

THE AMERICAN ACADEMY OF FORENSIC SCIENCES

PROGRAM

# A RESPONSIVE ACADEMY

MEETING AND SURPASSING THE CHALLENGES OF A  
MODERN FORENSIC SCIENCE WORLD



**AAAFS**  
**2022**

FEBRUARY 21 - 25  
SEATTLE, WASHINGTON

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# WELCOME MESSAGE

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**Carl R. McClary, MS**  
**2021-22 AAFS President**

It is a privilege to welcome you to the 74th AAFS Annual Scientific Conference in Seattle, Washington. There has been much preparation on the part of the staff and the Board of Directors to get us to this point, following our all-virtual conference last year! We're offering a hybrid format to allow much of our content to be provided virtually, adding flexibility to those who could not attend in person. This format will be available to all attendees for 60 days past our conference week.

Our variable format provides yet another means to meeting the goals set forth in my theme this year – *A Responsive Academy – Meeting and Surpassing the Challenges of a Modern Forensic World*. This theme conveys the approach for a new era for the Academy, one in which our organization listens and responds to you, our members, in providing resources, content, value, and opportunities in the most expedient way. This is made possible through streamlining our administrative processes, modernizing our technology, paving an easier path to leadership, and generally rethinking your needs.

Not to miss this week – Please be sure to attend our Diversity Outreach Committee's (DOC) Session on Tuesday evening and the Plenary Session on Wednesday. The DOC Session following our Welcome Reception, entitled *Embracing Diversity for a Modern Forensic Science World*, will feature speaker Kelly Knight, Associate Professor at George Mason University, in addition to highlighting our diversity survey results. The Plenary Session will feature DNA Analyst Todd Bille of the Alcohol, Tobacco, Firearms, and Explosives Forensic Science Laboratory, Andy Parsons of Adobe, and a chance for you to be introduced to our new Executive Director, Donna Grogan. Our exhibitors will be available Wednesday through Friday, so don't forget to visit the exhibitor hall to see the latest in technology and literature!

I thank everyone who made this conference, in both formats, possible this week. This extends to our Program, DOC, and Plenary Committees, our extremely dedicated and hardworking staff, and those of you who are presenting this week. The extra effort to provide a recording for the benefit of those members and guests who will watch online are so very much appreciated by the Board of Directors, me, and all who will be viewing.

Finally, we are still living in precarious times with the COVID-19 pandemic, and I implore you to follow the local regulations through masking and being distance conscious while attending our conference this week. This will help ensure safety for all.

# TABLE OF CONTENTS

---

|  |       |
|--|-------|
| Officers & Officials . . . . .   | 3 .   |
| Program Committee . . . . .  | 3 .   |
| General Information . . . . .  | 4 .   |
| Sexual Misconduct Resources and Information . . . . .                          | 5 .   |
| Awards . . . . .   | 6 .   |
| Distinguished Fellow . . . . .   | 8 .   |
| Business Meetings . . . . .  | 9 .   |
| Financial Contributors . . . . .   | 10 .  |
| Continuing Education . . . . .   | 11 .  |
| Diversity and Inclusion in Forensic Sciences Forum and Reception . . . . .     | 13 .  |
| Student Academy . . . . .  | 14 .  |
| Interdisciplinary Symposium . . . . .  | 16 .  |
| Young Forensic Scientists Forum Special Session . . . . .                      | 18 .  |
| Special Session . . . . .  | 20 .  |
| Forensic Science Education Programs Accreditation Commission Session . . . . . | 22 .  |
| Keynote Address . . . . .  | 23 .  |
| Plenary Session . . . . .  | 24 .  |
| Mentor Program Kickoff Breakfast . . . . .                                     | 26 .  |
| Breakfast Seminars . . . . .   | 27 .  |
| Luncheon Seminars . . . . .  | 35 .  |
| Workshops . . . . .  | 37 .  |
| Humanitarian and Human Rights Resource Center Poster Session . . . . .         | 69 .  |
| National Institute of Justice . . . . .  | 70 .  |
| Bring Your Owns Slides Submission Form . . . . .                               | 76 .  |
|  |       |
| Scientific Sessions  |       |
| Anthropology . . . . .   | 78 .  |
| Criminalistics . . . . .   | 96 .  |
| Digital & Multimedia Sciences . . . . .  | 117 . |
| Engineering & Applied Sciences . . . . .                                       | 121 . |
| General . . . . .  | 126 . |
| Jurisprudence . . . . .  | 139 . |
| Odontology . . . . .   | 143 . |
| Pathology/Biology . . . . .  | 147 . |
| Psychiatry & Behavioral Science . . . . .                                      | 160 . |
| Questioned Documents . . . . .   | 163 . |
| Toxicology . . . . .   | 166 . |
| Last Word Society . . . . .  | 173 . |
| YFSF Poster Sessions . . . . .   | 174 . |
|  |       |
| Program Committee Financial Disclosure . . . . .                               | 176 . |
| Presenting Author Financial Disclosure . . . . .                               | 179 . |
| Key Word Index . . . . .   | 191 . |
| Presenting Author Index . . . . .  | 204 . |

# OFFICERS AND OFFICIALS



## Officers

*President:* Carl R. McClary, MS  
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*Vice President:* C. Ken Williams, MS, JD  
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*Engineering & Applied Sciences:* Mark I. Marpet, PhD, PE  
*General:* Claire E. Shepard, MS  
*Jurisprudence:* Roderick T. Kennedy, JD  
*Odontology:* TBD  
*Pathology/Biology:* James L. Caruso, MD  
*Psychiatry & Behavioral Science:* Dean M. De Crisce, MD  
*Questioned Documents:* Linton A. Mohammed, PhD  
*Toxicology:* Sarah Kerrigan, PhD

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*Chair:* Marin A. Pilloud, PhD  
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### Odontology

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*Secretary:* Robin A. Ainsworth, DDS

### Toxicology

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### Engineering & Applied Sciences

*Chair:* Robert Dale Lynch, BArch  
*Secretary:* Sarah V. Hainsworth, PhD

### Pathology/Biology

*Chair:* Erin G. Brooks, MD  
*Secretary:* Jacqueline L. Parai, MD

# 2022 PROGRAM COMMITTEE

|                                     |   |   |  |
|-------------------------------------|---|---|--|
| <i>Program Chair:</i>               | Adam J. Freeman, DDS                                | <i>Anthropology:</i>                        | Krista E. Latham, PhD                                    |
| <i>Program Co-Chair:</i>            | Jennifer C. Love, PhD                               |   | Debra Prince Zinni, PhD                                  |
| <i>Plenary Session:</i>             | Douglas S. Lacey, MS<br>James R. Gill, MD           | <i>Criminalistics:</i>                      | Peter J. Diaczuk, PhD<br>Sheree R. Hughes, PhD           |
| <i>Poster Sessions:</i>             | Jan Seaman Kelly, BA<br>Alex J. Krotulski, PhD      | <i>Digital &amp; Multimedia Sciences:</i>   | Joseph Levi White, PhD<br>Kathryn Seigfried-Spellar, PhD |
| <i>Workshops:</i>                   | Dean Michael De Crisce, MD<br>Andrew C. Seidel, PhD | <i>Engineering &amp; Applied Sciences:</i>  | Kurt D. Weiss, MS<br>Kimberlee Sue Moran, MSc            |
| <i>Breakfast Seminars:</i>          | Melissa A. Connor, PhD<br>Darren Franck, MSME       | <i>General:</i>                             | Erin M. Worrell, BSc<br>Terri Rosenblatt, JD             |
| <i>Luncheon Seminars:</i>           | Patrick Buzzini, PhD<br>Linton A. Mohammed, PhD     | <i>Jurisprudence:</i>                       | Nicolas R. Hughes, JD<br>Denise C. Murmann, DDS          |
| <i>Last Word Society:</i>           | Kenneth E. Melson, JD                               | <i>Odontology:</i>                          | Jennifer L. Pechal, PhD                                  |
| <i>Bring Your Own Slides:</i>       | J.C.U. Downs, MD<br>Joseph A. Prahlow, MD           | <i>Pathology/Biology:</i>                   | Jessica Morel, DO<br>Corina Freitas, MD                  |
| <i>Student Academy:</i>             | Marilyn T. Miller, EdD<br>Lynn A. Schneeweis, MS    | <i>Psychiatry &amp; Behavioral Science:</i> | Miriam Angel, MS<br>Timothy Campbell, BSc                |
| <i>Interdisciplinary Symposium:</i> | Chris Milroy, MD, LLB<br>Paul Messner, JD           | <i>Questioned Documents:</i>                | Amanda L.A. Mohr, MSFS<br>Diane Boland, PhD              |
| <i>Local Arrangements:</i>          | James Tarver, MS                                    | <i>Toxicology:</i>                          | Zain Bhaloo, MSc   |
|                                     |   | <i>Young Forensic Scientists Forum:</i>     |  |



# GENERAL INFORMATION

## Registration Desk Hours

*Washington State Convention Center - Level 4 Atrium Lobby*

|           |             |           |   |           |
|-----------|-------------|-----------|---|-----------|
| Sunday    | February 20 | 1:00 p.m. | - | 5:00 p.m. |
| Monday    | February 21 | 6:45 a.m. | - | 5:00 p.m. |
| Tuesday   | February 22 | 6:45 a.m. | - | 6:00 p.m. |
| Wednesday | February 23 | 6:45 a.m. | - | 5:00 p.m. |
| Thursday  | February 24 | 6:45 a.m. | - | 5:00 p.m. |
| Friday    | February 25 | 6:45 a.m. | - | 4:00 p.m. |

## Exhibit Hall Hours

*Washington State Convention Center - Level 4 Halls A & B*

|                |                 |            |   |           |
|----------------|-----------------|------------|---|-----------|
| Wednesday      | February 23     | 11:30 a.m. | - | 4:00 p.m. |
| Thursday       | February 24     | 9:00 a.m.  | - | 2:00 p.m. |
| AAFS Reception | (Exhibits Open) | 6:00 p.m.  | - | 8:00 p.m. |
| Friday         | February 25     | 8:00 a.m.  | - | 1:00 p.m. |

**Media Statement:** The American Academy of Forensic Sciences (AAFS) does not comment on forensic cases or Medicolegal investigations. Media releases will be issued by the AAFS Board of Directors only in response to matters deemed pertinent to the business of the Academy. The sitting AAFS President is the only member of the Academy authorized to provide comment on behalf of the Academy. Comments, views, and opinions expressed by all other members of the Academy reflect the comments, views, and opinions of the individual solely.

**Registrant Minimum Age:** Registrants and presenters at the AAFS Annual Conference must be at least 18 years old at the time of the conference.

**Lost Badge Policy:** Lost, misplaced, stolen, or forgotten badges will incur a replacement fee equal to the original purchase amount of your registration. If your badge was complimentary, the fee will be the current, on-site rate.

**Author Information:** The *Journal of Forensic Sciences* encourages authors to submit previously unpublished reports and papers presented at the AAFS annual conference. For full instructions on manuscript preparation, consult the Information for Authors available at: <https://www.aafs.org/resources/journal-of-forensic-sciences/information-for-authors/>.

Manuscripts must be submitted electronically via the *Journal of Forensic Sciences* Manuscript Central site: <http://mc.manuscriptcentral.com/jofs>. For questions, please contact: [jfs.editor@att.net](mailto:jfs.editor@att.net).

### Reminders:

- Video and/or audio recording of any session(s) or parts thereof is not permitted without prior approval from the American Academy of Forensic Sciences.
- English is the official language of the AAFS and its meetings; neither oral nor written translations will be provided.
- Although precautions are taken to prevent schedule changes, speakers and program schedules may change due to unforeseen circumstances.
- As a courtesy to others, please silence your cell phone when attending the sessions.

## Future AAFS Annual Conferences

### 2023 AAFS Annual Conference

February 13-18, 2023  
Rosen Shingle Creek  
Orlando, FL

### 2024 AAFS Annual Conference

February 19-24, 2024  
Denver Convention Center  
Denver, CO

# SEXUAL MISCONDUCT RESOURCES AND INFORMATION



AAFS takes the safety of its meeting attendees seriously, and strives to promote a welcoming experience for all. In order to promote a safe environment for meeting attendees, we have resources for meeting attendees about sexual misconduct.

## What is sexual misconduct?

Sexual misconduct is an umbrella term that includes different types of sexual violence including sexual harassment and sexual assault. (<https://www.rainn.org/types-sexual-violence>)

## What is sexual harassment?

Sexual harassment includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature in the workplace or learning environment, according to the Equal Employment Opportunity Commission. ([https://www.rainn.org/articles/sexual-harassment?gclid=CjwKCAjw2P-KBhByEiwADBYWCqz0g1E4mRjRxf5TN-EQ-JYXo2Q7USO-Yrtu1c9klaUmTmrEtpmsaxoCbiQQAvD\\_BwE](https://www.rainn.org/articles/sexual-harassment?gclid=CjwKCAjw2P-KBhByEiwADBYWCqz0g1E4mRjRxf5TN-EQ-JYXo2Q7USO-Yrtu1c9klaUmTmrEtpmsaxoCbiQQAvD_BwE))

## What is sexual assault?

The term sexual assault refers to sexual contact or behavior that occurs without explicit consent of the victim. (<https://www.rainn.org/articles/sexual-assault>)

## What do I do if I experience sexual misconduct during the annual meeting?

- Call 911.
- Call the AAFS 'safe person' Number: or contact another member of the AAFS staff
- Locate security personnel at the conference venue.
- Report conduct to AAFS Ethics Committee.
- Refer to local/national resources list.

## What do I do if I have witnessed sexual misconduct during the annual meeting?

- Talk to the victim/survivor. Encourage them to review this resource page.
- Direct them to the AAFS 'safe person' or another member of the AAFS staff
- Direct them to security personnel at the conference venue.
- If the person is in immediate danger, call 911.

## Resources:

AAFS 'safe person': 917-678-7197

King County Sexual Assault Resource Center  
425-282-0324

<https://www.kcsarc.org/en/>

Resources include resource line and advocacy

Washington Coalition of Sexual Assault Programs

<https://www.wcsap.org/help/csap-by-city>

Informations for resources listed by city

Seattle Police Department

<https://www.seattle.gov/police/need-help/sexual-assault>

Information on reporting sexual assault to the police, including advocacy

List of Seattle hospitals that perform SANE examinations

<https://www.seattle.gov/police/need-help/sexual-assault/getting-medical-care>

National Sexual Assault Hotline: 1-800-656-4673

National Domestic Violence Hotline: 1-800-799-7233

RAINN

<https://www.rainn.org/>

Resources including definitions, statistics, crisis line and crisis chat .

National Sexual Violence Resource Center

<https://www.nsvrc.org/>

Resources for survivors including definitions, where to get help, and post-assault recovery

National Domestic Violence Hotline

<https://www.thehotline.org/>

Resources include definitions, local resources/legal aid, crisis line and crisis chat.

*No member or Affiliate of the Academy shall participate in unacceptable behavior at an annual Academy conference, to include times not specifically in session or at gatherings, social or otherwise, not specifically a part of the Academy program. Unacceptable behavior includes, but may not be limited to, harassment; intimidation; discrimination; physical abuse; physical assault, verbal abuse; inappropriate use of nudity or sexual images; threats; stalking; unwanted sexual comments or advances; derogatory comments related to gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, religion, national origin, or political positions.*



# AWARDS

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The Distinguished Fellow Award and the Outstanding Early Career Achievement in Forensic Science Award will be presented on Wednesday, February 23, during the AAFS Awards Ceremony immediately following the Annual Business Meeting. Please join us in acknowledging your most distinguished colleagues as they are presented with these prestigious awards.

## Distinguished Fellow

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*Bruce A. Goldberger, PhD*

## Outstanding Early Career Achievement in Forensic Science Award

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*Kathryn C. Seigfried-Spellar, PhD*

The following awards will also be presented on Wednesday, February 23, during the AAFS Awards Ceremony. You will want to be present to congratulate the recipients

### Humanitarian and Human Rights Resource Center's Clyde Snow Award

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*Cristina Cattaneo, MD, PhD*

### Ambassador of Forensic Science Award

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*National Institute of Standards and Technology (NIST)  
Special Programs Office*

### FSF Emerging Forensic Scientist Award

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*Perla Santillan, MS  
Ya-Chih Cheng, MS  
Meghan Appley, MS*

### FSF Warren-Young Scholarship

---

*Ashley E. Shidner, PhD*

### FSF Jan S. Bashinski Criminalistics Graduate Thesis Assistance Grant

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The FSF Jan S. Bashinski Criminalistics Graduate Thesis Assistance Grant will be presented on Wednesday, February 23, during the Criminalistics Section Business Meeting. Teresa will be acknowledged again during the AAFS Awards Ceremony.

*Teresa M. Tiedge, MPS*



# AWARDS



The Section Awards will be presented during Section Business Meetings on Wednesday, February 23 (see Section Business Meeting start times on page 9). The recipients will be recognized before the entire membership during the AAFS Awards Ceremony.

## 2022 Section Award Honorees

### Anthropology Section's

T. Dale Stewart Award

Michael W. Warren, PhD

Tal Simmons, PhD

Outstanding Mentorship Award

Laura C. Fulginiti, PhD

Ellis R. Kerley Research Award

Laney Feeser, MA

Diversity & Inclusion Award

Ilaisah Martinez, BA

### Criminalistics Section's

Paul L. Kirk Award

Robin W. Cotton, PhD

Mary E. Cowan Outstanding Service Award

Chris E. Taylor, BS

Meritorious Service Award

Desiree A. Reid, BS

### Digital & Multimedia Sciences Section's

Outstanding Research Award

Brandon Epstein, BS

### Engineering & Applied Sciences Section's

Founders Award

David Pienkowski, PhD

Andrew H. Payne, Jr. Special Achievement Award

John Nixon, MBA

### General Section's

Paul W. Kehres Meritorious Service Award

Katherine M. Brown, PhD

### Odontology Section's

Reidar F. Sognaes Award

Robert E. Wood, DDS, PhD

### Pathology/Biology Section's

Milton Helpern Award

Tracey S. Corey, MD

Award for Achievement in the Forensic Life Sciences

David O. Carter, PhD

Best Resident Paper Award

Zuzanna Gorski, MD

Best Resident Paper Award – Honorable Mention

Fabiola A. Righi, DO

### Psychiatry & Behavioral Science Section's

Rosner Best Paper Award

Nathalie Boulos, MD

Rosner Best Paper Award – Honorable Mention

Corina Freitas, MD

### Questioned Documents Section's

Maureen Casey-Owens Award

Mark Goff, BA

### Toxicology Section's

Alexander O. Gettler Award

Karl G. Verebey, PhD

Irving Sunshine Award

Alex J. Krotulski, PhD

Ray Abernethy Award

Dani C. Mata, MS

Rolla N. Harger Award

Jeri D. Roper-Miller, PhD

## DISTINGUISHED FELLOW

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**Bruce A. Goldberger, PhD**

Dr. Bruce Goldberger is a Professor and Chief of the Forensic Medicine Division, Department of Pathology, Immunology and Laboratory Medicine in the College of Medicine at the University of Florida in Gainesville. He is the Technical and Administrative Director of the Forensic Toxicology Laboratory. Dr. Goldberger is the Director of UF Health Forensic Medicine, the Program Director of the Florida Emergency Mortuary Operations Response System and a Co-Investigator of the National Drug Early Warning System. Dr. Goldberger is also Director of the University of Florida Forensic Epidemiology Team.

Dr. Goldberger trained under the direction of Dr. Yale Caplan at the University of Maryland School of Medicine. Dr. Goldberger developed many new and innovative methods to solve a myriad of complex analytical problems. He also trained with Edward Cone, PhD, then at the Addiction Research Center in Baltimore, MD, performing seminal research in the detection and disposition of heroin and its metabolites in biological specimens. Dr. Goldberger's work led to the discovery of heroin and 6-acetylmorphine in the hair of heroin users, an accomplishment that directed future work in the analysis of drugs and drug metabolites in hair.

Dr. Goldberger is a consultant for the nation's leading public health institution, the Centers for Disease Control and Prevention, and is a member of the White House Office of National Drug Control Policy Emerging Threats Committee. Dr. Goldberger is the Editor-in-Chief of the *Journal of Analytical Toxicology*, the official journal of the Society of Forensic Toxicologists and The International Association of Forensic Toxicologists. The *Journal* is the premier international toxicology journal devoted to the timely dissemination of scientific communications concerning the analysis of impairing and toxic substances in biological matrices.

Dr. Goldberger's career has been unique, merging the academic environment, including research and teaching, with a service component spanning clinical, forensic, and medical toxicology. He is a recognized leader in the field, serving key forensic organizations such as the American Academy of Forensic Sciences, the Society of Forensic Toxicologists, and the Forensic Specialties Accreditation Board with great distinction. He is the current President of the American Board of Forensic Toxicology.

Dr. Goldberger has been prolific in research and publication in the areas of clinical, medical, and forensic toxicology, as well as in the medicolegal investigation of death, including the certification of the cause and manner of death. He has co-edited/co-authored 5 books, 45 book chapters, and 119 peer-reviewed papers.

Dr. Goldberger has received numerous honors and awards, including the American Academy of Forensic Sciences Toxicology Section's Sunshine Award and Alexander O. Gettler Award in recognition of outstanding contributions to the field and profession of forensic toxicology; the Florida Association of Medical Examiners' Outstanding Achievement Award; the National Safety Council's Robert F. Borkenstein Award for outstanding contributions to alcohol- and drug-related traffic safety; and Northeastern University's Richard Saferstein Memorial Award in Forensic Science.

Dr. Goldberger has been a member of the American Academy of Forensic Sciences Toxicology Section since 1983. He served the Academy holding many leadership positions. He served as Toxicology Section Program Chair, Secretary, and Chairman. He represented the Section on the Academy's Board of Directors and served as Academy Workshop Chair, Program Chair, Treasurer, Vice President, President-Elect, President, and Past-President. Dr. Goldberger was the Academy's Media and Public Relations liaison for 13 years; in this position, he was the Academy's point of contact for all media queries and was responsible for the vetting of all press releases and the planning of the annual Academy public outreach event. Finally, and very notably, as an incoming President, he worked with and advised those who proposed, shaped, and led the new Digital & Multimedia Sciences Section.

Dr. Goldberger is a scientist, a toxicologist, a leader, a teacher, a researcher, an epidemiologist, an academician, and a practitioner. Although his scientific knowledge is exhaustive, Dr. Goldberger's imagination toward the development and promotion of the forensic sciences has always been his most promising attribute.

# BUSINESS MEETINGS



**Section Business Meetings will only be available to those participating in person. Quorums will be based on in-person registrants - 25% of registered voting members.**

**Do not miss the opportunity to win a complimentary meeting registration for the 2023 AAFS Annual Scientific Meeting in Orlando, FL!** Each section will award one registration to a voting member who attends their Section Business Meeting.

All times are Pacific Time.

## **Wednesday, February 23**

|                       |                               |
|-----------------------|-------------------------------|
| 1:00 p.m. - 3:45 p.m. | Criminalistics                |
| 1:30 p.m. - 3:45 p.m. | Pathology/Biology             |
| 1:45 p.m. - 3:45 p.m. | General                       |
| 2:00 p.m. - 3:45 p.m. | Anthropology                  |
| 2:00 p.m. - 3:45 p.m. | Digital Multimedia Sciences   |
| 2:00 p.m. - 3:45 p.m. | Engineering Applied Sciences  |
| 2:00 p.m. - 3:45 p.m. | Jurisprudence                 |
| 2:00 p.m. - 3:45 p.m. | Odontology                    |
| 2:00 p.m. - 3:45 p.m. | Psychiatry Behavioral Science |
| 2:00 p.m. - 3:45 p.m. | Questioned Documents          |
| 2:00 p.m. - 3:45 p.m. | Toxicology                    |

## **Attend the AAFS Annual Business Meeting for a Chance to Win a Complimentary Meeting Registration!**

The Annual Business Meeting of the Fellows and Members of the AAFS will be held on Wednesday, February 23, at 4:15 p.m. It is essential that all Fellows and Members attend this very important meeting in order to reach a quorum for the voting process. Agenda items include the election of 2022-23 Officers, consideration of bylaw amendments, a summary of AAFS activities during the past year, and plans for the future.

As an incentive to attend, all Fellows and Members present will automatically be entered in a drawing for a complimentary meeting registration to attend the 2023 AAFS Annual Scientific Meeting in Orlando, FL.



# FINANCIAL CONTRIBUTORS

The American Academy of Forensic Sciences would like to thank the following for their contribution to the 74<sup>th</sup> AAFS Annual Scientific Conference:

## PLATINUM SPONSOR



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# CONTINUING EDUCATION



## General Information

All meeting sessions are lectures with one or more speakers. Continuing professional education credits will be offered for physicians, dentists, and attorneys. Continuing education credit applications will be submitted for physicians, nurses, and dentists. Attorneys may request CLE credit; please see the “Legal” section.

To register for continuing education credit, please complete the appropriate section on the meeting Registration Form. An individual must be a registrant to obtain continuing education credit. Fees charged for continuing education credits are based on projected costs of providing the various types of continuing education credit. The AAFS has adopted a user-pay approach so that those individuals who benefit from the specific continuing education program are responsible for the costs incurred.

In order to be in compliance with accrediting organizations, introductions and breaks have been deducted from the total hours. Please note that continuing education credit is not available for all sessions. All continuing education credit recipients will receive certificates with the number of continuing education hours awarded. Attendance reports are filed with the appropriate state or national agency, as required.

## Learning Objectives of the AAFS Continuing Education Program

- Recognize the perspectives and roles of the various forensic science disciplines
- Assess current concepts and practices
- Discuss relevant forensic science issues related to science, evidence and the law
- Identify strategies for researching descriptive studies, technology and methods, diagnostics, interpretation and testimony
- Review administrative functions performed by forensic scientists

## American Board of Criminalists Approval

The American Academy of Forensic Sciences (AAFS) is approved by the American Board of Criminalistics (ABC) to offer continuing education points for approved workshops for criminalists and forensic scientists. The ABC maintains responsibility for the program, and credit may be awarded to ABC Fellows, Diplomates, and Affiliates.

## Overall Purpose and Objective Statements for Major Aspects of AAFS Programs

### *Workshops and Special Sessions*

**Purpose:** To provide an opportunity for experts to present material and to lead discussion and practical exercises related to forensic science methods, procedures, diagnosis, investigation, professional relations and practices, communication, administration, and professional development.

**Learning Overview:** Detailed individually in each workshop and special session announcement and description.

### *Plenary and Keynote Sessions*

**Purpose:** To provide a multidisciplinary presentation and discussion of issues related to the forensic science profession.

**Learning Overview:** Attendees will be able to: a) identify the challenges the forensic science profession has faced and will continue to face in terms of ensuring quality; b) identify ways to deal with the variances each challenge presents; and c) identify the entities which have influence over setting the quality standards in the field of forensic science.

### *Oral and Poster Section Scientific Sessions*

**Purpose:** To provide an opportunity for presentation and discussion of case reports, descriptive studies, review presentations, research, administrative issues, and investigative/diagnostic methods regarding topics and issues of importance to a primary discipline among the forensic sciences.

**Learning Overview:** To meet the educational objectives stated by each presenter for his/her presentation.

### *Last Word Society*

**Purpose:** To provide a retrospective forensic analysis of historical events and to provide education about the history and evolution of forensic sciences as well as the modern methods and technologies used to re-examine past events of forensic science interest. Emphasis is placed on the evaluation of the original opinions and case outcome and on the development of newer hypotheses based on the re-analysis.

