Wednesday

Poster Session

11:30 a.m. - 1:00 p.m.  B1  Costal Cartilage as an Alternative Source for DNA Typing in Personal Identification
Marcin Tomsia; Rafał Skowronek; Michał Szczepanski; Christian Jablonski; Gulnaz T. Javan, PhD*

11:30 a.m. - 1:00 p.m.  B2  Population Analysis and Forensic Utility of Sequence-Based X-Chromosomal Short Tandem Repeat (X-STR) Loci
Lisa Borsuk, MS*; Toni M. Diegoli, PhD; Katherine B. Gettings, PhD; Becky Steffen, MS; Kevin Kiesler, MS; Peter M. Vallone, PhD

11:30 a.m. - 1:00 p.m.  B3  A Novel Collection Method That Improves Direct DNA Amplification From Various Bloodstained Porous Materials
Jamie D. Fredericks, PhD*; Stephen Lipic; Lucille Giordullo

11:30 a.m. - 1:00 p.m.  B4  An Investigation of Forensic DNA Methylation Profiling as a Method of Age Estimation Using High Resolution Melting (HRM)
Rachel A. Turiello, MS*; Cynthia B. Zeller, PhD

11:30 a.m. - 1:00 p.m.  B5  Optimizing the Processing of Databasing Samples Using the Hamilton® easyPunch™ STARlet
Allie Flores, BS*; Heather Sarik, MS; Kevin W.P. Miller, PhD; Daniel Watsula, MS; Robert A. Bever, PhD; Kristen Naughton, BS

11:30 a.m. - 1:00 p.m.  B6  Evaluating In Vitro Seminal Fluid and Saliva Biomarker Degradation Using a Mass Spectrometry-Based Serological Assay
Catherine O. Brown, MSFS*; Janelle Leo, BS; Phillip Danielson, PhD; Kevin M. Legg, PhD; Heather E. McKiernan, MSFS

11:30 a.m. - 1:00 p.m.  B7  Improving the “Front End” of DNA Analysis and Trace Evidence Collection Through a Versatile Vacuum-Based Device
Julian L. Mendel, PhD*; DeEtta Mills, PhD

11:30 a.m. - 1:00 p.m.  B8  The Development of a Polymerase Chain Reaction (PCR) High-Resolution Melt (HRM) Assay for Wormwood (Artemisia Absinthium)
Brianna D. Kiesel, BA*; Kelly M. Elkins, PhD*

11:30 a.m. - 1:00 p.m.  B9  An Improved Swabbing Method for the Collection of DNA From Fired Cartridge Cases
Glenn P. Fahrig*; Gregory A. Peiffer, PhD; Todd W. Bille, MS

11:30 a.m. - 1:00 p.m.  B10  Quadrat Sampling of Splashing Incident Evidence for Urine Stain Identification
Shelby Carlson*

11:30 a.m. - 1:00 p.m.  B11  A Comparative Study of Differential DNA Extraction Methods in United States Laboratories
Jenna K. Sweet*; Kelly L. Knight, MS
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<th>Time</th>
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<tr>
<td>11:30 a.m.</td>
<td>B12</td>
<td>Confirming Statistical Phased Single Nucleotide Polymorphisms (SNPs) Haplotype Data of 74 Microhaplotypes (MH) Across a Global Set of Populations by Massively Parallel Sequencing (MPS)</td>
<td>Fabio Oldoni, PhD; Leena Yoon*; Sathya Prakash Harihar; Aishwaryaa Subramanian; Drew A. Bader, AB; Sharon C. Wootton, PhD; Robert Lagacé, BS; Ryo Hasegawa, BS; Joseph P. Chang, BS; Kenneth Kidd, PhD; Dantele S. Podini, PhD</td>
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<td>11:30 a.m.</td>
<td>B13</td>
<td>A Biological Sample and Fingerprint Collection From Various Surfaces: Which Comes First?</td>
<td>Aylin Yalçin Saribey, PhD*; Tugba Ünsal, PhD; Kaan Yılanıçglu, PhD; Sevil Atasoy, PhD</td>
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<tr>
<td>11:30 a.m.</td>
<td>B14</td>
<td>Building a Face for a Case: Advanced Investigative Leads From Forensic DNA Phenotyping and Prediction Markers</td>
<td>Gregoreese Willocks*; Ismail M. Sebetan, MD, PhD; Paul Stein, PhD; Vivian L. Stafford, MFS</td>
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<tr>
<td>11:30 a.m.</td>
<td>B15</td>
<td>A Statistical Comparison of Mass Spectral Data for Positional Isomer Differentiation</td>
<td>Emma L. Stuhmer, BS*; Victoria L. McGuffin, PhD; Ruth Waddell Smith, PhD</td>
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<td>11:30 a.m.</td>
<td>B16</td>
<td>Multiple Transfers of Drug-Contaminated Fingerprints and Their Analysis With Raman Spectroscopy</td>
<td>Victoria R. DePrimo, BS*; Kenneth B. Zercie, MFS; Pauline E. Leary, PhD; Nicholas D. Petraco, PhD; Lisa Dadio, MS; Brooke W. Kammrath, PhD</td>
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<tr>
<td>11:30 a.m.</td>
<td>B17</td>
<td>The Detection of Explosive Residue on Gloves Exposed to Environmental Conditions</td>
<td>Shannon Lamy*; Alyssa L. Marsico, PhD</td>
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<td>11:30 a.m.</td>
<td>B18</td>
<td>WITHDRAWN</td>
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<td>11:30 a.m.</td>
<td>B19</td>
<td>Increased Objectivity of Shooting Distance Determinations by Spectrochemical Mapping</td>
<td>Courtney H. Vander Pyl*; Oriana Ovide*; Bayram Yuksel, PhD; Tatiana Trejos, PhD</td>
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<tr>
<td>11:30 a.m.</td>
<td>B20</td>
<td>A New Color Identification of Benzodiazepines in Blood and Pharmaceuticals: Using Cobalt Thiocyanate as Reagent</td>
<td>Zahid Mahmood, MPhil*</td>
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<td>11:30 a.m.</td>
<td>B21</td>
<td>The Application of Surface-Enhanced Raman Spectroscopy (SERS) for the Detection of Opioids</td>
<td>Ling Wang, MS*</td>
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<td>11:30 a.m.</td>
<td>B22</td>
<td>The Effects of Exposure to Various Environmental Conditions on the Analytical Data of Manufactured Fibers</td>
<td>Alexis R. Weber, BS*; Virginia M. Maxwell, DPhil</td>
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<td>11:30 a.m.</td>
<td>B23</td>
<td>The Development of a Rule-Based Protocol for Evaluating Fire Debris Using Known Ground Truth Samples and a Best Factors Algorithm</td>
<td>Taylor A. Wood*; Mary R. Williams, MS; Michael E. Sigman, PhD</td>
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<td>11:30 a.m.</td>
<td>B24</td>
<td>A Quantitative Analysis of Trace Levels of Explosives and Related Materials Using Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)</td>
<td>Rory M. Doyle, PhD*; Dominic Andrada, MS; Andrew Harron, PhD</td>
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| 11:30 a.m.  | **B25** The Simultaneous Detection of Rodenticides and Drugs Using Thermal Desorption Direct Analysis in Real-Time Mass Spectrometry (TD/DART®-MS)  
*Elizabeth Robinson, MS*; *Edward Sisco, PhD* |
| 11:30 a.m.  | **B26** New Psychoactive Substances (NPS): How a Forensic Institute Deals With the Lack of Certified Standards in Brazil  
*Lara R.S. Gris, MS*; *Emmanuele V. Baggio*; *Paulini B. Wegner*; *Patricia D. Correa* |
| 11:30 a.m.  | **B27** Portable Quadrupole-Based Gas Chromatography/Mass Spectrometer (GC/MS) Versus a GC/MS Benchtop System: An Analytical Comparison  
*Tais R. Fiorentin, PhD*; *Shana M. Hogg, PhD*; *David M. Martin, PhD*; *Thom Browne, Jr.*;  
*Barry K. Logan, PhD* |
| 11:30 a.m.  | **B28** WITHDRAWN |
| 11:30 a.m.  | **B29** Bomb Biometrics: Detection and Imaging of Markers Indicative of Explosive Compounds in Fingerprints  
*Cameron M. Longo*; *Rabi A. Musah, PhD* |
| 11:30 a.m.  | **B30** Gunshot Residue Detection on Wounds in Stagnant Water: Scanning Electron Microscopy With Energy-Dispersive X-Ray Spectroscopy (SEM/EDX) or Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)? A Preliminary Study  
*Romain Montoriol, MD*; *Céline Guilleau Frugier, PhD*; *Sébastien Aries, PhD*;  
*Lauriane Onfray, PhD*; *Bruno Payré, PhD*; *Valentin Lombardi*; *Norbert Telmon, PhD*;  
*Frederic Savall* |
| 11:30 a.m.  | **B31** The Decomposition Clock: A Characterization of Insect Volatile Odor Profiles  
*Katie E. Blanar, BS*; *Paola A. Prada, PhD* |
| 11:30 a.m.  | **B32** Use of Blood Volatiles as Trace Evidence  
*Lena M. Dubois, MSc*; *Katelynn A. Perrault, PhD*; *Pierre-Hugues Stefanuto, PhD*;  
*Jean-François M. Focant, PhD* |
| 11:30 a.m.  | **B33** The Use of Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) in the Identification of the Elemental Composition of Kratom and the Determination of Geographical Origin  
*Cody L. Braley*; *Ellen Hondrogiannis, PhD* |
Thursday—Session I

