



CRIMINALISTICS

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; Rafal Skowronek; Michal 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)**
Rachelle 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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- 11:30 a.m. - 1:00 p.m. **B12** **Confirming Statistical Phased Single Nucleotide Polymorphisms (SNPs) Haplotype Data of 74 Microhaplotypes (MH) Across a Global Set of Populations by Massively Parallel Sequencing (MPS)**
*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; Daniele S. Podini, PhD
- 11:30 a.m. - 1:00 p.m. **B13** **A Biological Sample and Fingerprint Collection From Various Surfaces: Which Comes First?**
*Aylin Yalçin Saribey, PhD**; Tugba Ünsal, PhD; Kaan Yilancioglu, PhD; Sevil Atasoy, PhD
- 11:30 a.m. - 1:00 p.m. **B14** **Building a Face for a Case: Advanced Investigative Leads From Forensic DNA Phenotyping and Prediction Markers**
*Gregoreese Willocks**; Ismail M. Sebetan, MD, PhD; Paul Stein, PhD; Vivian L. Stafford, MFS (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B15** **A Statistical Comparison of Mass Spectral Data for Positional Isomer Differentiation**
*Emma L. Stuhmer, BS**; Victoria L. McGuffin, PhD; Ruth Waddell Smith, PhD (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B16** **Multiple Transfers of Drug-Contaminated Fingerprints and Their Analysis With Raman Spectroscopy**
*Victoria R. DePrimo, BS**; Kenneth B. Zercie, MFS; Pauline E. Leary, PhD; Nicholas D. Petraco, PhD; Lisa Dadio, MS; Brooke W. Kammrath, PhD (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B17** **The Detection of Explosive Residue on Gloves Exposed to Environmental Conditions**
*Shannon Lamy**; Alyssa L. Marsico, PhD (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B18** **WITHDRAWN**
- 11:30 a.m. - 1:00 p.m. **B19** **Increased Objectivity of Shooting Distance Determinations by Spectrochemical Mapping**
*Courtney H. Vander Pyl**; Oriana Ovide*; Bayram Yuksel, PhD; Tatiana Trejos, PhD
- 11:30 a.m. - 1:00 p.m. **B20** **A New Color Identification of Benzodiazepines in Blood and Pharmaceuticals: Using Cobalt Thiocyanate as Reagent**
*Zahid Mahmood, MPhil**
- 11:30 a.m. - 1:00 p.m. **B21** **The Application of Surface-Enhanced Raman Spectroscopy (SERS) for the Detection of Opioids**
*Ling Wang, MS**
- 11:30 a.m. - 1:00 p.m. **B22** **The Effects of Exposure to Various Environmental Conditions on the Analytical Data of Manufactured Fibers**
*Alexis R. Weber, BS**; Virginia M. Maxwell, DPhil (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B23** **The Development of a Rule-Based Protocol for Evaluating Fire Debris Using Known Ground Truth Samples and a Best Factors Algorithm**
*Taylor A. Wood**; Mary R. Williams, MS; Michael E. Sigman, PhD



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- 11:30 a.m. - 1:00 p.m. **B24** **WITHDRAWN**
- 11:30 a.m. - 1:00 p.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. - 1:00 p.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; Patrícia D. Correa*
- 11:30 a.m. - 1:00 p.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. - 1:00 p.m. **B28** **WITHDRAWN**
- 11:30 a.m. - 1:00 p.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. - 1:00 p.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 Guilbeau Frugier, PhD; Sébastien Aries, PhD; Lauriane Onfroy, PhD; Bruno Payré, PhD; Valentin Lombardi; Norbert Telmon, PhD, MD; Frederic Savall*
- 11:30 a.m. - 1:00 p.m. **B31** **The Decomposition Clock: A Characterization of Insect Volatile Odor Profiles**
Katie E. Blamar, BS; Paola A. Prada, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.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. - 1:00 p.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. Umbach, PhD
Office the of 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**



