

**Wednesday**

## Poster Session

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*Moderator:*

Jolene Bierly, MSFS  
NMS Labs  
Horsham, PA

*Co-Moderator:*

Joshua S. DeBord, PhD  
North Louisiana Crime Lab  
Shreveport, LA

- 7:30 p.m. – 9:00 p.m.
- K1**     **Phenibut, You Say What? A Phenibut and 2-Methyl AP-237 Overdose in a Sober Living Facility**  
*Robyn Parks, MD\*; Sarah Buxton de Quintana, MS; Juan Carrillo, MD*
- K2**     **Fentanyl Analogs in Dried Plasma Spots (DPS): A Novel Technique**  
*Kintress Watson, MS\*; Kaitlyn B. Palmquist, PhD; Madeleine J. Swortwood, PhD*
- K3**     **Simultaneous Determination and Quantitation of Five Synthetic Cathinones in Postmortem Blood and Urine by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
*Yun-Chen Tsao, MS\*; Chao-Ching Huang, MS; Hsiu-Chuan Liu, PhD; Ray H. Liu, PhD; Dong-Liang Lin, PhD*
- K4**     **Trazodone-Related Deaths in Taiwan From 2011 to 2020: A Report on 591 Fatalities**  
*Yun-Chen Tsao, MS\*; Chao-Ching Huang, MS; Hsiu-Chuan Liu, PhD; Ray H. Liu, PhD; Dong-Liang Lin, PhD*
- K5**     **A Study on the Characteristics of New Psychoactive Substances (NPS) in Korea From 2014 to Recent Years**  
*Byungsuk Cho, MS; Junghyun Kim, MS, PhD; Hyewon Baik, MS; Yujin Park, MS, PhD; Jongsook Rhee, MS, PhD; Eunmi Kim, MS, PhD\**
- K6**     **Death Via Ingestion of Zinc Phosphide**  
*Erin A. Spargo, PhD\*; Beth M. Slaybaugh, MPS; Lindsay Cheeseman, BS; Lee M. Blum, PhD*
- K7**     **Profiling Trace Element Contaminants of Toxicological Interest in Commercially Available Cannabidiol (CBD) Tincture Oils**  
*Tom J. Gluodenis, Jr., PhD\*; Robert Thomas, BS; Marjani Walton*
- K8**     **A Toxicological Analysis of Methadone and Oxycodone in Decomposition Fluid and Liver Tissue From Decomposed Bodies**  
*Kaitlin Collura, MD, PhD\*; Jack M. Titus, MD; Stephanie A. Dean, MD; Rebecca Phipps, PhD*
- K9**     **The Effects of Ethanol on GABA Catabolism: Succinyl Semialdehyde Dehydrogenase**  
*Natalia Gabrys, BS\*; Robert H. Powers, PhD*
- K10**    **The Effects of Storage Time, Adverse Storage Conditions, and Lab Exposure on Blood Alcohol Concentrations**  
*Ruby E. Liliedahl, BS\*; Tifani Parker, MS*