**Learning Overview:** To meet the educational objectives stated by each presenter for his/her presentation.



# CONTINUING EDUCATION

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## Guidelines For Claiming Credit

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As the sponsor of Continuing Education Credit, the AAFS recognizes that the forensic science disciplines are inextricably linked and that interdisciplinary knowledge is critical to promote competence in forensic practice. As a result, the claiming of credit for various continuing education activities related to medicine, dentistry, law, and other forensic disciplines need not be limited to one's primary professional specialty. For example, a forensic pathologist from the Pathology/Biology Section may gain very useful and relevant information by attending a presentation in the Anthropology Section scientific session. It is appropriate to claim continuing medical education credit for that session. Many other examples exist where the claiming of continuing education credit is appropriate for attending sessions that cover material related to, but which lay outside of, one's primary professional area of expertise.

It is the conference attendee's responsibility to document which program sessions were attended and to determine those sessions for which continuing education credit may be claimed. The AAFS operates under the assumption that meeting attendees will, in general, be unlikely to attend sessions that will not be beneficial to their professional practice and that the claim for continuing education credit is justified if a session contains scientific or practice-related information that may bring new knowledge, may affirm current knowledge, or may provide information that could possibly modify one's professional practices.

Those who wish to receive continuing education credit must register and pay the Continuing Education Credit fee on the meeting Registration Form. CE Credit Request Forms will be available on the AAFS website. The completed forms must be returned to AAFS by the designated deadline.

## Joint Accreditation Statement

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In support of improving patient care, this activity has been planned and implemented by the Postgraduate Institute for Medicine and the American Academy of Forensic Science. Postgraduate Institute for Medicine is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

## Physician Continuing Medical Education Credit

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The Postgraduate Institute for Medicine designates this live activity for a maximum of 41.25 AMA PRA Category 1 Credit(s)<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## Dental Continuing Education Credit

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This continuing education activity has been planned and implemented in accordance with the standards of the ADA Continuing Education Recognition Program (ADA CERP) through joint efforts between Postgraduate Institute for Medicine and the American Academy of Forensic Sciences .

Postgraduate Institute for Medicine is an ADA CERP Recognized Provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of the credit hours by boards of dentistry. Postgraduate Institute for Medicine designates this activity for 41.25 continuing education credits. Concerns or complaints about a CE Provider may be directed to the provider or to the Commission for Continuing Education Provider Recognition at [www.ada.org/cerp](http://www.ada.org/cerp).

## Legal Continuing Education Credit

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Continuing legal education credit will be awarded on an hour-for-hour basis. Attorneys may file the AAFS-issued CLE certificate with their respective state bars.

## Non Physician Continuing Education Credit

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A general non physician certificate of attendance will be available.

## General Continuing Education Credit

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General continuing education credit is offered for those practicing the various forensic science disciplines not represented in the aforementioned list.

# DIVERSITY AND INCLUSION IN FORENSIC SCIENCE FORUM AND RECEPTION



*Open to All Meeting Registrants - (in-person and live-streamed)*

Tuesday, February 22, 2022

8:00 p.m. - 10:00 p.m.

## *Embracing Diversity for a Modern Forensic Science World*



**Kelly Knight, MS**  
Associate Professor  
George Mason University

### *Moderators:*

**Kate Spradley, PhD**  
Texas State University  
San Marcos, TX

**Hunter Fleming, BS**  
Virginia Commonwealth University  
Richmond, VA

**Deirdre Amaro, MD**  
University of Missouri School of Medicine  
Columbia, MO

The goal of the Diversity Outreach Committee (DOC) Session is to enlighten and initiate dialogue regarding diversity, equity, and inclusion initiatives within the AAFS and the greater forensic science community. Participants will hear from an invited speaker on their perspectives and experiences on issues related to diversity and inclusion. The DOC hopes that this interactive session will promote dialogue on navigating diversity, equity, and inclusion within forensic science throughout an everchanging social climate.

Kelly Knight, a 2020 University Teaching Excellence Award winner and AAFS Fellow, is an associate professor of Forensic Science and a STEM Accelerator. As a STEM Accelerator, she mentors STEM students and leads K-12 STEM outreach programs such as the Females of Color and those Underrepresented in STEM (FOCUS) program which makes STEM exciting and accessible for BIPOC (Black, Indigenous, and People of Color) girls. After obtaining degrees in chemistry and forensic science, Prof. Knight worked in forensic DNA laboratories for almost a decade before beginning her career in higher education. As a former DNA analyst, she has years of experience in both forensic casework and research, specifically in the areas of forensic serology and low copy number (LCN) DNA methods.

Professor Knight is also currently working on her PhD with specializations in science education research, critical theory, and multicultural education. Her current work examines how out-of-school STEM programs impact middle and high school BIPOC girls, particularly in the area of STEM identity. Her future work will include an in-depth analysis of the experiences of marginalized students persisting in the STEM pipeline. Through her advisory roles and work with various justice, equity, diversity, and inclusion initiatives at her University, such as the President's Anti-Racism and Inclusive Excellence taskforce, Kelly's work in higher education centers the development and implementation of equitable practices for both STEM students and faculty.



# STUDENT ACADEMY

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*Open to all Meeting Registrants—\$15 (in-person)*

Tuesday, February 22, 2022

9:00 a.m. - 1:00 p.m.

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The purpose of the Student Academy of Forensic Sciences is to bring to the attention of high school students the vital importance of the application of scientific principles to the administration of justice. It acquaints the participants with the role of the forensic science disciplines in the legal system as well as the education and training required for the career in each discipline.

*Chair:*

**Marilyn T. Miller, EdD**  
Virginia Commonwealth University  
Richmond, VA

*Co-Chair:*

**Lynn A. Schneeweis, MS**  
Massachusetts State Police Crime Laboratory  
Maynard, MA

*Faculty:*

*Anthropology*  
**Ginesse A. Listi, PhD**  
Louisiana State University  
Baton Rouge, LA

*Jurisprudence:*

**Pamela A.W. King, JD**  
Minnesota State Public Defender Office  
Rochester, MN

*Criminalistics:*

**Kelly Knight, MS**  
George Mason University  
Fairfax, VA

*Odontology:*

**Lillian A. Nawrocki, DDS**  
Office of the Medical Examiner  
Suffolk County, NY

*Digital & Multimedia Sciences:*

**Douglas Lacey, BS, MS**  
BEK TEK LLC  
Stafford, VA 22556

*Pathology/Biology:*

**J.C.U. Downs, MD**  
forensiX, LLC  
Savannah, GA

*Engineering & Applied Sciences:*

**Roy Crawford, BSME**  
R.R. Crawford Engineering  
Whitesburg, KY

*Psychiatry & Behavioral Science:*

**TBD**

*General:*

**Brian S. Clark, MFS**  
Federal Bureau of Investigation  
Chicago, IL

*Questioned Documents:*

**Cami Fuglsby, BS**  
South Dakota State University  
Brookings, SD

**TL Williams, MFS**

U.S. Army Criminal Investigation Command  
Quantico, VA

*Toxicology:*

**Sabra R. Botch-Jones, MS**  
Boston University School of Medicine  
Boston, MA



# STUDENT ACADEMY



## Program:

- 9:00 a.m. - 9:20 a.m. **Introduction**  
*Marilyn T. Miller, EdD, Chair*
- 9:20 a.m. - 9:30 a.m. **“The Case”**  
*Lynn A. Schneeweis, MS, Co-Chair*

## The Forensic Sciences Group I Disciplines

- 9:30 a.m. - 9:45 a.m. **Pathology/Biology**  
*J.C.U. Downs, MD*
- 9:45 a.m. - 10:00 a.m. **Anthropology**  
*Ginesse A. Listi, PhD*
- 10:00 a.m. - 10:15 a.m. **Odontology**  
*Lilliian A. Nawrocki, DDS*
- 10:15 a.m. - 10:30 a.m. **Toxicology**  
*Sabra R. Botch-Jones, MS*
- 10:30 a.m. - 10:45 a.m. **General**  
*Brian S. Clark, MFS; T.L. Williams, MFS*
- 10:45 a.m. - 11:00 a.m. **Q&A, Assignment, and Break**

## “The Forensic Sciences” Group II Disciplines

- 11:00 a.m. - 11:15 a.m. **Criminalistics**  
*Kelly Knight, MS*
- 11:15 a.m. - 11:30 a.m. **Questioned Documents**  
*Cami Fuglsby, BS*
- 11:30 a.m. - 11:45 a.m. **Engineering & Applied Sciences**  
*Roy Crawford, BSME*
- 11:45 a.m. - 12:00 p.m. **Digital & Multimedia Sciences**  
*Douglas Lacey, BS, MS*
- 12:00 p.m. - 12:15 p.m. **Psychiatry & Behavioral Science**
- 12:15 p.m. - 1:30 p.m. **Lunch & Student Trivia**
- 1:30 p.m. - 1:45 p.m. **Case Conclusion**  
*Jurisprudence, Pamela A.W. King, JD*
- 1:45 p.m. - 2:00 p.m. **Wrap Up**



# INTERDISCIPLINARY SYMPOSIUM

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Pre-Registration Required—\$75 (*in person and virtual*)

## S1 Problems of Today and Solutions for Tomorrow

Tuesday, February 22, 2022

1:00 p.m. – 4:30 p.m.

3.0 CE Hours

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*Chair:*

**Christopher M. Milroy, MD, LLB**  
University of Ottawa  
Ottawa Hospital  
Ottawa, Ontario, Canada

*Co-Chair:*

**Paul Messner, JD**  
Dry Ridge, KY

*Faculty:*

**James L. Caruso, MD**  
Office of the Chief Medical Examiner/Coroner  
Denver, CO

**Roderick T. Kennedy, JD**  
Los Ranchos, NM

**Lucy Davis, BHS**  
LDH Consultants, LLC  
Pikeville, KY

**Barry Logan PhD**  
NMS Labs  
Horsham, PA

**Heidi Eldridge, PhD**  
RTI International  
Research Triangle Park, NC

**Learning Overview:** After attending this presentation, attendees will have a greater understanding of current challenges in multiple forensic science disciplines, death investigations, and in the courts.

**Impact Statement:** This presentation will impact the forensic sciences community by offering various perspectives regarding current issues and possible future solutions.

**Program Description:** This presentation will present various perspectives as they relate to forensic science, medicine, and the courts including: workload and workforce issues in forensic pathology and their impact on death investigations; the analytical challenges presented by the rapid development of illicit novel psychoactive substances; why standards created by the Academy Standards Board (ASB) are crucial to forensic science; and how pattern recognition discipline validity challenges are being addressed. The symposium will also discuss why courts are both reluctant to recognize challenges to previously accepted forensic science techniques and resistant to admitting evolved techniques.

# INTERDISCIPLINARY SYMPOSIUM



Pre-Registration Required—\$75 (*in person and virtual*)

## S1 Problems of Today and Solutions for Tomorrow

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### Program:

|                       |  |
|-----------------------|--|
| 1:00 p.m. - 1:15 p.m. | <b>Opening Remarks and Introduction</b><br><i>Christopher M Milroy, MD, LLB</i>  |
| 1:15 p.m. - 1:45 p.m. | <b>Courts and Old Science – A Myth is as Good as a Mile</b><br><i>Roderick T. Kennedy, JD</i>  |
| 1:45 p.m. - 2:15 p.m. | <b>Precedent Does Not Equal Validity: Why Pattern Evidence Disciplines Are Being Challenged After A 100 Years of Use &amp; What Is Being Done About It</b><br><i>Heidi Eldridge, PhD</i> |
| 2:15 p.m. - 2:45 p.m. | <b>Workforce Issues in Forensic Pathology</b><br><i>James L. Caruso, MD</i>  |
| 2:45 p.m. - 3:00 p.m. | <b>Break</b>   |
| 3:00 p.m. - 3:30 p.m. | <b>Analytical and Legal Challenges Presented by Novel Illicit Drugs</b><br><i>Barry K. Logan PhD</i>   |
| 3:30 p.m. - 4:00 p.m. | <b>The AAFS Solution Regarding Forensic Standards—The Academy Standards Board (ASB)</b><br><i>Lucy A. Davis, BHS</i>   |
| 4:00 p.m. - 4:30 p.m. | <b>Panel Discussion and Q&amp;A</b>  |



# YOUNG FORENSIC SCIENTISTS FORUM

*Open to All Meeting Registrants—(in person and live streamed)*

## S2 Meeting and Overcoming Challenges Faced by Young Forensic Scientists

Tuesday, February 22, 2022

9:00 a.m. – 4:15 p.m.

6.25 CE Hours

*Chair:*

**Zain Bhaloo, MSc**

Canada Border Services Agency  
Ottawa, ON, CANADA

**Kelly Freeman, MS**

Houston Forensic Science Center  
Houston, TX

**Cheryl Hunter**

American Academy of Forensic Sciences  
Colorado Springs, CO

**Brian Janysek, MFS**

Oakton, VA

**Robert Lynch, BArch**

Architectural Expert & Consultant  
Haymarket, VA

**Modhuparna Manna, BTech**

Louisiana State University  
Baton Rouge, LA

**Carl McClary, MS**

AAFS President  
Atlanta, GA

*Committee Member:*

**Hannah N. Simmons, BS**

Raleigh, NC

**Aja Moss, MS**

Houston Forensic Science Center  
Houston, TX

**Joe Trevino, MS**

Forensic Investigations Sunnyside,  
NY

**Molly Van Buren, MSc**

Houston Forensic Science Center  
Houston, TX

**Dirk Vastrick, BA**

Dirk Vastrick Presents  
Spokane Valley, WA

**Matthew R. Wood, PhD**

Ocean County Sheriff's Department  
Forensic Science Laboratory Toms  
River, NJ

**Learning Overview:** The YFSF will aim to bring to light some of these challenges and more importantly, highlight how the members and attendees of our very own American Academy of Forensic Science met these challenges head on, rose to the occasion and circumvented these challenges in order to get to their current positions.

**Impact Statement:** The impact of this Special Session will focus mostly on, but not exclusively on, the younger forensic scientists who are still in the process of trying to get to their "dream job". We say not exclusively because the age of the person will never dictate their entrance into a new career in forensics, therefore anyone and everyone can and will benefit from the information provided in this Special Session .

This session is designed from the ground up and tailored to the Young Forensic Scientists Forum attendees as well as any members of the AAFS who are or were experiencing difficulties in the transition from Student to Professional. So many hurdles are present in this journey, many of which young scientists are completely unprepared for: building and updating resumes, job interviewing skills and techniques, proper and efficient networking, and all the mistakes, difficulties and challenges in between.

# YOUNG FORENSIC SCIENTISTS FORUM



## Program:

|                         |   |
|-------------------------|---|
| 9:00 a.m. – 9:10 a.m.   | <b>Introduction to the YFSF</b><br><i>Zain Bhaloo, MSc</i>  |
| 9:10 a.m. – 9:25 a.m.   | <b>Membership in AAFS</b><br><i>Cheryl Hunter</i>   |
| 9:25 a.m. – 9:35 a.m.   | <b>Presidential Address</b><br><i>Carl R. McClary, MS</i>   |
| 9:35 a.m. – 9:55 a.m.   | <b>Food and Forensics: Building Interpersonal Relationships With Coworkers and Colleagues</b><br><i>Joe Trevino, MS</i>   |
| 9:55 a.m. – 10:20 a.m.  | <b>The Challenges Faced by Young Forensic Scientists in Memory Forensics</b><br><i>Modhuparna Manna, BTech</i>  |
| 10:20 a.m. – 10:50 a.m. | <b>BREAK</b>  |
| 10:50 a.m. – 11:15 a.m. | <b>The Difficulties I Encountered Job Hunting and What I Learned</b><br><i>Zain Bhaloo, MSc</i>   |
| 11:15 a.m. – 11:35 a.m. | <b>Be Unique!</b><br><i>Robert Lynch, BArch</i>   |
| 11:35 a.m. – 12:00 p.m. | <b>Finding/Earning Success in the Forensic Science Field: A Summary of What Worked and What Did Not in 32 Years as a Federal Agent</b><br><i>Brian Janysek, MFS</i> |
| 12:00 p.m. – 1:30 p.m.  | <b>BREAK</b>  |
| 1:30 p.m. – 2:00 p.m.   | <b>We Need You! Participation in AAFS Committee Work</b><br><i>Matthew R. Wood, PhD</i>   |
| 2:00 p.m. – 2:20 p.m.   | <b>Hunting for a Job While Living Abroad/My First Job: From DNA Analyst to Death Investigator During the COVID-19 Pandemic</b><br><i>Molly Van Buren, MSc</i>       |
| 2:20 p.m. – 2:50 p.m.   | <b>A Tale of Two Worlds: From Crime Scene Investigator to the Lab</b><br><i>Kelly Freeman, MS</i>   |
| 2:50 p.m. – 3:10 p.m.   | <b>Don't Count Me Out: Overcoming Setbacks in Forensic Science</b><br><i>Aja Moss, MS</i>   |
| 3:10 p.m. – 3:25 p.m.   | <b>BREAK</b>  |
| 3:25 p.m. – 3:55 p.m.   | <b>A Better Resume Tomorrow in Just Three Steps</b><br><i>Dirk Vastrick, BA</i>   |
| 3:55 p.m. – 4:40 p.m.   | <b>Resume Review Workshop</b><br><i>Dirk Vastrick, BA; Zain Bhaloo, MSc</i>   |
| 4:40 p.m. – 5:00 p.m.   | <b>Questions &amp; Closing</b><br><i>Hannah Simmons, BS</i>   |



## SPECIAL SESSION

### S3 Tale of the Tape—The Media’s Impact on Forensic Science Cases

*Pre-Registration Required—\$75 (in person only; lunch included)*

Tuesday, February 22, 2022

11:30 a.m. – 3:00 p.m.

2.75 CE Hours

*Chair:*

**J.C.U. Downs, MD**  
forensX, LLC  
Charleston, SC

**Barry Fisher, MBA, MS**  
NIJ  
Indio, CA

**John Fudenberg**  
IACME  
Las Vegas, NV

**Judy Melinek, MD**  
PathologyExpert, Inc.  
San Francisco, CA

*Co-Chair:*

**Tanisha Henson, JD**  
Maricopa County District Attorney’s Office  
Phoenix, AZ

**Bobbi Jo O’Neal, RN**  
Charleston County  
North Charleston, SC

**Greg Ramey, MPA**  
Lafayette, GA

**Edwin P. Stevens**  
APS Films LLC  
Glendale, CA

**Learning Overview:** The audience can be expected to learn about the impact that media can and does have on forensic casework at multiple levels and how to successfully engage with journalists while maintaining objectivity in casework.

**Impact Statement:** This presentation will impact the forensic science community by showing documented pitfalls & successes in various media and Forensic Science Professionals in handling casework and suggest strategies for future improvement in the flow of information while protecting necessary information.

Forensics Professionals are keenly aware of the impact their services have on cases. Part and parcel of this is intense public interest in and scrutiny of casework. One need only do a brief internet search to find over 1.5 million hits for “case of the century” including references to the accompanying media frenzies associated therewith. In many settings, the players – Forensics Experts and the media – are placed at seeming odds with each other, in a real or perceived effort to control information flow. Comfort comes in knowing that the crucible of second-guessing burns hot – but only until the next such case comes along. As this cycle of investigation-analysis-court-critique-resolution repeats, lessons are available for those willing to learn from their forebearers. As Voltaire asked, “Is there anyone so wise as to learn by the experience of others?”

All cases begin at the scene, where experience teaches many cases are won or lost based upon how a scene is processed and how an initial investigation commences. Los Angeles County, California is an enormous jurisdiction and no stranger to high profile cases, including OJ, Phil Spector, The Night Stalker, and too many others to count. A discussion of lessons learned from decades of leading the Forensic Laboratory analysis of such high profile provides valuable insights into the “dos” and “dons” of casework.

High interest cases, far from being limited to major jurisdictions, can literally occur anywhere and at any time. Case in point, 20 years ago in a sleepy northwest Georgia community of just over 60,000 people became home to a macabre nightmare of a case – an originally unknown number of human remains (later tallied at 339) was found literally dumped in and around the grounds of a family compound surrounding an operating crematory. Nothing similar on such a scale had been encountered before or since. The primary investigators had to deal with not only the casework to be done in order to identify the deceased and to prove criminal charges, but had to simultaneously inform the public while preventing the media from interfering with investigators’ duties. Issues encountered along the way proved challenging but a (partial, at least) successful case resolution followed thanks to good public relations anchoring good detective work.

\*Presenting Author

## S3 Tale of the Tape—The Media’s Impact on Forensic Science Cases

Many jurisdictions conduct exhaustive preparatory exercises in order to be ready to face possible future mass disaster scenarios. Large or small, one can never be ready for all scenarios. The task of primary Medicolegal death investigation falls in many jurisdictions on the Coroner, who must be prepared for any death(s) falling under their jurisdiction. One of the worst-case situations involves mass shooting fatalities. These happen suddenly and without warning. The Las Vegas shooting is an example of such a potentially overwhelming investigation. Lessons learned from the experience provide insights in readiness if such awful acts might occur again. Although fortunately involving fewer fatalities, lesser scale investigations can be no less troubling and warrant similar media scrutiny. The racially-motivated slaying of nine parishioners with clergy at a bible study group shocked a city, a nation, and the world. How could this happen here? In a city not unfamiliar with shocking cases – nine firefighters dead in the line of duty, a suspect shot in the back while fleeing, and the like are another day at the office for a medicolegal death investigator.

When the deceased come in, the task of examination of the remains and telling their story falls upon the Forensic Pathologist. As with other Forensics Professionals, the stories are waiting to be told - awaiting only an attentive ear and an eloquent voice. Personal recollections of the Medical Examiner can make for best-selling non-fiction. But, are there lessons to be learned about and in the telling?

Eventually, the press interest in cases comes to center on the courtroom where evidence – good or bad – is presented to a presumably objective arbiter of fact. With intense pre-trial and in-trial scrutiny, including live televised trials, Attorneys have had to adapt and perfect new strategies to best present their cases. Lessons learned from a career trial Criminal Defense Attorney (ongoing) turned TV journalist offer a unique perspective on the good, the bad, and the ugly of courtroom as entertainment and the media as fact source.

Often downplayed in the entire media hoopla surrounding a case is the victim, without whom there would be no story. Every victim has a story, but not everyone has someone to tell it. In a unique circumstance, the surviving family can tell the decedent’s tale in such a way as to capture not only public but also professional interest. The session closes with the brother of a homicide victim, who shared his sister’s story in an award winning documentary. The session will close with a special screening of her story: “Alice is still dead.”

In the “sweet science” of pugilism, participants are assessed according to their literal physical dimensions – the “tale of the tape.” In the modern era of ubiquitous video, the Forensic Sciences have been and continue to be judged based on a different – but no less real – physical comparison, the taped record of events. Properly anticipated and thoughtfully pursued, information flow can be successfully managed and utilized, leaving both sides, the pursuit of truth and the quest for justice, as winners.

### Program:

|                         |   |
|-------------------------|---|
| 11:30 a.m. – 11:45 a.m. | <b>Introduction</b><br>J.C.U. Downs, MD; Tanisha Henson, JD                       |
| 11:45 a.m. – 12:15 p.m. | <b>Dos and Don’ts at the Scene and in the Laboratory</b><br>Barry Fisher, MBA, MS |
| 12:15 p.m. – 12:45 p.m. | <b>Medicolegal Death Investigation: Part 1</b><br>Bobbi Jo O’Neal, RN             |
| 12:45 a.m. – 1:45 p.m.  | <b>Medicolegal Death Investigation: Part 2</b><br>John Fudenberg                  |
| 1:45 p.m. – 2:15 p.m.   | <b>The Aftermath-The Survivors</b><br>Edwin P. Stevens                            |
| 2:15 p.m. – 2:45 p.m.   | <b>“Alice is Still Dead” (excerpt)</b><br>Edwin P. Stevens                        |
| 2:45 p.m. – 3:00 p.m.   | <b>QUESTIONS &amp; ANSWERS</b><br>All Presenters                                  |

**Proceeds from this workshop will benefit the Forensic Sciences Foundation**





# FEPAC SESSION

## Accreditation of Forensic Science Academic Programs Through the AAFS Forensic Science Education Programs Commission (FEPAC)

Tuesday, February 22, 2022

*Open to All Meeting Registrants (in-person only)*

8:30 a.m. – 12:45 p.m.

*Chair:*

**Heidi Eldridge, PhD**  
RTI International  
Research Triangle Park, NC

*Commissioner:*

**Patrick A. Eller, MS**  
Metadata Forensics LLC  
Richmond, VA

*Commissioner:*

**Jason L. Schroeder, MS**  
Harris County Institute of Forensic Science  
Houston, TX

*Commissioner:*

**A. Karl Larsen, PhD**  
University of Illinois, Chicago  
Chicago, IL

**Learning Overview:** Upon completion of this session, the participant should be able to understand the process of accreditation through the AAFS FEPAC mechanism and be able to participate in the process as a reviewer of academic programs. Participants from academic programs will also learn about the process of accreditation from different perspectives.

**Program Description:** This session has been developed to assist academic institutions offering undergraduate and graduate degree programs in forensic science and forensic digital evidence to prepare for the accreditation process through the FEPAC. This session will also assist future on-site evaluators (academic and practitioners) to prepare for on-site evaluations of academic programs. Successful completion of this one-day session will qualify participants for consideration to serve as on-site evaluators for FEPAC in the future (please note that participants must still meet other FEPAC requirements, such as membership in the AAFS and designation as either a practitioner or academician). This training session will highlight updates to the FEPAC Standards for Accreditation and provide valuable information for both program directors and on-site evaluators.

The FEPAC is a standing committee of the AAFS with a membership that includes five educators, five forensic science practitioners, and a public member as voting members. The mission of the FEPAC is to maintain and enhance the quality of forensic science education through a formal evaluation and recognition of college-level academic programs. The primary function of the committee is to develop and maintain standards and to administer an accreditation program that recognizes and distinguishes high-quality undergraduate and graduate forensic science programs. Forty academic programs have successfully completed the accreditation process since 2003. Additional information on FEPAC can be found on the FEPAC website: <http://fepac-edu.org>.

**Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. - 9:00 a.m.   | <b>Introduction and Welcoming Remarks/Module 1: What to Know About FEPAC</b><br><i>Heidi Eldridge, PhD</i>  |
| 9:00 a.m. - 9:30 a.m.   | <b>Module 2: An Overview of the FEPAC Application Process</b><br><i>Patrick A. Eller, MS</i>  |
| 9:30 a.m. - 10:00 a.m.  | <b>Module 3: A Review of Self-Study Standards 3.0–General for all Programs</b><br><i>Patrick A. Eller, MS</i>   |
| 10:00 a.m. - 10:15 a.m. | <b>Break</b>  |
| 10:15 a.m. - 10:45 a.m. | <b>Module 4: A Review of Self-Study Standards 4.0–Undergraduate Programs</b><br><i>A. Karl Larsen, PhD</i>  |
| 10:45 a.m. - 11:15 a.m. | <b>Module 5: A Review of Self-Study Standards 5.0–Graduate Programs</b><br><i>A. Karl Larsen, PhD</i>   |
| 11:15 a.m. - 11:45 a.m. | <b>Module 6: Accreditation Decisions and Categories, Appeals Process, Annual Reports, Substantive Changes, and Post-Visit Survey</b><br><i>Jason L. Schroeder, MS</i> |
| 11:45 a.m. - 12:15 p.m. | <b>Module 7: FEPAC On-Site Evaluator Training</b><br><i>Jason L. Schroeder, MS</i>  |
| 12:15 p.m. - 12:45 p.m. | <b>Questions and Answers</b><br><i>FEPAC Commissioners and Accreditation Coordinator</i>  |



# KEYNOTE ADDRESS

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*Open to All Meeting Registrants—(in person and live streamed)*

Wednesday, February 23, 2022

8:30 a.m. – 9:30 a.m.