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- 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***
*Suni M. Edson, MS**
- 11:50 a.m. - 1:00 p.m. **Lunch**

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



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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. Roper-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. Diaczuk**
- 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**
*Krysalyn 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*

- 1:00 p.m. - 1:15 p.m. **B74** **The Application of Probabilistic Genotyping Software Analysis for Mixture Deconvolution Using a New Massively Parallel Sequencing (MPS) Panel for Microhaplotypes**
Drew A. Bader, AB; Fabio Oldoni, PhD; Charles H. Brenner, PhD; Kenneth Kidd, PhD; Daniele S. Podini, PhD
(FSF Emerging Forensic Scientist Award Paper Presentation)*
- 1:15 p.m. - 1:30 p.m. **B75** **Quantifying the Impact of Post-Validation Modifications to Forensic Statistical Tool (FST)**
Nathaniel D. Adams, BS; Stephen Lorenz; Marzieh Babaeianjelodar, MS; Jeanna N. Matthews, PhD; Dan Krane, PhD*
- 1:30 p.m. - 1:50 p.m. **B76** **How to Decide How Many Contributors Are in a Mixture**
*Charles H. Brenner, PhD**
- 1:50 p.m. - 2:05 p.m. **B77** **A Logistic Regression Approach For Combining Likelihood Ratio (LR) in the Field of DNA Mixture Interpretation**
Eugenio Alladio, PhD; Monica Omedei, PhD; Selena Cisana, PhD; Denise Caneparo, MS; Paolo Garofano, MD, PhD; Tereza Neocleous, PhD*
- 2:05 p.m. - 2:20 p.m. **B78** **Evaluating Likelihood Ratio Variability of Major Component DNA Profiles in Complex Mixtures**
Steven Weitz, MS; Todd W. Bille, MS; Gregory A. Peiffer, PhD; John S. Buckleton, PhD; Jo-Anne Bright, PhD; Michael D. Coble, PhD*
- 2:20 p.m. - 2:30 p.m. **Discussion**
- 2:30 p.m. - 2:45 p.m. **Break**

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*

- 2:45 p.m. - 3:00 p.m. **B79** **Proteomic Genotyping of Human Head Hair**
Zachary C. Goecker, MPS; Michelle Salemi, MS; Brett Phinney, PhD; Glendon Parker, PhD; Robert Rice, PhD*
- 3:00 p.m. - 3:15 p.m. **B80** **The Evaluation of a Quantitative Proteomic Seminal Fluid Assay for Assessing Lateral Flow Test Error Rates and Predicting Downstream DNA Profiling Success**
Heather E. McKiernan, MSFS; Catherine O. Brown, MSFS; Kevin M. Legg, PhD; Phillip Danielson, PhD*



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- 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 (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 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 (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 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 (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 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. Goodpaster, PhD**

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

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

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

Co-Moderator: John L. Allen, PE
Bureau of Alcohol, Tobacco, Firearms
and Explosives
Ammendale, MD

- 10:30 a.m. - 10:45 a.m. **D27** **Heavy Truck Fuel-Fed Fires: Predictable Fuel Leakage, Ignition Sources, Fuel Tank Placement Hazards, and Safer Alternative Designs**
*Mark C. Pozzi, MS**; *David R. Bosch, PhD**; *Kenneth J. Saczalski, PhD*
- 10:45 a.m. - 11:00 a.m. **D28** **Electrical Homicide or Not?**
*Helmut G. Brosz, BASc, PEng**
- 11:00 a.m. - 11:15 a.m. **D29** **Sabotaged Electrical Grid: Worse Than 9/11?**
*Helmut G. Brosz, BASc, PEng**
- 11:15 a.m. - 11:30 a.m. **B90** **Yes, Everybody Knows a Fire Needs Oxygen, But Why Should We Care?**
*John J. Lentini, BA**
- 11:30 a.m. - 11:45 a.m. **D30** **American Association for the Advancement of Science (AAAS) Forensic Science Assessments: A Quality and Gap Analysis of Fire Investigation**
*Jose R. Almirall, PhD**
- 11:45 a.m. - 1:00 p.m. **Lunch**