- K11** ***In Vitro* Metabolic Profile of the New Synthetic Opioid Bucinnazine by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
*Karissa N. Resnik, MS\*; Emanuele A. Alves, PhD*
- K12** **The Validation of a Screening Method for 700+ New Psychoactive Substances (NPS) in Authentic Urine by Liquid Chromatography/Triple Quadrupole/Mass Spectrometry (LC/QqQ/MS)**  
*Rebecca Smith, MS\*; Anthony DeCaprio, PhD*
- K13** **Gender Differences in Driving Under the Influence (DUI) of Psychoactive Drugs: A Systematic Review and Meta-Analysis**  
*Guido Pelletti, MD, PhD\*; Clara Fiorentini, MD; Camilla Fontana, MD; Arianna Giorgetti, MD; Rafael Boscolo-Berto, MD; Rossella Barone, MD; Paolo Fais, MD, PhD; Susi Pelotti, MD*
- K14** **A Gas Chromatography/Tandem Mass Spectrometry (GC/MS/MS) Determination of Ethyl Glucuronide (EtG) on Real Hair Samples and a Medicolegal Evaluation of Alcohol Use and Abuse**  
*Sara Gariglio, BS\*; Maria Chiara David, PhD; Alessandro Mattia, PS; Vincenza Liviero, PhD, MD; Clementina Moschella, PhD*
- K15** **The Adulteration of Powder Milk (Lactogen-1) With Lambda-Cyhalothrin Causing the Death of a Baby Girl: A Case Study**  
*Hafiz Faisal Usman, MS\*; Muhammad Imran, MPhil; Asif Raza, MPhil; Muhammad Amjad, PhD; Mohammad Ashraf Tahir, PhD*
- K16** **The Determination of Commonly Encountered Drugs (Pheniramine, Diphenhydramine, Lidocaine, Norketamine, Ketamine, Tramadol, Chlorpheniramine, Dextromethorphan, Pyrimethamine, and Chloroquine) in Biological Specimens Using a Modified Quick, Easy, Cheap, Effective, Rugged, and Safe (QuEChERS) Technique**  
*Najam Ud Din, MS\*; Muhammad Imran, MPhil; Muhammad Amjad, PhD; Mohammad Ashraf Tahir, PhD*
- K17** **Exo-THC: The Impact of Isobars on Cannabinoid Testing for Seized Drug and Toxicology Cases**  
*Edward X. Zumaeta, MS\*; Kelvin Morales-Colon, MS; Ilene K. Alford, MS; Nicholas B. Tiscione, MS*
- K18** **An Unusual Case of Accidental Phosphine Inhalation in Pakistan**  
*Muhammad Amir Nadeem, MPhil\*; Muhammad Mubasher, MPhil; Muhammad Imran, MPhil; Muhammad Amjad, PhD; Mohammad Ashraf Tahir, PhD*
- K19** **An Analysis of Cannabis Exposure and Oxidative Stress Biomarkers in Exhaled Breath Condensate and Oral Fluid**  
*Meena Swaminathan, MS\*; Anthony P. De Caprio; Anamary Tarifa*
- K20** **A Quantitative Analysis of Cannabinoids in Exhaled Breath Aerosols by High-Performance Liquid Chromatography/Electrospray Ionization-Tandem Mass Spectrometry (HPLC/ESI-MS/MS)**  
*Cheryle Beuning, PhD\*; Adam J. Friss, PhD; Kavita M. Jeerage, PhD; Tara Lovestead, PhD; Cinnamon Bidwell, PhD*
- K21** **A Sensitive Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Method for the Simultaneous Quantification of 32 Drugs in Oral Fluid**  
*Kayla Marschke, BS; Marta Concheiro-Guisan, PhD\**
- K22** **The Detection of Gabapentin in the Human Umbilical Cord**  
*Amy Racines, MS; Andre J. Sukta, MSFS\*; Joseph Jones, PhD*
- K23** **Comparative Biotransformation of New Psychoactive Substances by Human Liver Microsomes, Electrochemical Oxidation, and *In Silico* Analysis**  
*Leonardo Maya, BS\*; Anthony P. DeCaprio, PhD*

- K24 Method Development for Drug Court Samples**  
*Kourtney M. Steen, MSFS\*; Elizabeth A. Gardner, PhD*
- K25 The Determination of 67 Analytes in Oral Fluid by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
*Kennedy Plude, BS\*; Amy E. Kinkennon, PhD; Phillip Bost, MS; Matthew McGreevy, BS; James A. Bourland, PhD*
- K26 When Being Positive Is Enough—Unlocking Child Abuse in a Non-Disclosing Child Via Toxicological Hair Testing: A Case Study**  
*Jessica Volz, DNP\**
- K27 Electrochemical and Density Functional Theory (DFT) Studies for Fentanyl and Fentanyl Analogs**  
*Ling Wang, PhD\*; Gustavo Murilo Alves, BS; Sevde Dogruer, BS\*; Bruce R. McCord, PhD*
- K28 The Stability of Ethanol in Oral Fluid Samples Using the Quantisal® Collection Device**  
*Mairin M. Higgins BS\*; Kelvin Barnes, BS; Heather L. Harris, MFS, JD; Karen S. Scott, PhD*
- K29 The Development of a Method for the Extraction and Analysis of Fentanyl and Alprazolam From Dermestid Beetles, Larvae, Casings, and Frass**  
*Stephanie R. VanLysebettens, BA\*; Stephanie A. Rainer, MSFS; Lorna A. Nisbet, PhD; Karen S. Scott, PhD*
- K30 Validation of an Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Method for 23 Fentanyl Analogs in Oral Fluid**  
*Nicole Haase, BS\*; Erin Divito, PhD; Frederick W. Fochtman, PhD; Haley Berkland, MS; Ashley Trouten, BS; Stephanie J. Wetzel, PhD*
- K31 An Investigation of Structural Features on the Binding of Synthetic Cannabinoids to the CB1 Receptor: A Computational Study of the JWH Compounds**  
*Krishna Chaturvedi, PhD; Caroline Spencer, PhD; Pankaj Pandey, PhD; Robert Doerksen, PhD; Murrell Godfrey, PhD\**
- K32 A Comparison of Meconium, Synthetic Meconium, and Urine by High-Performance Liquid Chromatography (HPLC) and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) in the Simultaneous Detection of Illicit Drugs and Metabolites**  
*Shannon Palladino, MPS\*; William Campbell, PhD*

