

CRIMINALISTICS

Wednesday

Poster Session

- 11:30 am – 1:00 pm **B1** **Revisiting Guidance on Sampling of Populations for Highly Polymorphic Forensic Loci**
*Sanne Aalbers, PhD**; Katherine Gettings, PhD
- 11:30 am – 1:00 pm **B2** **Assessing the Added Value of Non-Human DNA Analysis for Forensic Soil Analysis**
*Kelly Meiklejohn, PhD**; Melissa Scheible, MFS; Tiffany Layne, PhD;
Teresa Tiedge, PhD; Jack Hietpas, PhD; Jodi Webb, MS; Libby Stern, PhD
- 11:30 am – 1:00 pm **B3** **A Small-Scale Ancestry Informative DIP-STR Marker Set for Biogeographic Ancestry Inference in United States Populations**
*Lauren Hoopes, MSFS; Nicole DeWald; Diana Hall, PhD; Daniele Podini, PhD; Fabio Oldoni, PhD**
- 11:30 am – 1:00 pm **B4** **Addressing the Challenges of the ISFG Minimum Sequence Ranges When Implementing NGS Technologies for STR Typing**
*Christina Scott, MS**; Kevin Cheng, PhD; Kyleen Teague, PhD; Kim Eskey, MS;
Tracy Ferguson, MS; Jo-Anne Bright, PhD; Rebecca Just, PhD; Rebecca Mitchell, PhD
- 11:30 am – 1:00 pm **B5** **Assessing the Viability of DNA Yields From Taphonomically Altered Bone and Teeth**
*Shelby Feirstein, MS**; Maria Castagnola, MA; Mayaas Hassan, BA; Alixs Pujols, BS;
Sara C. Zapico, PhD; Luis Cabo, MS; Joe Adserias-Garriga, PhD
- 11:30 am – 1:00 pm **B6** **It's Common Cents—How to Spend a Million Dollars in Five Months!**
*Julie Ferragut, BS**
- 11:30 am – 1:00 pm **B7** **The Molecular Diversity of 23 Y-STR Genetic Markers in an Endogamous Ramgharia Population of Punjab, India**
*Amandeep Kaur Bhambara, PhD**; Shivkant Sharma, PhD*; Vivek Sahajpal, PhD
- 11:30 am – 1:00 pm **B8** **A Comprehensive Drug Analysis of Vaporizer Products From Pennsylvania High Schools**
*Alexis Quinter, MASc**; Joshua DeBord, PhD; Alex Krotulski, PhD; Barry Logan, PhD;
Max Denn, MS
- 11:30 am – 1:00 pm **B9** **Field Testing of Drug-Incorporated Edible Jellies Using Portable Raman-Based Analyzers and Colorimetric Tests**
*Abid Naseer, MS**; Tahir Jamshaid, MPhil; Muhammad Usman, MS;
Laraib Batool, PharmD; Muhammad Saqib Kabir Khan, MS
- 11:30 am – 1:00 pm **B10** **Source Attribution of Fentanyl Via Metals Analysis**
*Edward Bentil, PhD**; Marie Taylor, BSFS; Brian Eckenrode, PhD

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- 11:30 am – 1:00 pm **B11** **Determination of Plant DNA Recovery After Extraction of Ephedrine From Ephedra: A Pilot Study**
Nurdan Sandikçi, MS; Tuğba Ünsal Sapan, PhD; Sevil Atasoy, PhD; Salih Tuncay, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B12** **A Simple DNA Extraction Method and a Rapid PCR-Based Assay for Detecting *Ricinus Communis* L. DNA Co-Extracted With Ricin**
*Renato Paranaiba, PhD**
- 11:30 am – 1:00 pm **B13** **A Rapid Method for Identifying Source Species of Body Fluids: Implications for Wildlife Investigations**
Kate Jones; Christopher Ehrhardt, PhD*
- 11:30 am – 1:00 pm **B14** **The Mysterious Case of a Fatal Accident During Skydiving: A Fracture of the Pelvis From Parachute Opening Shock (POS)?**
Naomi Iacoponi, MD; Julia Lazzari, MD; Carla Occhipinti, MD; Giacomo Visi, MD; Matteo Leoni, MD; Alessandra Cicchini, MD; Giorgio Chiandussi, PEng; Roberto Testi, MD; Marco Di Paolo, MD*
- 11:30 am – 1:00 pm **B15** **A 3D-Printed Object Topography Analysis and the Viability for Forensic Examination**
Cooper Blair, BS; Eric Law, PhD*
- 11:30 am – 1:00 pm **B16** **Exploring the Persistence of Human Scent for Forensic Purposes**
Alex Stone, BSFS; Edward Bentil, PhD; Brian Eckenrode, PhD*
- 11:30 am – 1:00 pm **B17** **A Characterization of Decomposing Human and Animal Tissue in a Micro-Scale Biotope Through Simulated Rainwater Extraction**
Nicholas Lyde, BSFS; Edward Bentil, PhD; Brian Eckenrode, PhD; Ivory Krise, MSFS; Nana Kennedy, MSFS*
- 11:30 am – 1:00 pm **B18** **Analyzing the Case of a Fatal Shooting on a Movie Set**
Peter Diaczuk, PhD; Lexy Dejesus, BA*
- 11:30 am – 1:00 pm **B19** **Developing a Method for the Analysis of Products Claiming to Treat COVID-19**
Christopher Poulos, MS; Travis Falconer, PhD; Michael Thatcher, BS; Adam Lanzarotta, PhD; Martin Kimani, PhD*
- 11:30 am – 1:00 pm **B20** **Forensic Intelligence Derived From Crime Scene Evidence Using Text Embeddings**
Vinicius Lima, MEng; Umit Karabiyik, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B21** **Deep Ultraviolet Raman Spectroscopy for the Forensic Analysis of Oral Fluids**
Mohamed Amin, PhD; Fatima Matroodi, PhD; Entesar Al-Hetlani, PhD; Barbara Rossi, PhD; Igor Lednev, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)

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- 11:30 am – 1:00 pm **B22** **The Distribution of Retroreflective Glass Beads in Soil Samples**
*Shirly Montero, PhD**
- 11:30 am – 1:00 pm **B23** **Forensic Profiling of Cigarette Paper Using ATR/FTIR Spectroscopy and Machine Learning/Algorithms**
Vishal Sharma, PhD; Akanksha Sharma, MS*
- 11:30 am – 1:00 pm **B24** **Low-Field and Benchtop NMR in the Forensic Science: Challenges and Opportunities**
Caroline D'Oca, PhD; Kahlil Salome, PhD; Anelize Bahniuk, PhD; Marcio Fernandes, PhD*
- 11:30 am – 1:00 pm **B25** **Cracking the Case: Toward the Development of Mass Spectral Analysis of Blow Fly Eggs for Postmortem Interval Determination**
Alexa Figueroa, BS; Jennifer Rosati, PhD; Rabi Musah, PhD*
- 11:30 am – 1:00 pm **B26** **The Contamination of Training Aid Substrates**
*Fernando Zaldivar Eyre, BS**
- 11:30 am – 1:00 pm **B27** **A Rapid Hand-Held Detector for Drugs and Explosives and Their Signature VOCs Using Novel Nano-Porous Molecularly Imprinted Polymer Sensors**
Kenneth Furton, PhD; Abuzar Kabir, PhD; Patrick Roman, PhD*
- 11:30 am – 1:00 pm **B28** **Exploring Alternative Solvents for Dichloromethane as an Extraction Solvent of Sexual Lubricant Components Using Gas Chromatography/Mass Spectroscopy**
Safiya Best, MScFS; Ashley Gamache; Candice Bridge, PhD*