Pattern Recognition—Science of Latent Print and Firearm Analysis

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

- 1:00 p.m. - 1:15 p.m. **B91** **A Large-Scale Study for the Differentiation of Individuals Based on Triacylglycerols (TG) in Latent Fingerprints**
*Kelly C. O'Neill**; *Paige L. Hinners, MS*; *Young-Jin Lee*



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- 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. Suber; 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*

- 4:40 p.m. - 5:00 p.m. **B104** **An Analysis of High Explosive Compounds Utilizing Gas Chromatography (GC) With Tandem Cold Electron Ionization (EI) Mass Spectrometric Detection and Vacuum Ultraviolet Detection (VUV)**
Dennise Montero, BS; Ioan Marginean, PhD*
(FSF Emerging Forensic Scientist Award Paper Presentation)

Friday—Session I

The Next Generation of Sequencing

Moderator: *Christina Rivera Sorensen, MS*
Office of the Chief Medical Examiner
New York, NY

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*
(FSF Emerging Forensic Scientist Award Paper Presentation)
- 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*
(FSF Emerging Forensic Scientist Award Paper Presentation)
- 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**



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Low Copy Number DNA Techniques

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

*Co-Moderator: Michelle K. Gordon, MS
Office of the Chief Medical Examiner
New York, NY*

- 10:35 a.m. - 10:50 a.m. **B112** **The Examination of DNA Extraction Lysis and Wash Step Modification for Low Template DNA Sample Processing**
*Sydney Menchhoff**; *Milady T. Delacruz*; *Madison Hytinen, BS*; *Marilyn T. Miller, EdD*;
Tracey Dawson Cruz, PhD
- 10:50 a.m. - 11:05 a.m. **B113** **Standardizing Testing for DNA Shedding Propensity**
*Mechthild K. Prinz, PhD**; *Marine Bougerie Le Du*; *Dinura Gunatilake, BS*;
Nicholas D. Petraco, PhD
- 11:05 a.m. - 11:20 a.m. **B114** **Improved DNA Recovery From Handwritten Documents**
*Patrick McLaughlin, BS**; *Mechthild K. Prinz, PhD*
- 11:20 a.m. - 11:35 a.m. **B115** **Improving Recovery of Trace DNA From Cotton Swabs Using Pressure Cycling and Alkali-Based Lysis**
*Meghan N. Roig, MSFS**; *Nicole Fernandez Tejero*; *Vanessa Martinez*; *Bruce R. McCord, PhD*
(FSF Emerging Forensic Scientist Award Paper Presentation)
- 11:35 a.m. - 11:50 a.m. **B116** **The Assessment of Variable Elution Volumes for Efficient Recovery of Low-Level DNA Samples From Robotic Extraction Platforms**
*Heather V. Milnthorp, MSFS**; *Yih Ling Saw, MSFS*; *Heather E. McKiernan, MSFS*
- 11:50 a.m. - 1:00 p.m. **Lunch**

Poster Session

- 11:30 a.m. - 1:00 p.m. **B117** **A Proteomic Analysis of Epidermal Squamous Corneocytes**
*Trevor A. Borja, BA**; *Noreen Karim, PhD*; *Zachary C. Goecker, MPS*; *Michelle Salemi, MS*;
Brett Phinney, PhD; *Robert Rice, PhD*; *Glendon Parker, PhD*
- 11:30 a.m. - 1:00 p.m. **B118** **The Determination of Biogeographic Ancestry Within Hispanic Populations**
*Cassandra Hernandez Setser, MSFS**; *Deanna S. Cross, PhD*; *John V. Planz, PhD*;
Ranajit Chakraborty, PhD
- 11:30 a.m. - 1:00 p.m. **B119** **A Faster, Easier, and More Effective Bone Processing Method for DNA Analysis**
*LeAnn Michelle Harrel, BS**; *Sheree R. Hughes-Stamm, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **B120** **Forensic Match Probabilities and the Impact of Historical Migrations and Consanguinity: A Population Study**
*Ijaz Anwar, MPhil**; *Shahid Hussain, MPhil*
- 11:30 a.m. - 1:00 p.m. **B121** **Developing a Contaminant-Abatement Method for Isolation DNA From Cancellous Bones**
Bryan Bernal, BS; *Jordana Centauro*; *Tova Akerman*; *Yilin Kong, HSD*; *Richard Li, PhD**