**Thursday**

## Annual Lectureship in Toxicology

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*Moderator:*

Amanda L.A. Mohr, MSFS  
The Center for Forensic Science Research & Education  
Willow Grove, PA

*Co-Moderator:*

Diane Boland, PhD  
Miami-Dade Medical Examiner Department  
Miami, FL

- 8:15 a.m. – 8:30 a.m.            **Welcome and Introduction**
- 8:30 a.m. – 9:30 a.m.            **Annual Lectureship in Toxicology**  
*Daniele Piomelli, PhD, MD (hon)*  
*Distinguished Professor of Anatomy and Neurobiology*  
*Louise Tuner Arnold*  
*Chair in the Neurosciences*  
*Director, NIDA Center of Excellence 'Impact of Cannabinoids Across the Lifespan' (ICAL)*  
*Director, UCI Center for the Study of Cannabis*
- 9:30 a.m. –10:00 a.m.    **K33    Standards Development Activities in Forensic Toxicology**  
*Marc A. LeBeau, PhD\**
- 10:00 a.m. – 10:30 a.m.            **BREAK**
- ## Drugs and Driving Special Session
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- Moderator:*
- Nicolas B. Tiscione, MS  
Palm Beach County Sheriff's Office  
West Palm Beach, FL
- Co-Moderator:*
- Rebecca L. Hartman, PhD  
Office of the Medical Examiner, Department of Public Health  
Monroe County, NY
- 10:30 a.m. – 10:45 a.m.    **K34    The Rise of the “Cannabisomers”**  
*Tiara Evans, MS\*;* *Joshua Seither, PhD;* *Jessica Knittel, MS;* *Erin Karschner, PhD;* *Jeff Walterscheid, PhD*
- 10:45 a.m. – 11:00 a.m.    **K35    Impaired Driving Cases With Clonazepam**  
*Nicholas B. Tiscione, MS\**
- 11:00 a.m. – 11:15 a.m.    **K36    Gabapentin in Driving Under the Influence of Drugs (DUID): An Update**  
*Jolene Bierly, MSFS\*;* *Ayako Chan-Hosokawa, MS*
- 11:15 a.m. – 11:30 a.m.    **K37    An Assessment of the National Safety Council’s Tier 1 and Tier 2 Scope Recommendations in Authentic Driving Under the Influence of Drugs (DUID) Cases**  
*Grace Cieri, BS\*;* *Amanda L.A. Mohr, MSFS;* *Melissa Fogarty;* *Barry K. Logan, PhD*
- 11:30 a.m. – 11:45 a.m.    **K38    The Use of Statistical Models to Evaluate Signs of Cannabis Impairment During Drug Recognition Expert (DRE) Evaluations**  
*Karen Woodall, PhD;* *Rachel Ram, BSc\*;* *Reed Holland*

- 11:45 a.m. – 12:00 p.m. **K39** **Evaluating Cannabinoid Interference and Drug Stability in Oral Fluid for Driving Under the Influence of Drugs (DUID) Testing**  
*Jasmine Maxwell, BS\*; Elizabeth A. Gardner, PhD; Curt E. Harper, PhD*
- 12:00 p.m. – 1:15 p.m. **BREAK**

## Novel Psychoactive Substances

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*Moderator:*

Alex J. Krotulski, PhD  
The Center for Forensic Science Research & Education  
Willow Grove, PA