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**Marc Milstein, PhD**

Los Angeles, CA

**Overview:**

Dr. Marc Milstein specializes in taking the leading scientific research on health and happiness and presents it in a way that entertains, educates, and empowers his audience to live better.

His presentations provide science-based solutions to keep the brain healthy, lower the risk of dementia, boost productivity and maximize longevity. He earned both his PhD in Biological Chemistry and his Bachelor of Science in Molecular, Cellular, and Developmental Biology from UCLA.

Dr. Milstein has conducted research on topics including cancer biology and neuroscience and his work has been published in multiple scientific journals. Dr. Milstein has been quoted breaking down and analyzing the latest research in popular press such as *USA Today*, *Huffington Post*, and *Weight Watchers Magazine*. Dr. Milstein's upcoming book "The Age-Proof Brain" will be published in 2022.

*Open to All Meeting Registrants—(in person and live streamed)*

Wednesday, February 23, 2022

10:00 a.m. – 11:30 a.m.

1.5 CE Hours



*Welcoming Remarks*

## ***A Responsive Academy—Meeting and Surpassing the Challenges of a Modern Forensic Science World***

**Carl R. McClary, MS**

**President  
American Academy of Forensic Sciences  
Atlanta, GA**

*Plenary Session Chair:*

**Douglas S. Lacey, MS**  
BEK TEK LLC  
Stafford, VA

*Plenary Session Co-Chair & Moderator:*

**James R. Gill, MD**  
Office of the Chief Medical Examiner  
Farmington, CT

### ***Speakers***

**Donna Grogan**  
AAFS  
Colorado Springs, CO

**Todd W. Bille, MS**  
Bureau of ATFE  
Ammendale, MD

**Andy Parsons**  
Adobe Inc.  
Brooklyn, NY

**Overview:** Forensic practitioners are continually searching for proven methods of analyzing an ever-changing landscape of potential evidence in criminal and civil matters, especially in the digital evidence arena. At the same time, they must actively learn how to apply new technology to traditional evidentiary items, enabling even greater information to be gleaned from those items. One of the most important avenues of learning these new methods and technology is through scientific presentations and workshops, such as those featured at the AAFS Annual Scientific Conferences. This session will cover the AAFS' efforts to update its interface with its members and to expand its educational offerings beyond the Annual Scientific Conferences, in the face of the unprecedented pandemic. Additionally, a novel analysis technique regarding the extraction of DNA evidence from fired cartridge cases and a multi-member initiative to authenticate multimedia evidence will be discussed.

All change is different and requires a unique implementation process. The key need for change at the Academy is operational efficiency. The Academy needs to keep up with the evolution of technology, conduct internal process reviews and expand benefits for our membership. On June 15, 2021 the Academy welcomed a new Executive Director, Donna Grogan. Donna brings with her prodigious experience in organizational leadership, management, leadership training and development, and notable successes in fundraising programs. Through her accomplishments in non-profit executive positions, she has increased the global footprint of the healthcare foundations she worked with for over 20 years prior to joining the Academy. A high-energy, goal-oriented manager, Donna has been using her experience to impact the changes that will bring the current state to a future state to achieve even greater success for the forensic science community.

Gun violence is not new in the United States, but the level of gun violence has increased in recent years. In many instances, fired cartridge cases (FCCs) are the only physical evidence left at the scene. Historically, the ability of forensic examinations on FCCs to provide investigative information has been limited. DNA analysis and latent fingerprint examinations were rarely successful. Linking

# PLENARY SESSION



*Open to All Meeting Registrants—(in person and live streamed)*

## ***A Responsive Academy—Meeting and Surpassing the Challenges of a Modern Forensic Science World***

### **Overview cont.**

the FCC to a firearm through a firearms examination required the firearm. Over the years, techniques and technology have evolved that now allow laboratories to potentially provide investigative information linking an individual, firearm, or previous incident to FCCs recovered from a crime scene. However, implementing the analysis of a new type of evidence brings additional challenges to the forensic laboratory. The U.S. Bureau of Alcohol, Tobacco, Firearms, and Explosive Laboratory (ATF) began investigating methods of increasing the success rate of DNA analysis on FCCs in 2012. Mr. Todd Bille, DNA Technical Leader of the ATF Laboratory, will discuss the evolution of DNA analysis of FCCs along with the challenges encountered in the first two years after implementation. These include the mitigation of contamination at the crime scene, developing a case acceptance policy to prevent the laboratory from being overwhelmed with submissions, storage of the FCCs appropriately to reduce DNA degradation, formation of a group specifically for the DNA analysis of FCCs, DNA mixture interpretation, and ways to coordinate the DNA analysis and entry of the FCCs into the National Integrated Ballistic Information Network (NIBIN) in a timely manner.

Digital provenance is becoming one of the most important countermeasures against mis- and dis-information. With the proliferation of “deep fakes” and synthesized voice mimicking an individual’s speech characteristics, it has become increasingly difficult to trust digital video and audio at face value. Andy Parson’s talk will focus on how Adobe’s Content Authenticity Initiative (CAI) is deploying techniques and standards that answer the question: instead of detecting what may be fake, can we prove what’s true? From a forensics perspective, he will explore how the technology works, how it may be adopted, and its place in court proceedings.

### **Program:**

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|------------|---|------------|--|
| 10:00 a.m. | - | 10:10 a.m. | <b>Welcome and Opening Remarks</b><br><i>Carl R. McClary, MS; Douglas S. Lacey, MS</i>   |
| 10:10 a.m. | - | 10:35 a.m. | <b>A More Modern Academy</b><br><i>Donna M. Grogan</i>   |
| 10:35 a.m. | - | 11:00 a.m. | <b>DNA Analysis of Fired Cartridge Cases and the Unique Challenges They Present</b><br><i>Todd W. Bille, MS</i>                |
| 11:00 a.m. | - | 11:25 a.m. | <b>Adobe’s Content Authenticity Initiative: Digital Content Provenance in the Age of Misinformation</b><br><i>Andy Parsons</i> |
| 11:25 a.m. | - | 11:30 a.m. | <b>Panel Discussion</b><br><i>Carl R. McClary, MS; Donna Grogan; Todd W. Bille, MS; Andy Parsons</i>                           |



# MENTOR PROGRAM KICKOFF BREAKFAST

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*RSVP Required by Feb. 2—No Charge (in person only)*

Thursday, February 24, 2022

7:00 a.m. – 8:15 a.m.

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Are you interested in mentoring a colleague or would you like to have a mentor to help guide your professional growth in your discipline? If so, please join the AAFS Mentoring Program Kickoff Breakfast. We will discuss the program, solicit participation, and begin the matching process for those ready to commit.

Many in the Academy have already notified the committee of their interest in the program and are on the Mentoring Program roster. Like most other things, COVID has slowed down the process in getting the program launched, but this breakfast will mark the official beginning of hopefully numerous productive relationships. If you have already agreed to participate, definitely plan on joining us for breakfast.

Seattle registrants interested in attending this breakfast must RSVP by February 2 to: [mentorship@aafs.org](mailto:mentorship@aafs.org).

For those unable to make it to Seattle, or have a conflict that morning but are interested in the Mentoring Program, please let us know using that same email address.

# BREAKFAST SEMINARS



*Pre-Registration Required by February 11 –\$60 (in person only)*

## BS1 The Path Forward Continues: What's Happening in Forensic Standards

Monday, February 21, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

### **Teresa Ambrosius, BA\***

American Academy of Forensic Sciences  
Colorado Springs, CO

### **Karen Reczek, MS\***

National Institute of Standards and Technology  
Gaithersburg, MD

### **Allison Getz, MS\***

National Institute of Standards and Technology  
Gaithersburg, MD

**Learning Objective:** Participants will learn about updates in standards development in the United States and internationally from United States Standards Developing Organizations (SDOs). Participants will also get an update from the Organization of Scientific Area Committees (OSAC) for Forensic Science regarding how they are working with the SDOs and encouraging forensic science service providers to implement standards.

Participants will gain a better understanding of the progress of consensus standards development, including submission, drafting, public and committee commenting and resolutions, and finalization. Participants will also realize the importance of public input into the standards process and will learn how to participate, even if they are not part of an SDO consensus body or committee.

**Impact Statement:** The 2009 National Research Council (NRC) stressed the lack of standardization in forensics. The advent of OSAC, administered by the National Institute of Standards and Technology (NIST), and the AAFS Standards Board (ASB) has resulted in several years of concerted efforts to identify gaps in needed standards and begin their development using the voluntary consensus standards development process. All forensic professionals need to be aware of new and emerging standards in the various forensic disciplines, their importance, and how they can be implemented.

In 2009, the NRC published the Report, *Strengthening Forensic Science in the United States: A Path Forward*, which summarized the challenges facing the forensics community and the lack of mandatory standardization, certification, and accreditation. From this report, the Department of Justice (DOJ) and the NIST signed a Memorandum of Understanding that led to the establishment of the National Commission on Forensic Science (NCFS) and the NIST-administered OSAC for Forensic Science.

Presenters will provide an overview of the standards currently in development, those soon to be published, and the new standards published by various SDOs. New standards include those related to interdisciplinary topics, such as evidence collection and labeling, interpretation and reporting, and discipline-specific standards in the areas of criminalistics, toxicology, digital evidence, anthropology, facial recognition, photography, biology, pattern evidence, and crime and fire scene investigation, with a focus on terminology, measurement uncertainty, measurement traceability, quality assurance, and calibration.

Presenters will describe the process that a document goes through from inception through drafting, commenting, voting, and publication. This overview will give participants the education they need to participate in the standards development process.

OSAC has been working closely with various SDOs to bring the community together to define requirements for disciplines to submit standards through the development process. OSAC's role in the standards development process and promotion of implementation of these standards will also be covered.

\*Presenting Author



# BREAKFAST SEMINARS

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*Pre-Registration Required by February 11 –\$60 (in person only)*

## **BS2      Autopsy of a Crime Lab: The Evolving Approaches Toward Forensic Evidence in Court**

Tuesday, February 22, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

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**Brandon Garrett, JD\***

Duke University School of Law  
Durham, NC

**Learning Overview:** This presentation will survey the current state of litigation and judicial review of admissibility of forensic evidence, as well as providing an overview of a recent book, *Autopsy of a Crime Lab*, that surveys the sources of error in forensic work and approaches designed to improve the process and safeguard reliability.

**Impact Statement:** This presentation will provide an overview of the book, but particularly focus on legal research and developments in the courts as judges have evolved in their approach toward forensic evidence. Studies examining how lay jurors evaluate forensic testimony in court will be summarized.

“That’s not my fingerprint, your honor,” said the defendant after Federal Bureau of Investigation (FBI) experts reported a “100-percent identification.” They were each wrong, and Brandon Mayfield was later cleared. How does error, even in high-profile cases, occur? Is it the quality of the latent fingerprint, the role of databases, individual examiner error, cognitive bias, or uncertainty inherent in a method that can lead to error? How should lawmakers, labs, and courts approach each of these challenges? The recently published book, *Autopsy of a Crime Lab*, is the first to catalog the sources of error behind a range of well-known forensic evidence, from fingerprints and firearms to forensic algorithms. At the crime scene, the book explores the need for scientific standards regarding evidence collection. Moving to the lab, the book explores quality controls, human factors, and the need for further studies to validate basic premises of widely accepted techniques. Turning to individual experts, the book asks how proficiency tests could be used to better assess individual performance, and the need for standards governing report writing and testimony. Reaching the courtroom, the book examines how concepts of judicial gatekeeping have slowly evolved, regarding discovery, testimony, and expert admissibility.

Taking us into the lives of the wrongfully convicted or nearly convicted, into crime labs rocked by scandal, and onto the front lines of promising reform efforts driven by professionals and researchers alike, *Autopsy of a Crime Lab* describes the forensic landscape and recent efforts to place evidence, from the crime scene to the laboratory to the courtroom, on a sound scientific footing.

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\*Presenting Author

# BREAKFAST SEMINARS



*Pre-Registration Required by February 11 –\$60 (in person only)*

## BS3 Procedures for Breaking the Zodiac Killer's Code

Wednesday, February 23, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

**Jeanne Anderson\***

Federal Bureau of Investigation Laboratory  
Quantico, VA

**David Oranchak\***

Roanoke, VA

**Learning Overview:** Attendees will learn about the forensic cryptanalysis of the Zodiac Killer's 50-year old unsolved cipher, how this code was broken, and the procedures used by the Federal Bureau of Investigation (FBI) Laboratory in cases such as this.

**Impact Statement:** This presentation impacts the forensic science community by bringing awareness of forensic codebreaking capabilities.

The field of forensic cryptanalysis, or codebreaking, is a little-known but well-established forensic discipline that, when applied, can produce reliable and informative results. Cryptanalysis can be applied to records of illicit businesses, such as drug distribution or manufacturing, human smuggling, and commercial sex, as well as coded messages.

The FBI Laboratory houses the Cryptanalysis and Racketeering Records Unit (CRRU) and is staffed with forensic cryptanalyst examiners trained to decipher coded messages and cryptic illicit business records. This forensic analysis relies on standard operating procedures based on steps developed in the early 1900s by a United States Army cryptologist and that remain accepted by forensic and academic cryptologic communities today. These procedures provide a framework for the analysis of codes and records that apply regardless of crime, context, or record type. Despite this framework's historical basis, it remains largely unknown by the forensic community; this presentation will inform attendees about this forensic capability. Further, this presentation will introduce one such codebreaking case, that of the never-caught Zodiac serial killer. This case involved a coded message that remained unsolved for 50 years before it was broken this past December. This development provided the law enforcement community with new material on an unsolved serial killer case and the cryptologic community with a new encipherment technique that confounded professional and amateur cryptanalysts for 50 years.

One of the three-person team who broke this message will provide background on techniques employed for over a decade of work on the Zodiac Killer's code, including those techniques that eventually helped decrypt this coded message as well as how these techniques may apply to remaining unsolved coded messages. An FBI Cryptanalyst Forensic Examiner will present on law enforcement's approach to coded messages, specifically the standard operating procedures used for analysis of records and codes such as this. Several remaining unsolved coded messages will be introduced for those interested in applying any of the presented cryptanalytic techniques to actual unsolved codes.

\*Presenting Author



## BREAKFAST SEMINARS

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BS4 Pursuing Truth Through Forensic Evidence—But Does the Family Believe?

**CANCELED**



# BREAKFAST SEMINARS



*Pre-Registration Required by February 11 –\$60 (in person only)*

## **BS5 Helping the Marines Correct the Historical Record: Identifying the Iwo Jima Flag Raisers Using Photographic Comparison and Facial Recognition**

Thursday, February 24, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

**Richard Vorder Bruegge, PhD\***

Federal Bureau of Investigation  
Quantico, VA

**Learning Overview:** Attendees will learn how Digital and Multimedia Sciences techniques, including photographic comparison, facial recognition, and 3D face modeling, were used to help the United States Marine Corps correct the historical record in regard to the individuals depicted in the iconic “Iwo Jima Flag Raising” photograph by Joe Rosenthal. This case provides an example of how new techniques may be tested against unusual types of evidence in a matter of historical significance.

**Impact Statement:** The forensic science community will see an example of how established and innovative forensic science techniques can be “stress tested” in unusual circumstances to help further define the limits of these techniques.

On February 23, 1945, United States Marines raised an American flag on Mount Suribachi, Iwo Jima. A photograph depicting that event taken by Associated Press photographer Joseph Rosenthal immediately became iconic in Marine Corps and United States lore, with the image serving as the basis for the United States Marine Corps War Memorial in Washington, DC, and the National Museum of the Marine Corps in Quantico, VA. While most Marines will tell you that the individual names of those in the photograph do not matter, historians, and many in the public, want to be able to put names to the faces.

Previous Marine Corps reviews led to updates of the record in 1947 and 2016, but after the 2016 Huly Board findings were released, historians Dustin Spence, Stephen Foley, and Brent Westemeyer brought forth additional evidence indicating that further changes were needed. As a result, a third Board was convened in 2018. This “Bowers Board” requested the assistance of the Federal Bureau of Investigation (FBI) Digital Evidence Laboratory (DEL) in analyzing photographs and film footage from that day to help establish, once and for all, which Marines are depicted and in which positions around the flag.

The flag raised in the Rosenthal photograph was the second raised on the summit that day, replacing a smaller one. Several photographers, including one with a 16-mm movie camera, were also present and captured multiple photographs and film recordings of events on the summit that day, culminating in a series of celebratory photos known as the “Gung Ho!” photos. The combination of these photographs and film recordings make it possible to track the movements of various individuals during this sequence and establish their presence through image analysis (photographic comparison), primarily based on their faces and details of their helmets, clothing, and gear.

Through this examination process, the identities of four of the six individuals around the flagpole in the Rosenthal photo can be established with either “Strong Support” or “Extremely Strong Support,” while there is “Some Support” or “Limited Support” for the other two. Facial recognition technology and 3D-facial modeling software were also utilized in support of these analyses. When combined with further information from historical records, these findings offered a compelling case for the Bowers Board to declare in 2019 that the record is now complete.<sup>1</sup>

Requests like this—which do not involve criminal or civil litigation—allow multimedia evidence labs to not only stress test their existing standard procedures on different materials and content, but also allow them to experiment with new techniques and procedures under more “realistic” conditions than may otherwise be available. In this case, facial recognition technology and 3D-modeling software were utilized in support of traditional image analysis techniques for photographic comparison. Through this process, potential limitations of these technologies were identified. This presentation will provide attendees with a better understanding of the process involved in this image analysis examination, as well as how the facial recognition and 3D-modeling software were leveraged in this case, along with the potential limitations.

### **Reference(s):**

1. *Investigating Iwo: The Flag Raisings in Myth, Memory, & Esprit de Corps*. Contributing editor: Breanne Robertson, PhD., Marine Corps History Division, Quantico, Virginia, 2019, LCCN 2019035917 | ISBN 9781732003071 (Also Available at: [https://www.usmcu.edu/Portals/218/Investigating%20Iwo\\_WEB2.pdf](https://www.usmcu.edu/Portals/218/Investigating%20Iwo_WEB2.pdf))

\*Presenting Author



# BREAKFAST SEMINARS

*Pre-Registration Required by February 11 –\$60 (in person only)*

## BS6 Electrical Torture, Electrocution, and Homicide—The Istanbul Protocol

Thursday, February 24, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

**Helmut Brosz, BASc\***

Forensic Sciences International Group  
Markham, ON, Canada

**Renee Knight, BSFS\***

Forensic Sciences International Group  
Markham, ON, Canada

**Learning Overview:** This presentation will provide an overview in identifying electrical torture injuries through a foundational background in body resistance to electricity and electrocution scenarios. After attending this presentation attendees will: (1) have an understanding of what is Electrical Shock Torture as defined by the Istanbul Protocol; (2) Mechanisms of Electrocution; and, (3) the variables to be applied in the identification of electrical torture, injury, and homicide.

**Impact Statement:** This presentation will impact the forensic science community by improving the ability of Authorities Having Jurisdiction (AHJ), including investigators, medical examiners, lawyers, prosecutors, and engineers, to identify when an electrical torture or other electrical incident has taken place. Attendee knowledge of electrical shock injuries, torture, and homicide will be increased.

AHJ attending to a suspected electrical torture scene or homicide scene involving electrocution sometimes have difficulty discerning between natural death and death due to electricity. On average in North America, between 500 and 1,100 electrocutions occur annually, including suicide, auto-erotic, accidental, homicide, etc. The statistics for electrical torture are hard to come by; however, this form of torture “Parilla” appears to be practiced in certain South American and far Eastern Countries. There are also approximately ten times as many arc flash burn injuries and more than ten times as many non-fatal electric shocks. Some minor shock situations result in fall reactions that can lead to death and injury. These low-voltage shocks/electrocutions frequently leave no visible marks on the person. High-voltage electrocutions mostly leave distinctive marks and catastrophic injuries.

In scenarios involving electrical torture, readily identifiable marks may not always be available. Scenarios involving an individual being shocked in the presence of water may sometimes obscure contact entry and exit marks. Scene photos, hospital admission notes and sketches, autopsy photos, and reports are important data to be created, then assembled, studied, and analyzed as set out in the Istanbul Protocol.

The review and study of applicable standards and codes can assist the AHJ or investigator. For example, the Istanbul Protocol provides a definition on what is deemed as electrical shock torture, the device mechanisms utilized, and the various pathological outcomes of the torture relating to independent and dependent variables. For electrocution situations, the National Electrical Safety Code (NEC), Occupational Safety and Health Administration (OSHA) 26CFR1910, 26CFR1926, National Fire Protection Association (NFPA) 70E, and California General Order 95 may apply.

Variables in identifying electrical shock include voltage, body resistance, time, and the paths the current takes through the body. Through these factors, reconstruction and forensic analysis can be conducted in identifying and interpreting the method and potential motive for electrical torture through case presentations, examples, and artifacts.

\*Presenting Author

# BREAKFAST SEMINARS



*Pre-Registration Required by February 11 –\$60 (in person only)*

## BS7 Forensic Nursing Science: A New Section for a New Scientific Era

Friday, February 25, 2022

7:00 a.m. – 8:15 a.m.

.75 CE Hour

### **Nancy Cabelus, DNP\***

University of New Haven  
New Haven, CT

### **Joyce Williams, DNP\***

Stevenson University  
Owings Mills, MD

### **Virginia Lynch, MSN\***

Forensic Nurse Consultants, International  
Divide, CO

### **Amy Carney, PhD\***

California State University  
San Marcos, CA

**Learning Overview:** After attending this presentation, attendees will have a better understanding of the history of this dynamic discipline, the inception of forensic nursing worldwide, and how forensic nurses contribute to clinical practice, research, and policy.

**Impact Statement:** This presentation will impact the forensic science community by presenting exemplars of the application of care of victims, survivors, and perpetrators of violence of trauma.

In 1991, the American Academy Forensic Sciences (AAFS) distinguished forensic nursing as a scientific discipline.<sup>1</sup> This pronouncement launched a movement now recognized worldwide. The following year, the International Association of Forensic Nurses (IAFN) was founded.<sup>2</sup> In 1995, the American Nurses Association (ANA) Congress of Nursing Practice bestowed the official status of a nursing specialty upon the science of forensic nursing.<sup>3</sup> The forensic aspects of nursing have long existed. Nurses have historically cared for victims of violence—both the living and the dead. In the 17th century, nursing had not yet become a science and midwives filled this role.<sup>4</sup> Two centuries later, Florence Nightingale established the first aspects forensic nursing when caring for the war wounded and dead.

Forensic nursing is a dynamic discipline that recognizes human violence and trauma through a contemporary domain of scientific knowledge, health care, human rights, social justice, public health, and evidence-based practice. Broadly defined, forensic nursing science is nursing applied to the law, following the long-established exemplar of forensic medical science. Forensic nurses are health care providers qualified in the examination and evaluation of patients presenting with forensic biomarkers of crime-related trauma and the clinical investigation of questioned deaths. Global violence and problematic social and cultural situations reinforce the need to define the dynamics, processes, and guidelines for forensic nursing practice as it evolves and endures change.

Educational requirements to practice in forensic nursing vary. The nurse must have, at a minimum, an Associate's degree in nursing but a Bachelor's degree is preferred. After completing the degree, the nurse must successfully pass the board exam in the state in which they intend to practice. After practicing clinical nursing for a year or more, s/he may desire to specialize in forensic nursing as a Forensic Nurse Examiner (FNE) generalist or select a subspecialty of this discipline. Opportunities for role development include the Sexual Assault Forensic Examiner (SANE) course or pursuing the forensic aspects of training as a legal nurse consultant, accident investigator, mental health nurse practitioner, or nurse death investigator. Educational opportunities may be offered in risk management agencies, law firms, correctional settings, or domestic violence shelters. Regardless of the specialized role, forensic nurses work with victims of all ages who have suffered abuse, neglect, sexual assault, trauma, or any other crime-related injuries. Forensic nurses may practice in hospitals and community settings, typically interfacing with the legal system and treating victims, suspects, or perpetrators of crime.

Policy development in forensic nursing has evolved as the professional role grows and changes. Across the United States, individual Boards of Nursing have evaluated the forensic nursing response and the gaps that are filled when forensic nurses work with law enforcement, attorneys, and fellow medical professionals. As individual states evaluate their Nurse Practice Acts and the impact they have on forensic applications, forensic nurses are examining the effect that state, national, and federal rules and policies have on their interactions with both individuals and institutions. Forensic nurses also shape policy, bringing change through advocacy and research.

\*Presenting Author

All times are in the U.S. Pacific Time Zone



# BREAKFAST SEMINARS

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## **BS7 Forensic Nursing Science: A New Section for a New Scientific Era**

Graduate forensic nursing programs are available, often online, and require a number of clinical hours (typically 500) in addition to the didactic requirement of 30–40 credits. Forensic nurses with a graduate degree may opt to teach, conduct research, or in a clinical practice. Advanced practice forensic nurses may pursue a doctorate degree in forensic nursing research (PhD) or a doctorate with a clinical forensic focus, the Doctor of Nursing Practice (DNP).

### **Reference(s):**

1. Lynch, V.A. Proposal for a new scientific discipline: Forensic nursing. Proceedings of the American Academy of Forensic Sciences, 43rd Annual Scientific Meeting, Anaheim, CA. 1991.
2. Aiken, M. Forensic nursing record. In: IAFN. Summary reports of presentations: Proceedings of the Founding Meeting of the IAFN. 13–14 August 1992. Minneapolis: IAFN; 1992.
3. ANA & IAFN. Forensic Nursing: Scope and Standards of Practice. 2nd ed. Silver Spring, Maryland: Nursesbooks.org; 2017.
4. Camp, F. Gradwold's Legal Medicine. 3rd ed. Chicago: Yearbook Medical Publication; 1976.
5. Lynch, V.A., Standing Bear, Z.G. A global perspective in forensic nursing: Challenges for the 21st century. In: Robinson D, Kettles A. (eds.) Forensic nursing and multidisciplinary care of the mentally disordered offender. London: Jessica Kingsley; 2000. p.249–266. (6) Presenti C. Membership Manager, IAFN, Personal communication. 11 July 2021.

# LUNCHEON SEMINARS



*Pre-Registration Required by February 11 –\$60 (in person only)*

## L1 A Tale of Two CSIs: A Criminal Salad Impersonation and a Cookie Subterfuge Incident

Thursday, February 24, 2022

12:00 p.m. – 1:30 p.m.

1.0 CE Hour

Gerald DeMenna, PhD\*

Chem-Chek Labs

Cape May, NJ

**Learning Overview:** The analytical processes employed will enlighten the attendee to the power of spectroscopic analyses (Ultraviolet [UV]-visible and Infrared [IR]) of suspect samples in differentiating materials that appear to look and smell the same but are actually quite different. Using these spectroscopic techniques usually involves minimal sample preparation that maintains the integrity of the original sample, which increases the reliability of the data when presented in court. These techniques also allow accurate comparisons between an unknown sample and a known reference material, again maximizing the credibility of that data in a court trial. Attendees will better understand the principles of these spectroscopic techniques as critical molecular “fingerprinting” tools and how to best utilize them for forensic analyses.