Multidisciplinary Session: Criminalistics I/General II—Rape Kit Collection and Processing

Moderator: Gina Londino-Smolar, MS
Indiana University–Purdue University Indianapolis
Indianapolis, IN

Co-Moderator: Noelle J. Umback, PhD
Office of the Chief Medical Examiner
Department of Forensic Biology
New York, NY

8:30 a.m. - 8:50 a.m.   E74  Testing Sexual Assault Kits Supports the Principle of “Justice For All”
Julie L. Valentine, PhD*; Suzanne Miles, BS*; Leslie Miles, DNP; Linda Mabey, DNP

8:50 a.m. - 9:05 a.m.   B34  A Casework Review for Determining Time Since Intercourse in Boston, Massachusetts
Cassandra A. Swart, BS*; Caitlin E. Rogers, MS; William Cavedon, MS;
Amy N. Brodeur, MFS; Kathryne Hall, MS

9:05 a.m. - 9:20 a.m.   E75  Forensic Doctors and Clinical Forensic Medicine: Should or Could?
Pierre-Antoine Peyron, MD; Elodie Michel; Eric Baccino, MD*

9:20 a.m. - 9:40 a.m.   B35  A Strategic Design to Arrest a Serial Rapist and Killer: The Role of a DNA
Profiling Database and Population Census Data
Mohammad A. Tahir, PhD; Syed W. Hamdani*; Mudassar Naseer, MPhil;
Nasir Siddique, MPhil, LLB

9:40 a.m. - 9:55 a.m.   E76  DNA Evidence Collection and Analysis in Groping Sexual Assault Cases
Julie L. Valentine, PhD*; Suzanne Miles, BS*

9:55 a.m. - 10:10 a.m.  Break

10:10 a.m. - 10:25 a.m. B36  The Recovery of Foreign DNA Introduced Through Kissing
Joyce P. Williams, DNP*; David A. Williams, DDS*

10:25 a.m. - 10:40 a.m. E77  Forensic Nurses in Institutes of Forensic Medicine: An Evaluation of the
Zurich Integration Model
Valeria Hofer*; Michael Thali, MD; Rosa M. Martinez, MD

10:40 a.m. - 11:00 a.m. B37  Rapid DNA Turnaround for the Analysis of All Victim Sexual Assault Evidence
When a Kit Is Collected
Diana K. Faugno, MSN*; Patricia M. Speck, DNSc

Bones and DNA

Moderator: Janine Kishbaugh, MS
Cedar Crest College
Forensic Science Program
Allentown, PA

Co-Moderator: Amy L. Southall-Malone, BA
Mississippi Crime Laboratory
Pearl, MS

11:00 a.m. - 11:15 a.m. B38  Efficient Sampling of Skeletonized Human Crania for DNA Testing
Suni M. Edson, MS*
11:15 a.m. - 11:30 a.m.  B39  Rapid DNA Analysis for Disaster Victim Identification in New York City
Andrew J. Schweighardt, PhD*; Veronica N. Cano, BS; Yasser D. Hernandez, BA; Arianna Lionetti; Brad Greenstein, MS; April V Kwong, MSc; Kaleel Wainwright, MPH; Carl Gajewski, MS; Mark A. Desire, MS, JD

11:30 a.m. - 11:50 a.m.  B40  Coupling DNA and Gas Chromatography/Mass Spectrometry (GC/MS) Analysis of Skeletal Remains: A Case Study of the USS Oklahoma
Soni M. Edson, MS*

11:50 a.m. - 1:00 p.m.  Lunch

Poster Session

11:30 a.m. - 1:00 p.m.  B41  The Development of an Innovative Massively Parallel Sequencing (MPS) Panel of Microhaplotypes for Improved Biogeographic Ancestry Inference
Sathya Prakash Harihar*; Fabio Oldoni, PhD; Aishwaryaa Subramanian; Leena Yoon; Sharon C. Wootton, PhD; Robert Lagacé, BS; Ryo Hasegawa, BS; Joseph P. Chang, BS; Moses S. Schanfield, PhD; Kenneth Kidd, PhD; Daniele S. Podini, PhD

11:30 a.m. - 1:00 p.m.  B42  The Persistence of Salivary α-Amylase on Decomposing Skin
Jennifer P. Kidd*; Martin Jimenez-Navarro; Courtney Manas

11:30 a.m. - 1:00 p.m.  B43  Comparing Novel Differential Lysis Methods and Direct Polymerase Chain Reaction (PCR) to Traditional Differential Extraction
Meghan N. Roig, MSFS*; Vanessa Martinez; Jeff Johnson, MS; George T. Duncan, PhD; Jeffrey A. Hickey, MS; Bruce R. McCord, PhD

11:30 a.m. - 1:00 p.m.  B44  The Development of a Single-Tube Assay for the Simultaneous Detection of Blood, Semen, and Saliva Utilizing DNA Methylation and ScreenClust® High Resolution Melt Software
Ellyn A. Zeidman, BS*; Cynthia B. Zeller, PhD

11:30 a.m. - 1:00 p.m.  B45  The Evaluation of a Novel Massively Parallel Sequencing (MPS) Panel of 74 Microhaplotypes for Ancestry Prediction of Four Major United States Population Groups
Aishwaryaa Subramanian*; Fabio Oldoni, PhD; Sathya Prakash Harihar; Leena Yoon; Sharon C. Wootton, PhD; Robert Lagacé, BS; Ryo Hasegawa, BS; Joseph P. Chang, BS; Moses S. Schanfield, PhD; Kenneth Kidd, PhD; Daniele S. Podini, PhD

11:30 a.m. - 1:00 p.m.  B46  Utilizing DNA Profiles Generated From Human Nail Clippings as a Means of Personal Identification
Jonah W.P. Stone, BS*; Haley Rock, BS*; Rachel M. Kreher, BS*; Krista E. Latham, PhD; Cynthia Cale, MS; Gay L. Bush, PhD

11:30 a.m. - 1:00 p.m.  B47  Dual Separation of DNA and Peptides From Semen
Ashleigh K. Matzoll*; Victoria L. Montgomery, BSc; Zachary C. Goecker, MPS; Glendon Parker, PhD

