluations and Forensic Toxicology Results in Suspected Driving Under the Influence of Drugs Cases—2018-DU-BX-0168**
Rebecca Wagner, Virginia Department of Forensic Science

1:30–1:50—Q&A**1:50–2:00—BREAK****Session II—Forensic Anthropology and Forensic Pathology**

Moderated by NIJ Program Manager Danielle McLeod-Henning

- 2:00–2:10 **Welcome and Opening Remarks**
Lucas Zarwell and Danielle McLeod-Henning, NIJ
- 2:10–2:35 **A DNA Barcoding Strategy for Blow and Flesh Flies Encountered During Medicolegal Casework—2019-DU-BX-0022**
Sam Kwiatkowski, Harris County
- 2:35–3:00 **The Impact of Drugs on Human Decomposition and the Postmortem Interval: Insect, Scavenger, and Microbial Evidence—2018-DU-BX-0180**
Dawnie Steadman, University of Tennessee
- 3:00–3:25 **Modeling the Fluvial Transport of Human Remains in the Sacramento River, California—2016-DN-BX-0159**
Eric Bartelink, California State University, Chico Research Foundation

3:25–3:45—Q&A**3:45–4:05—BREAK**

- 4:05–4:30 **Skeletal Trauma Research in Forensic Anthropology—2019-DU-BX-0040**
Angela L. Harden, The Ohio State University
- 4:30–4:55 **Post-Mortem Iris Recognition—2018-DU-BX-0215**
Adam Czajka, University of Notre Dame
- 4:55–5:20 **Understanding the Pathology of Homicidal Pediatric Blunt Neurotrauma Through Correlation of Advanced Magnetic Resonance Images with Histopathology—2017-DN-BX-0145**
Heather Jarrell, Office of the Medical Investigator, University of New Mexico

5:20–5:40—Q&A**5:40—ADJOURN**

TRACK II

10:00–1:50 **Session I—Impression and Pattern Evidence/Trace Evidence**

Moderated by NIJ Program Manager Gregory Dutton

10:00–10:10 **Welcome and Opening Remarks**

Lucas Zarwell and Gregory Dutton, NIJ

10:10–10:35 **Black Box Evaluation of Bloodstain Pattern Analysis Conclusions—2018-DU-BX-0214**

R. Austin Hicklin, Noblis, Inc.

10:35–11:00 **Physics and Statistical Models for Physical Match Analysis Utilizing 3D Microscopy of Fracture Surfaces—2018-R2-CX-0034**

Ashraf Bastawros, Iowa State University

11:00–11:25 **Results of the 2019 3D Virtual Comparison Microscopy Topography Resolution Study (VCMTRS)—2018-DU-BX-0216**

Ryan Lilien, Cadre Research Labs, LLC

11:25–11:45—Q&A

11:45–12:05—BREAK

12:05–12:30 **Determining Fingerprint Age with Mass Spectrometry Imaging of Triacylglycerols—2019-DU-BX-0134**

Young-Jin Lee, Iowa State University

12:30–12:55 **Application of Morphologically Directed Raman Spectroscopy (MDRS) for the Forensic Examination of Soils—2019-DU-BX-0017**

Brooke W. Kamrath, University of New Haven

12:55–1:20 **Raman Microspectroscopy and Advanced Statistics for Detection and Characterization of Gunshot Residue—2016-DN-BX-0166**

Igor K. Lednev, University at Albany, State University of New York

1:20–1:40—Q&A

1:40–2:00—BREAK

Session II—Forensic Biology/DNA

Moderated by NIJ Program Manager Gregory Dutton

2:00–2:10 **Welcome and Opening Remarks**

Lucas Zarwell and Gregory Dutton, NIJ

2:10–2:35 **Population Distribution and Factors Affecting Individual DNA Shedding Propensity—2018-DU-BX-0203**

Mechthild Prinz, John Jay College of Criminal Justice

2:35–3:00 **Persistence of Touch DNA for Forensic Analysis—2018-DU-BX-0192**

Meghan Ramsey, Massachusetts Institute of Technology Lincoln Laboratory

3:00–3:25 **Towards Developing Forensically Relevant Single-Cell Pipelines by Incorporating Unsupervised Clustering—2018-DU-BX-0185**

Ken Duffy, Maynooth University, Rutgers University

3:25–3:45—Q&A

3:45–4:05—BREAK

TRACK II

- 4:05–4:30 **A Universal Method for Biological Stain Identification and Analysis Using Raman Spectroscopy—2017-DN-BX-0135**
Igor K. Lednev, University at Albany, State University of New York
- 4:30–4:55 **The Effect of Storage Conditions on Estimates of the Age of Dried Bloodstains—2018-DU-BX-0206**
Robert Allen, Oklahoma State University Center for Health Sciences
- 4:55–5:20 **An Epigenetic Multiplex Capable of Discriminating Body Fluid Type, Age, and Phenotype—2017-NX-BX-0001**
Bruce R. McCord, Florida International University

5:20–5:40—Q&A

5:40—ADJOURN