**Impact Statement:** Expanding one’s exposure to the more generalized forms of chemical analysis is worthwhile in these days of specialization where the analyst may be an expert in one specified field of technology, but will ignore the benefits of complimentary analyses from other area of analytical technology. Spectroscopic analysis in the electromagnetic spectral region from shortwave UV to longwave IR is a very versatile area that can produce a wealth of data on the chemical and molecular composition of many materials if one is familiar with all aspects of these technologies, both the common and unique. This presentation should serve to open the attendees’ thought processes when presented with an analytical situation that can easily be addressed with these techniques as a starting point to develop a foundation upon which to possibly expand the evaluation of a suspect sample in a more fruitful direction to maximize results efficiently and effectively.

In the business of food production, there are incidents in which the wrong product is made either accidentally or intentionally. Accidents naturally happen, but if by intent, that is fraud with criminal intent. The stories in this presentation are true, and the names have been changed to protect the innocent.

At some time in the past, there were a series of mysterious illnesses and a few fatalities occurring in the Baltimore, MD, Little Italy area. The symptoms included severe nausea and vomiting, respiratory distress, and allergic-type reactions, but none of the medical exams of the living or postmortem exams revealed any common toxicological factor. The victims and their families, who were widely spread throughout the various Baltimore areas, eliminating an environmental cause of these afflictions, were thoroughly interviewed to try and identify some commonality to their daily lives. One aspect of their Italian heritage was the routine use of olive oil in most food preparations. By process of elimination, it was revealed that the “Krakatoa” brand Extra-Virgin Olive Oil (EV-OO) was used by all the victims. Since this suspect EV-OO looked and smelled like all the other brands of popular EV-OOs, an in-depth evaluation was needed to discover what might be in the Krakatoa brand to cause these afflictions. The information contained herein will give a description of genuine EV-OO production, and how a colorimetric evaluation of the Krakatoa brand revealed some interesting discrepancies, which uncovered a scheme by the producers of the olive oil to sell a cheap, low-quality grade of olive oil as the higher-priced extra-virgin grade.<sup>1</sup>

At another time in the very distant past (in the early 1900s), there was a snack food manufacturer in northern New Jersey that had the simple idea of putting sandwich crème in between two pieces of baked chocolate wafers. The Continental American Cookie Association (CACA) had already been producing a wide variety of biscuits and cookies by mass-production and was looking to set themselves apart from the competitors at the time. While CACA to this day still guards the exact recipe of that scrumptious crème filling in their “PSFP” cookies (hint: 2001: A Space Odyssey), there have been several modifications in that recipe over the past 100+ years. The original filling was made with lard, a by-product of pig rendering, plus sugars and vanilla to produce a firm, crumbly filling with a specific “mouthfeel.” They replaced the lard with hydrogenated soybean oil; to reach the kosher/halal/vegetarian market, they then replaced that with natural palm and coconut oils to avoid the negative press of hydrogenation.<sup>2</sup> Someone on eBay was selling “Original PSFP Cookies with the Original Filling!”, but the buyer said they were not authentic. This part of the presentation shows the power of IR spectroscopy to identify the components in these various fillings.

### Reference(s):

1. Mirabella, Lorraine. “Proposed Olive Oil Testing Would Look for Unpure or Mislabeled Products.” The Baltimore Sun, May 10, 2016. <https://www.baltimoresun.com/business/bs-bz-olive-oil-fda-testing-20160509-story.html>.
2. Debczak, Michelle. What Is an Oreo Cookie’s “Creme” Filling Really Made Of? MentalFloss.com, March 12, 2019. <https://www.mentalfloss.com/article/576611/what-oreo-cookies-creme-filling-made>

\*Presenting Author



# LUNCHEON SEMINARS

*Pre-Registration Required by February 11 –\$60 (in person only)*

## L2 What's New From the American Society for Testing and Materials (ASTM) International's Committee E30 on Forensic Sciences: Big Changes Underway!

Friday, February 25, 2022

12:00 p.m. – 1:30 p.m.

1.0 CE Hour

**Agnes D. Winokur, MS\***  
Drug Enforcement Agency  
Miami, FL

**Karen Reczek, MS\***  
National Institute of Standards and Technology  
Gaithersburg, MD

**Learning Overview:** Attendees will gain a better understanding of the progress of consensus standards development, including drafting, submission, committee and public comment periods, comment resolutions, and finalization of the standards. Attendees will also gain a stronger appreciation for the role and importance of public comments in the standards process. In addition, attendees will learn how they can provide input in the process of public comments, even if they are not part of a standard developing organization, a consensus body, or a standard developing committee.

**Impact Statement:** It is essential for forensic sciences professionals to be familiar with new and emerging standards in the various forensic disciplines. Familiarity with the standards will enable a forensic scientist to implement the standards in their respective laboratory setting and incorporate the standards into their quality assurance manuals. Ultimately, these consensus-based standards will assist the forensic sciences provider with accreditation efforts, development and validation of methods, and increase the level of quality in their work product. Awareness of ASTM E30 Forensic Sciences standards and its process will provide another means for forensic science professionals and stakeholders to become actively engaged in improving the practice of forensic science in the United States and internationally.

ASTM International is one of the oldest United States standards developing organizations. Although ASTM's Committee E30 on Forensic Sciences has been in existence since 1970, many forensic sciences professionals are not familiar with ASTM E30 standards, its process, or how to actively participate and provide input. Subsequently, stakeholders are not aware on how consensus-based standards have been influencing the practice of forensic sciences throughout the years.

In this session, presenters will provide an overview of ASTM International's E30 Forensic Sciences and its subcommittees, which include Criminalistics (e.g., fire debris, explosives, trace, seized drugs), Digital and Multimedia (e.g., video, imaging, face identification, storage mediums), Terminology, and the Interdisciplinary Subcommittee. In addition to the ASTM standards development process and the new American National Standards (ANS) process for E30, the presenters will highlight specific standards currently in development, soon to be published, and those being revised to address current forensic practices and needs.

Standards influence requirements for forensic sciences professionals within their respective laboratories and even accreditation requirements for forensic sciences providers. Many forensic scientists do not realize how standards affect them individually or the work processes that they use on a daily basis. Raising this awareness is critical in empowering the forensic community to provide information on their processes, techniques, and methods. This information can then be used to standardize processes and develop standards that improve the overall practice of forensic sciences. The role that public comment periods play in the development of consensus-based standards is essential to ensure the practicality and comprehensiveness of the standards. The opportunity to hear from interested parties to facilitate discussion improves the quality of the standards being developed. But how does the stakeholder community actively participate in these opportunities? Presenters will educate attendees as to how they can engage with E30, whether through full membership, serving on a task group, or commenting on standards open for ballot.

\*Presenting Author

# WORKSHOPS

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W1                      Transfer and Persistence of Physical Evidence: Deciphering Implications

**CANCELED**



# WORKSHOPS

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*Pre-Registration Required—\$200 (in person and virtual)*

## **W2 The National Institute of Standards and Technology (NIST) Forensic DNA Activities: Foundations, Research, and Standards**

**Monday February 21, 2022**

**8:30 a.m. – 5:00 p.m.**

**6.75 CE Hours**

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**Learning Overview:** Presenters will review activities at NIST involving forensic DNA foundational studies, research, and standards.

**Impact Statement:** Presentations in this workshop will impact the forensic science community by contributing to an understanding of NIST activities in advancing knowledge and practice of forensic DNA through foundation studies, focused research, and development of documentary standards.

**Program Description:** Three sessions will focus on DNA mixture interpretation, DNA sequencing research, and DNA training materials that will benefit students, practitioners, and stakeholders. Participants will gain an understanding of principles involved in DNA analysis and interpretation, knowledge of core foundational literature supporting these principles, and information that can strengthen training programs for DNA analysts.

*Chair:*

**John M. Butler, PhD**

National Institute of Standards and Technology  
Special Programs Office  
Gaithersburg, MD

*Co-Chair:*

**John Paul Jones, MBA**

National Institute of Standards and Technology  
Special Programs Office  
Gaithersburg, MD

*Presenters:*

**Katherine B. Gettings, PhD**

National Institute of Standards and Technology  
Biomolecular Measurement Division  
Gaithersburg, MD

*Co-Chair:*

**Peter M. Vallone, PhD**

National Institute of Standards and Technology  
Biomolecular Measurement Division  
Gaithersburg, MD

**Sarah Riman, PhD**

National Institute of Standards and Technology  
Biomolecular Measurement Division  
Gaithersburg, MD

**Carolyn R. Steffen, MS**

National Institute of Standards and Technology  
Biomolecular Measurement Division  
Gaithersburg, MD

**Melissa K. Taylor, MA**

National Institute of Standards and Technology  
Special Programs Office  
Gaithersburg, MD

**Target Audience:** Criminalistics, Jurisprudence

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 150 pages



# WORKSHOPS



*Pre-Registration Required—\$200 (in person and virtual)*

## **W2 The National Institute of Standards and Technology (NIST) Forensic DNA Activities: Foundations, Research, and Standards**

### **Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 8:45 a.m.   | <b>Introduction to Workshop and NIST Forensic Science Activities</b><br><i>John Paul Jones, MBA</i>         |
| 8:45 a.m. – 10:00 a.m.  | <b>Scientific Foundation Study on DNA Mixture Interpretation</b><br><i>John M. Butler, PhD</i>              |
| 10:00 a.m. – 10:30 a.m. | <b>Examining Probabilistic Genotyping Systems</b><br><i>Sarah Riman, PhD</i>                                |
| 10:30 a.m. – 10:45 a.m. | <b>BREAK</b>  |
| 10:45 a.m. – 11:15 a.m. | <b>DNA Mixture Interpretation Standards on the OSAC Registry</b><br><i>John Paul Jones, MBA</i>             |
| 11:15 a.m. – 12:00 p.m. | <b>DNA Process Map and Human Factors Working Group</b><br><i>Melissa K. Taylor, MA</i>                      |
| 12:00 p.m. – 1:00 p.m.  | <b>BREAK</b>  |
| 1:00 p.m. – 1:30 p.m.   | <b>DNA Sequencing Research Overview</b><br><i>Peter M. Vallone, PhD</i>                                     |
| 1:30 a.m. – 2:15 p.m.   | <b>STR Sequence Nomenclature Activities</b><br><i>Katherine B. Gettings, PhD</i>                            |
| 2:15 p.m. – 2:45 p.m.   | <b>NIST DNA Standard Reference Materials</b><br><i>Carolyn R. Steffen, MS</i>                               |
| 2:45 p.m. – 3:00 p.m.   | <b>BREAK</b>  |
| 3:00 p.m. – 3:30 p.m.   | <b>DNA Training Standards on the OSAC Registry and Educational Materials</b><br><i>John Paul Jones, MBA</i> |
| 3:30 p.m. – 3:45 p.m.   | <b>STRBase Updates</b><br><i>Peter M. Vallone, PhD</i>  |
| 3:45 p.m. – 4:15 p.m.   | <b>DNA Most Valuable Publications List</b><br><i>John M. Butler, PhD</i>                                    |
| 4:15 p.m. – 4:45 p.m.   | <b>QUESTIONS &amp; ANSWERS</b><br><i>All Presenters</i>   |
| 4:45 p.m. – 5:00 p.m.   | <b>Wrap-Up and Workshop Conclusions</b><br><i>John M. Butler, PhD</i>                                       |



# WORKSHOPS

*Pre-Registration Required—\$225 (in person only)*

## W3 Determining Sufficiency for the Identification of Gasoline

Monday, February 21, 2022

8:30 a.m. – 5:00 p.m.

6.75 CE Hours

**Learning Overview:** Attendees can expect an overview of the current gasoline identification limitations as well as an introduction to key diagnostic features of gasoline used in a statistical framework to enhance interpretation and identification.

**Impact Statement:** This workshop will detail chromatographic peak ratios with varied support for the identification of gasoline as well as a method to graphically demonstrate the overall statistical support for gasoline in the sample.

**Program Overview:** The information to be presented provides instructions to build a sufficiency graph with decision lines to demonstrate the sufficiency of the data for the identification of gasoline to further strengthen the data interpretation process and provide transparent documentation. The objective of this information is to make the fire debris analysis process more standard, objective, and transparent by establishing a validated method with quantitative measures that include the implementation of documentation methodology and verification.

*Chair:*

**Brenda B. Christy, MS**

Virginia Department of Forensic Science  
Norfolk, VA

*Co-Chair:*

**Reta M. Newman, MA**

Pinellas County Forensic Laboratory  
Largo, FL

*Presenters:*

**Kelsey R. Winters, MSFS**

Virginia Department of Forensic Science  
Norfolk, VA

**Larry Tang, PhD**

National Center for Forensic Science  
University of Central Florida  
Orlando, FL

**Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 8:45 a.m.   | <b>Introduction</b><br><i>Brenda B. Christy, MS</i>                                 |
| 8:45 a.m. – 9:45 a.m.   | <b>Defining Gasoline</b><br><i>Reta M. Newman, MA</i>                               |
| 9:45 a.m. – 10:00 a.m.  | <b>BREAK</b>  |
| 10:00 a.m. – 11:45 a.m. | <b>Project Design and Overview</b><br><i>Brenda B. Christy, MS; Larry Tang, PhD</i> |
| 11:45 a.m. – 12:45 p.m. | <b>BREAK</b>  |
| 12:45 p.m. – 1:45 p.m.  | <b>Data Extraction and Calculations</b><br><i>Kelsey R. Winters, MSFS</i>           |
| 1:45 p.m. – 2:45 p.m.   | <b>Case-Like Example</b><br><i>Brenda B. Christy, MS</i>                            |
| 2:45 a.m. – 3:00 p.m.   | <b>BREAK</b>  |
| 3:00 p.m. – 4:45 p.m.   | <b>Practical Exercise—Complex Sample</b><br><i>Brenda B. Christy, MS</i>            |
| 4:45 p.m. – 5:00 p.m.   | <b>Summary</b><br><i>Reta M. Newman, MA</i>   |

**Target Audience:** Criminalistics

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 100 Pages

# WORKSHOPS



*Pre-Registration Required—\$200 (in person only)*

## W4 The Application of Evaluative Reporting for Forensic Handwriting Examinations

Monday, February 15, 2021

8:30 a.m. – 5:00 p.m.

6.75 CE Hours

**Learning Overview:** Attendees will learn how to apply Evaluative Reporting for evidence interpretation and conclusions. Handwriting comparisons will be used as examples. There will be a short lecture, followed by a demonstration using a mock case. The majority of the class will be hands-on group practice and feedback.

**Impact Statement:** This presentation will impact the forensic science community by describing modifications to the current interpretation method and reporting conventions that can help elucidate the evaluation process and advance forensic document examination as a science.

**Program Description:** Attendees will receive mock cases to examine, but not evaluate, prior to the workshop. The workshop will begin with an introduction of the key principles of the approach and general theory, followed by a demonstration of the method using one of the mock cases. For the remaining cases, attendees will break into groups and evaluate evidence using the approach. After each breakout session, attendees will reconvene for discussion with the instructors.

*Chair:*

**Tobin A. Tanaka, BSc**

Government of Canada, Canada Border Services Agency  
Ottawa, Ontario, Canada

*Co-Chair:*

**Miriam S. Angel, MS**

Los Angeles Police Department  
Los Angeles, CA

**Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 9:30 a.m.   | <b>Introduction and Key Concepts</b><br><i>Tobin A. Tanaka, BSc</i> |
| 9:30 a.m. – 10:00 a.m.  | <b>Demonstration of Sample Case</b><br><i>Miriam S. Angel, MS</i>   |
| 10:00 a.m. – 10:15 a.m. | <b>BREAK</b>  |
| 10:15 a.m. – 11:00 a.m. | <b>Group Breakouts for Problem 1</b><br><i>Attendees</i>            |
| 11:00 a.m. – 12:00 p.m. | <b>Class Discussion of Problem 1</b><br><i>Tobin A. Tanaka, BSc</i> |
| 12:00 p.m. – 1:00 p.m.  | <b>BREAK</b>  |
| 1:00 p.m. – 2:00 p.m.   | <b>Group Breakouts for Problem 2</b><br><i>Attendees</i>            |
| 2:00 p.m. – 3:00 p.m.   | <b>Class Discussion of Problem 2</b><br><i>Miriam S. Angel, MS</i>  |
| 3:00 p.m. – 3:15 p.m.   | <b>BREAK</b>  |
| 3:15 p.m. – 4:00 p.m.   | <b>Group Breakouts for Problem 3</b><br><i>Attendees</i>            |
| 4:00 p.m. – 4:45 p.m.   | <b>Class Discussion of Problem 3</b><br><i>Tobin A. Tanaka, BSc</i> |
| 4:45 p.m. – 5:00 p.m.   | <b>QUESTIONS &amp; ANSWERS</b><br><i>Miriam S. Angel, MS</i>        |

**Targeted Audience:** Questioned Documents

**Knowledge Level Required:** Basic

**Expected Handout Length:** 30 pages



# WORKSHOPS

*Pre-Registration Required—\$200 (in person and virtual)*

## W5 Unseen Threats

Monday, February 21, 2022

8:30 a.m. – 5:00 p.m.

7.0 CE Hours

**Learning Overview:** Attendees will gain a better understanding of public threats in respect to emerging drugs that are not often discussed (e.g., electronic cigarettes and their role in drug use, the effect of polydrug overdoses in toxicology and emergency rooms, online resources and how they can be used to predict future emerging drugs, fentanyl supervised consumption sites, and drug concealment techniques). Attendees will also gain awareness of innovative techniques used to address challenges in these areas (e.g., Direct Analysis in Real-Time Mass Spectrometry [DART®-MS] for the rapid screening of the chemicals in electronic cigarettes, and real time fatal overdose surveillance).

**Impact Statement:** Attendees will become aware that drug-related deaths continue to significantly impact communities. There are topics that influence the illicit drug landscape in these communities and are not frequently discussed.

**Program Description:** This workshop will bring visibility and clarity to topics that emphasize emerging drug threats. Electronic cigarettes and vaping, polydrug overdose deaths, online sites, concealment drug techniques, and fentanyl supervised consumption sites are among those topics that generate challenges for the forensic community. By increasing discussion and attention in these areas, the forensic community can become better equipped in developing processes in their laboratories that will assist them in handling emerging drugs more effectively.

*Chair:*

**Agnes D. Winokur, MS**  
DEA Southeast Laboratory  
Miami, FL

*Co-Chair:*

**Erin M. Worrell, BSc**  
Medical Examiner's Office  
Denver, CO

*Presenters:*

**Kim N. Aldy, DO, MS, MBA**  
University of Texas  
Dallas, TX

**Richard R. Laing, MS**  
Health Canada  
Burnaby, British Columbia, Canada

**Jason R. Bory, MS**  
United States Customs and Border Protection  
Newark, NJ

**Michelle R. Peace, PhD**  
Virginia Commonwealth University  
Richmond, CA

**Katie S. Heidere, MSW**  
King County Public Health  
Seattle, WA

**Victor W. Weedn, MD, JD**  
Maryland Office of the Chief Medical Examiner  
Baltimore, MD

**Shannon T. Krauss, PhD**  
RTI International  
Research Triangle Park, NC

**Mary Elizabeth Zaney, BS**  
Miami-Dade Medical Examiner Department  
Miami, FL

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

# WORKSHOPS



*Pre-Registration Required—\$200 (in person and virtual)*

## W5 Unseen Threats

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### Program:

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 8:50 a.m.   | <b>Introduction</b><br><i>Agnes D. Winokur, MS</i>   |
| 8:50 a.m. – 10:00 a.m.  | <b>Electronic Cigarettes: A Tangle of Regulation, Public Health, and Public Safety Issues</b><br><i>Michelle R. Peace, PhD</i>   |
| 10:00 a.m. – 10:10 a.m. | BREAK  |
| 10:10 a.m. – 11:00 a.m. | <b>Electronic Cigarettes: A Tangle of Regulation, Public Health, and Public Safety Issues (cont.)</b><br><i>Michelle R. Peace, PhD</i>   |
| 11:00 a.m. – 11:30 a.m. | <b>Confined DART®-MS for Rapid Chemical Analysis of Electronic Cigarette Aerosols and Spiked Drugs</b><br><i>Shannon T. Krauss, PhD</i>  |
| 11:30 a.m. – 12:00 p.m. | <b>Looming Legality: Expiration of Class Wide Fentanyl Scheduling</b><br><i>Victor W. Weedn, MD, JD</i>  |
| 12:00 p.m. – 1:00 p.m.  | BREAK  |
| 1:00 p.m. – 1:30 p.m.   | <b>Things Aren't What They Seem—Interesting Case Studies From the Miami-Dade County Medical Examiner Department</b><br><i>Mary Elizabeth Zaney, BS</i>                           |
| 1:30 p.m. – 2:00 p.m.   | <b>OD in the ED: Nothing Is What It Seems</b><br><i>Kim N. Aldy, DO, MS, MBA</i>   |
| 2:00 p.m. – 3:00 p.m.   | <b>Real-Time Fatal Drug Overdose Surveillance in Washington State</b><br><i>Katie S. Heidere, MSW</i>  |
| 3:00 p.m. – 3:10 p.m.   | BREAK  |
| 3:10 p.m. – 3:45 p.m.   | <b>Narcotic Concealment Methods in U.S. Customs and Border Protection Air, Land, Marine, and Cargo Environments</b><br><i>Jason R. Bory, MS</i>                                  |
| 3:45 p.m. – 4:20 p.m.   | <b>Monitoring Online Resources for Predicting Drug Threats</b><br><i>Alex J. Krotulski, PhD</i>  |
| 4:20 p.m. – 5:00 p.m.   | <b>Qualitative and Quantitative Characterization of Complex Samples Containing Fentanyl and Benzodiazepines From Supervised Consumption Sites</b><br><i>Richard R. Laing, MS</i> |

**Targeted Audience:** Criminalistics, General, Pathology/Biology, Toxicology

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 80 pages



# WORKSHOPS

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*Pre-Registration Required—\$200 (in person and virtual)*

## **W6 Impairment: A Look at Causes, Data, and Policies**

**Monday, February 21, 202**

**9:00 a.m. – 5:00 p.m.**

**6.25 CE Hours**

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**Learning Overview:** Attendees of this workshop will gain: (1) expertise in the role of drug recognition experts and their role in impairment investigations; (2) detailed knowledge of the role of fatigue in transportation accidents and an understanding of the factors impacting fatigue; (3) in-depth knowledge of the most recent recommendations for the toxicological investigation of drug-impaired driving and motor vehicle fatalities; (4) an appreciation of the roles of alcohol and cannabinoids in driving impairment and various strategies to control their use within the population; (5) an awareness of the tools available, roadside screening of oral fluid samples, and the policies regarding these samples; and (6) a detailed overview of the Academy Standards Board (ASB) Standards and the role they play in impairment investigations from testing in the laboratory all the way through to courtroom testimony.

**Impact Statement:** This workshop will impact the forensic science community by providing a detailed overview of recent policy changes and current developments within impairment testing.

**Program Description:** The workshop brings together experts from the National Safety Council and the National Transportation Safety Board, as well as representatives from the ASB and the Organization of Scientific Area Committees (OSAC) Standards boards to present data for the first time.

*Chair:*

**Karen S. Scott, PhD**  
Arcadia University  
Glenside, PA

*Co-Chair:*

**Sabra R. Botch-Jones, MS**  
Boston University School of Medicine  
Boston, MA

*Presenters:*

**Amanda L. D’Orazio, MSFS**  
NMS Labs  
Horsham, PA

**Mark A. LeBeau, PhD**  
FBI Laboratory  
Quantico, VA

**Curt E. Harper, PhD**  
Alabama Department of Forensic Sciences  
Hoover, AL

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

**Marilyn A. Huestis, PhD**  
Huestis & Smith Toxicology, LLC  
Severna Park, MD

**Jana M. Price, PhD**  
National Transportation Safety Board  
Washington, DC

**Joseph Jones, MS**  
North Louisiana Criminalistics Laboratory  
Shreveport, LA

**Michael J. Whitekus, PhD**  
Robson Forensic, Inc.  
Lancaster, PA

**Targeted Audience:** Criminalistics, General, Jurisprudence, Pathology/Biology, Toxicology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 100 pages

# WORKSHOPS



*Pre-Registration Required—\$200 (in person and virtual)*

## **W6 Impairment: A Look at Causes, Data, and Policies**

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### **Program:**

|                         |  |
|-------------------------|--|
| 9:00 a.m. – 9:05 a.m.   | <b>Introduction</b><br><i>Karen S. Scott, PhD; Sabra R. Botch-Jones, MS</i>  |
| 9:05 a.m. – 9:45 a.m.   | <b>The Role Drug Recognition Experts and Roadside Evaluations Play in Impairment Investigations</b><br><i>Joseph Jones, MS</i>   |
| 9:45 a.m. – 10:30 a.m.  | <b>Fatigue-Related Impairment and Transportation Safety</b><br><i>Jana M. Price, PhD</i>   |
| 10:30 a.m. – 11:00 a.m. | <b>Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities—2021 Update</b><br><i>Amanda L. D’Orazio, MSFS</i>            |
| 11:00 a.m. – 11:15 a.m. | <b>BREAK</b>   |
| 11:15 a.m. – 12:15 p.m. | <b>How Should We Best Document Cannabis Driving Impairment and Improve Future Cannabis Policy?</b><br><i>Marilyn A. Huestis, PhD</i>                                   |
| 12:15 p.m. – 1:30 p.m.  | <b>BREAK</b>   |
| 1:30 p.m. – 2:15 p.m.   | <b>The Combined Effect of Alcohol and THC on Driving Impairment</b><br><i>Michael J. Whitekus, PhD</i>   |
| 2:15 p.m. – 3:00 p.m.   | <b>Oral Fluid and Drugged Driving Investigations on Impairment</b><br><i>Amanda L.A. Mohr, MS</i>  |
| 3:00 p.m. – 3:15 p.m.   | <b>BREAK</b>   |
| 3:15 p.m. – 4:00 p.m.   | <b>Drugs and Driving: Polydrug Use and Prevalence of Drugs at Different Ethanol Concentrations and the Impact of Stop Testing Limits</b><br><i>Curt E. Harper, PhD</i> |
| 4:00 p.m. – 4:45 p.m.   | <b>ASB Standards and the Role They Play in Impairment Investigations—From Testing to Testimony</b><br><i>Mark A. LeBeau, PhD</i>                                       |
| 4:45 p.m. – 5:00 p.m.   | <b>Panel Discussion</b><br><i>All Presenters</i>   |



# WORKSHOPS

*Pre-Registration Required—\$100 (in person only)*

## W7 Histology for Non-Pathologists

Monday, February 21, 2022

8:00 a.m. – 12:00 p.m.

3.75 CE Hours

**Learning Overview:** Attendees will learn the basics of histology as well as receive an introduction to the histologic interpretation of infection and trauma, including trauma to the brain and spinal cord.

**Impact Statement:** This presentation will impact the forensic science community by providing non-pathologists with an understanding of the process of histology interpretation and, in particular, its relevance to their forensic specialty.

**Program Description:** During their anatomic pathology training, forensic pathologists learn the art of histopathology, which involves looking at small sections of tissues under the microscope for identification and interpretation. The results of this examination can be used to determine the cause and manner of death, extent and type of disease process, and nature of identified abnormalities. Although extensive training is provided to pathologists on this topic, little to none is given to other forensic practitioners, even those whose work can be affected by the results of these examinations.