Thursday

Poster Session

- 11:30 am – 1:00 pm **B29** **Time-Since-Deposition Signatures for the Analysis of Canine Body Fluids**
Alysia Townsley; Christopher Ehrhardt, PhD*
- 11:30 am – 1:00 pm **B30** **Implementing Y-Screen Protocols as a Tool for Sexual Assault Forensic Examination Kit Backlog Reduction**
*Lake Prescott, MSFS**
- 11:30 am – 1:00 pm **B31** **The Use of Quantitation Values to Infer the Possible Presence of Spermatozoa**
Kate DeHeer, MPS; Ashley Luther, MS; Joanna Johnson, MS*
- 11:30 am – 1:00 pm **B32** **Seminal Fluid Identification in Different Semen Sample Types**
Gabriela Roca, PhD; Mercedes Aler; Maria Castagnola, MA; Scarlet Neilson, MSFS; Francisco Medina Paz, PhD; Maik Schlieper; Nora Ronan-Milz; Polina Khalizov; Elizabeth Brusacoram, BS; Maria Isabella Negretti, BS; Amy Brodeur, MFS; Mirna Ghemrawi, PhD*

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- 11:30 am – 1:00 pm **B33** **Increased DNA Quantification Sensitivity: An Evaluation of Investigator Quantiplex Pro FLX**
*Julia Wang, MS**; *Ya-Chih Cheng, PhD*; *Joshua Boster, BS*; *Rachel Houston, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B34** **A Novel Method for the Identification of Source Tissue in Biological Mixtures**
*Gabrielle Wolfe**; *Nicole Dailey, MS*; *Christopher Ehrhardt, PhD*
- 11:30 am – 1:00 pm **B35** **QIAxcel vs. qPCR: Evaluating Versatility for Forensic DNA Screening**
*Susana Garcia, BS**; *Natalia Czado, MSFS*; *Damani Johnson, BS*; *Cesar Cantu, BS*;
Sheree Hughes, PhD; *Rachel Houston, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B36** **The Simultaneous Recovery of DNA, RNA, and Protein From Biological Samples for Forensic Applications Using a Novel Method**
*Jacob Hetzke, BS**; *Coral Smith, MS*; *Brian Davis, PhD*; *Michael Rishel, PhD*;
Chrystal Chadwick, BS; *John Nelson, PhD*; *Arati Iyengar, PhD*
- 11:30 am – 1:00 pm **B37** **An In-Depth Look at DNA Casework on Fired Cartridge Casings Extracted Using a Modified Swabbing and Extraction Technique**
*Jennifer Belna, BS**; *Rhonda Carter, BS*
- 11:30 am – 1:00 pm **B38** **Streamlining Forensic Workflows: Field Test Results of Forensic Samples Using the HID NIMBUS Presto QNA System**
*Kayli Carrillo, BS**; *Sheree Hughes, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B39** **The Simultaneous Determination of Time-Since-Deposition and Source Tissue for Forensic Biological Samples**
*Caitlin Lydon, BS**; *Christopher Ehrhardt, PhD*; *Catherine Connon, PhD*;
Susan Greenspoon, PhD
- 11:30 am – 1:00 pm **B40** **Modified Extraction Protocols for Nuclear DNA Extraction From Human Hair Shafts**
*Holly Zhao, BS**; *Vinalon Mones, BS*; *Elaine Lewis, PhD*; *Glenn Fahrig, MS*;
Gregory Peiffer, PhD; *Rebecca Sloman, MFS*; *Katherine Hargett, MFS*;
Todd Bille, MS; *Daniele Podini, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B41** **Direct to DNA: Revolutionizing Forensic Analysis by Streamlining the Process**
*Darcy Machado, MSFS**; *Francesca Spatola, MS**
- 11:30 am – 1:00 pm **B42** **Rapid DNA—Friend or Foe? Comparing Rapid DNA Analysis With Conventional Methodologies for Sexual Assault and Identification Cases**
*Tania Dominguez González, BS**; *Jenny Acevedo González, PhD*

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- 11:30 am – 1:00 pm **B43** **The Impact of Various Substrates and Deposition Time on Bacteria Associated With Saliva Samples and Its Implication on the Accuracy of a Bacterial Signature-Based Body Fluid Identification Method**
Olisdey Galano Cruz, BS;* Sarah Seashols-Williams, PhD; Paul Brooks, PhD;
Baneshwar Singh, PhD; Denise Wohlfahrt, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B44** **Enhancing Success Rates in Sexual Assault Investigations With the SpermX Differential Extraction System**
Huma Nasir, MS;* Amanda Walker, MS; Kelsy Lowther, MS
- 11:30 am – 1:00 pm **B45** **Expanding On-Site Crime Scene Reconstruction Capabilities by Uncovering Microscopic Clues Using Mobile Laser-Induced Breakdown Spectroscopy (LIBS)**
Leah Thomas, BS;* Roger Jefferys, MS; Luis Arroyo, PhD; Tatiana Trejos, PhD
- 11:30 am – 1:00 pm **B46** **Analysis of Inorganic Oxidizing Salts in Intact and Chemically Reacted Consumer Fireworks Using Microscopical and Spectroscopic Approaches**
Sydney Hampton, BS;* Cassidy Callaway, MS; Jared Estevanes, PhD;
Patrick Buzzini, PhD; Geraldine Monjardez, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B47** **An Artificial Intelligence-Based Detection of Ignitable Liquid Residues in Fire Debris Using a Deep Convolutional Neural Network**
Ting-Yu Huang, PhD;* Jorn Yu, PhD
- 11:30 am – 1:00 pm **B48** **The Detection of Organic Explosive Residues From Outdoor Explosions Using Confocal Raman Microscopy**
Nicholas Jernigan, BS;* Jared Estevanes, PhD; Geraldine Monjardez, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B49** **The Application of a Hand-Held Raman Spectrometer for the Classification of Synthetic- and Petroleum-Based Hydrocarbon Fluids**
Javier Hodges, BS;* Kailee Marchand, BS; Jorn Yu, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B50** **The Impact of Glass Vial Type in Measuring Raman Spectrum of Liquid Hydrocarbon Samples**
Kailee Marchand, BS;* Javier Hodges, BS; Jorn Yu, PhD
- 11:30 am – 1:00 pm **B51** **The Detection of Bio-Based Lighter Fluid and Biodiesel Residues on Wood and Fabric Debris**
*Mengliang Zhang, PhD**
- 11:30 am – 1:00 pm **B52** **Real Bullets, Plastic Guns: Evaluating the Strength of 3D-Printed Gun Parts**
Maria Mayol, BA;* Peter Diaczuk, PhD

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- 11:30 am – 1:00 pm **B53** **The Collection Efficiency of the Activated Charcoal Adsorbent for the Detection and Identification of the DMNB by GC/MS From the Headspace of the Suspected Post-Blast Debris**
*Khalid Feras, MS**
- 11:30 am – 1:00 pm **B54** **The Characterization and Discrimination of Soil by Major Elemental Analysis Using Laser-Induced Breakdown Spectroscopy: A Case Study of Nirasaki in Central Japan**
Kento Kumisaka, MD; Ritsuko Sugita, PhD*
- 11:30 am – 1:00 pm **B55** **An Investigation Into Chromatographic Methods for the Preservation, Stability, and Analysis of Organic Gunshot Residue**
Addio Fiordigigli, BS; Kourtney Dalzell, MS; Thomas Ledergerber, BS; Tatiana Trejos, PhD; Luis Arroyo, PhD*
- 11:30 am – 1:00 pm **B56** **A Study of Casing Markings of Semi-Automatic Firearms Modified With a Glock® Switch**
Nicole Sachman, BS; Lawrence Quarino, PhD; Carol Ritter, MS; Peter Diaczuk, PhD*
- 11:30 am – 1:00 pm **B57** **One-Step Non-Contact Sampling and Analysis of Trace Chemical Residues Using an Electrostatic Wand and Paper Spray Mass Spectrometry**
Kimberly Edmunds; La’Nyah Nance; Kenyon Evans-Nguyen, PhD*
- 11:30 am – 1:00 pm **B58** **A Quantitative Assessment of the Stability of New AR-Style Rifle Breech Face Characteristics**
Teagan Trent; Eric Law, PhD*
- 11:30 am – 1:00 pm **B59** **A Modified Procedure for Extracting Primer Gunshot Residue From Scanning Electron Microscopy Carbon Stubs and Trace Analysis Utilizing the Graphite Furnace-Atomic Absorption Spectrometry Technique**
*Khalid Feras, MS**
- 11:30 am – 1:00 pm **B60** **Outpacing the Law: NPS—A Global Threat Challenging Forensic Analysis**
Tahir Jamshaid, MPhil; Khalid Feras, MS**
- 11:30 am – 1:00 pm **B61** **The Enhancement of Latent Fingerprints Using Waste Biomass-Derived Biocompatible Fluorescent Graphene Nanosheets**
Kajol Bhati, PhD; Divya Tripathy, PhD*
- 11:30 am – 1:00 pm **B62** **An Assessment of the Permeability of VOCs Between Containers Housing Detection Canine Training Aids**
Kayla Hogan, BA; Lauryn DeGreeff, PhD; Kenneth Furton, PhD*
- 11:30 am – 1:00 pm **B63** **The Prevalence of GSR on Ammunition Packaging**
Brittany Claassen, MS; Kailyn Thomas; Jason Schroeder, MS*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B64** **Advancing Trace Evidence Identification Through ATR/FTIR Spectroscopy and Machine Learning for Textile Fibers Analysis**
Vishal Sharma, PhD; Akanksha Sharma, MS*