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- 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 Yadavalli, 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*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 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*



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- 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, Treatment, 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*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 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 Sarıbey, 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*

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- 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** **Snapshotting 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
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 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
(FSF Emerging Forensic Scientist Award Paper Presentation)
- 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



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- 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
(*FSF Emerging Forensic Scientist Award Paper Presentation*)
- 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
John Jay College of Criminal Justice
Department of Sciences
New York, NY

Co-Moderator: Cyndi Hall, MS
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!

Friday—Session II

Trace Analyses

Moderator: A. Bakarr Kanu, PhD
Winston-Salem University
Department of Chemistry
Winston-Salem, NC

Co-Moderator: Jason C. Kolowski, PhD
Forensic Insight Consulting, LLC
Aldie, VA

- 8:30 a.m. - 8:50 a.m. **B158** **The Use of Optical Profilometry to Characterize Fabric Impressions in Vehicle Surfaces**
*Abigail J. Bender, BS**; *Jessica E. Hovingh**; *Ralph R. Ristenbatt III, MS*
- 8:50 a.m. - 9:10 a.m. **B159** **On the Development of Score Rules for the Pairwise Sample Comparison of Particle Micromorphometry of Aluminum (Al) Powders**
*Danica Ommen, PhD**; *JenaMarie Baldaino, MS*; *Cami Fuglsby, MS*;
*Christopher P. Saunders, PhD**; *Jack Hietpas, PhD*; *JoAnn Buscaglia, PhD**
- 9:10 a.m. - 9:30 a.m. **B160** **Learning Algorithms to Evaluate Glass Evidence**
Soyoung Park, MS; *Samantha Tyner, PhD*; *Alicia L. Carriquiry, PhD**
- 9:30 a.m. - 9:45 a.m. **B161** **The Feasibility of Ultra High-Performance Liquid Chromatography-Mass Spectrometry (UHPLC-MS) for the Forensic Analysis of Permanent Hair Dyes**
*Taylor M. Tipton, BS**; *Ioan Marginean, PhD*
- 9:45 a.m. - 10:00 a.m. **B162** **Trace Vapor Generator for Explosives and Narcotics (TV-Gen): An Overview**
Susan Rose-Pehrsson, PhD; *Greg Collins, PhD*; *Michael Malito*; *Mark Hammond, PhD*;
Lauryn DeGreeff, PhD; *Christopher J. Katilie*; *Michelle Cerreta, PhD*; *Alison G. Simon, PhD**
(FSF Emerging Forensic Scientist Award Paper Presentation)
- 10:00 a.m. - 10:15 a.m. **Break**

Trace DNA, Fabric, Fiber, Drugs, and Instrumentation

Moderator: Philip R. Antoci, MS
New York City Police Department Crime Laboratory
Jamaica, NY

Co-Moderator: Pamela M. Hofsass, MS
Contra Costa County Sheriff's
Crime Laboratory
Martinez, CA