*Chair:*

**Katherine F. Maloney, MD**

Erie County Medical Examiner Office  
Buffalo, NY

*Co-Chair:*

**Milad Webb, MD, PhD**

Hillsborough County Medical Examiner Office  
Tampa, FL

*Presenters:*

**Kelly G. Devers, MD**

Hillsborough County Medical Examiner Office  
Tampa, FL

**Ashley R. Perkins, DO**

Hillsborough County Medical Examiner Office  
Tampa, FL

**Teresa Nguyen, MD**

Wayne County Medical Examiner Office  
Detroit, MI

**Omar Rayes, MA**

Wayne County Medical Examiner Office  
Detroit, MI

**Program:**

|                         |  |
|-------------------------|--|
| 8:00 a.m. – 8:10 a.m.   | <b>Opening Remarks and Introduction</b><br><i>Katherine F. Maloney, MD</i> |
| 8:10 a.m. – 8:45 a.m.   | <b>Histology Basics</b><br><i>Katherine F. Maloney, MD</i>                 |
| 8:45 a.m. – 9:30 a.m.   | <b>Infectious Disease</b><br><i>Ashley R. Perkins, DO</i>                  |
| 9:30 a.m. – 9:45 a.m.   | <b>BREAK</b>   |
| 9:45 a.m. – 10:45 a.m.  | <b>Trauma</b><br><i>Milad Webb, MD, PhD</i>                                |
| 10:45 a.m. – 11:45 a.m. | <b>Neurotrauma</b><br><i>Kelly G. Devers, MD</i>                           |
| 11:45 a.m. – 12:00 p.m. | <b>Closing Remarks &amp; Questions</b><br><i>Katherine F. Maloney, MD</i>  |

**Targeted Audience:** General, Jurisprudence, Pathology/Biology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 120 pages



# WORKSHOPS

*Pre-Registration Required—\$100 (in person only)*

## W8 Subaerial Weathering of Bone

Monday, February 21, 2022

8:30 a.m. – 12:00 p.m.

3.0 CE Hours

**Learning Overview:** Participants in this workshop will learn about the taphonomic processes causing subaerial weathering of bone and how to score weathering stages following the standard 0-5 scale from Behrensmeyer.<sup>1</sup> Participants also will learn about estimation of the Postmortem Interval (PMI) from the weathering stage and the other types of taphonomic alterations that commonly co-occur with surface exposure and how to tell the effects of subaerial weathering (cracking, delamination, and bleaching) from other causes that may produce similar effects.

**Impact Statement:** This workshop will impact forensic practice by teaching standard scoring procedures for subaerially weathered bone and the procedures for estimating PMI based on those scores. This workshop will encourage participants to gather additional taphonomic data to improve greater understanding of subaerial weathering and its regional variation.

**Program Description:** Participants will be encouraged to record taphonomic changes as an integrated part of forensic casework that can provide investigators with crucial information, including PMI, depositional environment, and post-depositional circumstances. This workshop includes hands-on presentations of taphonomic examples and will supply certificates of successful attendance/completion of taphonomic training to attendees who successfully complete the training exercise.

*Chair:*

**James T. Pokines, PhD**

Boston University School of Medicine

Massachusetts Office of the Chief Medical Examiner

Jamaica Plain, MA

### Program:

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 10:00 a.m.  | <b>Subaerial Bone Weathering</b><br><i>James T. Pokines, PhD</i> |
| 10:00 a.m. – 10:30 a.m. | <b>BREAK</b>   |
| 10:30 a.m. – 11:30 a.m. | <b>Bone Weathering Examples</b><br><i>James T. Pokines, PhD</i>  |
| 11:30 a.m. – 12:00 p.m. | <b>DISCUSSION</b><br><i>James T. Pokines, PhD</i>                |

**Targeted Audience:** Anthropology

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 30 pages



# WORKSHOPS

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*Pre-Registration Required—\$100 (in person and virtual)*

## **W9 Forensic Science Standards Development and Implementation ... You Want Me to Do What?**

**Monday, February 21, 2022**

**8:30 a.m. – 12:15 p.m.**

**3.5 CE Hours**

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**Learning Overview:** The goal of this workshop is to discuss the development process of forensic science standards, how these standards are implemented in crime laboratories, and how they are viewed by the legal profession.

**Impact Statement:** This presentation will impact the forensic science community by enabling attendees to understand: (1) the process through which standards are developed and published; (2) issues with implementation of standards in crime laboratories; and (3) how the legal profession views and assesses the role of standards in court proceedings.

**Program Description:** This workshop will provide answers to questions about standards that are asked frequently by the forensic science community and will provide information that will be helpful to laboratories that plan to, or will soon be, adopting Academy Standards Board (ASB) Standards, Best Practice Recommendations, and Technical Notes.

*Chair:*

**Linton A. Mohammed, PhD**  
Forensic Science Consultants, Inc.  
Poway, CA

*Co-Chair:*

**Pamela A.W. King, JD**  
Minnesota Judicial Branch  
Rochester, MN

*Presenters:*

**Teresa L. Ambrosius, BA**  
American Academy of Forensic Sciences  
Colorado Springs, CO

**Mark T. Goff, BA**  
MSP Lansing Laboratory  
Lansing, MI

**Kris Cano, MA**  
Scottsdale Police Department  
Scottsdale, AZ

**Mary C. McKiel, PhD**  
American Academy of Forensic Sciences  
Colorado Springs, CO

**Jennifer P. Floyd, BS**  
Arkansas State Crime Laboratory  
Little Rock, AR

**Linda U. Wilson, MS**  
American Academy of Forensic Sciences  
Colorado Springs, CO

**Targeted Audience:** All Disciplines

**Knowledge Level Required:** Basic

**Expected Handout Length:** 50 pages

# WORKSHOPS



*Pre-Registration Required—\$100 (in person and virtual)*

## **W9 Forensic Science Standards Development and Implementation ... You Want Me to Do What?**

### **Program:**

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 8:35 a.m.   | <b>Introduction</b><br><i>Linton A. Mohammed, PhD</i>  |
| 8:35 a.m. – 8:55 a.m.   | <b>A World of Standards</b><br><i>Mary C. McKiel, PhD</i>  |
| 8:55 a.m. – 9:15 a.m.   | <b>History and Progress of ASB</b><br><i>Teresa L. Ambrosius, BA</i>                                 |
| 9:15 a.m. – 9:35 a.m.   | <b>Procedures for Consensus Bodies and Working Groups</b><br><i>Linda U. Wilson, MS</i>              |
| 9:35 a.m. – 10:05 a.m.  | <b>The Business Side of Standards</b><br><i>Kris Cano, MA</i>  |
| 10:05 a.m. – 10:20 a.m. | <b>BREAK</b>   |
| 10:20 a.m. – 10:50 a.m. | <b>QD Standards: What's New, What's Coming, and What's Going on Here?</b><br><i>Mark T. Goff, BA</i> |
| 10:50 a.m. – 11:20 a.m. | <b>The Buy-In Challenge</b><br><i>Jennifer P. Floyd, BS</i>  |
| 11:20 a.m. – 12:00 p.m. | <b>The View From the Bench</b><br><i>Pamela A.W. King, JD</i>  |
| 12:00 p.m. – 12:15 p.m. | <b>QUESTIONS &amp; ANSWERS</b><br><i>All Presenters</i>  |



# WORKSHOPS

*Pre-Registration Required—\$100 (virtual only)*

## **W10 Inference From Evidence in Forensic Science and Pathology: Turning Something That Has Been Wrong Into Something Right**

**Monday, February 21, 2022**

**1:00 p.m. – 5:00 p.m.**

**3.0 CE Hours**

**Learning Overview:** After attending this workshop, attendees will learn which forms of inference—the reasoning involved in drawing conclusions from evidence—are highly reliable for truth and which forms are highly unreliable. Attendees will also learn how to apply proper inference to their forensic casework.

**Impact Statement:** This workshop will impact the forensic science community by revealing how demonstrably incorrect ways of inferring from evidence have led to numerous injustices from false accusations and incarcerations. This workshop will also disclose a reliable way to infer that is both scientifically and logically valid.

**Program Description:** This workshop will question if there a way for forensic scientists and pathologists to truthfully offer opinions from the witness stand made “to a reasonable degree of medical/scientific certainty.” Is there a way to put the “science” back into forensic science and pathology? Is there a way for forensic pathologists and scientists to offer opinions that are reliably truthful and helpful to triers of fact in a courtroom?

*Chair:*

**Thomas W. Young, MD**  
Heartland Forensic Pathology, LLC  
Kansas City, MO

*Co-Chair:*

**Ljubisa J. Dragovic, MD**  
Oakland County Medical Examiner Office  
Pontiac, MI

### **Program:**

|                       |   |
|-----------------------|---|
| 1:00 p.m. – 1:35 p.m. | <b>Welcome and Introduction</b><br><i>Thomas W. Young, MD</i>                       |
| 1:35 p.m. – 2:20 p.m. | <b>The Inferential Test (IT)</b><br><i>Thomas W. Young, MD</i>                      |
| 2:20 p.m. – 3:05 p.m. | <b>Applications of the IT: Forensic Science</b><br><i>Thomas W. Young, MD</i>       |
| 3:05 p.m. – 3:25 p.m. | <b>BREAK</b>  |
| 3:25 p.m. – 4:15 p.m. | <b>Applications of the IT: Forensic Pathology</b><br><i>Ljubisa J. Dragovic, MD</i> |
| 4:15 p.m. – 5:00 p.m. | <b>DISCUSSION</b><br><i>Thomas W. Young, MD; Ljubisa J. Dragovic, MD</i>            |

**Targeted Audience:** General, Jurisprudence, Pathology/Biology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 36 pages

# WORKSHOPS



*Pre-Registration Required—\$100 (virtual only)*

## **W11 Successful Strategies for the Accreditation of Crime Scene Units**

**Monday, February 21, 2022**

**1:00 p.m. – 5:00 p.m.**

**3.5 CE Hours**

**Learning Overview:** Attendees will learn about the planning process for the accreditation of crime scene processes.

**Impact Statement:** In 2009, the National Academies of Sciences (NAS) issues their landmark Report, Strengthening Forensic Science in the United States: A Path Forward. The Report recommended the accreditation of forensic laboratories and rightfully identified crime scene investigation as part of the forensic science community. However, since the publication of the Report, the accreditation of crime scene units globally has not kept pace with other disciplines. This presentation aims to reduce the perceived barriers that may stop an agency from pursuing accreditation of crime scene investigation processes, resulting in an increasing number of accreditations in this area, and thus improving the quality of forensic science at a systemic level.

**Program Description:** The presentation will cover unique challenges to accreditation of these activities and how specific International Organization for Standardization (ISO) standards can be satisfied in a crime scene context. Attendees will hear lessons learned from agencies with accredited crime scene units as well as the benefits that have been realized.

*Chair:*

**Mark D. Mogle, BS**

United States Department of Justice—ICITAP  
Washington, DC

*Co-Chair:*

**Abraham Aysa Bravo, JD**

Pacific Architects and Engineers, LLC  
Panama City, Panama

*Presenters:*

**Alejandro Madrigal Reyes, BS**

Pacific Architects and Engineers, LLC  
Weslaco, TX

**Domingo Villarreal**

Houston Forensic Science Center (Retired)  
Houston, TX

**Program:**

|                       |   |
|-----------------------|---|
| 1:00 p.m. – 1:15 p.m. | <b>Introduction</b><br><i>Mark D. Mogle, BS</i>                                     |
| 1:15 p.m. – 1:45 p.m. | <b>Accreditation Scope—Identify the Challenges</b><br><i>Abraham Aysa Bravo, JD</i> |
| 1:45 p.m. – 2:15 p.m. | <b>Selecting the Right Standard</b><br><i>Domingo Villarreal</i>                    |
| 2:15 p.m. – 2:30 p.m. | <b>Accreditation Plan Requirements</b><br><i>Alejandro Madrigal Reyes, BS</i>       |
| 2:30 p.m. – 2:45 p.m. | <b>Planning and Scheduling</b><br><i>Abraham Aysa Bravo, JD</i>                     |
| 2:45 p.m. – 3:00 p.m. | <b>BREAK</b>  |
| 3:00 p.m. – 3:30 p.m. | <b>The Importance of Process Mapping</b><br><i>Abraham Aysa Bravo, JD</i>           |
| 3:30 p.m. – 4:00 p.m. | <b>QA System Implementation</b><br><i>Alejandro Madrigal Reyes, BS</i>              |
| 4:00 p.m. – 4:30 p.m. | <b>Overcoming Perceived Roadblocks</b><br><i>Domingo Villarreal</i>                 |
| 4:30 p.m. – 5:00 p.m. | <b>Preparing for Your Final Assessment</b><br><i>Alejandro Madrigal Reyes, BS</i>   |

**Target Audience:** Criminalistics, General

**Knowledge Level Required:** Basic

**Expected Handout Length:** 25 pages

All times are in the U.S. Pacific Time Zone



# WORKSHOPS

*Pre-Registration Required—\$200 (virtual only)*

## **W12 Forensic Postmortem Radiology: Crossing the Border Between Radiology and Pathology**

Tuesday, February 22, 2022

8:30 a.m. – 5:00 p.m.

6.5 CE Hours

**Learning Overview:** After attending this workshop, attendees will: (1) have learned the basics of how to get started in the field of forensic radiology; (2) understand the current state of the art and levels of evidence in forensic radiology; (3) have learned about applications to assist forensic pathologists and practitioners in medical death investigation; and 4) will be aware of potential resources available to interested practitioners.

**Impact Statement:** This presentation will impact the forensic science community by providing attendees with expertise from around the world on the use of best practices and the evidence base of forensic postmortem radiology.

**Program Description:** This workshop will demonstrate how to start a program, give an overview of the current state of forensic imaging in the world, and inform attendees how future technologies may impact the field of forensics.

*Chair:*

**Summer J. Decker, PhD**

USF Health Morsani College of Medicine  
Tampa, FL

*Presenters:*

**Natalie L. Adolphi, PhD**

University of New Mexico, Office of the Medical Examiner  
Albuquerque, NM

**Fabrice Dedouit, MD, PhD**

University Hospital of Toulouse  
Toulouse, France

**Lars C. Ebert, PhD**

University of Zurich, Institute of Forensic Medicine  
Zurich, Switzerland

**Jonathan M. Ford, PhD**

USF Health Morsani College of Medicine  
Tampa, FL

**Hideki Hyodoh, MD, PhD**

Hokkaido University, Department of Forensic Medicine  
Sapporo, Japan

*Co-Chair:*

**Edward Mazuchowski II, MD, PhD**

Forensic Pathology Associates  
Health Network Laboratories  
Allentown, PA

**Michael J. Thali, MD**

University of Zurich Institute of Forensic Medicine  
Zurich, Switzerland

**Jeroen J.F. Kroll, MS**

Maastricht University Medical Center  
Maastricht, The Netherlands

**Christopher J. O'Donnell, MBBS**

Victoria Institute of Forensic Medicine  
Brandon Park, Victoria, Australia

**Lars Oesterhelweg, MD**

Charite University Berlin, Institute of Forensic Medicine  
Berlin, Germany

**Rick R. van Rijn, MD, PhD**

Netherlands Forensic Institute  
Amsterdam, The Netherlands

**Targeted Audience:** Anthropology, Criminalistics, Engineering & Applied Sciences, General, Jurisprudence, Pathology/Biology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 20 pages

# WORKSHOPS



*Pre-Registration Required—\$200 (virtual only)*

## **W12 Forensic Postmortem Radiology: Crossing the Border Between Radiology and Pathology**

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### **Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 9:00 a.m.   | <b>Introductions, Background, and Historical Overview</b><br><i>Michael J. Thali, MD</i>                                  |
| 9:00 a.m. – 9:30 a.m.   | <b>Acquiring Postmortem CT Scans Tips and Tricks: A Technician’s Perspective</b><br><i>Jeroen J.F. Kroll, MS</i>          |
| 9:30 a.m. – 10:00 a.m.  | <b>The Development of a Forensic CT Service in a Medical Examiner Office</b><br><i>Natalie L. Adolphi, PhD</i>            |
| 10:00 a.m. – 10:30 a.m. | <b>PMCT Status in Australia: An International Perspective</b><br><i>Christopher J. O’Donnell, MBBS</i>                    |
| 10:30 a.m. – 10:45 a.m. | <b>BREAK</b>  |
| 10:45 a.m. – 11:30 a.m. | <b>Directed PMCT Angiography and Evaluation of Resuscitative Medical Therapy</b><br><i>Edward L. Mazuchowski, MD, PhD</i> |
| 11:30 a.m. – 12:00 p.m. | <b>Forensic Postmortem CT in Children—Applications and Limitations</b><br><i>Rick R. van Rijn, MD, PhD</i>                |
| 12:00 p.m. – 12:30 p.m. | <b>Interactive Cases 1</b><br><i>Jeroen J.F. Kroll, MS; Rick R. van Rijn, MD, PhD</i>                                     |
| 12:30 p.m. – 1:30 p.m.  | <b>BREAK</b>  |
| 1:30 p.m. – 2:00 p.m.   | <b>PMCT in GSW and Fatal Penetrating Trauma</b><br><i>Lars Oesterhelweg, MD</i>   |
| 2:00 p.m. – 2:30 p.m.   | <b>Postmortem Cardiac Imaging</b><br><i>Fabrice Dedouit, MD, PhD</i>  |
| 2:30 p.m. – 3:05 p.m.   | <b>3D Visualization in Forensic Postmortem Radiology: Possibilities and Examples</b><br><i>Summer J. Decker, PhD</i>      |
| 3:05 p.m. – 3:20 p.m.   | <b>BREAK</b>  |
| 3:20 p.m. – 3:50 p.m.   | <b>The Use of MRI in Forensic Postmortem Imaging</b><br><i>Hideki Hyodoh, MD, PhD</i>                                     |
| 3:50 p.m. – 4:30 p.m.   | <b>Emerging Technologies</b><br><i>Jonathan M. Ford, PhD; Lars C. Ebert, PhD</i>  |
| 4:30 p.m. – 5:00 p.m.   | <b>Interactive Cases 2</b><br><i>Summer J. Decker, PhD; Lars C. Ebert, PhD</i>  |



## WORKSHOPS

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**W13 Forensic Techniques Applied in Military Investigations**

**CANCELED**



# WORKSHOPS



*Pre-Registration Required—\$200 (in person and virtual)*

## **W14 Interdisciplinary Approaches to Age Estimation**

**Tuesday, February 22, 2022**

**8:30 a.m. – 5:00 p.m.**

**6.25 CE Hours**

**Learning Overview:** After attending this workshop, attendees will have a heightened understanding of: (1) age-at-death assessments as well as age assessment of the living from the anthropological and odontological point-of-view; (2) application of alternative techniques, based on the biochemical fundamentals of aging, to improving age estimates; and (3) age assessment implications in humanitarian contexts.

**Impact Statement:** This workshop will impact the forensic science community through the presentation of interdisciplinary approaches toward improving age assessments, encouraging collaboration and innovation among different forensic specialties. This workshop will further highlight the importance of age estimation in various contexts, including humanitarian applications.

**Program Description:** This workshop will demonstrate how the awareness of the problems faced with regard to age assessment, out-of-the-box thinking, the application of new and interdisciplinary techniques, and promoting collaborations among different forensic specialties, such as anthropology, odontology, and criminalistics, are essential to improve age estimates, and as a result, the identification of the victim. Thus, this workshop will provide a step toward finding solutions to these challenges by improving the knowledge on the most state-of-the-art techniques available to forensic scientists.

*Chair:*

**Sarah Ellingham, PhD**

International Committee of the Red Cross  
Geneva, Switzerland

*Co-Chair:*

**Sara C. Zapico, PhD**

New Jersey Institute of Technology  
Newark, NJ

*Presenters:*

**Joe Adserias Garriga, PhD**

Mercyhurst University  
Erie, PA

**Victoria M. Dominguez, PhD**

Lehman College, City University of New York  
New York, NY

**Sakher AlQatani, PhD**

King Saud University  
Riyadh, Saudi Arabia

**Sara M. Getz, PhD**

University of Wisconsin–Platteville  
Platteville, WI

**Christian Crowder, PhD**

Dallas County Medical Examiner Office  
Dallas, TX

**Douglas H. Ubelaker, PhD**

Smithsonian Institute  
Washington, DC

**Targeted Audience:** Anthropology, General, Odontology, Pathology/Biology

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 100 pages



# WORKSHOPS

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*Pre-Registration Required—\$200 (in person and virtual)*

## **W14 Interdisciplinary Approaches to Age Estimation**

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**Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 8:45 a.m.   | <b>Welcome and Introduction</b><br><i>Sarah Ellingham, PhD; Sara C. Zapioc, PhD</i>                                 |
| 8:45 a.m. – 9:15 a.m.   | <b>Why Is Establishing Age Important in Forensic Science?</b><br><i>Joe Adserias Garriga, PhD</i>                   |
| 9:15 a.m. – 10:00 a.m.  | <b>Juvenile Age Assessment of a Living and the Dead Through Skeletal Methods</b><br><i>Douglas H. Ubelaker, PhD</i> |
| 10:00 a.m. – 10:45 a.m. | <b>Adult Age Estimation Through Skeletal Methods</b><br><i>Sara M. Getz, PhD</i>                                    |
| 10:45 a.m. – 11:00 a.m. | <b>BREAK</b>  |
| 11:00 a.m. – 11:45 a.m. | <b>Juvenile Age Assessment of the Living and the Dead Through Dental Methods</b><br><i>Sakher AlQatani, PhD</i>     |
| 11:45 a.m. – 12:30 p.m. | <b>Adult Age Assessment Through Dental Methods</b><br><i>Joe Adserias Garriga, PhD</i>                              |
| 12:30 p.m. – 1:30 p.m.  | <b>BREAK</b>  |
| 1:30 p.m. – 2:00 p.m.   | <b>Age Assessments by Histological Methods</b><br><i>Christian Crowder, PhD; Victoria M. Dominquez, PhD</i>         |
| 2:00 p.m. – 2:45 p.m.   | <b>Age Assessment by Molecular Techniques</b><br><i>Sara C. Zapico, PhD</i>   |
| 2:45 p.m. – 3:15 p.m.   | <b>The Relevance of Age Assessment From a Humanitarian Perspective</b><br><i>Sarah Ellingham, PhD</i>               |
| 3:15 p.m. – 3:30 p.m.   | <b>BREAK</b>  |
| 3:30 p.m. – 4:45 p.m.   | <b>Practical Cases</b><br><i>All Presenters</i>   |
| 4:45 p.m. – 5:00 p.m.   | <b>Closing Remarks</b><br><i>Sarah Ellingham, PhD; Sara C. Zapico, PhD</i>  |

# WORKSHOPS

*Pre-Registration Required—\$225 (in person and virtual)*

## **W15      Unlocking the Truth: The Impact of DNA Testing and Legal Strategies in Post-Conviction Cases**

**Tuesday, February 22, 2022**

**8:30 a.m. – 5:00 p.m.**

**6.75 CE Hours**

**Learning Overview:** Over the past 30 years, advancements in the field of forensic science have greatly impacted the criminal justice system. Advances in DNA testing and the development of new technology have led to an increase in exonerations of those wrongfully convicted.

**Impact Statement:** Attendees, armed with the knowledge of how best to efficiently and cost effectively process post-conviction cases, will be able to watch clips from a documentary to further inspire them to perform post-conviction DNA testing in their laboratories and form integrity units in their district attorney offices. This workshop will motivate those attending to realize that we can all participate in the quest for justice and, in the words of Dr. Rubin Carter, “to live in a world where truth matters and justice, however late, really happens, that world would be heaven for us all.”

**Program Description:** This workshop will explore the issues that are faced by those wrongfully convicted and will also explore how the use of modern DNA testing and legal strategies can be used to assist cases for review of innocence. This will be highlighted by examining the almost-30-year fight for justice of a wrongfully convicted man.

*Chair:*

**Lisa A. Mertz, MS**

Office of the Chief Medical Examiner  
New York, NY

*Co-Chair:*

**Andrew J. Schweighardt, PhD**

Office of the Chief Medical Examiner  
New York, NY

*Presenters:*

**Hillary Blout, JD**

For The People  
Oakland, CA

**David McCallum**

South Mineola, NY

**Krista A. Currie, MS**

Laurentian University  
Sudbury, Ontario, Canada

**Oscar Michelen, JD**

South Mineola, NY

**Ken Klonsky**

Innocence International  
Vancouver, British Columbia, Canada

**Janis C. Puracal, JD**

Forensic Justice Project  
Portland, OR

**Ray Klonsky**

Brooklyn, NY

**Jeff Reisig, JD**

Yolo County District Attorney’s Office  
Woodland, CA

**Targeted Audience:** Criminalistics, General, Jurisprudence

**Knowledge Level Required:** Basic

**Expected Handout Length:** 100 pages



# WORKSHOPS

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*Pre-Registration Required—\$225 (in person and virtual)*

## **W15 Unlocking the Truth: The Impact of DNA Testing and Legal Strategies in Post-Conviction Cases**

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### **Program:**

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 8:45 a.m.   | <b>Introduction to Workshop</b><br><i>Lisa A. Mertz, MS; Krista Currie, MS; Andrew J. Schweighardt, PhD</i>        |
| 8:45 a.m. – 9:30 a.m.   | <b>David's Story</b><br><i>David McCallum</i>  |
| 9:30 a.m. – 9:45 a.m.   | <b>David Meets Rubin Carter and Ken Klonsky</b><br><i>David McCallum; Ken Klonsky</i>                              |
| 9:45 a.m. – 10:00 a.m.  | <b>Big Brother/Little Brother</b><br><i>David McCallum; Ray Klonsky</i>  |
| 10:00 a.m. – 10:15 a.m. | <b>BREAK</b>   |
| 10:15 a.m. – 11:00 a.m. | <b>David's Case and the Fight for Justice</b><br><i>Oscar Michelen, JD; Ken Klonsky; David McCallum</i>            |
| 11:00 a.m. – 11:30 a.m. | <b>Fight For Justice: David and Me</b><br><i>Ray Klonsky; Ken Klonsky</i>  |
| 11:30 a.m. – 12:15 p.m. | <b>Innocence International and Continuing Dr. Carter's Legacy</b><br><i>Ken Klonsky</i>                            |
| 12:15 p.m. – 1:15 p.m.  | <b>BREAK</b>   |
| 1:15 p.m. – 2:30 p.m.   | <b>DNA Technology: Bridging the Gap to Justice</b><br><i>Lisa A. Mertz, MS; Krista Currie, MS</i>                  |
| 2:30 p.m. – 3:15 p.m.   | <b>Wrongful Convictions and the Role of Forensics in Post-Conviction Litigation</b><br><i>Janis C. Puracal, JD</i> |
| 3:15 p.m. – 3:30 p.m.   | <b>BREAK</b>   |
| 3:30 p.m. – 4:45 p.m.   | <b>Prosecutor-Initiated Resentencing: The Science of Redemption</b><br><i>Jeff Reisig, JD; Hillary Blout, JD</i>   |
| 4:45 p.m. – 5:00 p.m.   | <b>QUESTIONS &amp; ANSWERS</b><br><i>All Presenters</i>  |

# WORKSHOPS



*Pre-Registration Required—\$200 (in person and virtual)*

## **W16 The Neurobiology and Toxicology of Aggression**

**Tuesday, February 22, 2022**

**8:30 a.m. – 5:15 p.m.**

**7.0 CE Hours**

**Learning Overview:** This workshop examines the nature and origin of aggression and the modulating effect of various drugs.