11:30 a.m. - 1:00 p.m.  B48  Recovery of Touch DNA: A Comparison of Four Collection Methods on Various Substrates
Rachel B. Gilmore*; Emily Neverett; Claire Glynn, PhD
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<th>Time</th>
<th>Session</th>
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<th>Presenters</th>
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<tr>
<td>11:30 a.m. - 1:00 p.m.</td>
<td>B49</td>
<td>A Comparison of Two Commercial Quantitative Polymerase Chain Reaction (qPCR) DNA Quantitation Kits for Prioritizing Forensic Samples for Downstream Genetic Analysis</td>
<td>Megan M. Foley, MSFS*; Catherine O. Brown, MSFS; Heather E. McKiernan, MSFS</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B50</td>
<td>MicroFLOQ®: Swabs and Direct Amplification of Trace DNA Samples</td>
<td>Dana M. Yenko, BS*; Daniele S. Podini, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B51</td>
<td>Optimal Small-Molecular Reference RNA for MicroRNA-Based Body Fluid Identification</td>
<td>Shuntaro Fujimoto, MS*; Sho Manabe, PhD; Chie Morimoto, MS; Munetaka Ozeki, PhD; Yuya Hamano, PhD; Keiji Tamaki, MD, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B52</td>
<td>The Forensic Value of Electrospun Nanofiber Mesh for Sexual Assault Samples</td>
<td>Juliette Smith*; James P. Creecy, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B53</td>
<td>DNA Methylation-Based Assay for the Identification of Smoking Status</td>
<td>Hussain J.H. Alghanim, MS*; Bruce R. McCord, PhD; Wensong Wu, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B54</td>
<td>Fast Analysis Workflow With No Sample Preparation for Forensic Applications</td>
<td>Luis A. Cuadra-Rodriguez, BS*; Bjorn Flatt, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B55</td>
<td>The Fusion of Electrochemical and Spectrochemical Data for the Detection of Organic and Inorganic Gunshot Residues (GSR)</td>
<td>Luis E. Arroyo, PhD*; Korina Menking-Hoggatt, MSc; Tatiana Trejos, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B56</td>
<td>The Adsorption and Persistence of Gasoline Residues on Household Materials</td>
<td>Eric Frauenhofer*; Joonyeong Kim, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B57</td>
<td>The Optimization of Superglue Fuming to Develop Fingermarks Exposed to Different Bodies of Water</td>
<td>Emily L. Horrocks, MSc*</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B58</td>
<td>Blood Decomposition Odor Profiling: An Instrumental and Field Application Tool in Forensic Detection</td>
<td>Kiana L. Holbrook, BS*; Paola A. Prada, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B59</td>
<td>Characterization and Comparison of Electrical Tape Backings by X-Ray Florescence (XRF)</td>
<td>Meghan Prusinowski*; Andria H. Mehltretter, MSFS; Claudia Martinez, BSc; Jose R. Almirall, PhD; Tatiana Trejos, PhD</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B60</td>
<td>Differentiation of Isobaric and Isomeric Fentanyl Analogs by Gas Chromatography/ Mass Spectrometry (GC/MS)</td>
<td>Jianmei Liu*; Roxanne E. Franckowski, MS</td>
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<td>11:30 a.m. - 1:00 p.m.</td>
<td>B61</td>
<td>An Analysis of Non-Detonable Canine Training Aids for Hexamethylene Triperoxide Diamine (HMTD)</td>
<td>Alison G. Simon, PhD*; Lauryn DeGreeff, PhD</td>
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11:30 a.m. - 1:00 p.m.  B62  A Quantitative Analysis of Trace Elements in Electrical Tapes
Saeed Almheiri*; Claudia Martinez, BSc; Jose R. Almirall, PhD

11:30 a.m. - 1:00 p.m.  B63  The Effect of Aqueous Foam Concentrate-380 Blast Suppression Foam on Latent Fingerprints
Kelsey Kyllonen, MA*; Jeffrey Leggitt; Maria A. Roberts; Kelli Edmiston; Keith L. Monson, PhD

11:30 a.m. - 1:00 p.m.  B64  The National Forensic Laboratory Information System (NFLIS): Monitoring Trends in Cannabis/THC, Methamphetamine, and Cocaine Drug Reports
DeMia P. Pressley, MS*; Liqun Wong, MS; Terrence Boos, PhD; Belinda J. Weimer, MA; Hope Smiley-McDonald, PhD; Katherine N. Moore, MS; Jeffrey M. Ancheta, BS; Neelima Kunta, BS; David Heller, BS; Jeri D. Ropero-Miller, PhD

11:30 a.m. - 1:00 p.m.  B65  Identification of an Ultraviolet (UV) -Induced Promethazine Dimer
Sarah E. Chaffman*; Tyler Williams; James T. Miller, MA; J. Tyler Davidson, MS; Glen P. Jackson, PhD

11:30 a.m. - 1:00 p.m.  B66  Burning Down the House: The Biometric Recovery of Latent Prints and Blood in Arson Crime Scenes
Jason A. Casper, MFS*; Ismail M. Sebetan, MD, PhD*; Jose E. Valdez, Jr., MFS; Paul Stein, PhD*

11:30 a.m. - 1:00 p.m.  B67  Trinitrotoluene (TNT) Recovery Via Microbial-Vac System (M-Vac) Collection
Jacqueline Ruchti, BS*; John V. Goodpaster, PhD

11:30 a.m. - 1:00 p.m.  B68  Split-Second Decision: Is It Real or Is It Fake?
Andrew J. Winter, MS*; Peter J. Dianckuk*

11:30 a.m. - 1:00 p.m.  B69  The Repeatability of Ridge Width Measurements for Latent Fingermark Aging Studies
Josep De Alcaraz-Fossoul, PhD*; Michelle Mancenido, PhD; Carme Barrot, PhD; Sara C. Zapico, PhD; Katherine A. Roberts, PhD; Melissa J. Sirard; Anahi Barraza; Sara R. Anderson; Natalie Rivera Cardenas, BSc

11:30 a.m. - 1:00 p.m.  B70  A Comparison and Analysis of New Impression Casting Mediums to Dental Stone and Plaster of Paris
Alexander J. Colla, MFS*; Ismail M. Sebetan, MD, PhD*; Paul Stein, PhD*

11:30 a.m. - 1:00 p.m.  B71  The Dealkylation of Secondary Amines in the Presence of Botanical Materials
Katherine E. Eames*; Shana M. Hogg, PhD; David Buzby, BS; Francis X. Diamond, BS; Heather L. Harris, JD

11:30 a.m. - 1:00 p.m.  B72  Practical Techniques for the Enhancement of Textile Impressions in Vehicle Surface Coatings
Jessica E. Hovingh*; Abigail J. Bender, BS*; Ralph R. Ristenbatt III, MS

11:30 a.m. - 1:00 p.m.  B73  A Comparison of D-Amino Acid Levels in Historical Parchment and Leather
Krystalyn C. Gerhardt, BS*; Mehdi Moini, PhD
## Likelihood Ratios and Probabilistic Genotyping

**Moderator:** Daniele S. Podini, PhD  
*Department of Forensic Science*  
Washington, DC  

**Co-Moderator:** Kelly L. Knight, MS  
*George Mason University*  
*Forensic Science Program*  
Fairfax, VA

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<tr>
<td>1:00 p.m.</td>
<td>B74</td>
<td>The Application of Probabilistic Genotyping Software Analysis for Mixture Deconvolution Using a New Massively Parallel Sequencing (MPS) Panel for Microhaplotypes</td>
<td>Drew A. Bader, AB; Fabio Oldoni, PhD; Charles H. Brenner, PhD; Kenneth Kidd, PhD; Daniele S. Podini, PhD</td>
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<td>1:15 p.m.</td>
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<td>Quantifying the Impact of Post-Validation Modifications to Forensic Statistical Tool (FST)</td>
<td>Nathaniel D. Adams, BS; Stephen Lorenz; Marzieh Babaeianjelodar, MS; Jeanna N. Matthews, PhD; Dan Krane, PhD</td>
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<td>1:30 p.m.</td>
<td></td>
<td>How to Decide How Many Contributors Are in a Mixture</td>
<td>Charles H. Brenner, PhD*</td>
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<td>1:50 p.m.</td>
<td>B77</td>
<td>A Logistic Regression Approach For Combining Likelihood Ratio (LR) in the Field of DNA Mixture Interpretation</td>
<td>Eugenio Alladio, PhD; Monica Omedei, PhD; Selena Cisana, PhD; Denise Caneparo, MS; Paolo Garofano, MD, PhD; Tereza Neocleous, PhD</td>
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<td>2:05 p.m.</td>
<td>B78</td>
<td>Evaluating Likelihood Ratio Variability of Major Component DNA Profiles in Complex Mixtures</td>
<td>Steven Weitz, MS; Todd W. Bille, MS; Gregory A. Peiffer, PhD; John S. Buckleton, PhD; Jo-Anne Bright, PhD; Michael D. Coble, PhD</td>
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<td>2:20 p.m.</td>
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<td>Discussion</td>
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<td>2:30 p.m.</td>
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<td>Break</td>
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## Developments in Laboratory Methods

**Moderator:** Taylor M. Dickerson, MSFS  
*American Registry of Pathology*  
*Armed Forces DNA Identification Laboratory*  
*Dover Air Force Base, DE*  