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- 11:30 am – 1:00 pm **B65** **Addressing Challenges in Mineral Identification by Raman Spectroscopy**
*Jasmine Kaur, MFS**; *Drew Kuroda, BS*; *Joshua Christensen*; *Marisia Fikiet, PhD*;
Peter De Forest, DCrim; *Brooke Kammrath, PhD*
- 11:30 am – 1:00 pm **B66** **The Characterization of Residues Left by the Impact of Different Types of Firearm-Propelled Projectiles**
*Jesus Velho, PhD**; *Aline Bruni, PhD*; *Michele Dos Santos, MD, PhD*;
Milena Souza, MD

Thursday – Session I

Collection and Extraction

- 8:00 am – 8:30 am **B67** **Standards Development Activities in Human Forensic Biology**
*Jillian Conte, PhD**; *Charlotte Word, PhD*; *Jarrah Kennedy, MSFS*
- 8:30 am – 8:45 am **B68** **An Evaluation of Semen Extraction Efficiency and Recovery After Washing From Reusable Period Underwear**
*Caitlyn Spencer, BS**; *Sarah Seashols-Williams, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 8:45 am – 9:00 am **B69** **Swab Technology Is Advancing: Are We Putting Research Evidence Into Action?**
*Jillian Conte, PhD**; *Tracey Johnson, MSFS*
- 9:00 am – 9:15 am **B70** **A Quantitative Assessment of Extraction Efficiencies Obtained From Various Methods and Sample Types**
*Lauren Mullen, MFS**; *Erica Romsos, MFS*; *Peter Vallone, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 9:15 am – 9:30 am **B71** **Innovative Lab-on-a-Disc Technology for Rapid Differential DNA Extraction in Forensic Science**
*Beomseok Lee, PhD**; *Kyusang Lee, PhD*; *Beomhee Ahn*; *Hanna Kim, BS*;
Hwanghee Ryu, MS; *Myunghee Jang, BS*; *Yoon-Kyoung Cho, PhD*
- 9:30 am – 9:45 am **B72** **A New DNA Collection Tool Kit: Bringing Versatility and Flexibility to Analysts**
*Jamie Fredericks, PhD**; *Eric Wooldridge, MS*
- 9:45 am – 10:15 am **B73** **Differential Extractions—Defining the Problem**
*Robin Cotton, PhD**; *Ashley Lara, MS*; *Anna Berberoglu, MS*; *Xiaoyu Zhang, MS*
- 10:15 am – 10:30 am **BREAK**

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Criminalistics Gone Wild

- 10:30 am – 11:30 am **B74** **Criminalistics Gone Wild (in the Courtroom)—Human Factors, Activity Level, and Probability, Oh My!**
**Interactive Panel Discussion*
Agnes Winokur, PhD; Tiffany Rodriguez, MS*; Claude Roux, PhD, FRSN*;
Christopher Palenik, PhD*; Joseph Remy*; Tim Kalafut, PhD**
- 11:30 am – 1:00 pm **BREAK**

Biomarkers, Body Fluids, and Y-STRs

- 1:00 pm – 1:15 pm **B75** **A Proteomic Analysis of Semen for Human Identification and Body Fluid Classification**
Zachary Goecker, PhD; Zheng Zhang, MD; Erica Romsos, MFS; Meghan Burke, PhD;
Glendon Parker, PhD; Stephen Stein, PhD; William Wallace, PhD; Peter Vallone, PhD*
- 1:15 pm – 1:30 pm **B76** **An Advanced Nucleic Acid Lateral Flow Assay for Rapid and Sensitive Identification of Human Vaginal Fluid Using Molecular Beacon Technology**
*Nidhi Subhashini, PhD**
- 1:30 pm – 1:45 pm **B77** **Integrating Genetic and Epigenetic Sequencing for Forensic Application in a Single Workflow**
Mirna Ghemrawi, PhD; Lindsay Kotchey, MSFS*
- 1:45 pm – 2:00 pm **B78** **A Microfluidic Device for the Rapid Serological Identification of Forensically Relevant Body Fluids**
Taylor Chambers, BS; Renna Nouwairi, PhD; Larissa Cunha, BS; Liam Barry, MS;
Rachel Flemming, PhD; Zoey Golabek, BA; Sam McCollam; Tiffany Layne, PhD;
James Landers, PhD; Ashleigh Williamson, PhD*
- 2:00 pm – 2:15 pm **B79** **The Identification and Optimization of MicroRNA Biomarkers for Accurate Body Weight Prediction in Forensic Samples**
Kimberly Lettner, BS; Xiaomeng Yang, MS; Sarah Seashols-Williams, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 2:15 pm – 2:30 pm **B80** **Dead or Alive? Biomarker Identification for Postmortem Blood Detection**
Sara C. Zapico, PhD; Amy Brodeur, MFS; Tai-Hua Tsai, MS; Gulnaz Javan, PhD;
Christian Stadler, PhD; Gabriela Roca, PhD*
- 2:30 pm – 2:45 pm **B81** **The Design and Development of Novel Single Multiplex System Incorporating 26 Rapidly Mutating Y-STRs: 26 RM Yplex**
*Rashed Alghafri, PhD**
- 2:45 pm – 3:00 pm **B82** **The Recovery of Probative aSTR and Y-STR Profiles From Single or a Few Micromanipulated Sperm Cells**
Morgan Peters, MS; Kaitlin Huffman, PhD; John Ballantyne, PhD; Erin Hanson, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*

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3:00 pm – 3:15 pm

BREAK

FIGG and UHR

3:15 pm – 3:45 pm

B83 **The Humanitarian DNA Database (HDD): An Update**
*Michael Coble, PhD**; *Melody Josserand, MS*; *Erika Ziemak, MS*

3:45 pm – 4:15 pm

B84 **When You Come to a Fork in the Road, Recognize It: Mapping the FIGG Decision-Making Landscape**
*Colleen Fitzpatrick, PhD**; *Valerie Mattimore Fuller, PhD*

4:15 pm – 4:35 pm

B85 **Building Branches: Navigating Practical and Ethical Considerations for the Responsible Use of Forensic Investigative Genetic Genealogy (FIGG)**
*Claire Glynn, PhD**

4:35 pm – 4:55 pm

B86 **Down the Rabbit Hole—Now Up a Tree: Solving Cold Cases Using Forensic Investigative Genetic Genealogy at the New York City Office of Chief Medical Examiner and the Queens District Attorney's Office**
*Lisa Mertz, MS**; *Karen Ross, JD**

4:55 pm – 5:15 pm

B87 **The Development of Artificial Single Nucleotide Polymorphism (SNP) Data for Investigative Genetic Genealogy (IGG) Research and Training: A Preliminary Study**
*Jessica Whitney, MS**; *Keith Morris, PhD*; *Aldo Romero, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)