*Co-Moderator:*

Jessica L. Ayala, MSFS  
Sam Houston State University  
Huntsville, TX

- 1:15 p.m. – 1:30 p.m. **K40** **The Development and Validation of an Analytical Method for Ten Novel Designer Benzodiazepines in Blood Using Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
*Pucheng Ke, PhD\*; Sara Dempsey, PhD; Peter R. Stout, PhD; Dayong Lee, PhD*
- 1:30 p.m. – 1:45 p.m. **K41** **The Quantitation of a Synthetic Cannabinoid, 5F-MDMB-PICA, and Its Metabolites in Authentic Human Biological Samples Using Liquid Chromatography/Triple Quadrupole/Mass Spectrometry (LC/QqQ/MS)**  
*Sara E. Walton, MS\*; Alex J. Krotulski, PhD; Donna M. Papsun, MS; Barry K. Logan, PhD*
- 1:45 p.m. – 2:00 p.m. **K42** **An Explanation and the Impacts of a Class-Wide Ban on Synthetic Cannabinoids: What Does the Future Hold for This Already Challenging Novel Psychoactive Substances (NPS) Subclass?**  
*Alex J. Krotulski, PhD\*; Judith Rodriguez Salas, MSFS; Amanda L.A. Mohr, MSFS; Barry K. Logan, PhD*
- 2:00 p.m. – 2:15 p.m. **K43** **The 2021 Novel Psychoactive Substance (NPS) Landscape: The New, the Nuanced, and the Long-Haulers**  
*Donna M. Papsun, MS\*; Alex J. Krotulski, PhD; Barry K. Logan, PhD*
- 2:15 p.m. – 2:30 p.m. **K44** **Multimodality Surveillance of Adverse Events of Designer Stimulants From 2013 to 2020**  
*Jeri Roper-Miller, PhD\*; Amanda L.A. Mohr MSFS; Barry K. Logan, PhD; Marilyn A. Huestis, PhD*
- 2:30 p.m. – 2:45 p.m. **K45** **An Evaluation of Enzyme-Linked Immunosorbent Assay (ELISA) for the Detection of Novel Psychoactive Benzodiazepines**  
*Christie L. Mitchell-Mata, MFS\*; Szabolcs Sofalvi, MSc; Shelby Travaglianti; Luigino Apollonio, PhD*
- 2:45 p.m. – 3:00 p.m. **BREAK**

## Alternative Matrices

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*Moderator:*

Dani C. Mata, MS  
Orange County Crime Lab  
Santa Ana, CA

*Co-Moderator:*

Liz Zaney, BS  
Miami-Dade Medical Examiner's Office  
Miami, FL

- 3:00 p.m. – 3:15 p.m. **K46** **An Analysis of Methylphenidate, Ethylphenidate, Lisdexamfetamine, and Amphetamine in Oral Fluid by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
*Christina Smith, BS\**; *Madeleine J. Swortwood, PhD*
- 3:15 p.m. – 3:30 p.m. **K47** **An Assessment of Biological Matrices for the Detection of *In Utero* Cannabis Exposure**  
*Marta Concheiro-Guisan, PhD\**; *Frank Martin Gutierrez, BS*; *Alejandro Ocampo, BS*; *Elena Lendoiro, PhD*; *Eva González-Colmenero, MD, PhD*; *Ana Concheiro-Guisán, MD, PhD*; *Manuel López-Rivadulla, PhD*; *Ana de-Castro-Ríos, PhD*
- 3:30 p.m. – 3:45 p.m. **K48** **An Evaluation of Three Extraction Techniques for the Analysis of 11 Drugs and Metabolites in Authentic Hair Reference Material**  
*Brianna Spear, MS\**; *Anthony P. DeCaprio, PhD*
- 3:45 p.m. – 4:00 p.m. **K49** **Fantastic Cases and Where to Find Them**  
*Katherine Dozier, PhD\**; *Bryan J. Platt, MD*; *Eric W. Berg III, MD*