**Co-Moderator:** Nasir A. Butt, PhD  
*Cuyahoga County Medical Examiner’s Office*  
*Cleveland, OH*  

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<td>2:45 p.m.</td>
<td>B79</td>
<td>Proteomic Genotyping of Human Head Hair</td>
<td>Zachary C. Goecker, MPS; Michelle Salemi, MS; Brett Phinney, PhD; Glendon Parker, PhD; Robert Rice, PhD</td>
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<td>3:00 p.m.</td>
<td>B80</td>
<td>The Evaluation of a Quantitative Proteomic Seminal Fluid Assay for Assessing Lateral Flow Test Error Rates and Predicting Downstream DNA Profiling Success</td>
<td>Heather E. McKiernan, MSFS; Catherine O. Brown, MSFS; Kevin M. Legg, PhD; Phillip Danielson, PhD</td>
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*Presenting Author*
3:15 p.m. - 3:30 p.m.  B81  The Developmental Validation of a MicroRNA (miRNA) Panel for Forensic Body Fluid Identification
Annabelle C. Campbell, BSc*; Jennifer Szekely, BS; Carolyn Lewis, BS; Sarah J. Seashols Williams, PhD; Raquel Green, BS; Tracey Dawson Cruz, PhD

3:30 p.m. - 3:45 p.m.  B82  Antibody-Mediated Separation of Seminal Male/Female Mixtures From Sexual Assault Samples
Chelsie N. Testerman, BS*; Jordan Cox, MS; Kemper Gibson, MS; James P. Landers, PhD; Tracey Dawson Cruz, PhD

3:45 p.m. - 4:00 p.m.  B83  The Optimization and Validation of a Novel Direct-Lysis Differential Extraction Procedure
Andrew D. Ziegler, BS*; Anooja Rai; Mike Yakoo, MS; Robin W. Cotton, PhD

4:00 p.m. - 4:15 p.m.  B84  The Integration of a High-Resolution Melt (HRM) Curve Short Tandem Repeat (STR) Assay Into a Commercial Quantification Kit for Preliminary Mixture Detection: Getting More Information Earlier in the DNA Workflow
Hannah Wines, BS; Laura C. Oliver, MS*; Jordan Cox, MS; Darianne Cloudy, BS; Sarah J. Seashols Williams, PhD; Steven Weitz, MS; Todd W. Bille, MS; Edward Boone, PhD; Tracey Dawson Cruz, PhD

4:15 p.m. - 4:30 p.m.  B85  Forensic Body Fluid Identification Using Microbiome Signature Attribution Through 16S Ribosomal DNA (rDNA) High-Throughput Sequencing (HTS)
Denise Wohlfahrt, BS*; Raquel Green, BS; Angela L. Brand, BS; Eric A. Abshier, BS; Elena Martinez Planes; Antonio Tan-Torres, MS; J. Brooks, PhD; Sarah J. Seashols Williams, PhD; Baneshwar Singh, PhD

4:30 p.m. - 4:45 p.m.  B86  Typing Highly Degraded DNA Using Circularized Molecules and Target Enrichment
Rachel E. Wiley, MFS*; Magdalena Bus, PhD; Jonathan King, MS; Bruce Budowle, PhD

4:45 p.m. - 5:00 p.m.  Discussion

Thursday—Session II

Multidisciplinary Session: Criminalistics II/Engineering Sciences II—Fire Science and Investigation, Part I

Moderator: Sarah V. Hainsworth, PhD
Aston University
School of Engineering and Applied Science
Birmingham, UNITED KINGDOM

Co-Moderator: Sandra B. Sachs, PhD
Oakland Police Department
Crime Laboratory
Oakland, CA

8:30 a.m. - 8:45 a.m.  D24  The Vision and Progress of the Organization of Scientific Area Committees (OSAC) Fire Debris and Explosives (FD&E) Analysis Subcommittee
Susan Seebode Hetzel, BA*

8:45 a.m. - 9:00 a.m.  B87  The Bomb Maker Project: How Human Factors Affect the Characteristics and Interpretation of Explosives Evidence
John V. Goodpastor, PhD*
### CRIMINALISTICS

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<th>Time</th>
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<tr>
<td>9:00 a.m.</td>
<td>B88</td>
<td>Exploring a New Approach to Canine Training Aids for Explosives</td>
<td>William A. MacCrehan, PhD*; Craig Angle, PhD; Michele Schantz, PhD; Paul Waggoner, PhD; Jason Barrow, PhD; Kelly Van Arsdale, MS</td>
</tr>
<tr>
<td>9:15 a.m.</td>
<td>B89</td>
<td>A Quantitative Comparison and Differentiation of Smokeless Powders</td>
<td>Casey M. Brown, MPS; Ryan Schonert, MPS; Wayne Moorehead, MS; Jack Hietpas, PhD*</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>D25</td>
<td>The Use of Toxicological Evidence in Fire Investigation</td>
<td>Douglas J. Carpenter, MS*</td>
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<tr>
<td>9:45 a.m.</td>
<td>D26</td>
<td>Exceeding the Scope of Law Enforcement in Forensic Fire Investigation</td>
<td>S.B. Addison Larson, MS*</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Break</td>
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**Multidisciplinary Session: Criminalistics II/Engineering Sciences II—Fire Science and Investigation, Part II**

**Moderator:** Sarah V. Hainsworth, PhD  
**Co-Moderator:** John L. Allen, PE  
**Aston University**  
**School of Engineering and Applied Science**  
**Birmingham, UNITED KINGDOM**  

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<tr>
<td>10:30 a.m.</td>
<td>D27</td>
<td>Heavy Truck Fuel-Fed Fires: Predictable Fuel Leakage, Ignition Sources, Fuel Tank Placement Hazards, and Safer Alternative Designs</td>
<td>Mark C. Pozzi, MS*; David R. Bosch, PhD*; Kenneth J. Saczalski, PhD</td>
</tr>
<tr>
<td>10:45 a.m.</td>
<td>D28</td>
<td>Electrical Homicide or Not?</td>
<td>Helmut G. Brosz, BASc, PEng*</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>D29</td>
<td>Sabotaged Electrical Grid: Worse Than 9/11?</td>
<td>Helmut G. Brosz, BASc, PEng*</td>
</tr>
<tr>
<td>11:15 a.m.</td>
<td>B90</td>
<td>Yes, Everybody Knows a Fire Needs Oxygen, But Why Should We Care?</td>
<td>John J. Lentini, BA*</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>D30</td>
<td>American Association for the Advancement of Science (AAAS) Forensic Science Assessments: A Quality and Gap Analysis of Fire Investigation</td>
<td>Jose R. Almirall, PhD*</td>
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<tr>
<td>11:45 a.m.</td>
<td>Lunch</td>
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**Pattern Recognition—Science of Latent Print and Firearm Analysis**

**Moderator:** Thomas A. Brettell, PhD  
**Cedar Crest College**  
**Allentown, PA**

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<th>Time</th>
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<tr>
<td>1:00 p.m.</td>
<td>B91</td>
<td>A Large-Scale Study for the Differentiation of Individuals Based on Triacylglycerols (TG) in Latent Fingerprints</td>
<td>Kelly C. O’Neill*; Paige L. Hinners, MS; Young-Jin Lee</td>
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</table>

*Presenting Author*
1:15 p.m. - 1:30 p.m.  B92  Tape-Dependent Latent Print Development  
Vidia A. Gokool, BSc*; Monika Garcia, MFS; Rachel L. Creager

1:30 p.m. - 1:45 p.m.  B93  Latent Print Processing of Glassine Stamp Bags Containing Suspected Heroin: The Search for an Efficient and Safe Method  
Brittany Barnes, BS; Jason Clark, MS; Joseph B. Kadane, PhD*; Marla Priestley, BS; Neil Spencer, MS; Deborah Tator, MS; Denielle Wauthier, BS; Joshua Yohannan, MS

1:45 p.m. - 2:00 p.m.  B94  Latent Fingermark Detection Using Functional Nanomaterials  
Fehmida Kanodarwala, PhD*; Po Lun Lee, BSc; Sebastien Moret, PhD; Xanthe Spindler, PhD; Christopher J. Lennard, PhD; Claude Roux, PhD

2:00 p.m. - 2:15 p.m.  B95  Why Do Latent Print Examiners Differ in Their Conclusions?  
Bradford Ulery, MS; R. Austin Hicklin, PhD*; Tom Busey, PhD; Maria A. Roberts; JoAnn Buscaglia, PhD*

2:15 p.m. - 2:30 p.m.  B96  Assessing the Expected Weight of Evidence for a Latent Print (Fingermark) That Is Insufficient for Identification and Without Reference to a Putative Source  
Marco De Donno*; Christophe Champod, PhD; David A. Stoney, PhD; Paul Stoney, MBA

2:30 p.m. - 2:45 p.m.  B97  The Associative Value of Latent Print Correspondences That Are Insufficient for Identification  
David A. Stoney, PhD*; Marco De Donno; Christophe Champod, PhD; Paul Stoney, MBA