5:15 pm – 5:35 pm

B88 **The Coldest Cold Case in Croatia: The Body in the Chest Freezer**
*Tina Smoljanović, BASc**; *Hrvoje Senješ, MAS*; *Jerković Ivan, PhD*

Thursday – Session II

SWGMAT Update and Fentanyl

8:00 am – 8:20 am

B89 **A 2025 Update From the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG)**
*Jaclyn Iera, PhD**

8:20 am – 8:40 am

B90 **Reference-Free Identification of Fentanyl Analogs**
*Tom Metz, PhD**; *Katherine Schultz, MS*; *Adam Hollerbach, PhD*;
Christopher Harrilal, PhD; *Dylan Ross, PhD*; *Danielle Ciesielski, PhD*;
Yehia Ibrahim, PhD; *Simone Raugei, PhD*; *Bobbie-Jo Webb-Robertson, PhD*;
Robert Ewing, PhD

8:40 am – 9:00 am

B91 **Using Chemical Profiling and Chemometrics for Predictive Fentanyl Geographic Associations**
*Agnes Winokur, PhD**

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- 9:00 am – 9:20 am **B92** **Profiling Fentanyl in a Local Drug Market and Characterizing Variability Through Quantitative Chemical Analysis**
*Joshua DeBord, PhD**; *Alexis Quinter, MASc*; *Max Denn, MS*; *Barry Logan, PhD*;
Alex Krotulski, PhD
- 9:20 am – 9:40 am **B93** **Longitudinal Insights Into the United States' Illicit Fentanyl Supply From the Characterization of Counterfeit Fentanyl Tablets**
*Barry Logan, PhD**; *Sarah Shuda, MS*; *Mia Borrelli, MS*; *M.J. Menendez, JD*;
Thom Browne, MA; *Amanda Mohr, MS*
- 9:40 am – 9:55 am **BREAK**

Drug Chemistry Instrumental Analysis

- 9:55 am – 10:10 am **B94** **The Optimization of Soft Ionization by Chemical Reaction in Transfer Coupled to a Time-of-Flight Mass Spectrometer for Rapid Seized Drug Screening**
*Joanna Eldon-Edington, BASc**; *Elizabeth Robinson, MS*; *Edward Sisco, PhD*;
Thomas Forbes, PhD; *Ira Lurie, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 10:10 am – 10:30 am **B95** **The Development of an Analytical Scheme for the Identification of Nitazene Compounds**
*Sarah Caceres, MS**; *Russel Ford, PhD**; *Sherri Tupik, BS**
- 10:30 am – 10:45 am **B96** **Novel Approaches to Increase Specificity for Difficult Isomeric Separations With Ultra-High Performance Liquid Chromatography (UHPLC) for the Analysis of Seized Drugs**
*Jerimiah Seba, BS**; *Ira Lurie, PhD*
- 10:45 am – 11:00 am **B97** **Determining the Utility of Gas Chromatography/Derivative Vacuum Ultraviolet Spectroscopy for Seized Drug Analysis Through a Comparison to Gas Chromatography/Mass Spectrometry Capabilities**
*Alexa Mehlman, BS**; *Ira Lurie, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 11:00 am – 11:15 am **B98** **Chemometrics as a Tool for Transformation: Addressing the Limitations of Gas Chromatography/Infrared Spectroscopy for Synthetic Cathinone Analysis**
*Jennifer Bonetti, MS**; *Ruben Kranenburg, PhD*; *Stephen Hokanson, BS*;
Matthew Pothier, MS; *Saer Samanipour, DSc*; *Arian van Asten, PhD*
- 11:15 am – 11:30 am **B99** **An Additional Analysis of Drug Test Strips by Mass Spectrometry for Rapid Comprehensive Drug Checking**
*Meghan Appley, PhD**; *Edward Sisco, PhD*
- 11:30 am – 1:00 pm **BREAK**

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Detector Dogs

- 1:00 pm – 1:20 pm **B100** **Detector Dogs: Advancing Drug Detection Operations Using Science at the United States Customs and Border Protection**
Jonathan McGrath, PhD; Armando Avallone, MS*
- 1:20 pm – 1:40 pm **B101** **The Development of Fentanyl Training Aids to Advance Canine Detection Strategies**
Jonathan McGrath, PhD; Armando Avallone, MS*
- 1:40 pm – 2:00 pm **B102** **Canine Training Aid Development of Novel Target Odors to Advance Strategies to Combat Fentanyl Precursors at the Border**
Jonathan McGrath, PhD; Armando Avallone, MS*
- 2:00 pm – 2:20 pm **B103** **The Evolution of VOC Profiles During Early Human and Animal Decomposition in Application for Canine Detection**
Fantasia Whaley, MSFS; Valerie Albizu, BS; Joel Fuentes Carrasco, BS; Emily Millan, BS; Jordi Cruz, PhD; Lauryn DeGreeff, PhD*
- 2:20 pm – 2:40 pm **B104** **Assessing the Accuracy and Reliability of Canine Explosives Detection Using OSAC Training and Certification Standards**
Adele Quigley-McBride, PhD; Haylie Browning, BS*; Lauryn DeGreeff, PhD; Paola A. Prada-Tiedemann, PhD*
- 2:40 pm – 3:00 pm **B105** **Developing a Universal Smokeless Powder Training Aid**
Rushali Dargan, PhD; Lauryn DeGreeff, PhD*
- 3:00 pm – 3:20 pm **BREAK**

Firearm and Toolmark Examinations

- 3:20 pm – 3:40 pm **B106** **OSAC/ASB Standards Development Activities in Firearm and Toolmark Examination**
Xiaoyu Zheng, MS; Robert Sanger**
- 3:40 pm – 4:00 pm **B107** **A Quantitative Topography Comparison of Toolmarks Made by Tongue-and-Groove Pliers**
Eunah Joo, MS; Thomas Renegar, AA; Johannes Soons, PhD; Michael Stocker, BS; Robert Thompson, MFS; Xiaoyu Zheng, MS*
- 4:00 pm – 4:20 pm **B108** **The Interoperability of 3D Firearm Toolmark Measurements**
Xiaoyu Zheng, MS; Johannes Soons, PhD; James Yen, PhD*
- 4:20 pm – 4:40 pm **B109** **The Generation and Interpretation of the Similarity Score Distribution for Matched and Non-Matched Bullets and Cartridge Cases**
*Neal Schrode, BS**

CRIMINALISTICS

- 4:40 pm – 5:00 pm **B110** **Quantitative Assessment of Barrel Wear From Solid Copper Bullets**
Natali Hassett, MS; Eric Law, PhD*
- 5:00 pm – 5:20 pm **B111** **A Quantitative Determination of Muzzle-to-Target Distance in Shooting Cases**
Taqiyah Chernesky, MScFS; Sophie Knier, MFS; Stephanie Walcott, MScFS;
Emanuele Alves, PhD*
- 5:20 pm – 5:40 pm **B112** **Close Non-Matches and Database Searches: How Often Can We Expect to See a True Match Among the K Highest Correlations?**
Blanca Parker, BA; Heike Hofmann, PhD; Alicia Carriquiry, PhD*

Thursday – Session III

Challenging Samples From Human Remains

- 8:30 am – 9:00 am **B113** **Deep Ocean Recovery and DNA Identification of Human Remains From the Titan Submersible**
Nancy Stokes, MSFS; Taylor Dickerson, MSFS; John Walsh, MD;
Timothy McMahon, PhD*
- 9:00 am – 9:15 am **B114** **An Evaluation of DNA Recovery From Chemically Treated Human Remains**
Jennifer Snedeker, BS; Rachel Houston, PhD; Sheree Hughes, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:15 am – 9:30 am **B115** **The Use of Mitochondrial DNA to Provide Ancestry of Skeletal Remains Discovered in the East Marshall Street Well (EMSW)**
Martin MacStudy, BS; Filipa Simao, PhD; Baneshwar Singh, PhD; Tal Simmons, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:30 am – 9:45 am **B116** **An Optimized Demineralization Method Using Bone Slices for Improved DNA Recovery of 19th-Century Human Skeletal Remains**
Ciara Rhodes, BS; Reilly Price, MS; Celeste Willetts, BS; Tal Simmons, PhD;
Sarah Seashols-Williams, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:45 am – 10:00 am **B117** **Biparental and Uniparental Ancestry of the Unidentified Human Remains From the East Marshall Street Well**
Christopher Twene, MS; Filipa Simao, PhD; Baneshwar Singh, PhD;
Tal Simmons, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 10:00 am – 10:15 am **BREAK**