## Friday

### Postmortem Toxicology

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*Moderator:*

Michael E. Lamb, MSFS  
NMS Labs  
Horsham, PA

*Co-Moderator:*

Erin Karshner  
Armed Forces Medical Examiner System  
Dover, DE

- 8:00 a.m. – 8:15 a.m. **K50** **Quantifying the Relationship Between 1-Propanol and Postmortem-Formed Ethanol**  
*Robert Kronstrand, PhD\**; *Shimpei Watanabe, PhD*; *Markus Roman, BSc*
- 8:15 a.m. – 8:30 a.m. **K51** **Branching Out: A Report of a Fatal Intoxication Case Involving 2-Methyl-2-Butanol**  
*Michael E. Lamb, MSFS\**; *Andrea Carolina Noble, PhD*; *Mark Annand, BS*; *Frederick Strathmann, PhD*
- 8:30 a.m. – 8:45 a.m. **K52** **Fatal Intoxication Involving 2-Methyl AP-237: A Case Report**  
*Michael T. Truver, PhD\**; *Alex Gillette, MS*; *Sara Brogan, BS*; *Jennifer L. Hoyer, MS*; *Chris W. Chronister, PhD*; *Bruce A. Goldberger, PhD*
- 8:45 a.m. - 9:00 a.m. **K53** **Drug Taxonomy in Forensic Science Data for Integration Into Medicolegal Death Investigation Systems**  
*Alex J. Krotulski, PhD\**; *Donna M. Iula, PhD*; *Agnes D. Winokur, MS*; *Jeri Roper-Miller, PhD*; *Bruce A. Goldberger, PhD*
- 9:00 a.m. – 9:15 a.m. **K54** **Postmortem Polysubstance Use Trends in Tramadol-Positive Cases From 2015–2020 in Pennsylvania**  
*Stephanie Marco, PhD\**
- 9:15 a.m. – 9:30 a.m. **BREAK**

## General Forensic Toxicology

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*Moderator:*

Michael T. Truver, PhD  
University of Florida  
Gainesville, FL

*Co-Moderator:*

Marta Concheiro-Guisan, PhD  
John Jay College of Criminal Justice  
New York, NY

- 9:30 a.m. – 9:45 a.m.    **K55**    **A 3D Origami Paper-Based Microfluidics Device for Creatine Analysis in Urine: A Disposable Tool for Identifying Urine Sample Adulteration by Dilution**  
*Giacomo Musile, PhD\**; *Yvane Agard, MS*; *Sara Pesavento, MS*; *Matilde Murari, MS*; *Elio De Palo, PhD*; *Franco Tagliaro, PhD*
- 9:45 a.m. – 10:00 a.m.    **K56**    **The Evaluation and Laboratory Testing of Synthetic Urines and Urine Adulterants Available in the United States**  
*Svante Vikingsson, PhD\**; *Shannon Krauss, PhD*; *Dale Hart, BS*; *Eugene Hayes, PhD, MBA*; *Ron Flegel, BSMT, MS*; *Ruth E. Winecker, PhD*
- 10:00 a.m. – 10:15 a.m.    **K57**    **Respiratory Depressant Effects and Pharmacokinetics of Oral Mitragynine (Kratom) and Oxycodone in Rats**  
*Marilyn A. Huestis, PhD\**; *Aaron Magnusson, PhD*; *Dan Wang, BS*; *Wanzhu Zhao, MA*; *Uwe Christians, MD, PhD*; *Jack E. Henningfield, PhD*
- 10:15 a.m. – 10:30 a.m.    **K58**    **The Application of All Ions Data Acquisition and SureMass Quantitative Data Analysis for Comprehensive Drug Screening Detection in Whole Blood**  
*Jessica L. Ayala, MSFS\**; *Sarah Kerrigan, PhD*; *Vadim Kalmeyer, PhD*; *Bjorn Ogren, MS*; *Peter Stone, PhD*; *Karen Yannell, PhD*
- 10:30 a.m. – 10:45 a.m.    **K59**    **Field Impairment Testing: Establishing the Statistical Variability and Uncertainty of Measurement in the General Population**  
*Lucy Victoria Watson, MSc\**; *Atholl Johnston, PhD*; *Nikolas P. Lemos, PhD*
- 10:45 a.m. – 11:00 a.m.    **K60**    **Carfentanil and Xylazine: Veterinary Drugs Detected in Drug Abuse-Related Forensic Casework**  
*Andrea Carolina Noble, PhD\**; *Donna M. Papsun, MS*; *Barry K. Logan, PhD*