2:45 p.m. - 3:00 p.m.  B98  Probabilistic Reporting in American Criminal Cases: A Baseline Study  
Simon Cole, PhD*; Matt Barno, JD

3:00 p.m. - 3:15 p.m.  B99  A Pathway Toward Firearm Population Statistics  
Xiaoyu A. Zheng, MS*; Erich D. Smith, MS*; Martin Baiker-Sørensen, PhD; Johannes A. Soons, PhD

3:15 p.m. - 3:30 p.m.  Break

Firearm Markings, Explosive Devices, and Components

Moderator: Desiree A. Reid, BS  
New Jersey State Police, East Laboratory  
Sea Girt, NJ  
Co-Moderator: Peter J. Diaczuk  
Penn State University  
State College, PA

3:30 p.m. - 3:45 p.m.  B100  An Experiment to Explore Persistence of Bullet Striations  
Heike Hofmann, PhD*; Alicia L. Carriquiry, PhD; Nicholas A. Lennie, BSc

3:45 p.m. - 4:00 p.m.  B101  A Comparison of VisionX and Leica® UFM4 Comparison Microscopes and Validation of the VisionX Comparison Microscope for Intra- and Inter-Laboratory Examination  
Mark S. Dreyfuss, PhD*; Daniel E. Katz, MFS; Torin Z. Saber; Susan L. Kim, MFS

4:00 p.m. - 4:20 p.m.  B102  The Development and Validation of Machine Learning Models for Fire Debris Analysis  
Michael E. Sigman, PhD*; Mary R. Williams, MS

4:20 p.m. - 4:40 p.m.  B103  The Detection and Forensic Analysis of Trace Fuel-Oxidizer Mixture Evidence by Infrared Thermal Desorption (IRTD) With Direct Analysis in Real-Time Mass Spectrometry (DART®-MS): Black Powders and Black Powder Substitutes  
Thomas P. Forbes, PhD*; Jennifer R. Verkouteren, MS; Edward Sisco, PhD; Matthew E. Staymates, MS

*Presenting Author
Friday—Session I

The Next Generation of Sequencing

Moderator: Monnie Michalik, MFS  
Texas Department of Public Safety  
Houston, TX

Co-Moderator: Andrew J. Schweighardt, PhD  
Northport, NY

8:30 a.m. - 8:50 a.m.  B105  Forensic Genetic Genealogy for Law Enforcement  
Ellen M. Greytak, PhD*; CeCe Moore; Steven Armentrout, PhD

8:50 a.m. - 9:05 a.m.  B106  The Characterization and Repair of Hydrolytically Induced DNA Damage in the Mitochondrial DNA (mtDNA) Control Region Through Massive Parallel Sequencing (MPS) Analysis  
Sidney Gaston Sanchez*; Charity A. Holland, MPH; Mitchell M. Holland, PhD

9:05 a.m. - 9:20 a.m.  B107  Massively Parallel Sequencing (MPS) and Short Tandem Repeat (STR) Analysis of Human DNA From Partial Bloody Fingerprints Enhanced With Columnar Thin Films (CTF)  
Teresa M Tiedge*; Nivedita Nagachar, PhD; Akhlesh Lakhtakia, PhD, DSc; Reena Roy, PhD

9:20 a.m. - 9:35 a.m.  B108  A Newly Developed Massively Parallel Sequencing (MPS) Microhaplotype Forensic Assay for Mixture Detection and Deconvolution and Ancestry Prediction  
Fabio Oldoni, PhD*; Drew A. Bader, AB; Sharon C. Wootton, PhD; Robert Lagacé, BS; Ryo Hasegawa, BS; Joseph P. Chang, BS; Kenneth Kidd, PhD; Daniele S. Podini, PhD

9:35 a.m. - 9:50 a.m.  B109  FONTANA: A FOrensic NexT-Generation ANAlysis Pipeline for High-Throughput Microhaplotype Data Analysis  
Keylie M. Gibson, BS*; Fabio Oldoni, PhD; Rebecca M. Hart; Daniele S. Podini, PhD; Keith A. Crandall, PhD

9:50 a.m. - 10:05 a.m.  B110  The Use of Receiver Operating Characteristic (ROC) Curves as a Tool to Assess Noise and Zygosity in the Targeted Sequencing of Forensic Short Tandem Repeat (STR) Markers  
Sarah Riman, PhD*; Hariharan Iyer, PhD; Lisa Borsuk, MS; Peter M. Vallone, PhD

10:05 a.m. - 10:20 a.m.  B111  Eye, Hair, and Skin Color Prediction Using the HIrisPlex-S (HPS) System and Massively Parallel Sequencing (MPS)  
Krystal Breslin, MS; Bailey M. Wills, BS*; Susan Walsh, PhD

10:20 a.m. - 10:35 a.m.  Break
Low Copy Number DNA Techniques

**Moderator:** Baneshwar Singh, PhD  
Virginia Commonwealth University  
Department of Forensic Science  
Richmond, VA

**Co-Moderator:** Angelina R. Temple, MS  
Texas Department of Public Safety  
Houston, TX

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<tr>
<td>10:35 a.m.</td>
<td>B112</td>
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<td>10:50 a.m.</td>
<td>B113</td>
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<td>11:05 a.m.</td>
<td>B114</td>
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<td>11:20 a.m.</td>
<td>B115</td>
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<td>11:35 a.m.</td>
<td>B116</td>
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<td>11:50 a.m.</td>
<td>Lunch</td>
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**Poster Session**

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<td>11:30 a.m.</td>
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<td>11:30 a.m.</td>
<td>B119</td>
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<td>11:30 a.m.</td>
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<td>11:30 a.m.</td>
<td>B121</td>
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*Presenting Author*
11:30 a.m. - 1:00 p.m.  B122 A Developmental Validation of a Body Fluid Identification Multiplex Via DNA Methylation Analysis
Quentin T. Gauthier, MSFS*; Sohee Cho, PhD; Bruce R. McCord, PhD

11:30 a.m. - 1:00 p.m.  B123 The Optimization of a Semi-Automated Differential Extraction Protocol for Recovery of Low-Level Male DNA From Sexual Assault Samples
Janelle Leo, BS*; Heather V. Milnthorp, MSFS; Heather E. McKiernan, MSFS

11:30 a.m. - 1:00 p.m.  B124 An Examination of the Persistence of Indirectly Transferred DNA on Regularly Used Knives in a Stabbing Simulation
Erica Cantor, BS*; Jessica Miller, BS*; Krista E. Latham, PhD; Cynthia Cale, MS; Gay L. Bush, PhD

11:30 a.m. - 1:00 p.m.  B125 Nanoscale Imaging and Chemical Analysis of Extracellular DNA in Trace Biological Samples
Congzhou Wang, PhD; Emily Brocato; Christopher J. Ehrhardt, PhD; Vamsi Yadhavalli, PhD*

11:30 a.m. - 1:00 p.m.  B126 Tracking DNA Loss in Forensic Touch Samples
Jessica Tang, BS*; Ray Wickenheiser, MBA; Ashley Hall, PhD

11:30 a.m. - 1:00 p.m.  B127 The Development of a Universal Quantitative Reverse Transcription-Polymerase Chain Reaction (qRT-PCR) Protocol for Differentiating a Mixture of Forensically Relevant Body Fluids Using microRNA (miRNA)
Zoe S. Garcia, BSc*; Cynthia B. Zeller, PhD

11:30 a.m. - 1:00 p.m.  B128 The Generation of Interpretable, Single-Source, Short Tandem Repeat (STR) Profiles From Mixed Samples Using Optical Tweezers
Michael K. Valle, BS*; Nicole Auka, MS; Joseph E. Reiner, PhD; Tracey Dawson Cruz, PhD; Sarah J. Seashols Williams, PhD

11:30 a.m. - 1:00 p.m.  B129 The Evaluation of the Short Tandem Repeat (STR) Genotype Concordance Between Massively Parallel Sequencing (MPS) and Capillary Electrophoresis (CE) STR Kits in Japanese Population Samples
Tetsushi Kitayama, PhD*; Kevin Kiesler, MS; Lisa Borsuk, MS; Becky Steffen, MS; Takashi Fukagawa, PhD; Haruhiko Watahiki, MS; Yusuke Mita, PhD; Koji Fujii, PhD; Peter M. Vallone, PhD; Natsuko Mizuno, PhD