CRIMINALISTICS

Forensic Investigations, NIST Libraries, and Source Identification

- 10:15 am – 10:30 am **B118** **Non-Destructive Brand Classification From Automobile Tire Rubber Traces Using ATR/FTIR Spectroscopy and Machine Learning for Forensic Investigations**
*Vishal Sharma, PhD**; *Akanksha Sharma, MS*
- 10:30 am – 10:45 am **B119** **The Development of a Protocol for the Elemental Analysis of Tire Marks in Road Crime Forensics**
*Matthieu Baudelet, PhD**; *John Lucchi, PhD*; *Micaela Hernandez, BS*; *Alex Curto, BA*
- 10:45 am – 11:05 am **B120** **The National Institute of Standards and Technology (NIST) Mass Spectral Reference Libraries**
*Edward Erisman, MS**
- 11:05 am – 11:30 am **B121** **The Development and Evaluation of a Contrastive Learning Framework for Source Identification: Technology for Transformation in the Interpretation of Forensic Data**
*Danica Ommen, PhD**; *Christopher Saunders, PhD*; *JoAnn Buscaglia, PhD*
- 11:30 am – 1:00 pm **BREAK**

An Elusive Generalist, Measurement Uncertainty, Standards Implementation, and the Tyranny of Universal Standards

- 1:00 pm – 1:30 pm **B122** **The Curious Case of the Elusive Generalist**
*Sheila Willis, DSc**; *Michelle Miranda, PhD*
- 1:30 pm – 1:50 pm **B123** **The Implementation of a Uniform Approach to Determine Measurement Uncertainty in Routine Chemical Forensic Casework**
*Ivo Alberink, PhD**; *Ingrid Bosman, PhD*; *Marzena Glama, MS*; *Dick-Paul Kloos, PhD*; *Annette Sprong, BS*; *Camille van Dijk, MS*
- 1:50 pm – 2:10 pm **B124** **A Study of Standards Implementation Across the Forensic Sciences: Notes, Trends, and Future Directions**
*Vincent Desiderio, MS**; *John Paul Jones, MBA*; *Allison Getz, MS*; *Crystal DeGrange, MS*; *Mark Stolorow, MS, MBA*; *Steven Johnson, BS*
- 2:10 pm – 2:40 pm **B125** **Problematic Exclusionary Differences: The Tyranny of Universal Standards for Determining Exclusionary Differences**
*Janean Hanka, MS**; *JoAnn Buscaglia, PhD**; *Jack Hietpas, PhD*; *Danica Ommen, PhD*; *Christopher Saunders, PhD*
- 2:40 pm – 3:00 pm **BREAK**

CRIMINALISTICS

Friction Ridge Applications in Research and Practice I

- 3:00 pm – 3:20 pm **B126** **Standards Development Activities Related to Friction Ridge Examination**
*Heidi Eldridge, PhD**
- 3:20 pm – 3:40 pm **B127** **Forensic Lab's Phoenix Rise: The Remarkable Redemption of a Lost Latent Fingerprint Unit**
Angelic Rountree, BS; Alice White, BS*
- 3:40 pm – 4:00 pm **B128** **Assessing the Performance of Fingerprint Laboratories Through Collaborative Exercises: The ENFSI Fingerprint Working Group Experience**
*Aldo Mattei, PhD**
- 4:00 pm – 4:20 pm **B129** **An Investigation of Fingerprint Residue Components and Differentiation From Contaminants**
Katelynn Perrault Uptmor, PhD; Emma Macturk, BS*
- 4:20 pm – 4:30 pm **BREAK**

Friction Ridge Applications in Research and Practice II

- 4:30 pm – 4:50 pm **B130** **Developing Reproducible Protocols and Definitions for Selecting Combined Minutiae: Applications in Research and Practice**
Adele Quigley-McBride, PhD; Heidi Eldridge, PhD*; Brett Gardner, PhD*
- 4:50 pm – 5:10 pm **B131** **Likelihood Ratios for Fingerprint and Palm Impressions**
Thomas Busey, PhD; Meredith Coon, MS*
- 5:10 pm – 5:30 pm **B132** **One Size Does Not Fit All: Variations in Documenting the ACE-V Process Among Latent Print Examiners**
Ivy Walker, MS; John Grassel, MA; Micaela Ascolese, BA; Rebecca Shute, MS*
- 5:30 pm – 5:50 pm **B133** **Visualizing and Enhancing Latent Fingerprints Using Different Floral Powders: An Eco-Friendly Approach**
Kajol Bhati, PhD; Amandeep Kaur Bhambara, PhD*; Ankit Singh, MSc; Rajeev Kumar, PhD; Vinny Sharma, PhD;*

Friday

Poster Session

- 11:30 am – 1:00 pm **B134** **Enhanced Genetically Variant Peptide Profiling From Human Hair Using Keratinase and Trypsin**
Zheng Zhang, MD; William Wallace, PhD; Stephen Stein, PhD*
- 11:30 am – 1:00 pm **B135** **Developing Digital Polymerase Chain-Based Assays for the Detection and Speciation of Foodborne Illness**
Sylvia Etim, MS; Bruce McCord, PhD*

CRIMINALISTICS

- 11:30 am – 1:00 pm **B136** **Statistical Analysis of Fairness in Forensic Source Identification Problems**
*Semhar Michael, PhD**; *Christopher Saunders, PhD*
- 11:30 am – 1:00 pm **B137** **Enhancing the Number of Contributor Inference Using mtDNA Haplotypes for Mixture Deconvolution**
*Zack Beyerl, BS**; *Nicole Mischak, BS**; *Regan Fenske, BA*; *Helene Douglas, BS*; *Daniele Podini, PhD*
- 11:30 am – 1:00 pm **B138** **Different TrueAllele Users, Same DNA Answer: A Multi-Center Proficiency Study**
*William Allan, MASc**; *Jennifer Bracamontes, MS*; *Matthew Legler, BS*; *Jonathan Perlin, MS*; *Mark Perlin, MD, PhD*
- 11:30 am – 1:00 pm **B139** **The Advancement and Practical Application of a Kinship Identification System Through the Exploration of Genetically Shared Chromosomal Regions Using High-Density SNP Data**
*Sohee Cho, PhD**; *Eunsoon Shin, PhD*; *Yong-Seok Kim, PhD*; *Soong Deok Lee, MD, PhD*
- 11:30 am – 1:00 pm **B140** **DNA Metabarcoding: Can It Reliably Be Used to Characterize Pollen From Surface Soils?**
*Kelly Meiklejohn, PhD**; *Ozge Kuddar, MS*; *Benjamin Callahan, PhD*; *Christopher Bernhardt, PhD*
- 11:30 am – 1:00 pm **B141** **An Analysis of DNA Preservation in Human Remains Embedded in Solid Building Materials**
*Hayle Boechler, BS**; *Mayra Mayr-Eduardoff, PhD*; *Sheree Hughes, PhD*
- 11:30 am – 1:00 pm **B142** **A Decade of ForenSeq in Forensics: Where Are We Now?**
*Laurence Devesse, PhD**; *Melissa Kotkin, BS*
- 11:30 am – 1:00 pm **B143** **Microhaplotypes: A Double-Edged Sword in Forensic Genetics**
*Pegah Farhadi, PhD**; *Arash Alipourtabrizi, MD*
- 11:30 am – 1:00 pm **B144** **Investigating a Different Forensic Workflow for DNA Paternity Testing**
*Franzoni Anna, MS**; *Michele Rosso, PhD*
- 11:30 am – 1:00 pm **B145** **Enhancing Rapid DNA Programs: Implementing a Metrics Tracker to Improve Performance and Measure Success**
*Emily Strelka, MFS**; *Erin Forry, MS*; *Jason Chute, MSFS*; *Mikalaa Martin, BS*; *Misty Marra, MSFS*; *Patricia Melton, PhD*; *Shannon Krauss, PhD*
- 11:30 am – 1:00 pm **B146** **Upgrading to STRmix v2.11: A Chance to Do It All Again**
*Ut Dinh, MS**; *Alicia Cadenas, MS*
- 11:30 am – 1:00 pm **B147** **The Application of Deep Learning in Latent Fingerprint Enhancement**
*Daye Kim, MS**; *Ming-Sie Pan*; *Chao-Hsing Fan, PhD*; *Jorn Yu, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)