**Impact Statement:** This presentation will demonstrate how impulsive and premeditated aggression in humans is understood from neurocircuitry and neuroimaging studies, Central Nervous System (CNS) neurotransmitter involvement, and electrophysiology including the P3, an Event-Related Potential (ERP) component elicited in the process of decision making that varies from person to person.

**Program Description:** The unpredictable nature of alcohol-mediated aggression will be highlighted by the case of a young man who murdered a man he did not know in a local park in front of witnesses and later professed to have no recollection of the events and suffered a total alcoholic blackout.

*Chair:*

**Alan R. Felthous, MD**

Saint Louis University School of Medicine  
St. Louis, MO

*Presenters:*

**Scott Akridge, MD**

Saint Louis University School of Medicine  
St. Louis, MO

**Joe Bou Nassif, MD**

Saint Louis University School of Medicine  
St. Louis, MO

**Felice F. Carabellese, MD**

University of Bari  
Bari, Italy

**Dean M. DeCrisce, MD**

Coast to Coast Forensic Associates  
Division of Behavioral Health Sciences  
Elizabeth, NJ

**Alexandre Dumais, MD**

Institut Universitaire en Santé Mentale de Montréal  
Montreal, Quebec, Canada

**Marissa Hirsch, MD**

Saint Louis University School of Medicine  
St. Louis, MO

**Rebecca J. Houston, PhD**

Department of Psychology  
Rochester, NY

*Co-Chair:*

**Marilyn A. Huestis, PhD**

Huestis & Smith Toxicology, LLC  
Severna Park, MD

**Daniel S. Isenschmid, PhD**

NMS Labs  
Horsham, PA

**Graham R. Jones, PhD**

Edmonton, Alberta, Canada

**Dayong Lee, PhD**

Houston Forensic Science Center  
Houston, TX

**Barry K. Logan, PhD**

NMS Labs  
Horsham, PA

**Katherine McArthur, MD**

Saint Louis University School of Medicine  
St. Louis, MO

**Michael L. Smith, PhD**

Huestis & Smith Toxicology, LLC  
Severna Park, MD

**Targeted Audience:** Psychiatry & Behavioral Science, Toxicology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 100 pages



# WORKSHOPS

*Pre-Registration Required—\$200 (in person and virtual)*

## **W16 The Neurobiology and Toxicology of Aggression**

**Program:**

|                         |   |
|-------------------------|---|
| 8:30 a.m. – 8:35 a.m.   | <b>Housekeeping Announcements</b><br><i>Alan R. Felthous, MD; Marilyn A. Huestis, PhD</i> |
| 8:35 a.m. – 8:50 a.m.   | <b>Overview of Neurobiology and Aggression</b><br><i>Alan R. Felthous, MD</i>             |
| 8:50 a.m. – 9:05 a.m.   | <b>Overview of Toxicology and Aggression</b><br><i>Marilyn A. Huestis, PhD</i>            |
| 9:05 a.m. – 9:30 a.m.   | <b>The Neurocircuitry of Impulsive Aggression</b><br><i>Joe Bou Nassif, MD</i>            |
| 9:30 a.m. – 10:00 a.m.  | <b>The Electrophysiology of Human Aggression</b><br><i>Rebecca J. Houston, PhD</i>        |
| 10:00 a.m. – 10:25 a.m. | <b>Cocaine and Aggression</b><br><i>Katherine McArthur, MD</i>                            |
| 10:25 a.m. – 10:45 a.m. | <b>The Role of Cocaine in Violent Deaths</b><br><i>Daniel S. Isenschmid, PhD</i>          |
| 10:45 a.m. – 11:00 a.m. | <b>BREAK</b>  |
| 11:00 a.m. – 11:25 a.m. | <b>Phencyclidine and Aggression</b><br><i>Dean M. DeCrisce, MD</i>                        |
| 11:25 a.m. – 11:45 a.m. | <b>Phencyclidine Toxicology and Aggression</b><br><i>Michael L. Smith, PhD</i>            |
| 11:45 a.m. – 12:10 p.m. | <b>Cannabinoids, Schizophrenia, and Aggression</b><br><i>Alexandre Dumais, MD</i>         |
| 12:10 p.m. – 12:30 p.m. | <b>Cannabinoids, Toxicology, and Aggression</b><br><i>Marilyn A. Huestis, PhD</i>         |
| 12:30 p.m. – 1:30 p.m.  | <b>BREAK</b>  |
| 1:30 a.m. – 1:55 p.m.   | <b>Methamphetamine and Aggression</b><br><i>Marissa Hirsch, MD</i>                        |
| 1:55 p.m. – 2:15 p.m.   | <b>Methamphetamine Toxicology and Aggression</b><br><i>Barry K. Logan, PhD</i>            |
| 2:15 p.m. – 2:40 p.m.   | <b>Alcohol and Aggression</b><br><i>Felice F. Carabellese, MD</i>                         |
| 2:40 p.m. – 3:00 p.m.   | <b>Alcohol Toxicology and Aggression</b><br><i>Graham R. Jones, PhD</i>                   |
| 3:00 p.m. – 3:20 p.m.   | <b>BREAK</b>  |
| 3:20 p.m. – 3:45 p.m.   | <b>Anti-Impulsive Aggressive Agents</b><br><i>Alan R. Felthous, MD</i>                    |
| 3:45 p.m. – 4:05 p.m.   | <b>Toxicology and Aggression</b><br><i>Dayong Lee, PhD</i>                                |
| 4:05 p.m. – 4:30 p.m.   | <b>Paradoxical Aggression and Pharmacotherapeutic Agents</b><br><i>Scott Akridge, MD</i>  |
| 4:30 p.m. – 4:45 p.m.   | <b>Toxicology and Paradoxical Aggression</b><br><i>Dayong Lee, PhD</i>                    |
| 4:45 p.m. – 5:15 p.m.   | <b>QUESTIONS &amp; ANSWERS</b>  |

# WORKSHOPS



*Pre-Registration Required—\$200 (in person only)*

## **W17 Forensic Examination and Evaluation of the Fine and Subtle Elements of Signatures and Handwriting**

**Tuesday, February 22, 2022**

**8:30 a.m. – 5:00 p.m.**

**7.0 CE Hours**

**Learning Overview:** This workshop will increase forensic document examiners' knowledge regarding the fine and subtle elements of signatures.

**Impact Statement:** This workshop will impact forensic document examiners by increasing the accuracy and reliability of their opinions in signature and handwriting examinations.

**Program Description:** This workshop will begin with a lecture session reviewing the research data regarding genuine, disguised (auto simulated), and simulated signatures. Attendees will then be given practical problems to the hands-on session. Attendees will be asked to present their results (in groups), and give reasons for their opinions. The workshop presenters will then go into the fine and subtle details of the signatures in the problems to illustrate and explain how these details can be observed and evaluated.

*Chair:*

**Linton A. Mohammed, PhD**  
Forensic Science Consultants, Inc.  
Poway, CA

*Co-Chair:*

**Karen J. Nobles, MFS**  
Forensic Document Services, LLC  
Pensacola, FL

*Presenters:*

**Brett M.D. Bishop, BS**  
Washington State Police Crime Laboratory  
Spokane, WA

**Lloyd W. Cunningham**  
Alamo, CA

**Program:**

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 9:00 a.m.   | <b>Introduction/Review of Error Rates</b><br><i>Linton A. Mohammed, PhD</i>    |
| 9:00 a.m. – 10:00 a.m.  | <b>Fine and Subtle Elements of Signatures I</b><br><i>Lloyd W. Cunningham</i>  |
| 10:00 a.m. – 10:20 a.m. | <b>BREAK</b>   |
| 10:20 a.m. – 12:00 p.m. | <b>Fine and Subtle Elements of Signatures II</b><br><i>Lloyd W. Cunningham</i> |
| 12:00 p.m. – 1:00 p.m.  | <b>BREAK</b>   |
| 1:00 p.m. – 3:00 p.m.   | <b>Hands-On Exercises</b><br><i>Lloyd W. Cunningham</i>                        |
| 3:00 p.m. – 3:15 p.m.   | <b>BREAK</b>   |
| 3:15 p.m. – 3:45 p.m.   | <b>Group Presentation of Results</b><br><i>Linton A. Mohammed, PhD</i>         |
| 3:45 p.m. – 4:30 p.m.   | <b>A Case of Subtlety</b><br><i>Brett M.D. Bishop, BS</i>                      |
| 4:30 p.m. – 5:00 p.m.   | <b>Moot Court/Questions and Answers</b><br><i>Lloyd W. Cunningham</i>          |

**Targeted Audience:** Questioned Documents

**Knowledge Level Required:** Basic

**Expected Handout Length:** 50 pages



# WORKSHOPS

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*Pre-Registration Required—\$100 (in person only)*

## **W18 An Advanced Bloodstain Pattern Analysis Hands-On Workshop With an Accompanying Principles of Bloodstain Patterns Lecture**

**Tuesday, February 22, 2022**

**8:30 a.m. – 11:30 a.m.**

**3.0 CE Hours**

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**Learning Overview:** After attending this workshop, attendees will have an increased understanding of bloodstain patterns, their relevance to crime scene reconstruction, the determination of events that occurred, and potential charges that could be issued.

**Impact Statement:** This workshop and the accompanying lecture will expand the understanding of lab and scene personnel who have not have previous bloodstain pattern analysis classes.

**Program Description:** This workshop is a hands-on opportunity for attendees to become involved in re-enactments of multiple, fresh, bloody crime scenes without the worry of contaminating themselves or their clothing. Attendees will experience the “real thing,” be required to collect data, evaluate the scenes and statements of witnesses, determine the action resulting in the blood-letting events, determine potential classification of events, and conclude how these finding relate to subsequent criminal charges. This opportunity is closely followed by the Bloodstain Pattern analysis lecture, which, by its conclusion, will reveal the actions and events studied in the session workshop.

*Chair:*

**Lawrence L. Renner, MA**

Santa Fe Police Department (Retired)

Santa Fe, NM

**Program:**

8:30 a.m. – 10:00 a.m.

**Hands-On Bloodstain Scene Experience**

*Lawrence L. Renner, MA*

10:00 a.m. – 11:30 a.m.

**Bloodstain Pattern Analysis Lecture**

*Lawrence L. Renner, MA*

**Targeted Audience:** General; Jurisprudence; Psychiatry & Behavioral Science

**Knowledge Level Required:** Intermediate (some knowledge of subject presented)

**Expected Handout Length:** 1 page



# WORKSHOPS

*Pre-Registration Required—\$125 (in person and virtual)*

## **W19 Silent Disasters: Establishing and Operationalizing New Technologies for Missing Persons Programs**

**Tuesday, February 22, 2022**

**8:30 a.m. – 12:30 p.m.**

**3.75 CE Hours**

**Learning Overview:** After attending this presentation, attendees will be more familiar with the established and emerging science, law, and ethics surrounding the use of emergent DNA technologies to bring justice and closure in the wake of genocide, armed conflict, and other humanitarian crises. This includes, but is not limited to, mitochondrial DNA, autosomal Single Nucleotide Polymorphisms (SNPs), and other non-traditional markers.

**Impact Statement:** This workshop will showcase innovative strategies and governance considerations for implementing missing persons programs and inform laboratories and organizations to scale these programs effectively.

**Program Description:** This workshop explores the intersection of science, criminal justice, and peace building. Experts from academia, policy specialists, forensic practitioners, social and forensic anthropologists, and genetic genealogy data analysts will review established and emerging methods to reconnect victims to families to provide attendees with a blueprint to operationalize an end-to-end small-scale, large-scale, or national program for the identification of unidentified human remains.

*Chair:*

**Frederick R. Bieber, PhD**  
Harvard Medical School  
Boston, MA

*Co-Chair*

**Swathi A. Kumar, PhD**  
Verogen  
San Diego, CA

*Presenters:*

**Bruce Budowle, PhD (retired)**  
University of Texas Health Science Center  
Fort Worth, TX

**Chelsey Juarez, PhD**  
Fresno State University  
Fresno, CA

**Mayra Eduardoff, PhD**  
International Commission on Missing Persons  
The Hague, Netherlands

**Charla Marshall, PhD**  
AFMES-AFDIL  
Dover Air Force Base, DE

**Colleen Fitzpatrick, PhD**  
Identifinders International  
Fountain Valley, CA

**Targeted Audience:** Anthropology, Criminalistics, General, Jurisprudence, Pathology/Biology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 150 pages



# WORKSHOPS

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*Pre-Registration Required—\$125 (in person and virtual)*

## **W19 Silent Disasters: Establishing and Operationalizing New Technologies for Missing Persons Programs**

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**Program:**

|                         |  |
|-------------------------|--|
| 8:30 a.m. – 8:40 a.m.   | <b>Welcome and Introductions</b><br><i>Frederick R. Bieber, PhD</i>  |
| 8:40 a.m. – 9:05 a.m.   | <b>Lessons Learned From the Field: Metrics and Success Criteria for Missing Persons Programs</b><br><i>Mayra Eduardoff, PhD</i>  |
| 9:05 a.m. – 9:30 a.m.   | <b>Identifying Unknown Soldiers With Novel DNA Sequencing Applications</b><br><i>Charla Marshall, PhD</i>  |
| 9:30 a.m. – 9:55 a.m.   | <b>A Place to Begin: Using Isotopes From Hair, Teeth, and Bone to Assist With the Identification of the Deceased and Unidentified from the U.S.-Mexico Border and Beyond</b><br><i>Chelsey Juarez, PhD</i> |
| 9:55 a.m. – 10:20 a.m.  | <b>Whose Loved One is This? The Role of Forensic Genetic Genealogy in Resolving Missing Person's Cases</b><br><i>Colleen Fitzpatrick, PhD</i>  |
| 10:20 a.m. – 10:25 a.m. | <b>QUESTIONS &amp; ANSWERS</b>   |
| 10:25 a.m. – 10:35 a.m. | <b>BREAK</b>   |
| 10:35 a.m. – 11:00 a.m. | <b>Building a Missing Persons Database at National and Local Scales</b><br><i>Bruce Budowle, PhD</i>   |
| 11:00 a.m. – 11:25 a.m. | <b>Managing Expectations: Engaging With Local Populations to Build a Successful Program</b><br><i>Frederick R. Bieber, PhD</i>   |
| 11:25 a.m. – 11:50 a.m. | <b>Data Sovereignty and Governance: Taking a Privacy-First Approach to Human Identification</b><br><i>Swathi A. Kumar, PhD</i>   |
| 11:50 a.m. – 12:30 p.m. | <b>Future-Casting: Reimagining Missing Persons Programs</b><br><i>All Presenters</i>   |

# WORKSHOPS



*Pre-Registration Required—\$100 (in person and virtual)*

## **W20 Novel Synthetic Opioids (NSO) in a Post-Fentanyl Analog Environment**

**Tuesday, February 22, 2022**

**1:00 p.m. – 5:00 p.m.**

**3.5 CE Hours**

**Learning Overview:** After attending this workshop, participants will have a better understanding of how core-structure scheduling for fentanyl analogs and related drug policy actions have shifted the NSO landscape, what the new drugs on the markets are, and what challenges they pose to the scientific community.

**Impact Statement:** The presentations in this workshop will impact the forensic science community by providing an update covering the latest generation of NSO, providing comprehensive pharmacological and analytical characterization, drug chemistry and toxicology workflows, and case histories.

**Program Description:** A new generation of NSO emerged after domestic class-wide scheduling of fentanyl-related substances in February of 2018 by the United States Drug Enforcement Administration followed by Chinese legislation that controlled two popular fentanyl precursor chemicals, NPP and 4-ANPP. These actions saw fentanyl analog positivity decreased for the most part; however, there was a subsequent shift to new varieties of opioid receptor agonists. This workshop will begin with a timeline of events, NSO trends, and an introduction of the tools and workflows that have proven effective in the quick identification of these new substances. Further, these novel opioids will be characterized, including discussions about development of standardized nomenclature and naming conventions, in vitro and in vivo studies, and postmortem cases that showcase the impacts posed by these substances.

*Chair:*

**Donna M. Papsun, MS**  
NMS Labs  
Horsham, PA

*Co-Chair:*

**Alex J. Krotulski, PhD**  
Center for Forensic Science Research and Education  
Willow Grove, PA

*Presenters:*

**Michael R. Baumann, PhD**  
IRP, NDA, NIH  
Baltimore, MD

**M.J. Menendez, JD**  
NMS Labs  
Horsham, PA

**Lynda Biedrzycki, MD**

Waukesha County Medical Examiner Office  
Waukesha, WI

**Reta M. Newman, MA**

Pinellas County Forensic Laboratory  
Largo, FL

**Donna M. Iula, PhD**

Cayman Chemical Company  
Ann Arbor, MI

**Robyn N. Parks, MD**

County of Los Angeles  
Department of Medical Examiner-Coroner  
Los Angeles, CA

**Barry K. Logan, PhD**

NMS Labs  
Horsham, PA

**Targeted Audience:** Anthropology, Criminalistics, Pathology/Biology, Toxicology

**Knowledge Level Required:** Intermediate

**Expected Handout Length:** 150 pages



# WORKSHOPS

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*Pre-Registration Required—\$100 (in person and virtual)*

## **W20 Novel Synthetic Opioids (NSO) in a Post-Fentanyl Analog Environment**

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**Program:**

|                       |  |
|-----------------------|--|
| 1:00 p.m. – 1:20 p.m. | <b>NSO: Introduction, Trends, and Updates</b><br><i>Donna M. Papsun, MS</i>  |
| 1:20 p.m. – 1:40 p.m. | <b>Drug Chemistry Workflows and Detection</b><br><i>Reta M. Newman, MA</i>   |
| 1:40 p.m. – 2:00 p.m. | <b>Nomenclature of Fentanyl Analogs, Nitazenes, and AP-Series NSOs</b><br><i>Donna M. Iula, PhD</i>  |
| 2:00 p.m. – 2:20 p.m. | <b>In Vitro and In Vivo Animals Models for Establishing Receptor Binding and Functional Effect of Nitazene Compounds</b><br><i>Michael H. Baumann, PhD</i> |
| 2:20 p.m. – 2:40 p.m. | <b>NSOs in Postmortem Casework—The West Coast Experience</b><br><i>Robyn N. Parks, MD</i>  |
| 2:40 p.m. – 3:00 p.m. | <b>Outbreak Investigations Involving Nitazenes and AP-Series NSOs</b><br><i>Barry K. Logan, PhD</i>  |
| 3:00 p.m. – 3:30 p.m. | <b>BREAK</b>   |
| 3:30 a.m. – 3:50 p.m. | <b>Challenges in Identification and Certification of NSOs in Death Investigations—The Midwest Experience</b><br><i>Lynda Biedrzyski, MD</i>                |
| 3:50 a.m. – 4:10 p.m. | <b>Impacts of an Early Warning System—The Tale of NPS Discovery</b><br><i>Alex J. Krotulski, PhD</i>   |
| 4:10 p.m. – 4:30 p.m. | <b>Pros and Cons to Core Structure Scheduling and Effectiveness of Controls</b><br><i>M.J. Menendez, JD</i>  |
| 4:30 p.m. – 5:00 p.m. | <b>Panel Discussion</b><br><i>All Presenters</i>   |

# WORKSHOPS



*Pre-Registration Required—\$100 (in person and virtual)*

## **W21 The Forgotten Ones: Post-Traumatic Stress Disorder (PTSD) in First Responders**

**Tuesday, February 22, 2022**

**1:00 p.m. – 5:00 p.m.**

**3.75 CE Hours**

**Learning Overview:** The goal of this presentation is to discuss various experiences of first responders from Emergency Medical Services (EMS), police, crime scene investigators, physicians, and others, in addition to different agency and regional responses to PTSD and processing of PTSD and grief. Symptoms experienced in these groups and how chronic exposure to trauma and vicarious trauma affect responders' mental health will be identified. This workshop will include small group discussion and larger collaboration of ways to prevent and recognize PTSD in one's home agency.

**Impact Statement:** This presentation will impact the forensic sciences community by addressing a serious aspect of mental health and responder well-being by discussing vicarious trauma, ways to recognize symptoms, and resources available for treatment.

**Program Description:** This workshop is designed to help the forensic sciences community understand the serious implications of the current mental health crisis affecting first responders. Understanding how PTSD is affecting first responders may also help address the need to research the forensic science community's potential risk. The forensic science community is not immune to the effects of PTSD and should also investigate how PTSD could be affecting the members of the forensic science community.

*Chair:*

**Jessica L. Morel, DO**  
Forensic Psychiatrist  
Fayetteville, NC

*Co-Chair:*

**Kathryn C. Seigfried-Spellar, PhD**  
Purdue University  
West Lafayette, IN

*Presenters:*

**Kyle T. Krebs, MA**  
Firefighter  
Gilbert, AZ

**Megan N. Stacy, BS**  
Officer  
Gretna, LA

**Allison N. Gaines, MS**  
Cobb County Medical Examiner's Office  
Marietta, GA

**Giuseppe Troccoli, MD**  
Mental Health Services  
Bari, Italy

**Vivian C. Shnaidman, MD**  
Jersey Forensic Consulting, LLC  
Princeton, NJ

**Targeted Audience:** Anthropology, Criminalistics, Digital & Multimedia Sciences, Engineering & Applied Sciences, General, Jurisprudence, Pathology/Biology, Psychiatry & Behavioral Science, Questioned Documents, Toxicology

**Knowledge Level Required:** Basic

**Expected Handout Length:** 40 pages



# WORKSHOPS

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*Pre-Registration Required—\$100 (in person and virtual)*

## **W21     The Forgotten Ones: Post-Traumatic Stress Disorder (PTSD) in First Responders**

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**Program:**

|                       |   |
|-----------------------|---|
| 1:00 p.m. – 1:25 p.m. | <b>Defining PTSD/Introduction</b><br><i>Jessica Morel, DO</i>                     |
| 1:25 p.m. – 1:50 p.m. | <b>Compassion Fatigue and Burn Out</b><br><i>Kyle T. Krebs, MA</i>                |
| 1:50 p.m. – 2:15 p.m. | <b>Trauma in Police and EMS</b><br><i>Megan N. Stacy, MS</i>                      |
| 2:15 p.m. – 2:30 p.m. | <b>BREAK</b>  |
| 2:30 p.m. – 2:55 p.m. | <b>What About the Last Responders?</b><br><i>Allison N. Gaines, MS</i>            |
| 2:55 p.m. – 3:20 p.m. | <b>Vicarious Trauma in Digital Media</b><br><i>Kathryn Siegfried-Spellar, PhD</i> |
| 3:20 p.m. – 3:45 p.m. | <b>Case Study of PTSD/Conversion Disorder</b><br><i>Vivian C. Shnaidman, MD</i>   |
| 3:45 p.m. – 4:15 p.m. | <b>Breakout Session in Small Groups</b>   |
| 4:15 a.m. – 5:00 p.m. | <b>Group Discussion of Experiences</b>  |

# HUMANITARIAN AND HUMAN RIGHTS RESOURCE CENTER



## Poster Session

The Humanitarian and Human Rights Resource Center (HHRRC) of the American Academy of Forensic Sciences (AAFS), with support from the National Institute of Justice's Forensic Technology Center of Excellence, provides needed resources and support to apply modern forensic science to global humanitarian and human rights projects. This Humanitarian and Human Rights Poster Session is a virtual open meeting where attendees can learn about the application of forensic science to investigate humanitarian and human rights injustices. Information will be available at [www.forensicCOE.org](http://www.forensicCOE.org).

## Tuesday

Tuesday, February 22, 2022

6:00 a.m. – 8:00 p.m.

### Moderator:

**Dawnie W. Steadman, PhD**

HHRRC Chair

Director, Forensic Anthropology Center

University of Tennessee

Knoxville, TN

### Co-Moderator:

**Jeri D. Roper-Miller, PhD**

AAFS Past President (2020-21)

Senior Director, Center for Forensic Sciences

RTI International

Research Triangle Park, NC

- 1 Identifying Signatures of a Single, Multiple and Mass Grave over Time; An Ongoing Research Project**  
Soren Blau, PhD; Jon Sterenberg, MSc
- 2 A Glimpse of Humanitarian Forensic Medicine in Milano: From the Arduous Tasks of Identifying the Victims of the Mediterranean to Assisting Asylum Seekers and Unaccompanied Minors**  
Cristina Cattaneo, MD; Danilo De Angelis, DDS; Debora Mazzarelli; Barbara Bertoglio, PhD; Giulia Caccia, MS; Pasquale Poppa, PhD; Ruggero Donida Labati; Fabio Scotti; Lorenzo Franceschetti, Andrea Palamenghi; Francesca Magli; Marco Cummaudo; Vincenzo Piuri; Silvana Riccio
- 3 Cultural Relativity and the Bounds of Forensic Interventions: A Case Study in Uganda**  
Jaymelee Kim, PhD; Tricia Redeker Hepner, PhD; Hugh Tuller, MA; Julia Hanebrink, MA; Dawnie Wolfe Steadman, PhD
- 4 Monitoring of Simulated Clandestine Graves of Dismembered Homicide Victims using Remote Piloted Aircraft, Electrical Tomography, and Ground Penetrating Radar to Optimize Searches in Colombia, South America**  
Carlos Martín Molina; Kristopher Wisniewski; Vivienne Heaton; Jamie Pringle; Edier F. Ávila, Luis Herrera; Jorge Guerrero; Miguel Saumett; Mario Duarte; Raúl Echeverri; Alejandra Baena
- 5 Humanitarian Identification of Violated and Disappeared Persons in Chungui District of Ayacucho-Peru**  
Nory Condor; Ivan Vargas
- 6 Construction of a National Hydrogen and Oxygen Isoscape for Colombia as a Baseline for the Identification of Region of Origin of Unidentified Victims of the Internal Armed Conflict**  
Daniela Orozco Ramelli; Tiffany Saul, PhD; Ana Caroline Guatame García, MSc; Jonathan Drake, MSc; Erica Andrea Castaño Osorio
- 7 Root Dentin Translucency and Estimation Age-at-Death in Adults Using Single-Rooted Teeth: Update of the Forensic International Dental Database**  
Roberto C. Parra; Gonzalo Garizoain; Karen Escalante-Flórez; Claudia Aranda; Leandro Luna; Lucio Condori; Clara Valderrama-Leal; Fernando Retana-Milán
- 8 Reflections on Methods to Estimate Race and Ancestry on Reference Osteological Samples in the Brazilian Context**  
Cláudia Regina Plens; Camila Diogo De Souza; John Albanese; Thais Torralbo Lopes Capp; Luiz Airton Saavedra



# NATIONAL INSTITUTE OF JUSTICE

## Forensic Science Research and Development (R&D) Symposium

The National Institute of Justice (NIJ) Forensic Science R&D Symposium is an open meeting where attendees can learn about NIJ-funded research across a variety of forensic science areas. The 2022 NIJ R&D Symposium will be held **March 1-2, 2022**, and will be 100% virtual event. Feel free to log on and browse posters, listen to specific presentations, or attend both days and learn about the diverse NIJ forensic science R&D portfolio. NIJ will also feature a poster session again this year highlighting recent research. The poster session will start February 28, 2022, at Noon (EST) and remain open for viewing through March 2, 2022.

You can register, find all presentations, and additional information at <https://forensiccoe.org/2022-nij-forensic-science-rd-symposium/>.