11:30 a.m. - 1:00 p.m.  B130 An Evaluation of the Stability of High Throughput Sequencing (HTS) of Microbial DNA From Compromised Human Samples
Francy Scarlett Nogales, BS*; Sarah J. Seashols Williams, PhD; Baneshwar Singh, PhD; J. Brooks, PhD; Denise Wohlfahrt, BS*; Raquel Green, BS*; Antonio Tan-Torres, MS; Kathleen D. Brim, BS; Najai Bradley

11:30 a.m. - 1:00 p.m.  B131 The Development of Magnetic Carbon Nanotubes (Mag-CNT) for Dispersive Solid Phase Extraction (dSPE) of Cyanide Metabolite (2-Aminothiazoline-4-Carboxylic Acid) in Biological Samples
Sun Yi Li, BSc*; Jorn Chi-Chung Yu, PhD

11:30 a.m. - 1:00 p.m.  B132 A Three-Year Review of Novel Psychoactive Substance (NPS) Prevalence in Drug Identification Casework
Keith-Dane H. Temporal, MS*; Donna M. Papsun, MS; Frederick Strathmann, PhD; Barry K. Logan, PhD

*Presenting Author
11:30 a.m. - 1:00 p.m.  B133  The Forensic Evaluation of Cut and Torn Duct Tape Fractures: A Validation Study to Quantify the Quality of a Physical Match  
Meghan Prusinowski*; Tatiana Trejos, PhD

11:30 a.m. - 1:00 p.m.  B134  Chemical Waste From a Chemistry Forensic Laboratory and the Challenge of Segregating, Treating, and Disposal  
Marcus de Abreu Farias Costa*; Natilene M. Brito, PhD

11:30 a.m. - 1:00 p.m.  B135  The Detection of Human Decomposition Products by Infrared and Visible Spectroscopy at a Disturbed 19th-Century Native American Burial Ground  
Afrin Lopa, MS*

11:30 a.m. - 1:00 p.m.  B136  The Determination of Weathering Levels of Gasoline Using Various Methods of Analysis  
Morgan N. Carpenter, BS*; William M. Davis, PhD

11:30 a.m. - 1:00 p.m.  B137  Drug Trends in Correctional Facilities: An Assessment of Forensic Drug Chemistry Casework  
Mollie Mares, MSFS*; Frederick Strathmann, PhD; Barry K. Logan, PhD; Francis X. Diamond, BS

11:30 a.m. - 1:00 p.m.  B138  Differentiation and Identification of U-47700, U-51754, and U-49900 Using Gas Chromatography/Mass Spectrometry (GC/MS) and Nuclear Magnetic Resonance (NMR) Spectroscopy  
Krystal T. Byrd, BSc*; Susan M. Schelble, PhD; Kelly M. Elkins, PhD

11:30 a.m. - 1:00 p.m.  B139  Fingermark Recovery Methods From Submerged Knives in Different Aquatic Environments  
Emily L. Horrocks, MSc*

11:30 a.m. - 1:00 p.m.  B140  The Determination of a Canine Olfactory Detection Threshold Using a Universal Detection Calibrant (UDC)  
Kelvin J. Frank, Jr., BS*; Rodolfo Mesa, BS*

11:30 a.m. - 1:00 p.m.  B141  The Detection of Arson Accelerants Using Porous-Layer Open-Tubular (PLOT)-Cryoadsorption  
Daniella M. Hernandez*; April A. Hill, PhD

11:30 a.m. - 1:00 p.m.  B142  Automatic Groove Identification in 3D Bullet Land Scans Using Statistical Models  
Nathaniel M. Garton, MSc*; Heike Hofmann, PhD; Ulrike Genschel

11:30 a.m. - 1:00 p.m.  B143  The Estimation of True Compositions of Volatile Compounds in Headspace Via Solid Phase Microextraction (HS/SPME) and Inverse Gas Chromatography (IGC)  
Joonyeong Kim, PhD*

11:30 a.m. - 1:00 p.m.  B144  A Biological Sample and a Gunshot Residue Collection from the Shooter’s Hand: Which Comes First?  
Tugba Ünsal, PhD*; Aylin Yalçın Saribey, PhD; Kaan Yilancioglu, PhD; Sevil Atasoy, PhD

11:30 a.m. - 1:00 p.m.  B145  Determining the Confidence of Fingerprint Examiners at Various Steps in the Analysis, Comparison, Evaluation-Verification (ACE-V) Method  
Kierstyn L. Evans, BS*; Megan Thoen, PhD

*Presenting Author
11:30 a.m. - 1:00 p.m.  **B146**  Canine Detection of Organic and Inorganic Gunshot Residues (GSR) on the Suspected Shooters  
Marcello Rendine, DBA*; Irene Riezzo, MD, PhD; Carmela Fiore, MD; Michela Ferrara, MD; Francesco Sessa, MS; Gianfranco Guccia; Pietrantonio Ricci, MD, PhD

11:30 a.m. - 1:00 p.m.  **B147**  An Evaluation of Novel Headspace Extraction Methods for the Analysis of Ignitable Liquid Residues (ILRs)  
Michelle N. Torres, BS*; Nicole Valdes, BA; Jose R. Almirall, PhD

11:30 a.m. - 1:00 p.m.  **B148**  Snapshooting Individuals From Nose Shape Genetics—A Novel Tool of DNA Witnesses  
Zeenat Salahuddin, PhD*; Tomás B. González; Julie White, MA; Peter Claes; Susan Walsh, PhD; Mark D. Shriver, PhD; Allah Rakha, PhD

11:30 a.m. - 1:00 p.m.  **B149**  A Comparison of Methods for Developing Submerged Fingerprints  
Irene M. Chiang, BS*; Elizabeth A. Gardner, PhD

11:30 a.m. - 1:00 p.m.  **B150**  Pyrolysis Direct Analysis in Real-Time Mass Spectrometry (DART*-MS) Analysis of Ignitable Liquids With Chemometrics  
Isabella C. Barnett, BA*; Mengliang Zhang, PhD*

**Multidisciplinary Session: Criminalistics I/Jurisprudence II—Justice Cannot Happen in a Vacuum**

*Moderator: Amrita Lal-Paterson, MSFS*  
Division of Forensic Science  
Wilmington, DE

*Co-Moderator: Jacquelyn A. Smith, JD*  
Charlotte Mecklenburg Schools  
Cornelius, NC

1:00 p.m. - 3:00 p.m.  **F43**  Justice Cannot Happen in a Vacuum: Toward a Better Representation of the Science, the Client, and the Case Through Open Communication  
Charlotte J. Word, PhD*; Terri Rosenblatt, JD*; Raymond Valerio, JD*; Heather H. Degnan, PhD*

3:00 p.m. - 3:15 p.m.  **Break**

**Not Just Humans**

*Moderator: Katherine B. Gettings, PhD*  
National Institute of Standards and Technology  
Gaithersburg, MD

*Co-Moderator: Lisa C. Schiermeier-Wood, MS*  
Virginia Department of Forensic Science  
Richmond, VA

3:15 p.m. - 3:30 p.m.  **B151**  Mosquitoes: A Potential Source for Human Identity  
Shayna L. Gray, BS*; Scott Lindner, PhD; Reena Roy, PhD

3:30 p.m. - 3:45 p.m.  **B152**  Small Unmanned Aerial System (sUAS) Attribution Phenomenology Via Plant/ Fungal and Human DNA Sequencing  
Josh Dettman*; Tara Boettcher, BS; Jim Comolli, PhD; Martha Petrovick, PhD

3:45 p.m. - 4:00 p.m.  **B153**  Internal Validation of the “DogFiler” Short Tandem Repeat (STR) Amplification Assay for the Analysis of Canine DNA Evidence  
Sam Kwiatkowski, PhD*; Michael A. Donley, MS; Katherine Welch, MS; Roger Kahn, PhD
4:00 p.m. - 4:15 p.m.  B154  The Utility of the Human Hair Microbiome in the Forensic Analysis of Human Hairs  
Tyler Kennedy, BS*; Baneshwar Singh, PhD*

4:15 p.m. - 4:30 p.m.  B155  The Characterization of New Chloroplast Markers to Determine the Biogeographical Origin and Crop Type of Cannabis Sativa Samples  
Madeline G. Roman, BS*; Rachel M. Houston, PhD; Bobby Larue, Jr., PhD; David A. Gangitano, PhD

4:30 p.m. - 4:45 p.m.  B156  Massively Parallel Sequencing (MPS) of 12 Autosomal Short Tandem Repeats (STRs) in Cannabis Sativa  
Rachel M. Houston, PhD*; Carrie Mayes, BS; Jonathan King, MS; Sheree R. Hughes-Stamm, PhD; David A. Gangitano, PhD

4:45 p.m. - 5:00 p.m.  B157  The Development of a Method to Extract Opium Poppy (Papaver somniferum L.) DNA From Heroin  
Michael Marciano, MS*; Sini Panicker; Garrett Liddil; Danielle Lindgren, MS; Kevin S. Sweder, PhD

5:00 p.m. - 5:15 p.m.  Discussion

Criminalistics Believe It or Not!