CRIMINALISTICS

- 11:30 am – 1:00 pm **B148** **Elucidating the Mechanism of Unwanted and Uncontrolled Water Adducts in the Tandem Mass Spectra of Synthetic Cannabinoids**
*McKenna Oaks**; Christopher Poulos, MS; Emmanuel Ubana, BS; Fabien Goulay, PhD; Glen Jackson, PhD
- 11:30 am – 1:00 pm **B149** **Utilizing a Field-Deployable, High-Resolution Mass Spectrometry System for Screening of Seized Drugs by DART-MS Analysis**
*Elizabeth Robinson, MS**; Edward Sisco, PhD; Thomas Forbes, PhD
- 11:30 am – 1:00 pm **B150** **The Effect of Mass Spectral Selection on Discrimination of Fentanyl Analog Positional Isomers**
*Alexandra Rahn, BS**; Ruth Waddell Smith, PhD; Victoria McGuffin, PhD
- 11:30 am – 1:00 pm **B151** **Structural Characterization of Nitazene Analogs Using Electrospray Ionization-Tandem Mass Spectrometry (ESI-MS/MS)**
*Emma Hardwick, BA**; J. Tyler Davidson, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B152** **Fingerprint Evidence Analysis of Fraudulent Receipts in Taichung City, Taiwan**
*Yu-Chih Lin, PhD**; Pei-Yi Hua, MS; Chi-I Wu, MS; Chia-Chen Weng, MAS; Kuo-Lan Liu, MD, PhD
- 11:30 am – 1:00 pm **B153** **The Development and Validation of a New GC/MS Decision-Point Method for Marijuana and Hemp Differentiation Using Hydrogen as Carrier Gas**
*Agatha Villegas, BS**; Sandra Rodriguez-Cruz, PhD; Michael Weaver, BS
- 11:30 am – 1:00 pm **B154** **Evaluating the Performance of DEA's New GUARDS Method Via an Interlaboratory Study**
*Mark Frisch, PhD**; Sandra Rodriguez-Cruz, PhD
- 11:30 am – 1:00 pm **B155** **Exploring Natural Aging and Depletion Processes of Latent Fingermarks With 2D and 3D Imaging**
*Alexandrea Buscarello, BS**; Josep De Alcaraz-Fossoul, PhD
- 11:30 am – 1:00 pm **B156** **Utilizing Low Energy Ionization to Differentiate and Identify Fentanyl and Nitazene Analogs**
*Kirk Lokits, PhD**
- 11:30 am – 1:00 pm **B157** **The Development and Validation of a Combined Selected Ion Monitoring-Scan GC/MS Method for Nitazene Analogs**
*Alleigh Couch, BS**; Emma Hardwick, BA; Claire Phelps, MSFS; J. Tyler Davidson, PhD
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B158** **The Differentiation of Isobaric Methyl-Substituted Fentanyl Analogs Using Direct Analysis in Real-Time Mass Spectrometry (DART-MS) and All-Ion Fragmentation (AIF)**
*Christany Liggins, BS**; Alleigh Couch, BS; J. Tyler Davidson, PhD

CRIMINALISTICS

- 11:30 am – 1:00 pm **B159 Thermal Desorption-Direct Analysis in Real-Time Mass Spectrometry (TD-DART-MS) of Seized Drug Mixtures**
*Keshonna Towns, BS**; *Alleigh Couch, BS*; *J. Tyler Davidson, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B160 An Evaluation of a Transportable Linear Ion Trap Mass Spectrometer for Rapid Seized Drug Screening**
*Fiza Tajdin, BS**; *Christina Chang, MS*; *Alleigh Couch, BS*; *J. Tyler Davidson, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B161 The Differentiation of CBD and Δ 9-THC Isomers Using Copper Ion Complexation and Electrospray Ionization Tandem Mass Spectrometry**
*Alleigh Couch, BS**; *Christopher Zall, PhD*; *J. Tyler Davidson, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B162 Enhancing Latent Print Development With Lanconide Powder**
*Lydia Buxa**; *Chad Snyder, PhD*
- 11:30 am – 1:00 pm **B163 A Modified and Optimized Duquenois Test for Classical and Designer Cannabis Products**
*Marie Lemay**; *Ryan Smith, BS*; *Ling Huang, PhD*; *Nanetter Wachter, PhD*
- 11:30 am – 1:00 pm **B164 Discriminating Between the Tandem Mass Spectra of Isomeric Synthetic Cannabinoids Using the Expert Algorithm for Substance Identification (EASI)**
*Alexandra Adeoye, MS**; *Alleigh Couch, BS*; *J. Tyler Davidson, PhD*; *Glen Jackson, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B165 An Analysis of *Mitragyna Hirsuta* and *Mitragyna Diversifolia* Being Offered as Legal Alternatives to Kratom**
*Megan Joos, BS**; *Elizabeth Gardner, PhD*
- 11:30 am – 1:00 pm **B166 The Development of a Virtual Liquid Chromatography Method Development Tool**
*Haley Berkland, MS**
- 11:30 am – 1:00 pm **B167 The Drug Enforcement Administration's Basic Forensic Chemist Training Program Becomes the First Forensic Training Program Accredited by the Federal Law Enforcement Training Accreditation Board**
*Jessica Rasmussen, MS**
- 11:30 am – 1:00 pm **B168 The Development and Testing of a Novel Sorbent Material for Headspace Analysis With Application to Illicit Drugs**
*Sadie Olrogg, BS**; *Lauryn DeGreeff, PhD*; *Joongho Moon, PhD*
- 11:30 am – 1:00 pm **B169 The Optimization of Fast Blue B Test for Cannabis Products**
*Ryan Smith, BS**; *Marie Lemay**; *Ling Huang, PhD*

CRIMINALISTICS

- 11:30 am – 1:00 pm **B170** **The Detection and Quantitation of Xylazine, Medetomidine, and Detomidine as Adulterants to Heroin or Illicitly Manufactured Fentanyl Using NanoLC With Various Mass Spectrometers**
*Mehdi Moini, PhD**; *Brian Eckenrode, PhD*
- 11:30 am – 1:00 pm **B171** **The Development of an LC/MS/MS Method for the Identification of Psilocybin and Psilocin From Seized Drugs**
*Alexia Cassman, BS**; *Kristen Head, MS*
- 11:30 am – 1:00 pm **B172** **DSI-GC/MS Analysis of Designer Cannabis Gummies**
*Hannah LaVena**; *Kevin Bisceglia, PhD*; *Ling Huang, PhD*
- 11:30 am – 1:00 pm **B173** **GC/VIR Technology in Seized Drug Analysis**
*Sherri Tupik, BS**
- 11:30 am – 1:00 pm **B174** **WITHDRAWN**
- 11:30 am – 1:00 pm **B175** **The Development and Optimization of a Method for the Quantitation of Seized Drugs Using Rapid Gas Chromatography/Mass Spectrometry**
*Marissa Ho, BS**; *Briana Capistran, PhD*; *Edward Sisco, PhD*; *Ira Lurie, PhD*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B176** **WITHDRAWN**
- 11:30 am – 1:00 pm **B177** **WITHDRAWN**
- 11:30 am – 1:00 pm **B178** **The Proliferation of Nitazenes in the United States Drug Market: Examining Powders and Counterfeit Tablets**
*Mia Borrelli, MS**; *Sarah Shuda, MS*; *Amanda Mohr, MS*; *Thom Browne, MA*; *Barry Logan, PhD*
- 11:30 am – 1:00 pm **B179** **A Discovery of False Positive Illicit Drug Identification With Portable Surface-Enhanced Raman Spectroscopy (SERS)**
*Ella Galvan**; *Desmond Brown*; *Don Ostrowski, APM*; *Richard Crocombe, PhD*; *Pauline Leary, PhD*; *Brooke Kammrath, PhD*
- 11:30 am – 1:00 pm **B180** **Illicit Drug Analysis in the Field With a Portable Instrument “Toolkit”**
*Brooke Kammrath, PhD**; *Desmond Brown*; *Ella Galvan*; *Samuel Friday, BS*; *Drew Kuroda, BS*; *Alexander Klein, BS*; *Jessica Persechino, MA*; *Jessica Behn, BS*; *Jon Naples*; *Debbie Fuller*; *Isabelle Radgen-Morvant, MS*; *Richard Crocombe, PhD*
- 11:30 am – 1:00 pm **B181** **Optimizing Extraction Methods for Cannabinoid Quantitation in Cannabis Gummies: A Comparative Study Using LC-PDA**
*Ya-Chih Cheng, PhD**; *Walter Wilson, PhD*