**Tuesday, March 1, 2022**

**10:00 a.m. - 5:50 p.m. (Eastern Standard Time)**

### TRACK 1

#### Session I – Impression and Pattern Evidence/Trace Evidence

*Moderated by NIJ Program Manager Gregory Dutton*

|            |   |            |   |
|------------|---|------------|---|
| 10:00 a.m. | - | 10:05 a.m. | <b>Welcome and Opening Remarks</b><br><i>Gregory Dutton, National Institute of Justice</i>  |
| 10:05 a.m. | - | 10:30 a.m. | <b>Validating Conclusion Scales in the Forensic Sciences</b><br><i>Thomas Busey, Indiana University</i>   |
| 10:30 a.m. | - | 10:55 a.m. | <b>Assessing Error Rates in Multiple Examiner Groups Using Regression Methods</b><br><i>Larry Tang, University of Central Florida</i>   |
| 10:55 a.m. | - | 11:20 a.m. | <b>Evaluating the Spatial Distribution of Randomly Acquired Characteristics on Outsoles</b><br><i>Jacqueline Speir, West Virginia University</i>  |
| 11:20 a.m. | - | 11:35 a.m. | <b>Q&amp;A</b>  |
| 11:35 a.m. | - | 11:45 a.m. | <b>Break</b>  |
| 11:45 a.m. | - | 12:10 p.m. | <b>Advancing Reporting of Significance from the Analysis and Comparison of Glass Evidence: A Global Collaboration</b><br><i>Jose Almirall, Florida International University</i>                                     |
| 12:10 p.m. | - | 12:35 p.m. | <b>Attenuated Total Reflection Infrared Microscopic Analysis of Simulated Automotive Paint Smears for Vehicle-Vehicle Collisions</b><br><i>Barry K. Lavine, Oklahoma State University</i>                           |
| 12:35 p.m. | - | 1:00 p.m.  | <b>Analysis of Small Particles Adhering to the Edges of Duct Tape as a Means to Make Associations in a Way that is Independent of Manufactured Characteristics</b><br><i>David A. Stoney, Stoney Forensic, Inc.</i> |
| 1:00 p.m.  | - | 1:15 p.m.  | <b>Q&amp;A</b>  |
| 1:15 p.m.  | - | 2:15 p.m.  | <b>Break</b>  |



## Session II – Seized Drugs and Toxicology

Moderated by NIJ Program Manager Frances Scott

|           |   |           |   |
|-----------|---|-----------|---|
| 2:15 p.m. | - | 2:20 p.m. | <b>Welcome and Opening Remarks</b><br><i>Frances Scott, National Institute of Justice</i>   |
| 2:20 p.m. | - | 2:40 p.m. | <b>Development of an Isotope Dilution Gas Chromatography-Mass Spectrometry Method for the Determination of THC in Seized Cannabis Samples</b><br><i>Walter Brent Wilson, National Institute of Standards and Technology</i>                                   |
| 2:40 p.m. | - | 3:00 p.m. | <b>Development of a Validated UHPLC-DAD Method With Optional ESI/TOFMS Detection for Rapid Quantification of D9-THC and D9-THCA-A Among Sixteen Cannabinoids in Hemp Concentrates</b><br><i>Liguo Song, Western Illinois University</i>                       |
| 3:00 p.m. | - | 3:20 p.m. | <b>Quantitative Analysis of <math>\Delta</math>9-Tetrahydrocannabinol (THC) in the Presence of THC Isomers in Biological Specimens Using Liquid Chromatography Tandem Mass Spectrometry</b><br><i>Rebecca Wagner, Virginia Department of Forensic Science</i> |
| 3:20 p.m. | - | 3:40 p.m. | <b>Development of a Hemoglobin Modification Assay for Retrospective Detection of Drug Exposure</b><br><i>Anthony P. DeCaprio, Florida International University</i>  |
| 3:40 p.m. | - | 4:00 p.m. | <b>Q&amp;A</b>  |
| 4:00 p.m. | - | 4:10 p.m. | <b>Break</b>  |
| 4:10 p.m. | - | 4:30 p.m. | <b>Evaluation of the NIST/NIJ DART-MS Data Interpretation Tool for Seized Drug Analysis</b><br><i>Edward Sisco, National Institute of Standards and Technology</i>  |
| 4:30 p.m. | - | 4:50 p.m. | <b>Fusion of DART-HRMS-Derived Dark Matter and Infrared Spectroscopy for the Identification of New Psychoactive Substances</b><br><i>Rabi Ann Musah, State University of New York at Albany</i>   |
| 4:50 p.m. | - | 5:10 p.m. | <b>Expert Algorithm for Substance Identification (EASI) From Mass Spectra</b><br><i>Glen P. Jackson, West Virginia University</i>   |
| 5:10 p.m. | - | 5:30 p.m. | <b>NPS Discovery Toolkits: Real-Time Identification and Dissemination of Information Regarding Novel Psychoactive Substances (NPS)</b><br><i>Sara E. Walton, Center for Forensic Science Research and Education</i>   |
| 5:30 p.m. | - | 5:50 p.m. | <b>Q&amp;A</b>  |



# NATIONAL INSTITUTE OF JUSTICE

Wednesday, March 2, 2022

10:00 a.m. - 5:00 p.m. (Eastern Standard Time)

## TRACK 2

### Session III – Forensic Biology/DNA

Moderated by NIJ Program Manager Tracey Johnson

- 10:00 a.m. - 10:05 a.m. **Welcome and Opening Remarks**  
*Tracey Johnson, National Institute of Justice*
- 10:05 a.m. - 10:25 a.m. **Verification and Evaluation of a miRNA Panel for Body Fluid Identification Using DNA Extracts**  
*Sarah Seashols-Williams, Virginia Commonwealth University*
- 10:25 a.m. - 10:45 a.m. **Evaluation of Precision ID GlobalFiler™ NGS STR Panel**  
*Elisa Wurmbach, City of New York*
- 10:45 a.m. - 11:05 a.m. **Variation in Laboratory Policies and Procedures Related to Interpretation of DNA Mixtures**  
*Austin Hicklin, Noblis, Inc.*
- 11:05 a.m. - 11:20 a.m. **Q&A**
- 11:20 a.m. - 11:35 a.m. **Break**
- 11:35 a.m. - 11:55 a.m. **Interpretation of Y Chromosome STRs for Missing Persons Cases**  
*Jianye Ge, University of North Texas Health Science Center at Fort Worth*
- 11:55 a.m. - 12:15 p.m. **Assessment of Sexual Assault Kit (SAK) Evidence Selection Leading to Development of SAK Evidence Machine-Learning Model (SAK-ML Model)**  
*Julie L. Valentine, Utah Department of Public Safety*
- 12:15 p.m. - 12:35 p.m. **Interpretation of Y-STR Evidence**  
*Bruce Weir, University of Washington*
- 12:35 p.m. - 12:50 p.m. **Q&A**
- 12:50 p.m. - 2:10 p.m. **Break**

### Session IV – Forensic Anthropology and Forensic Pathology

Moderated by NIJ Program Manager Danielle McLeod-Henning

- 2:10 p.m. - 2:15 p.m. **Welcome and Opening Remarks**  
*Danielle McLeod-Henning, National Institute of Justice*
- 2:15 p.m. - 2:35 p.m. **Discovering Clandestine Human Remains Using Unmanned Aerial System Based Remote Sensing**  
*Daniel Wescott, Texas State University*
- 2:35 p.m. - 2:55 p.m. **Microbial Clocks of Human Decomposition Accurately Estimate Postmortem Interval**  
*Zachary M. Burcham, Colorado State University*
- 2:55 p.m. - 3:15 p.m. **Progress Towards the Development of a Database of Chemical Fingerprint Signatures for Species Identification of Necrophagous Insects**  
*Rabi Ann Musah, State University of New York at Albany*
- 3:15 p.m. - 3:30 p.m. **Q&A**
- 3:30 p.m. - 3:45 p.m. **Break**

## Poster Session

Monday, February 28, 2022

12:00 p.m. – 5:00 p.m. (EST)

Tuesday, March 1, 2022

10:00 a.m. – 6:00 p.m. (EST)

Wednesday, March 2, 2022

10:00 a.m. – 6:00 p.m. (EST)

- 1. FileTSAR+: An Elastic Network Forensic Toolkit**  
*Kathryn Seigfried-Spellar, Purdue University*
- 2. Development of the Forensic Anthropology Skeletal Trauma (FAST) Database**  
*Angela L. Harden, Ohio State University*
- 3. Shape Atlas and Bone Structure Analysis for Body Mass Estimation: Workflow and Potential**  
*Adam D. Sylvester, Texas State University*
- 4. Software Tool and Methodology Supporting Post-mortem Iris Recognition**  
*Adam Czajka, University of Notre Dame Du Lac*
- 5. GIS Application for Building a Nationally Representative Forensic Taphonomy Database**  
*Katherine Weisensee, Clemson University*
- 6. Optimization of Forensic Hair Analysis Methods Using Statistical Design of Experiments (DoE)**  
*Brianna Spear, Florida International University*
- 7. Building the Chemical Foundation Necessary for a Reliable Cannabis Breathalyzer**  
*Tara M. Lovestead, National Institute of Standards and Technology*
- 8. Methods of Associating Forensic Examiner Performance with Experience, Training, and Other Background Attributes**  
*Nicole Richetelli, Noblis*
- 9. Black Box Evaluation of Bloodstain Pattern Analysis Conclusions**  
*Austin Hicklin, Noblis*
- 10. Kendrick Mass Defect Plots: Guided Selection of Compounds for Fingerprint Aging Models**  
*Andrew Paulson, Iowa State University*
- 11. Reaction Kinetics in Fingerprint Aging Studied by Laser Desorption/Ionization Mass Spectrometry**  
*Daphne R. Patten, Iowa State University*
- 12. Quantitative Matching of Forensic Evidence Fragments Utilizing 3D Microscopy Analysis of Fracture Surface Replicas**  
*Ashraf F. Bastawros, Iowa State University*
- 13. On-Site Noninvasive Sensing of Illicit Compounds**  
*Jan Halamek, Texas Tech University*
- 14. Analyzing Bloodstains on Different Textiles: Implications for Retrieving Airborne Drop Volume, Impact Speed, and Angle of Impact**  
*Tiegang Fang, North Carolina State University*
- 15. Expanding the Use of 3D Surface Topography Analysis in Firearm Forensics**  
*Ryan Lilien, Cadre Research Labs*



16. **Audio Forensic Analysis From Unsynchronized User Generated Audio Recordings**  
Robert C. Maher, Montana State University
17. **When Bloodstain Eccentricity Depends on More Than the Impact Incidence Angle**  
Garam Lee, Boston University
18. **Study of the Reliability of Fire Pattern Indicators Used in Wildland Fire Investigation**  
Juan Cuevas, Worcester Polytechnic Institute
19. **Experimental and numerical investigation of gypsum calcination when exposed to uniform heat flux**  
Shijin P. Kozhumal, Eastern Kentucky University
20. **Identification of Low Explosives and Their Post-Blast Residues Via Gas Chromatography (GC) Coupled With Vacuum Ultraviolet (VUV) Spectroscopy**  
Courtney Cruse, Indiana University Purdue University Indianapolis (IUPUI)
21. **A Novel Approach for Detection and Identification of Gunshot Residue Based on Laser Spectroscopy**  
Igor K. Lednev, State University of New York at Albany
22. **Comparison of Weathering Profiles of Ignitable Liquids by Gas Chromatography-Mass Spectrometry and Direct Analysis in Real-Time Mass Spectrometry**  
Mengliang (Mike) Zhang, Middle Tennessee State University
23. **Post-Blast Explosives Attribution**  
Paul Ippoliti, MIT Lincoln Laboratory
24. **Extraction of Ignitable Liquid Residues by Dynamic Capillary Headspace Sampling and Comparison to the Carbon Strip Method**  
Kavita M. Jeerage, National Institute of Standards and Technology
25. **A Universal Method for the Identification of Body Fluid Traces Using Raman Spectroscopy: Moving Towards a Practical Forensic Application**  
Igor Lednev, Research Foundation for the State University of New York
26. **Extended Extension PCR: A Simple Technique for Improved Amplification of Aged, Degraded, and Low Copy Number DNA Samples Compromised by PCR Inhibitors**  
Mary Faith C. Flores, University of Oklahoma
27. **The Development of Epigenetic Markers for Body Fluid Analysis and Phenotype**  
Bruce McCord, Florida International University
28. **Developing Multiplex Microhaplotype Sequencing for Mixture Detection and Deconvolution**  
Kenneth K. Kidd, Yale University
29. **Exploration of RNA Degradation in Dried Body Fluid Stains as a Means of Estimating the Age of the Samples**  
Robert W. Allen, Oklahoma State University
30. **Comparison of GlobalFiler™ and PowerPlex® Fusion 6C for Direct PCR Amplification of Touch DNA Samples**  
Anna Salmonsén, Bode Cellmark Forensics, Inc.



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# BRING YOUR OWN SLIDES (PowerPoint®) BYOS.ppt

Wednesday Evening: 8:00 p.m. - 10:00 p.m.

In order to keep BYOS.ppt informal, fun, and informative for the large and diverse audience, here are a few things to keep in mind for the BYOS.ppt program at the 2022 AAFS Annual Conference in Seattle, WA:

- Presentations must be in PowerPoint® format. 35mm slides are not accepted.
- Proposals must be submitted on this form accompanied by a “6-slides-per-page” printout of the presentation and an electronic copy on CD or flash drive.
- BYOS is not intended as a forum to present scientific papers. It is designed as a means to present interesting information and/or unusual case(s) that may be educational and blended with humor.
- Speakers should plan on ten minutes in which to present their material.
- Material being presented in other parts of the AAFS scientific program will not be accepted at BYOS.ppt.
- Tables, charts, and graphs should be avoided, making every effort to use slides of scenes, bodily findings, and evidence.

This completed form, a “6-slides-per-page” printout, and the electronic presentation copy should be delivered to the on-site AAFS Registration Desk by 4:00 p.m. on Wednesday, February 23, 2022. Presentations will be selected and scheduled based on perceived interest to the audience and in the order in which the completed submissions are received. This form and required printout are needed to organize the BYOS.ppt program and to allow appropriate allocation of continuing education credit. A BYOS.ppt Program Form also will be placed in each registrant’s meeting packet.

## BYOS PROGRAM FORM

Name and Degree(s): \_\_\_\_\_

Job Title: \_\_\_\_\_

Place of Employment: \_\_\_\_\_

AAFS Section Affiliation (if none, write “none”): \_\_\_\_\_

The presentation is being offered primarily to:

- Solicit input/advice on a challenging case
- Present interesting information or case(s) for education purposes
- Entertainment

Presentation is:

- A single case
- A series of cases with a common topic
- Multiple cases with unrelated topics
- Other (please specify): \_\_\_\_\_

Briefly describe the material to be presented: \_\_\_\_\_

What are the major points to be emphasized?: \_\_\_\_\_

How will the attendees benefit from this presentation?: \_\_\_\_\_

Is there commercial interest in the material being discussed?:  No  Yes (if yes, please describe): \_\_\_\_\_

How much presentation time is required?: \_\_\_\_\_ minutes      How many PowerPoint® slides will be shown?: \_\_\_\_\_

Presenter’s local hotel: \_\_\_\_\_ Room #: \_\_\_\_\_ Phone #: \_\_\_\_\_

U.S. Cell Phone: \_\_\_\_\_ Email you can access while at the meeting: \_\_\_\_\_

The BYOS agenda, scheduled presentation times, and continuing education credit hours will be posted near the BYOS meeting room.

\*\*\*\*\*

AAFS STAFF USE ONLY: Date Received: \_\_\_\_\_ Time: \_\_\_\_\_



**SCIENTIFIC SESSIONS**

## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **A1** **Pedagogical Access and Ethical Considerations in Forensic Anthropology and Bioarchaeology**  
 Micayla Spiros, MSc\*; Amber Piemons, MA; Jack Biggs, BA
- 11:30 a.m. – 1:00 p.m. **A2** **A Virtual Anthropological Approach to Assessing the Similarity of Joint Surfaces With Applications for Sorting Commingled Human Remains**  
 Helen Brandt–Litavec, MS\*  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **A3** **The Segregation of Individuals From Large Commingled Assemblages Via Stable Isotope Ratio Analysis of Bone Collagen**  
 Mary Megyesi, PhD\*; Gregory Berg, PhD; Lesley Chesson, MS
- 11:30 a.m. – 1:00 p.m. **A4** **Forensic Anthropology Casework at the Cook County, Illinois, Medical Examiner’s Office, 2012–2020**  
 Erin Waxenbaum, PhD\*; Anne Grauer, PhD
- 11:30 a.m. – 1:00 p.m. **A5** **Myriad Maps and Applied Anthropology: Needs and Limitations**  
 Molly Miranker, MA
- 11:30 a.m. – 1:00 p.m. **A6** **Documenting Outdoor Simulated Scenes With Photogrammetry: Methods for Improving Dappled Lighting Conditions**  
 Caroline Jasiak, MA\*; John Schultz, PhD; Morgan Ferrell, MA
- 11:30 a.m. – 1:00 p.m. **A7** **Tracing Academic Relatedness Via the Forensic Anthropology Phylogeny (FAP)**  
 Katharine Kolpan, PhD\*
- 11:30 a.m. – 1:00 p.m. **A8** **Exploring Forensic Research Interests of a United States–Based Anthropology Faculty**  
 Rhian Dunn, MS\*; Christopher Rainwater, MS; Nicholas Passalacqua, PhD
- 11:30 a.m. – 1:00 p.m. **A9** **Advances in Sorting Commingled Human Remains: A Preliminary Study Using the Subtalar Joint**  
 Ioanna Anastopoulou, PhD; Nikoletta Manta, MSc; Konstantinos Katsos, MD, PhD; Emmanouil Sakelliadis, MD, MSc, PhD; Konstantinos Moraitis, MSc, PhD\*
- 11:30 a.m. – 1:00 p.m. **A10** **Calculating the Minimum Number of Individuals (MNI) and Most Likely Number of Individuals (MLNI) for a Commingled Fetal and Infant Remains Sample**  
 Ariana V. Agyemang, BS\*; Helen Brandt–Litavec, MS; Elizabeth A. DiGangi, PhD
- 11:30 a.m. – 1:00 p.m. **A11** **We Take Care of Our Own: Utilizing the LGBT+ Accountability for Missing and Murdered Persons (LAMMP) Database**  
 Anthony Redgrave, MS\*; Amy Michael, PhD; Jessica Veltstra, MS; Samantha Blatt, PhD; Mariyam Isa, PhD
- 11:30 a.m. – 1:00 p.m. **A12** **Applying a Biocultural Signature of Embodied Stress to Identify Latin American Migrants From a Cold Case Sample in South Florida**  
 Enrique Plasencia, BA\*; Allysha Winburn, PhD
- 11:30 a.m. – 1:00 p.m. **A13** **OsteoID: A Freely Available Tool for Skeletal Species Identification**  
 Heather Garvin, PhD\*; Rachel Dunn, PhD; Sabrina Sholts, PhD; M. Schuyler Litten, MA; Merna Mohamed, MSc; Nathan Kuttickat, BSc; Noah Skantz, BS, BA





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- 11:30 a.m. – 1:00 p.m. **A14** **Assessing Opioid Exposure and Opioid Overdose Deaths in Skeletal Casework Through Collaboration With Organ Procurement Organizations**  
Janna Andronowski, PhD; Randi Depp, MS\*
- 11:30 a.m. – 1:00 p.m. **A15** **Evaluating the Effect of Cocaine Use on Dorsum Sellae (DS) Demineralization**  
Tanin Zadeh, MS\*; Ellen Fricano, PhD; Vicki Wedel, PhD
- 11:30 a.m. – 1:00 p.m. **A16** **The Effects of Prolonged Opioid Exposure on Bone Fracture Strength of Rabbit Middle Ribs**  
Reed Davis, MSc\*; Mary Cole, PhD; Henry Astley, PhD; Janna Andronowski, PhD
- 11:30 a.m. – 1:00 p.m. **A17** **Understanding Skeletal and Body Donation in Forensic Anthropology: Development and Procedures**  
Kerianne Armelli, MS\*; Rhian Dunn, MS; Carolyn Isaac, PhD
- 11:30 a.m. – 1:00 p.m. **A18** **Modeling Grave Depressions Using Open–Source Light Detection And Ranging (LiDAR) Data at the Forensic Anthropology Research Facility**  
Mariah Moe, MA\*; Shelby Garza, MA; Nicholas Herrmann, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **A19** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **A20** **A Robust Methodology for Stable Isotope Analysis of Human Tooth Enamel**  
Francesca Spencer, BS, BA\*; Kirsten Verostick, PhD; Alejandro Serna, PhD; Lesley Chesson, MS; Gregory Berg, PhD; Gabriel Bowen, PhD
- 11:30 a.m. – 1:00 p.m. **A21** **Repatriation and Responsibility: Consideration Beyond Traditional Constructs**  
Rose Leach, MA\*; Kerianne Armelli, MS
- 11:30 a.m. – 1:00 p.m. **A22** **A Morphometric Comparison of Eight Small Non–Human Species of Long Bones to Juvenile Human Long Bones for the Purpose of Identification in a Forensic Context**  
Kaitlyn Schoonover, BS\*; Luis Cabo, MS
- 11:30 a.m. – 1:00 p.m. **A23** **A Spatiotemporal Analysis of the National Missing and Unidentified Persons System (NamUs) Unidentified Person Cases Along the United States–Mexico Border**  
Justin Z. Goldstein, MA\*; Courtney Siegert, MA; Nicholas Herrmann, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **A24** **Developing a Tissue–Specific Multi–Isoscape ( $\delta^{18}O$  and  $87Sr/86Sr$ ) to Estimate Region of Origin**  
Julianne Sarancha, MS\*; Alexis Baide, MA; Clare Dittmore, BA; Thomas Delgado, BA; Gabriel Bowen, PhD
- 11:30 a.m. – 1:00 p.m. **A25** **Last Seen Location: Using Missing Persons Data for Identification in Forensic Anthropology**  
Liam Johnson, MA\*; Teresa Wilson, PhD
- 11:30 a.m. – 1:00 p.m. **A26** **Understanding the Spatial Relationships Between the National Missing and Unidentified Persons System (NamUs) Unidentified and Missing Persons Cases in Texas**  
Shelby L. Garza, MA\*; Justin Z. Goldstein, MA



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- 11:30 a.m. – 1:00 p.m. **A27** **An Initial Review of the Long–Term Unidentified Cases Managed by the Forensic Anthropology Center at Texas State University (FACTS)**  
Emilie L. Wiedenmeyer, MA\*, Justin Z. Goldstein, MA; Petra Banks, MA; Mariah Moe, MA; Sophia Mavroudas, MA; Michelle D. Hamilton, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **A28** **Stature Estimation From Facial Parameters—A Computed Tomography (CT) Scan–Based Observational Study in a South Indian Adult Population**  
Siddhartha Das, MD\*
- 11:30 a.m. – 1:00 p.m. **A29** **OsteoFlo: A FIJI/ImageJ Toolkit for Semi–Automated Identification and Characterization of Fluorescently Labeled Secondary Osteons**  
Mary Cole, PhD\*; Joshua Taylor, BSc; Medhat Hassan; Janna Andronowski, PhD
- 11:30 a.m. – 1:00 p.m. **A30** **A Multi–Isotopic Analysis of Ajnala Skeletal Remains for Provenance of Their Local or Non–Local Origin, Geographic Affinity, and Mobility Patterns**  
Jagmahender Singh Sehrawat, PhD\*

## Thursday—Session I

### The AAFS Anthropology Section 50<sup>th</sup> Anniversary Symposium: Celebrating Awareness, Change, and Progress in Forensic Anthropology

*Moderator:*

Sara M. Getz, PhD  
University of Wisconsin–Platteville  
Platteville, WI

*Co–Moderator:*

Katharine E. Kolpan, PhD  
University of Idaho  
Moscow, ID

- 8:30 a.m. – 8:45 a.m. **A31** **The Impact of British Biometry and Race Studies on the Origins of Forensic Anthropology in the United States**  
Nicholas Passalacqua, PhD\*; Iris Clever, PhD
- 8:45 a.m. – 9:00 a.m. **A32** **50 Years in the American Academy of Forensic Sciences (AAFS)**  
John Williams, PhD\*; Katherine Kolpan, PhD
- 9:00 a.m. – 9:15 a.m. **A33** **Pioneers of Color: Diversifying the Pantheon of Forensic Anthropology Luminaries**  
Matthew C. Go, PhD\*; Elaine Y. Chu, MA; Nandar Yuki, MA; An–Di Yim, PhD; Isis Dwyer, MA; Alba E. Craig, BA; Jesse R. Goliath, PhD; Chaunesey M.J. Clemmons, MA; Tanya Ramos, BA; Allison Nesbitt, PhD; Evonne Turner–Byfield, MSc; Kamar Afra, MA; Jessica K. Juarez, PhD; Sydney S. Garcia, MA; Aaron J. Young, MA; Isabel S. Melhado, BS; Fatimah Bouderdaben, BS; Tisa N. Loewen, MA; Ivanna Robledo MA
- 9:15 a.m. – 9:30 a.m. **A34** **Contributions of Master’s Degree Programs to Forensic Anthropology Education, Training, and Professionalization**  
Ashley Kendell, PhD\*; Krista Latham, PhD; Sara M. Getz, PhD; Eric Bartelink, PhD; Shannon Clinkinbeard, MA; Dennis C. Dirkmaat, PhD; Colleen Milligan, PhD; Stephen P. Nawrocki, PhD



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- 9:30 a.m. – 9:45 a.m. **A35** **Daubert: Lip Service or a Substantive Change in Forensic Anthropology?**  
Kate Lesciotto, PhD\*
- 9:45 a.m. – 10:00 a.m. **A36** **50 Years of Taphonomic Research: From Death's Acre to a Global Footprint**  
Sophia Mavroudas, MA\*; Dawnie Steadman, PhD; Katie Zedjlik, PhD; Daniel Wescott, PhD;  
Timothy Gocha, PhD; Sheree Hughes, PhD; Gretchen Dabbs, PhD; Melissa Connor, PhD;  
Jodie Ward, PhD; Erin Kimmerle, PhD; Jane Harris, PhD; Shari Forbes, PhD; Anthony Falsetti, PhD
- 10:00 a.m. – 10:15 a.m. **A37** **Beatings, Broken Bones, Bullet Holes, and 3D Prints: The Evolution of Bone Trauma From the Morgue to the Virtual World/Space**  
Ericka N. L'Abbe PhD\*; Alison F. Ridel, PhD; Charlotte Theye, MSc; Rudolph G. Venter, MMed;  
Alieske Hagg, MSc; Pearl Bothma, BSc; Angelique Carmichael, BSc; Clarisa van der Merwe, MSc;  
Steven A Symes, PhD
- 10:15 a.m. – 10:30 a.m. **A38** **Situating Activism in Forensic Anthropology: Historical Understandings of Advocacy in the Discipline**  
Raphaela Meloro, MA\*; Isis Dwyer, MA; Thomas Delgado, BA
- 10:30 a.m. – 10:45 a.m. **BREAK**

## Best Practices, Standards, and Professional Practice

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*Moderator:*

Rebecca Taylor, PhD  
Defense POW/MIA Accounting Agency  
Joint Base Pearl Harbor-Hickam, HI

*Co-Moderator:*

Jared B. Cornelison, PhD  
Western Michigan University  
Homer Stryker MD School of Medicine  
Kalamazoo, MI