**Moderator:** Mechthild K. Prinz, PhD  
**Co-Moderator:** Cyndi Hall, MS  
John Jay College of Criminal Justice  
Department of Sciences  
New York, NY  
Idaho State Police  
Forensic Services  
Meridian, ID

7:00 p.m. - 9:00 p.m.  Criminalistics Believe It or Not!

Believe It Or Not! is back! During this casual Friday evening session, you will have the pleasure of learning about unusual and challenging cases in which physical evidence played an amazing role. This evening session is intended to be informal, entertaining, and informational (in that order!). The list of Believe It Or Not! speakers, as well as the subject matter of each presentation, will be kept under wraps until the last minute to keep our attendees in suspense.

Join us to hear about unique or historical evidence substrates, challenging cases that yielded results due to creative thinking by analysts, and other assorted adventures in criminalistics. Past years’ speakers have entertained the crowd with tales of interesting substrates such as smugglers’ drug-filled candles, expert witness experiences, and the authentication of the Ground Zero flag.

After the more serious science has finished for the day, come and listen to your friends and colleagues share stories that will be even more entertaining than your favorite forensic-themed TV shows—no reruns here!

If you’ve ever found yourself with nothing to do on the Friday night before the end of the annual meeting, this session is for you!
**CRIMINALISTICS**

**Friday—Session II**

**Trace Analyses**

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<tr>
<td>8:30 a.m.</td>
<td>B158</td>
<td>The Use of Optical Profilometry to Characterize Fabric Impressions in Vehicle Surfaces</td>
<td>Abigail J. Bender, BS*; Jessica E. Hovingh*; Ralph R. Ristenbatt III, MS</td>
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<td>8:50 a.m.</td>
<td>B159</td>
<td>On the Development of Score Rules for the Pairwise Sample Comparison of Particle Micromorphometry of Aluminum (Al) Powders</td>
<td>Danica Ommen, PhD*; JenaMarie Balldaino, MS; Cami Fuglsby, MS;</td>
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<td>Christopher P. Saunders, PhD*; Jack Hietpas, PhD; JoAnn Buscaglia, PhD*</td>
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<tr>
<td>9:10 a.m.</td>
<td>B160</td>
<td>Learning Algorithms to Evaluate Glass Evidence</td>
<td>Soyoung Park, MS; Samantha Tyner, PhD; Alicia L. Carriquiry, PhD*</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>B161</td>
<td>The Feasibility of Ultra High-Performance Liquid Chromatography-Mass Spectrometry (UHPLC-MS) for the Forensic Analysis of Permanent Hair Dyes</td>
<td>Taylor M. Tipton, BS*; Ioan Marginean, PhD</td>
</tr>
<tr>
<td>9:45 a.m.</td>
<td>B162</td>
<td>Trace Vapor Generator for Explosives and Narcotics (TV-Gen): An Overview</td>
<td>Susan Rose-Pehrsson, PhD; Greg Collins, PhD; Michael Malito; Mark Hammond, PhD; Lauryn DeGreeff, PhD; Christopher J. Kattiste; Michelle Cerreta, PhD; Alison G. Simon, PhD*</td>
</tr>
<tr>
<td>10:00 a.m.</td>
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<td>Break</td>
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**Trace DNA, Fabric, Fiber, Drugs, and Instrumentation**

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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenters</th>
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<tr>
<td>10:15 a.m.</td>
<td>B163</td>
<td>MicroFLOQ®: Collection and Direct Amplification Methods Using the GlobalFiler™ Kit for DNA Recovered From Common Pipe Bomb Components</td>
<td>Esiri Tasker, BA*; Carrie Mayes, BS; Sheree R. Hughes-Stamm, PhD</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>B164</td>
<td>Cellular Autofluorescence Signatures for Quantifying Cell Types in Trace Biological Samples and Establishing Age of Evidence</td>
<td>Emily Brocato; Kate Philpott, JD; Christopher J. Ehrhardt, PhD*</td>
</tr>
<tr>
<td>10:45 a.m.</td>
<td>B165</td>
<td>Distinguishing Between Fluorinated Surface Treatments of Fibers Using Pyrolysis-Gas Chromatography Plasma-Assisted Reaction Chemical Ionization-Mass Spectrometry (py-GC-PARCl-MS)</td>
<td>Michael J. Dolan, Jr., MS*; Robert D. Blackledge, MS; Kaveh Jorabchi, PhD*</td>
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*Presenting Author
11:00 a.m. - 11:15 a.m. **B166** The Effect of Ultraviolet Radiation on the Microspectrophotometry (MSP) of Dyed Textile Fibers: Spectral Alteration Categories  
*Meggan B. King, BSc; Sebastian B. Sarenga, MS; Gary J. Laughlin, PhD; Patrick Buzzini, PhD*

11:15 a.m. - 11:30 a.m. **B167** The Discrimination and Identification of Fiber Samples Using Raman Microspectroscopy  
*Sergey Mamedov, PhD*

11:30 a.m. - 11:45 a.m. **B168** The Identification of Phencyclidine (PCP) and Designer PCP Analogs Using Microcrystalline Tests Followed by Raman Microspectroscopy  
*Matthew Quinn*; Lawrence Quarino, PhD; Monica Joshi, PhD; Thomas A. Brettell, PhD

11:45 a.m. - 12:00 p.m. **B169** Field Identification of Kratom by Portable Gas Chromatography/Mass Spectrometry (GC/MS) Instrumentation  
*Zachary Lawton, MS; Sarah Goda, BS; Peter Massey, MS; Brooke W. Kammrath, PhD*

12:00 p.m. - 1:00 p.m. **Lunch**

**Drug Chemistry I**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<th>Presenters</th>
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<tr>
<td>1:00 p.m.</td>
<td><strong>B170</strong></td>
<td>2019 Update From the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG)</td>
<td><em>Sandra E. Rodriguez-Cruz, PhD</em></td>
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<tr>
<td>1:15 p.m.</td>
<td><strong>B171</strong></td>
<td>The Identification of a Novel Fragmentation Pathway of Synthetic Cathinones</td>
<td><em>J. Tyler Davidson, MS</em>; Zachary J. Sasiene, BS; Younis F. Abiedalla, PhD; Randall Clark, PhD; Glen P. Jackson, PhD</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td><strong>B172</strong></td>
<td>The Use of Colorimetric Detection Techniques for Presumptive 25-NBOMe Identification</td>
<td><em>Laura Clancy</em>; Morgan Philp, PhD; Ronald Shimmon, PhD; Shanlin Fu, PhD</td>
</tr>
<tr>
<td>1:45 p.m.</td>
<td><strong>B173</strong></td>
<td>The Development of an In Silico Mass Spectral Library</td>
<td><em>Janelle D.S. Newman, MD</em>; Eileen B. Eubank, MFS; Jeremy Zehr, MS; Joseph A. Trimboli, PhD</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td><strong>B174</strong></td>
<td>A Confirmatory Method for the Analysis of 30 Fentanyl Analogs Using Gas Chromatography/Mass Spectrometry (GC/MS)</td>
<td><em>Delilah DeWilde, BS</em>; Matthew R. Wood, PhD; Thomas A. Brettell, PhD; Thomas H. Pritchett, MS</td>
</tr>
<tr>
<td>2:15 p.m.</td>
<td><strong>B175</strong></td>
<td>A Forensic Sample Comparison of Heroin by the Analysis of Its Elemental Composition</td>
<td><em>Joshua S. DeBord, PhD</em>; Ruthmara Corzo; Jose R. Almirall, PhD</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td><strong>B176</strong></td>
<td>Medible Testing: The Preparation of Matrix-Matched Calibrators and Controls for Forensic Analysis</td>
<td><em>Kathryn L. Orton, BS</em>; Casey Spencer, BS; Jean A. Heneks, BS; Rachel B. Fielden, MD; Justin L. Poklis, BS; Carl E. Wolf, II, PhD</td>
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<tr>
<td>2:45 p.m.</td>
<td><strong>Break</strong></td>
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*Presenting Author*
**Friday—Session III**