CRIMINALISTICS

- 11:30 am – 1:00 pm **B182** **The Presumptive Identification of Psilocybin and Psilocyn in Mushrooms and Food Products Using Matrix-Assisted Ionization Vacuum (MAIV) and Time-of-Flight/Mass Spectrometry (TOF/MS)**
Maci Koester, BS; Deborah Brimijoin, MS; Jennifer Clary, MS*
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 am – 1:00 pm **B183** **A Green Method for Seized Drug Analysis Using a Portable Liquid Chromatograph**
Jayda Barber, BS; Ira Lurie, PhD*
- 11:30 am – 1:00 pm **B184** **Drug Detection in Complex Materials Using Confocal Raman Microspectroscopy**
Natasha Wheatley, MPA; Kenzie Ballinger, BS**
- 11:30 am – 1:00 pm **B185** **The Identification of Isobutane Hash Oil (IBHO), an Uncommon Cannabis Product Seized for the First Time by the Brazilian Federal Police**
Alcir Gomes, PhD; Eduardo Bruck, BS*

Friday – Session I

Mixtures and Probabilities

- 8:00 am – 8:30 am **B186** **Back to the Future: Applying Decades-Old Probabilistic Models to Today's DNA Results When Activities Are of Interest**
Simone Gittelson, PhD; Franco Taroni, PhD; Tim Kalafut, PhD; John Buckleton, DSc*
- 8:30 am – 8:45 am **B187** **The Construction of a Microhaplotype Panel for Complex Mixture Deconvolution Using Next-Gen Sequencing**
Regan Fenske, BA; Sarah Cavanaugh, MSFS; Helene Douglas, BS;*
Daniel Standage, PhD; Robert Lagace, BA; Andrew Feldman, PhD;
Jeffrey Lin, MS; Kenneth Kidd, PhD; Daniele Podini, PhD
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 8:45 am – 9:00 am **B188** **DNA Evidence Analysis Using the Same Number of Contributors for Prosecution and Defense Will Often Frame a Non-Contributing Suspect**
*Charles Brenner, PhD**
- 9:00 am – 9:15 am **B189** **The Development of Universal STRmix™ Parameters for Legacy Kits**
*Tim Kalafut, PhD**
- 9:15 am – 9:30 am **B190** **Touch/Trace DNA in Activity-Level Propositions: Anatomy of a DNA Transfer**
Ashley Hall, PhD; Ray Wickenheiser, DPS; Aldrin Alviar, MS*
- 9:30 am – 10:00 am **B191** **Evaluating the Consistency of a DNA Mixture Interpretation Protocol**
Joseph Truppi, BS; Mario Galioto, MS; Michael Donley, MS; Katie Welch, MS*
- 10:00 am – 10:15 am **BREAK**

CRIMINALISTICS

Looking Back and Moving Forward

- 10:15 am – 10:45 am **B192** **A Perspective on More Than 30 Years of Forensic DNA Research and Technology Development**
*Bruce McCord, PhD**
- 10:45 am – 11:00 am **B193** **From Planning to Practice: Navigating the Implementation of Rapid DNA Technology and Tracking Success Metrics**
Jason Chute, MSFS; Patricia Melton, PhD; Emily Strelka, MFS; Erin Forry, MS; Mikalaa Martin, BS; Misty Marra, MSFS; Shannon Krauss, PhD*
- 11:00 am – 11:15 am **B194** **A Sensitivity Evaluation of the Applied Biosystems RapidHIT ID System v2.0 and RapidINTEL Plus Sample Cartridge**
Emily Yen Dang, BS; Morgan Eaton, MS; Raygan Harrington, BS; Tracey Dawson Green, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 11:15 am – 11:30 am **B195** **An Assessment of the RapidHIT ID System v2.0 for Use on Evidentiary Samples and Its Suitability for Implementation Into Law Enforcement**
Trupti Sriram, BS; Jamia Mealy, MFS; Kristen Naughton, BS*
- 11:30 am – 1:00 pm **BREAK**

How Low Can (Should) We Go?

- 1:00 pm – 1:15 pm **B196** **An Analysis of Pre- and Post-Coital Microbial Transfer Using Deep Shotgun Metagenomic Studies**
Andrea Ramirez Torres, BS; Mirna Ghemrawi, PhD; George Duncan, PhD; Bruce McCord, PhD*
- 1:15 pm – 1:30 pm **B197** **Exploring the World of “Touch DNA” and “Touch Microbiome”: One-Shot DNA Collection and Extraction**
Michele Di Nunzio, PhD; Sarah Gino, MD; Andrea Bonicelli, PhD; Noemi Procopio, PhD*
- 1:30 pm – 1:45 pm **B198** **Size-Selective Purification to Separate High and Low Molecular Weight DNA**
Vinalon Mones, BS; Helene Douglas, BS; Glenn Fahrig, MS; Gregory Peiffer, PhD; Rebecca Sloman, MFS; Katherine Hargett, MFS; Jessica Broner, MS; Jonathan King, MS; Elaine Lewis, PhD; Michael Coble, PhD; Todd Bille, MS; Daniele Podini, PhD*
- 1:45 pm – 2:00 pm **B199** **Probabilistic Clustering of Single-Cell Investigative Evaluations**
Qhawe Bhembe, MSFS; Nidhi Sheth, PhD; Leah O’Donnell, MS; Ken Duffy, PhD; Desmond Lun, PhD; Catherine Grgicak, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)

CRIMINALISTICS

- 2:00 pm – 2:15 pm **B200** **The Comparison and Evaluation of Predictors on Single-Cell Weights of Evidence**
*Catherine Grgicak, PhD**; *Desmond Lun, PhD*
- 2:15 pm – 2:30 pm **B201** **Low-Level DNA Recovery From Fired Cartridge Casings, Firearms, and Explosive Devices: Comparing Conventional Methods and Sequencing-Based DNA Typing**
*Mirna Ghemrawi, PhD**; *Leah Nangeroni, MS*
- 2:30 pm – 2:45 pm **B202** **Getting More From Less: Low-Level DNA Mixtures on Cartridges**
*Kari Danser, MS**; *Jennifer Bracamontes, MS*; *Matthew Legler, BS*;
Mark Perlin, MD, PhD
- 2:45 pm – 3:00 pm **B203** **Integrated On-Chip PCR-Capture-Sizing-CE Microsystems for Ultrasensitive Forensic DNA Typing**
*Xiujun Li, PhD**
- 3:00 pm – 3:15 pm **BREAK**