- 10:15 a.m. - 10:30 a.m. **B163** **MicroFLOQ®: Collection and Direct Amplification Methods Using the GlobalFiler™ Kit for DNA Recovered From Common Pipe Bomb Components**
*Esiri Tasker, BA**; *Carrie Mayes, BS*; *Sheree R. Hughes-Stamm, PhD*
- 10:30 a.m. - 10:45 a.m. **B164** **Cellular Autofluorescence Signatures for Quantifying Cell Types in Trace Biological Samples and Establishing Age of Evidence**
Emily Brocato; *Kate Philpott, JD*; *Christopher J. Ehrhardt, PhD**
- 10:45 a.m. - 11:00 a.m. **B165** **Distinguishing Between Fluorinated Surface Treatments of Fibers Using Pyrolysis-Gas Chromatography Plasma-Assisted Reaction Chemical Ionization-Mass Spectrometry (py-GC-PARCI-MS)**
*Michael J. Dolan, Jr., MS**; *Robert D. Blackledge, MS*; *Kaveh Jorabchi, PhD*



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- 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. Sparenga, 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 (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 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

Moderator: *Linda C. Jackson, MS*
Department of Forensic Science
Richmond, VA

Co-Moderator: *Agnes D. Winokur, MS*
Drug Enforcement Administration
Southeast Laboratory
Miami, FL

- 1:00 p.m. - 1:15 p.m. **B170** **2019 Update From the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG)**
*Sandra E. Rodriguez-Cruz, PhD**
- 1:15 p.m. - 1:30 p.m. **B171** **The Identification of a Novel Fragmentation Pathway of Synthetic Cathinones**
J. Tyler Davidson, MS; Zachary J. Sasiene, BS; Younis F. Abiedalla, PhD; Randall Clark, PhD; Glen P. Jackson, PhD (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 1:30 p.m. - 1:45 p.m. **B172** **WITHDRAWN**
- 1:45 p.m. - 2:00 p.m. **B173** **The Development of an *In Silico* Mass Spectral Library**
Janelle D.S. Newman, MD; Eileen B. Eubank, MFS; Jeremy Zehr, MS; Joseph A. Trimboli, PhD*
- 2:00 p.m. - 2:15 p.m. **B174** **A Confirmatory Method for the Analysis of 30 Fentanyl Analogs Using Gas Chromatography/Mass Spectrometry (GC/MS)**
Delilah DeWilde, BS; Matthew R. Wood, PhD; Thomas A. Brettell, PhD; Thomas H. Pritchett, MS*
- 2:15 p.m. - 2:30 p.m. **B175** **A Forensic Sample Comparison of Heroin by the Analysis of Its Elemental Composition**
Joshua S. DeBord, PhD; Ruthmara Corzo; Jose R. Almirall, PhD (FSF Emerging Forensic Scientist Award Paper Presentation)*
- 2:30 p.m. - 2:45 p.m. **B176** **Medible Testing: The Preparation of Matrix-Matched Calibrators and Controls for Forensic Analysis**
Kathryn L. Orton, BS; Casey Spencer, BS; Jean A. Heneks, BS; Rachel B. Fielden, MD; Justin L. Poklis, BS; Carl E. Wolf, II, PhD*
- 2:45 p.m. - 3:00 p.m. **Break**

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Drug Chemistry II

*Moderator: Carmen L. Masters, MSFS
Northeast Laboratory
New York, NY*

*Co-Moderator: Glen P. Jackson, PhD
West Virginia University
Department of Forensic
and Investigative Science
Morgantown, WV*