**Multidisciplinary Session: Criminalistics III/General—Forensic Science Education**

**Moderator:** Matthew G. Manns, MS  
United States Army Criminal Investigation Command  
Fort Campbell, KY

**Co-Moderator:** Micah Rush, MSFS  
Fort Benning Criminal Investigation Battalion  
Fort Benning, GA

1:15 p.m. - 1:30 p.m.  **E113** National Institute of Justice (NIJ) Initiatives and Partnerships to Advance the Forensic Sciences  
Jonathan G. McGrath, PhD*

1:30 p.m. - 1:45 p.m.  **B183** Forensic Science Education: Future-Proof or Flawed Paradigm?  
Scott Chadwick, PhD*; Claude Roux, PhD
CRIMINALISTICS

1:45 p.m. - 2:00 p.m. E114 Addressing the Challenge of Conducting Undergraduate Research in Forensic Science Academic Programs Using a Course-Based Undergraduate Research Experience (CURE) Kimberly S. Kobojek, MS*; Pamela A. Marshall, PhD; Ken G. Sweat, PhD; Jennifer Broatch, PhD; Jennifer Foltz-Sweat, PhD; Anthony B. Falsetti, PhD

2:00 p.m. - 2:15 p.m. E115 The Use of Large-Scale Faux Crime Scenes and Cold Case Coursework to Teach Forensic Science in Social Science-Based Coursework Michelle Rippy*

2:15 p.m. - 2:30 p.m. E116 The Educational Outreach Program at the Defense Forensic Science Center (DFSC) Rachel L. Creager*; Thomas A. Meyer, MS; Henry P. Maynard III, MSFS

2:30 p.m. - 2:45 p.m. E117 Improving Forensic Science Information Seeking Laura Sare*; Sarah Bankston, MS*; Jeffery K. Tomberlin, PhD*; Samantha J. Sawyer, BS*

2:45 p.m. - 3:00 p.m. E118 A Journal of Our Own: The Journal of Forensic Science Education—The Official Publication of the Council of Forensic Science Educators Lawrence Quarino, PhD*; Kelly M. Elkins, PhD; Adrienne L. Brundage, PhD

Saturday—Session I

Of Managerial Interest, Part I

Moderator: Craig O. O’Connor, PhD
New York City Office of the Chief Medical Examiner
New York, NY

Co-Moderator: Amy Kelly, MS
Maryland State Police
Forensic Sciences Division
Pikesville, MD

8:30 a.m. - 8:45 a.m. B184 The Use of a Database Feature in the TrueAllele® Casework System to Cross-Reference DNA Cases Jeffrey Oblock, BS; Nasir A. Butt, PhD*

8:45 a.m. - 9:00 a.m. B185 Genotype Information Criteria for Forensic DNA Databases John Donahue, MA*; Mark W. Perlin, PhD, MD

9:00 a.m. - 9:25 a.m. B186 The First Five Exonerations Using TrueAllele® Statistical Software: How Labs Can Review and Correct Old Cases Greg Hampikian, PhD*; Mark W. Perlin, PhD, MD*

9:25 a.m. - 9:40 a.m. B187 Challenges in Establishing an Innocence Project in the Philippines: The Innocence Project Philippines Network Experience Maria Corazon Abogado De Ungria, PhD*; Jose M. Jose, LLB

9:40 a.m. - 10:00 a.m. B188 The Introduction of Massively Parallel Sequencing (MPS) of Mitochondrial DNA (mtDNA) Into Forensic Laboratory Practice in Croatia Marina Korolija, PhD*; Viktorija Sukser, MS; Sara Rožic, MS; Lucija Barbaric, PhD

10:00 a.m. - 10:15 a.m. Break
CRIMINALISTICS

**Of Managerial Interest, Part II**

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<tr>
<td>10:15 a.m.</td>
<td>B189</td>
<td>A Reproducible Failure of One Base Pair Resolution in Casework Samples on the 3500xL Genetic Analyzer</td>
<td>Rachel Maragliano*; Jason M. Chute, MSFS; Kelly Beatty, MSFS</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>B190</td>
<td>Bias in Quantitative Polymerase Chain Reaction (qPCR): Does It Matter for Forensic Applications?</td>
<td>Erica L. Romsos, MFS*; Steven P. Lund, PhD; Peter M. Vallone, PhD</td>
</tr>
<tr>
<td>10:45 a.m.</td>
<td>B191</td>
<td>The Development of the National Institute of Standards and Technology (NIST) Polymerase Chain Reaction (PCR) -Based DNA Profiling Standard (Standard Reference Material 2391d): Where Are We Now?</td>
<td>Becky Steffen, MS*; Erica L. Romsos, MFS; Kevin Kiesler, MS; Katherine B. Gettings, PhD; Lisa Borsuk, MS; Peter M. Vallone, PhD</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>B192</td>
<td>Increasing Productivity Through Process Management: The Experience of the Brazilian Federal Police DNA Laboratory</td>
<td>Ronaldo C. da Silva, Jr., PhD*; Levy Heleno Fassio; Jorge Freitas, PhD; Renato T. Ferreira de Paraiba, BA; Renata S. Paiva, BS; Ana Paula V. Castro, MSc; Carlos B. Carvalho, PhD; Bruno R. Trindade, MSc; Jeferson L. Badaraco, MSc; Aline C. Minervino, MSc; Carlos Eduardo M. Medeiros, BS; Helio Lima, PhD; Sergio M. Aguiar, MSc</td>
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<tr>
<td>11:15 a.m.</td>
<td>Discussion</td>
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**Saturday—Session II**

**Crime Scene Evidence and Analysis**

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<tr>
<td>8:30 a.m.</td>
<td>B193</td>
<td>A Characterization of Sexual Assault Lubricants: Lubricant Database Use in an Operational Setting</td>
<td>Brooke R. Baumgarten, BS*; Caterina Vadell-Orsini; Mark Maric, PhD; Candice Bridge, PhD</td>
</tr>
<tr>
<td>8:45 a.m.</td>
<td>B194</td>
<td>Hair as a Trap for Evidence and a Tool for the Forensic Investigation</td>
<td>Giulia Caccia, BSc; Annalisa Cappella, PhD; Alberto Amadasi, MD*; Debora Mazzarelli, BS; Agostino Rizzi, BSc; Cristina Cattaneo, PhD</td>
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9:00 a.m. - 9:15 a.m.  B195  Identifying Paradoxical Undressing During Investigations: A Case Study
Adam C. Armstrong, MS*

9:15 a.m. - 9:30 a.m.  B196  Using Drones as a Valid Alternative to Employing Traditional Documentation Systems at Crime Scenes
Luciano Garofano, PhD*

9:30 a.m. - 9:45 a.m.  B197  Detection of Fentanyl Analogs in Soil Via Paper Spray Mass Spectrometry
Sarah Dowling, BS*; Trevor Glaros; Nick Manicke

9:45 a.m. - 10:00 a.m.  B198  Forensic Analysis of the Soil Microbiome: Linking a Piece of Evidence to a Location
Jill H. Cocking, MSc*; Greg A. Caporaso, PhD; Viacheslav Y. Fofanov, PhD; Ryan Turley; Crystal Y. Hepp, PhD

10:00 a.m. - 10:15 a.m.  Break

Concerns in Running a Crime Laboratory

Moderator: Jack Hietpas, PhD
Penn State University
University Park, PA

Co-Moderator: Sandra B. Sachs, PhD
Oakland Police Department
Crime Laboratory
Oakland, CA

10:15 a.m. - 10:30 a.m.  B199  Redefining Crime Scene Investigation
Michelle D. Miranda, PhD; Peter R. De Forest, DCRM*; Rebecca E. Bucht, PhD

10:30 a.m. - 10:45 a.m.  B200  Rise of the Machine and the Demise of the Forensic Science Laboratory?
Brooke W. Kammrath, PhD*; David San Pietro, PhD*; Peter R. De Forest, DCRM*

10:45 a.m. - 11:00 a.m.  B201  Human Factors in Forensic Science Practice Sourcebook: Beyond Bias
Heidi Eldridge, MS*; John Morgan, PhD; Tom Busey, PhD

11:00 a.m. - 11:15 a.m.  B202  Quantifying the Efficacy of Cleaning Agents for Removing Drug Background
Marcela Najarro, MFS*; Edward Sisco, PhD; Amber Burns, MS

11:15 a.m. - 11:30 a.m.  B203  False Inferences From True False and False True Positives and Negatives
Stewart Walker, PhD*

*Presenting Author