Administration and Planning

- 3:15 pm – 3:45 pm **B204** **So, You Want a Job in Forensic Science? Getting Hired as a Forensic Scientist From the Hiring Manager's Perspective**
*Matthew Gamette, MS**; *Rylene Nowlin, BS**
- 3:45 pm – 4:15 pm **B205** **The Role of the National Technology Validation Implementation Collaborative (NTVIC) in Forensic Technology Implementation**
*Matthew Gamette, MS**
- 4:15 pm – 4:35 pm **B206** **A National Survey and Interviews on Training in Forensic Science Service Laboratories in the United States Evaluative Report**
*Kelly Elkins, PhD**
- 4:35 pm – 5:05 pm **B207** **Planning for and Executing a Disaster Response: The Rapid DNA Mass Disaster Emergency Response and Preparedness Toolkit**
*Mikalaa Martin, BS**; *Taylor Koepfler, MSFS*; *Jason Chute, MSFS*;
Shannon Krauss, PhD; *Laura Kuyper, MFS*; *Katie Scott, MSFS*; *Jeri Roper-Miller, PhD*

CRIMINALISTICS

Friday – Session II

A Morning of Trace Materials—Standards, Soils, Glass, Paint, and Textiles

8:15 am – 8:35 am	B208	Standards Development Activities in Trace Materials <i>Sandra Koch, PhD*</i> ; <i>Celeste Grover, MSFS</i>
8:35 am – 8:55 am	B209	Differentiating Soil by Color and Mineralogy for Soil Comparisons: An Experiment Using Soil From North Carolina <i>Libby Stern, PhD*</i> ; <i>Hannah Dickson, MS</i> ; <i>Jodi Webb, MS</i> ; <i>Kelly Meiklejohn, PhD</i> ; <i>Jack Hietpas, PhD</i> ; <i>Ian Saginor, PhD</i> ; <i>Michael Smith, PhD</i>
8:55 am – 9:15 am	B210	Soil Discrimination by Particle-Related Raman Spectroscopy <i>Drew Kuroda, BS*</i> ; <i>Jasmine Kaur, MFS</i> ; <i>Joshua Christensen</i> ; <i>Marisia Fikiet, PhD</i> ; <i>Peter Harrington, PhD</i> ; <i>Peter De Forest, DCrim</i> ; <i>Brooke Kammrath, PhD</i>
9:15 am – 9:35 am	B211	An Elemental Analysis of Glass Powder on Spent Projectiles <i>Shirly Montero, PhD*</i> ; <i>Summer Garcia</i>
9:35 am – 9:55 am	B212	Data Fusion From Infrared, Elemental, MSP, and Raman Analysis Techniques to the Maximization of the Efficiency of the Analytical Sequence for the Forensic Examination of Paint Evidence <i>Patrick Buzzini, PhD*</i> ; <i>Morgan Carpenter, BS</i> ; <i>Swathi Murali, MS</i> ; <i>James Curran, PhD</i>
9:55 am – 10:15 am	B213	Wait, Hot Cooking Oil Turned Your Shirt From Green to Orange? <i>Tiffany Rodriguez, MS*</i> ; <i>William Perdue, MPA</i>
10:15 am – 10:30 am		BREAK

The River's Silent Witness, Chemometric Approaches, and Clandestine Human Burials

10:30 am – 10:50 am	B214	Skeleton in the Stream: Unraveling the Murder Mystery of the River's Silent Witness <i>Akhilesh Pathak, MD*</i>
10:50 am – 11:10 am	B215	Chemometric Approaches for Investigating Multiblock Hyperspectral Data in Forensic Biological Evidence Analysis <i>Eugenio Alladio, PhD*</i> ; <i>Alberto Mazzoleni, MS</i> ; <i>Carolina Scagliarini, MS</i> ; <i>Paolo Garofano, MD, PhD</i>
11:10 am – 11:30 am	B216	A Layered Analytical Method for Detecting Clandestine Human Burials <i>Brian Eckenrode, PhD*</i> ; <i>Edward Bentil, PhD</i>
11:30 am – 1:00 pm		BREAK

CRIMINALISTICS

An Afternoon of Fire Debris, Explosives, and GSR

- 1:00 pm – 1:20 pm **B217** **Standards Development Activities Related to Ignitable Liquids, Explosives, and Gunshot Residue**
*Brenda Christy, MS**
- 1:20 pm – 1:40 pm **B218** **The Validation of a Rapid GC/MS Method for Forensic Fire Debris Screening Applications**
Briana Capistran, PhD; Elizabeth Robinson, MS; Edward Sisco, PhD*
- 1:40 pm – 2:00 pm **B219** **An Application of the Expert Algorithm for Substance Identification (EASI) to Predict ASTM E1618-19 Ignitable Liquid Classes From Gas Chromatography/Mass Spectrometry Data of Ignitable Liquid Residues**
Hannah McMillen, MS; Glen Jackson, PhD*
- 2:00 pm – 2:20 pm **B220** **Revealing Gunshot Residue Flow and Deposition Behaviors Using Laser Sheet Scattering, High-Speed Videography, Atmospheric Particle Analysis, and Spectrometric Analytical Techniques**
Thomas Ledergerber, BS; Matthew Staymates, MS*; Kourtney Dalzell, MS; Luis Arroyo, PhD; Roger Jefferys, MS; Tatiana Trejos, PhD*
- 2:20 pm – 2:40 pm **B221** **An Assessment of the Transfer and Persistence of Gunshot Residue in Simulated Arrest Scenarios Analyzed by Screening and Confirmatory Methods**
Kourtney Dalzell, MS; Thomas Ledergerber, BS; Leah Thomas, BS; Addio Fiordigigli, BS; Tatiana Trejos, PhD; Luis Arroyo, PhD*
- 2:40 pm – 3:00 pm **BREAK**

Drug Chemistry Standards, Developments, and Applications

- 3:00 pm – 3:15 pm **B222** **Standard Development Activities in Seized Drug Analysis: The Current Status and Challenges**
*Agnes Winokur, PhD**
- 3:15 pm – 3:30 pm **B223** **Tracking the Emergence of Medetomidine, Tetracaine, and Other Substances as Adulterants in Philadelphia, Pennsylvania, Recreational Opioid Markets**
Max Denn, MS; Joshua DeBord, PhD; Alexis Quinter, MASc; Alex Krotulski, PhD; Barry Logan, PhD*
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 3:30 pm – 3:45 pm **B224** **A Systematic Study of Liquid Chromatography in Search of the Best Separation of Cannabinoids for Potency Testing of Hemp-Based Products**
*Liguo Song, PhD**
- 3:45 pm – 4:00 pm **B225** **Sample Preparation Procedures at NIST for the Determination of Δ 9-THC and Its Isomers in Commercial and Seized Cannabis Vape Products by GC/MS**
Walter Wilson, PhD; Ya-Chih Cheng, PhD*

CRIMINALISTICS

- 4:00 pm – 4:15 pm **B226** **The Development of a Δ 9-THC Colorimetric Breathalyzer Using 3D Printing Manufacture**
*Savanah Allinson, BS**; *Taqiyah Chernesky, MScFS*; *Aron Jaffe, MScFS*;
Stephanie Walcott, MScFS; *Emanuele Alves, PhD*
- 4:15 pm – 4:30pm **B227** **Psilocin Derivatives in Edibles: Issues, Extraction Tips, and Case Studies**
*H. Ross Ehmann, MSFS**; *Oriana Ovide, MSFS*
- 4:30 pm – 4:50 pm **B228** **The Application of the Expert Algorithm for Substance Identification (EASI) to Differentiate Tandem Mass Spectra of 2,3-MDMA and 3,4-MDMA**
*Glen Jackson, PhD**; *Alexandra Adeoye, MS*; *Sandra Rodriguez-Cruz, PhD*
- 4:50 pm – 5:10 pm **B229** **Standardizing and Implementing Direct Analysis in Real Time-Mass Spectrometry Methods Throughout DEA Laboratories**
*Sandra Rodriguez-Cruz, PhD**
- 5:10 pm – 5:30 pm **B230** **The Development and Validation of the Global Uniform Analysis and Reporting of Drug-Related Substances (GUARDS) Method**
*Michael Weaver, BS**; *Sandra Rodriguez-Cruz, PhD*; *Mark Frisch, PhD*;
Corey Nida, PhD