- 3:00 p.m. - 3:15 p.m. **B177** **A Comparison of Gas Chromatography/Infrared Spectroscopy (GC/IR) and Gas Chromatography/Mass Spectrometry (GC/MS) Methods for the Identification of Isomeric Synthetic Drugs**
Randall Clark, PhD; Lewis W. Smith, BS; Younis F. Abiedalla, PhD*
- 3:15 p.m. - 3:30 p.m. **B178** **The Separation of Fentalogs From Complex and Confounding Mixtures Using Gradient Elution Moving Boundary Electrophoresis (GEMBE)**
Thomas P. Forbes, PhD; David Ross, PhD*
- 3:30 p.m. - 3:45 p.m. **B179** **Gas Chromatography (GC) With Tandem Cold Electron Ionization/Mass Spectrometric (Cold EI/MS) Detection and Vacuum Ultraviolet (VUV) Detection for the Comprehensive Analysis of Fentanyl Analogs**
Sydney R. Buchalter, BS; Ioan Marginean, PhD; Ira S. Lurie, PhD
(FSF Emerging Forensic Scientist Award Paper Presentation)*
- 3:45 p.m. - 4:00 p.m. **B180** **The Application of Ultra High-Performance Liquid Chromatography-Time-of-Flight/Mass Spectrometry (UHPLC-TOF/MS) to the Analysis of Phenethylamine Derivatives**
Georgina R. Nicholls, MS; Ioan Marginean, PhD
(FSF Emerging Forensic Scientist Award Paper Presentation)*
- 4:00 p.m. - 4:15 p.m. **B181** **The Detection and Differentiation of Controlled Substances by Gas Chromatography-Vacuum Ultraviolet (GC-VUV) and Chemometrics**
Zackery Roberson, BS; John V. Goodpaster, PhD*
- 4:15 p.m. - 4:30 p.m. **B182** **Stability Studies of Components of Nyaope in Organic Solvents Using Gas Chromatography/Mass Spectrometry (GC/MS)**
Pabalala M. Mthembu, MSc; Ellen M. Mwenesongole, PhD; Michael D. Cole, PhD*

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*



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- 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. Koboжек, 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

Moderator: *Charlotte J. Word, PhD*
North Chesterfield, VA

Co-Moderator: *Argiro G. Magers, MS*
Pikesville, MD

- 10:15 a.m. - 10:30 a.m. **B189** **A Reproducible Failure of One Base Pair Resolution in Casework Samples on the 3500xL Genetic Analyzer**
*Rachel Maragliano**; *Jason M. Chute, MSFS*; *Kelly Beatty, MSFS*
- 10:30 a.m. - 10:45 a.m. **B190** **Bias in Quantitative Polymerase Chain Reaction (qPCR): Does It Matter for Forensic Applications?**
*Erica L. Romsos, MFS**; *Steven P. Lund, PhD*; *Peter M. Vallone, PhD*
- 10:45 a.m. - 11:00 a.m. **B191** **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?**
*Becky Steffen, MS**; *Erica L. Romsos, MFS*; *Kevin Kiesler, MS*; *Katherine B. Gettings, PhD*; *Lisa Borsuk, MS*; *Peter M. Vallone, PhD*
- 11:00 a.m. - 11:15 a.m. **B192** **Increasing Productivity Through Process Management: The Experience of the Brazilian Federal Police DNA Laboratory**
*Ronaldo C. da Silva, Jr., PhD**; *Levy Heleno Fassio*; *Jorge Freitas, PhD*; *Renato T. Ferreira de Paranaiba, 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*
- 11:15 a.m. - 11:30 a.m. **Discussion**

Saturday—Session II

Crime Scene Evidence and Analysis

Moderator: *Brooke W. Kammrath, PhD*
University of New Haven
Forensic Science Department
West Haven, CT

Co-Moderator: *Patrick Buzzini, PhD*
Sam Houston State University
Huntsville, TX

- 8:30 a.m. - 8:45 a.m. **B193** **A Characterization of Sexual Assault Lubricants: Lubricant Database Use in an Operational Setting**
*Brooke R. Baumgarten, BS**; *Caterina Vadell-Orsini*; *Mark Maric, PhD*; *Candice Bridge, PhD*
(*FSF Emerging Forensic Scientist Award Paper Presentation*)
- 8:45 a.m. - 9:00 a.m. **B194** **Hair as a Trap for Evidence and a Tool for the Forensic Investigation**
Giulia Caccia, BSc; *Annalisa Cappella, PhD*; *Alberto Amadasi, MD**; *Debora Mazzarelli, BS*; *Agostino Rizzi, BSc*; *Cristina Cattaneo, PhD*
(*FSF Emerging Forensic Scientist Award Paper Presentation*)



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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, DCrim; 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, DCrim**
- 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**