- 10:45 a.m. – 11:00 a.m. **A39** **Standards Development Activities in Forensic Anthropology**  
Gregory E. Berg, PhD\*
- 11:00 a.m. – 11:15 a.m. **A40** **Fatal Environments: Survey Results and Best Practices for Human Donor Programs and Body Farms Around the World**  
Kelsee Hentschel-Fey, MA\*, Gennifer Goad, MA, Erin Kimmerle, PhD
- 11:15 a.m. – 11:30 a.m. **A41** **F–Track: A Model for Forensic Professionalization**  
Joanne Devlin, PhD\*; Giovanna Vidoli, PhD; Lee Jantz, PhD; Mary Davis, MSc;  
Dawnie Steadman, PhD
- 11:30 a.m. – 11:45 a.m. **A42** **The Readability of Forensic Anthropological Abstracts**  
Donovan Adams, PhD; Clair Ralston, MS\*; Kelly McGehee, BA
- 11:45 a.m. – 1:00 p.m. **BREAK**

## Poster Session

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- 11:30 a.m. – 1:00 p.m. **A43** **Estimating the Postmortem Interval (PMI) in High Desert Climates**  
Mackenzie Sullivan, BA\*; Marin Pilloud, PhD; Mary Megyesi, PhD, Laura Knight, MD
- 11:30 a.m. – 1:00 p.m. **A44** **Toward a Better Understanding of the Effects of Leaching and Diagenesis on 87Sr/86Sr of Human Hair Keratin**  
Saskia T.M. Ammer, PhD\*; Lisette Kootker, PhD; Gareth Davies, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)



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- 11:30 a.m. – 1:00 p.m. **A45** **Diagenesis of Human Bone, Dental Elements, and Scalp Hair in Taphonomic Experiments: Implications for Isotope Analysis for Human Identification**  
Lisette M. Kootker, PhD; Saskia T.M. Ammer, MSc\*; Daniel J. Wescott, PhD; Gareth R. Davies, PhD; Hayley Louise Mickleburgh, PhD
- 11:30 a.m. – 1:00 p.m. **A46** **The Reliability of Bone Features Commonly Used to Predict Saw Class Characteristics**  
Alexandra Klales, PhD\*; Ashley Maxwell, PhD; Heather Garvin, PhD; Erin Chapman, PhD; Lauren Butaric, PhD
- 11:30 a.m. – 1:00 p.m. **A47** **A Retrospective Analysis of Scavenging in Southern Nevada Forensic Anthropology Cases (2000–2021)**  
Katharine Woollen, MS\*; Jennifer Byrnes, PhD
- 11:30 a.m. – 1:00 p.m. **A48** **Testing Blade Set Width Prediction From Minimum Kerf Width Using Fleshed Human Samples**  
Alexis VanBaarle, BA\*; Ibrahim Mustaly, MS; Lauren Butaric, PhD; Heather Garvin, PhD
- 11:30 a.m. – 1:00 p.m. **A49** **The Evaluation of the Transition Analysis 3 (TA3) (Beta Ver. 0.8.0) Age–Estimation Program Using Two International Samples**  
Sara M. Getz, PhD\*; Jacqueline Galimany, MA
- 11:30 a.m. – 1:00 p.m. **A50** **A Test of Anthropological Accumulated Degree Day (ADD) Methods of Postmortem Interval Estimation on an Iowan Autopsy Sample**  
Natasha Andersen; Emily Archibald\*; Taylor Brown; Hannah Spencer–Greathouse, BA; Jonathan Thompson, MD; Heather Garvin, PhD
- 11:30 a.m. – 1:00 p.m. **A51** **Assessing Patterns of Moisture Content in Decomposing, Desiccated, and Mummified Tissue in the Southeastern United States: Trial 1 Data**  
Christine Bailey, MA; Autumn Lennartz, MA; Maggie Klemm; Cameron Privette; Carter Unger\*; Rebecca George, PhD
- 11:30 a.m. – 1:00 p.m. **A52** **The Perimortem Trauma Pattern in Human Rights Violations: Comparative Case Studies From Spain, Cambodia, and Argentina**  
Matteo Borrini, PhD\*; Raffaella Minella, MSc; Constantine Eliopoulos, PhD
- 11:30 a.m. – 1:00 p.m. **A53** **The Differences in Fracture Healing Based on Fracture Classification in Young Children (Less Than Six Years of Age)**  
Diana Messer, PhD\*; Andrielle Finch
- 11:30 a.m. – 1:00 p.m. **A54** **Histological Differentiation of Burnt Cortical Bone in Northeast Ohio Mammals**  
Evin Hessel, BS\*; Mary Cole, PhD; Janna Andronowski, PhD
- 11:30 a.m. – 1:00 p.m. **A55** **Testing the Use of Bone Weathering to Estimate the Postmortem Interval (PMI) on Forensically Relevant Bone in an Arid Environment**  
Joyce Chu\*; Alexander Smith, BA; Melissa Connor, PhD
- 11:30 a.m. – 1:00 p.m. **A56** **Serrated Versus Non–Serrated Blade Class Interpretation: An Interactive Survey**  
Miriam Soto Martinez, PhD\*; Julie Fleischman, PhD; Jason Wiersema, PhD; Deborah Pinto, PhD
- 11:30 a.m. – 1:00 p.m. **A57** **The Usefulness of Transmission Electron Microscopy (TEM) for the Estimation of the Postmortem Interval (PMI): An Analysis of Ultrastructural Autolytic Changes in the Osteocyte of Human Remains**  
Chiara Rossetti, MD\*; Cesare Garberi; Mario Picozzi; Jutta Maria Birkhoff, MD, PhD; Marcella Reguzzoni



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- 11:30 a.m. – 1:00 p.m. **A58** **The Effects of Thermal Alteration on Sharp Force Trauma in Human and Non-Human Skeletal Remains**  
Hailey Collord–Stalder, MA\*; Nicholas Herrmann, PhD
- 11:30 a.m. – 1:00 p.m. **A59** **Wounded to Death: A Paleo-Forensic Analysis of a Case of Multiple Sharp-Force Lesions From the Medieval Cemetery of San Biagio in Cittiglio in Northern Italy**  
Chiara Tesi\*; Stefano Ricci; Jacopo Crezzini; Roberta Fusco; Chiara Rossetti; Marta Licata
- 11:30 a.m. – 1:00 p.m. **A60** **Decomposition in the Desert: Testing the Validity of Using Accumulated Degree Days (ADD) and Total Body Scores (TBS) for Postmortem Interval Estimation in the Sonoran Desert**  
Kaitlyn Fulp, MA\*; Jacob Harris, PhD; Katelyn Bolhofner, PhD
- 11:30 a.m. – 1:00 p.m. **A61** **The Evaluation of Postmortem Interval (PMI) Using Collagenous to Non-Collagenous Ratios in Skeletal Remains: A Validation Study**  
Theresa De Cree, BA\*; Luis Cabo, MS  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **A62** **Differences in Fracture Types, Locations, and Severity in Pre-, Peri-, and Post-Menopausal Women**  
Danielle Delelio, BS\*; Kyra Stull, PhD; Laura Knight, MD
- 11:30 a.m. – 1:00 p.m. **A63** **Fractur3D: A Computed Tomography Reference Atlas of Skeletal Trauma**  
Terrie Simmons–Ehrhardt, MA\*; Sara Sochor, MS; Anthony Falsetti, PhD
- 11:30 a.m. – 1:00 p.m. **A64** **The Effects of Soft Tissue on the Crystallographic Changes to Bone Mineral Upon Heating**  
Hannah Cross, MS\*; Charlene Greenwood, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **A65** **Identifying Taphonomic Factors Affecting the Dispersal Patterns of Surface-Scattered Human Remains: A Study of a Forensic Sample From Actual Casework**  
Kristine Kortonick, BS\*, Luis Cabo–Perez, MS
- 11:30 a.m. – 1:00 p.m. **A66** **Taphonomic Change in the Sonoran Desert: Monitoring Morphology in the Period of Mummification/Advanced Skeletonization**  
Kassandra Parrish, BS\*; Katelyn Bolhofner, PhD
- 11:30 a.m. – 1:00 p.m. **A67** **The Identification of Differential Burning Among Highly Fragmented Cremated Human Remains**  
Lisa Monetti, MSc\*
- 11:30 a.m. – 1:00 p.m. **A68** **Tuning Microbial Succession–Based Postmortem Interval (PMI) Estimation Models: The Effect of Environmental Parameters on Model Prediction**  
Allison Mason, BS\*; Hayden McKee, MSc; Katharina Hoeland, MS; Sarah Schwing, MA; Erin Patrick, MSc; Shawn Campagna, PhD; Dawnie Steadman, PhD; Jennifer DeBruyn, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **A69** **The Importance of Recognizing the Indicators of Vulture Scavenging for Forensic Archaeological Recoveries and Taphonomic Interpretations**  
Kristine Kortonick, MS; Anthony Lanfranchi, MS\*; Luis Cabo–Perez, MS
- 11:30 a.m. – 1:00 p.m. **A70** **The Bone Weathering Simulator: An Investigation of Bone Change Informing Forensic Anthropology Recovery Best Practices Using Crowd Sourcing**  
Matthew Rolland, MS\*; Heather Walsh–Haney, PhD



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## 20<sup>th</sup> Anniversary of the 9/11 Terrorist Attacks

*Moderator:*

Bradley J. Adams, PhD  
New York City Office of Chief Medical Examiner  
New York, NY

*Co-Moderator:*

Eric Bartelink, PhD  
California State University at Chico  
Chico, CA

- |                       |            |  |
|-----------------------|------------|--|
| 1:00 p.m. – 1:15 p.m. | <b>A71</b> | <b>World Trade Center—A Historical Overview</b><br>Amy Mundorff, PhD*; Eric Bartelink, PhD; Jason Wiersema, PhD; Gaille Mackinnon, MSc   |
| 1:15 p.m. – 1:30 p.m. | <b>A72</b> | <b>The Role of Forensic Anthropology in the Aftermath of the 9/11 Attack on the Pentagon</b><br>Robert Mann, PhD; Thomas Holland, JD, PhD; John Byrd, PhD*; Andrew Tyrrell, MD, PhD  |
| 1:30 p.m. – 1:45 p.m. | <b>A73</b> | <b>A Historical Review of the Recovery and Disaster Victim Identification Protocols Employed in the September 11, 2001, Crash of United Flight 93 in Shanksville, Pennsylvania, and Lessons Learned</b><br>Dennis C. Dirkmaat, PhD*; Marilyn R. London, MA |
| 1:45 p.m. – 2:00 p.m. | <b>A74</b> | <b>Lessons Learned From the September 11, 2001, Terrorist Attacks and Other Recent Mass Fatality Incidents</b><br>Frank DePaolo, PA-C*; Emily Carroll, MSPH; Helen Alesbury, MA  |
| 2:00 p.m. – 2:15 p.m. | <b>A75</b> | <b>The Role of the Medical Examiner in Two Mass Fatality Events: The World Trade Center Disaster and the COVID-19 Pandemic</b><br>Jason K. Graham, MD*; Barbara Sampson, MD, PhD   |
| 2:15 p.m. – 2:30 p.m. | <b>A76</b> | <b>The Changing Role of Forensic Anthropology in Investigations of Mass Fatality Incidents</b><br>Douglas H. Ubelaker, PhD*  |
| 2:30 p.m. – 2:45 p.m. | <b>A77</b> | <b>20 Years of DNA Developments for World Trade Center Victim Identification</b><br>Mark Desire, MS, JD; Carl Gajewski, MS; Andrew Schweighardt, PhD*  |
| 2:45 p.m. – 3:00 p.m. | <b>A78</b> | <b>World Trade Center Data Analysis Project: 20 Years of Ongoing Identification Efforts</b><br>Bradley Adams, PhD*; Julia Sommer, PhD; Jennifer Odien, PhD; Angela Soler, PhD; Christopher Rainwater, MS; Franklin Damann, PhD                             |
| 3:00 p.m. – 3:15 p.m. | <b>A79</b> | <b>Victim Identification and the Notification Process: A 9/11 Family Member Perspective</b><br>Mary Fetchet, LCSW*   |
| 3:15 p.m. – 3:30 p.m. |            | <b>Questions &amp; Answers</b>   |
| 3:30 p.m. – 3:45 p.m. |            | <b>BREAK</b>   |



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## Mass Graves, Clandestine Graves, and Commingled Remains

*Moderator:*

Janet E. Finlayson, PhD  
Defense POW/MIA Accounting Agency  
Joint Base Pearl Harbor-Hickam, HI

*Co-Moderator:*

Olivia Messenger, BA  
University of Indianapolis  
Indianapolis, IN

- 3: 45 p.m. – 4:00 p.m. **A80** **Geophysical Imaging of Buried Human Remains in a Mass Grave Experimental Setup**  
Kennedy Doro, PhD\*; Amar Kolapkar; Carl-Georg Bank, PhD; Daniel Wescott, PhD;  
Hayley Louise Mickleburgh, PhD
- 4:00 p.m. – 4:15 p.m. **A81** **An Actualistic Experimental Replication of a Small-Sized Mass Grave: A Taphonomic Study Aimed at Developing Virtual Training Tools, Advancing Methods of Human Identification, and the Detection and Documentation of Mass Graves**  
Hayley L. Mickleburgh, PhD\*; Michael B. Alexander, PhD; Kennedy O. Doro, PhD;  
Shari L. Forbes, PhD; Andrew L. Ford, MSc; Sarah Gino, MD; Timothy P. Gocha, PhD;  
Lisette M. Kootker, PhD; Noemi Procopio, PhD; Eugene Robinson; Daniel J. Wescott, PhD
- 4:15 p.m. – 4:30 p.m. **A82** **Open Source Geographic Information Systems (GIS) Models for Clandestine Mass Grave Prediction in Developing vs. Industrialized Countries**  
Perla Santillán, MSFS\*; Tal Simmons, PhD
- 4:30 p.m. – 4:45 p.m. **A83** **The Detection of Clandestine Graves in an Arid Environment Using Unmanned Aerial Vehicle (UAV) Remote Sensing**  
Abdullah Alawadhi, MSc\*; Constantine Eliopoulos, PhD
- 4:45 p.m. – 5:00 p.m. **A84** **Continuing to Shift the Forensic Anthropology Paradigm: Let's Be Realistic!**  
Dennis Dirkmaat, PhD\*; Luis L. Cabo, MS; Joe Adserias-Garriga, PhD
- 5:00 p.m. – 5:15 p.m. **A85** **Pair-Matching Commingled Femora: Applying Geometric Morphometrics to Detect Shape Similarities in Human Femora**  
Christina Recheis\*; Roland Wessling, MSc
- 5:15 p.m. – 5:30 p.m. **A86** **Digital Pair-Matching Based on a Mesh-to-Mesh Comparison of 3D Images**  
Yangseung Jeong, PhD\*; Eun Jin Woo, PhD; Charlene Sullivan, BS; Omar Ali, BS;  
Marcus Luciano; Yuryang Jang, PhD

## Thursday—Session II

### Perspectives on the Management of Unidentified Human Remains Cases

*Moderator:*

Kate Spradley, PhD  
 Texas State University  
 San Marcos, TX

*Co-Moderator:*

Justin Goldstein, MA  
 Texas State University  
 Austin, TX

- 8:30 a.m. – 8:45 a.m. **A87** **Expanding Lines of Evidence: Contextualizing Open Forensic Cases to Enhance Identification Efforts in Texas**  
 Molly Kaplan, MA\*; Shelby Garza, MA; Jennifer Barron, MLitt; Michelle Hamilton, PhD
- 8:45 a.m. – 9:00 a.m. **A88** **Addressing Informational Gaps in Family Reference Sample Practices for Transnational Missing Persons' Cases**  
 Diana Madden, MA; Zecilly Guzman, BS; Courtney C. Siegert, MS; Kate Spradley, PhD; Sara H. Katsanis, MS\*; Annika Larson
- 9:00 a.m. – 9:15 a.m. **A89** **Practitioner Attitudes Toward the Management of Unidentified Human Remains in the United States**  
 Jennifer E. Spence, PhD\*; Courtney C. Siegert, MA; Petra Banks, MA; Devora Gleiber, MA; Justin Z. Goldstein, MA; Sophia Mavroudas, MA; Mariah Moe, MA; Emilie Wiedenmeyer, MA; Kate Spradley, PhD
- 9:15 a.m. – 9:30 a.m. **A90** **State Policy Regarding the Treatment of Unidentified Human Remains and the Need for Scientific Advocacy**  
 Courtney C. Siegert MA\*; Jennifer E. Spence, PhD; Petra Banks, MA; Mariah Moe, MA; Devora S. Gleiber, MA; Emilie Wiedenmeyer; Justin Z. Goldstein, MA; Sophia Mavroudas, MA; Kate Spradley, PhD
- 9:30 a.m. – 9:45 a.m. **A91** **A Model for Multidisciplinary Identification Investigations in Medical Examiner and Coroner Offices: The New York City Office of Chief Medical Examiner (NYC OCME) Identification Review Committee**  
 Allison Sharplin, MA\*
- 9:45 a.m. – 10:00 a.m. **BREAK**

### Forensic Anthropology Practiced Internationally

*Moderator:*

Kyra Stull, PhD  
 University of Nevada  
 Reno, NV

*Co-Moderator:*

Laney Feeser, MA  
 SNA International  
 Supporting the Defense POW/MIA Accounting Agency  
 Omaha, NE

- 10:00 a.m. – 10:15 a.m. **A92** **An Introduction to the International Committee of the Red Cross (ICRC) Resolve Platform, a Web-Based Application for the Management of Information of Missing Persons and Human Remains**  
 Maria Mikellide, MA\*; Mirjana Kobasica, MSc; Kristy Winter, MA; Matthew Vennemeyer, MA





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- 10:15 a.m. – 10:30 a.m. **A93** **An Overview of Recent Migrant Drowning Deaths in the Balkans**  
Sherry Fox, PhD\*
- 10:30 a.m. – 10:45 a.m. **A94** **A Forensic Crisis in Mexico: Lessons Learned From International Cooperation**  
Aurora Marcela Pérez-Flórez, MSc\*; Maximilian Murck, MSc;  
María Fernanda Lazcano Campos, BSc
- 10:45 a.m. – 11:00 a.m. **A95** **Forensic Anthropology in the United Kingdom: The Evolving Landscape and Professional Certification of the Discipline**  
Julie Roberts, PhD\*; Sarah Ellingham, PhD; Rachael Carew, PhD; Linda Ainscough, MSc
- 11:00 a.m. – 11:15 a.m. **A96** **WITHDRAWN**
- 11:15 a.m. – 11:30 a.m. **A97** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **BREAK**

## The Biological Profile and Human Identification

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*Moderator:*

Rebecca L. George, PhD  
Western Carolina University  
Cullowhee, NC

*Co-Moderator:*

Ashley C. Smith, MSc  
University of Toronto  
Toronto, Ontario Canada

- 1:00 p.m. – 1:15 p.m. **A98** **Education and the Biological Profile: Survey Data on the Construction of the Biological Profile**  
Ashley Smith, MSc\*; Alexis Dzubak, MS; Alexandra Saly, MSc; Evonne Turner-Byfield, MS;  
Justin Maiers MS
- 1:15 p.m. – 1:30 p.m. **A99** **Theoretical and Methodological Considerations of the Estimation of Osteological Sex Utilizing Fuzzy Rule-Based Inference Systems**  
Katherine Lane, MA\*; Donovan Adams, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 1:30 p.m. – 1:45 p.m. **A100** **The Precision of Morphoscopic Traits for Sex and Ancestry Estimation From 3D Surface Scans of the Crania**  
Sarah Schwing, MA\*
- 1:45 p.m. – 2:00 p.m. **A101** **An Evaluation of the Influence of Socio-Cultural Identity on the Morphology of the Mid-Face Among Black South African Groups for Forensic Implications Using 3D Surface Scanning Modality**  
Alison F. Ridel, PhD\*; Anna Oetlé, PhD; Ericka N. L'Abbé, PhD
- 2:00 p.m. – 2:15 p.m. **A102** **Assessing the Validity of Palate Shape as an Indicator of Population Affinity Through the Use of Elliptical Fourier Analysis (EFA)**  
Christopher Goden, MA\*; Alice Gooding, PhD
- 2:15 p.m. – 2:30 p.m. **A103** **A Survey of Ancestry Estimation Method Preferences and Utilization in Forensic Anthropology**  
Marion Davidson, MSc\*; Ruth Morgan, DPhil
- 2:30 p.m. – 2:45 p.m. **A104** **A Pilot Study to Improve the Identification of Unknown American Indians and Hispanic/Latinx Americans**  
Heather Edgar, PhD\*; Nicollette Appel, MS; Kate Spradley, PhD; Hannah Cantrell;  
Nichole Benally



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- 2:45 p.m. – 3:00 p.m. **A105** **Postmortem Radiological Computed Tomography (CT) Identification Based on Cranial Sutures**  
Michal Peer, MSc\*; Chen Kugel, MD; Haim Cohen, PhD
- 3:00 p.m. – 3:15 p.m. **A106** **A Multifaceted Short Tandem Repeat (STR) and Next Generation Sequencing (NGS) Assessment of Burned Human Remains Using Comparative DNA Extraction and In-Solution Hybridization Capture**  
Matthew Emery, PhD; Katelyn L. Bolhofner, PhD; Suhail Ghafoor; Amanda Wissler, MA; Erin Rawls; Stevie Winingear, MA; Robert F. Oldt, BS; Sreetharan Kanthaswamy, PhD; Jane E. Buikstra, PhD; Laura C. Fulginiti, PhD; Anne Stone, PhD\*
- 3:15 p.m. – 3:30 p.m. **BREAK**

## Queered Science: Interdisciplinary Approaches to Gender-Inclusive Research

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*Moderator:*

Amy Michael, PhD  
University of New Hampshire  
Rochester, NH

*Co-Moderator:*

Samantha H. Blatt, PhD  
Idaho State University  
Pocatello, ID

- 3:30 p.m. – 3:45 p.m. **A107** **Centering Gender-Inclusive Strategies in Forensic Anthropology**  
Mariyam Isa, PhD\*; Amy Michael, PhD; Samantha H. Blatt, PhD; Taylor Flaherty, MSc
- 3:45 p.m. – 4:00 p.m. **A108** **Disciplinary and Community Ethics Surrounding Gender- and Sex-Diverse Individuals in Forensic Casework**  
Laura Cirillo, MA\*; Marin Pilloud, PhD; Jaxson Haug, MA
- 4:00 p.m. – 4:15 p.m. **A109** **Necropolitics and Trans Identities: Language Use as Structural Violence**  
Thomas Delgado, BA\*; Kinsey Stewart, MA
- 4:15 p.m. – 4:30 p.m. **A110** **Identifying Transgender and Gender-Variant Individuals in Public Records: Reconciling Differences Between Law Enforcement Data and Non-Government Organizations (NGOs)**  
Raphaella Meloro, MA\*; Fatimah Bouderdaben, BS
- 4:30 p.m. – 4:45 p.m. **A111** **Identifying Trans Individuals From Skeletal Remains: Indicators of Gender-Affirming Interventions**  
Angelica Bourgeault, MSc\*
- 4:45 p.m. – 5:00 p.m. **A112** **Supporting the Positive Identification of Trans Men in Forensic Anthropological Contexts**  
Jenna Schall, MSc\*; Tracy Rogers, PhD; Jordan Deschamps-Braly, MD, FACS
- 5:00 p.m. – 5:15 p.m. **A113** **When a Reanalysis Changes Everything: A Cold Case Study of a Possible Gender-Variant Individual**  
Alexis Goots, MA\*; Carolyn Isaac, PhD; Todd Fenton, PhD
- 5:15 p.m. – 5:30 p.m. **DISCUSSION**



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## Friday—Session I

### Pioneers of Color: A Diverse Narrative of Forensic Anthropology

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*Moderator:*

An-Di Yim, PhD  
Truman State University  
Kirksville, MO

*Co-Moderator:*

Chaunese M.J. Clemmons, MA  
Texas State University  
Austin, TX

- 8:30 a.m. – 8:45 a.m. **A114** **A Diverse Past, Present, and Future: Resituating the Anthro in Forensic Anthropology**  
Chaunese M.J. Clemmons, MA\*; Matt C. Go, PhD; Alba E. Craig, BA; Isis Dwyer, MA; Aaron J. Young, MA; Kamar Afra, MA
- 8:45 a.m. – 9:00 a.m. **A115** **A Counter–Pantheon to Forensic Anthropology’s Classic Luminaries**  
Jesse R. Goliath, PhD\*; Matthew C. Go, PhD; Allison Nesbitt, PhD; Aaron J. Young, MA; Sydney S. Garcia, MA
- 9:00 a.m. – 9:15 a.m. **A116** **Back to Black: The Legacy and Contributions of Black Pioneers of the 20<sup>th</sup> Century**  
Isis Dwyer, MA\*; Tisa N. Loewen, MA; Chaunese M.J. Clemmons, MA; Evonne Turner–Byfield, MSc; Jesse R. Goliath, PhD; Allison Nesbitt, PhD; Carter Clinton, PhD; Kendra Isable, MA
- 9:15 a.m. – 9:30 a.m. **A117** **Drawing Parallels: Black, Indigenous, and People Of Color (BIPOC) Representation in Other Medicolegal Fields**  
An-Di Yim, PhD\*; Jessica Juarez, PhD; Jesse Goliath, PhD; Isabel Melhado
- 9:30 a.m. – 9:45 a.m. **A118** **Objectivity in the Historical Narrative of Forensic Anthropology**  
Kamar Afra, MA\*; Elaine Y. Chu, MA; Sydney S. Garcia, MA
- 9:45 a.m. – 10:00 a.m. **A119** **Forensic Anthropology’s Role in Activism and Advocacy**  
Fatimah A. Bouderdaben, BS\*; Ivanna Robledo, MA; Alba Craig, BA; Sydney S. Garcia, MA; Tanya Ramos, BA; Evonne Turner–Byfield, MSc
- 10:00 a.m. – 10:15 a.m. **A120** **The (Colonial) Impacts of (Western) Forensic Anthropology in the International Sphere**  
Nandar Yukyi, MA\*; An-Di Yim, PhD; Matthew C. Go, PhD; Ivanna Robledo, MA
- 10:15 a.m. – 10:30 a.m. **A121** **Homework for Modern Forensic Anthropologists**  
Elaine Y. Chu, MA\*; Nandar Yukyi MA; Matthew C. Go, PhD
- 10:30 a.m. – 11:00 a.m. **DISCUSSION**

## Poster Session

- 11:30 a.m. – 1:00 p.m. **A122** **Quantification of the Mincer et al. Age Estimation Method Using Radiographs**  
 Bailey Oettel, MA\*; Brittany Walter, PhD; William Belcher, PhD
- 11:30 a.m. – 1:00 p.m. **A123** **Does Structural Violence Impact Forensic Anthropological Age Estimation? Investigating Skeletal Indicators of Biological “Weathering” in Modern United States Individuals**  
 Taylor Walkup, BA\*; Allysha Winburn, PhD
- 11:30 a.m. – 1:00 p.m. **A124** **The Combined Use of Craniometrics and Odontometrics to Estimate Parameters of the Biological Profile**  
 SaMoura L. Horsley\*; Cassie Skipper, MA; Marin Pilloud, PhD
- 11:30 a.m. – 1:00 p.m. **A125** **Validating the Use of Osteoarthritis as an Indicator of Age in Human Skeletal Remains**  
 Ariana Strasheim, BA\*; Allysha P. Winburn, PhD; Michala Stock, PhD
- 11:30 a.m. – 1:00 p.m. **A126** **An Evaluation of Palate Shape Scoring Systems**  
 Christopher Maier, PhD\*
- 11:30 a.m. – 1:00 p.m. **A127** **A Pilot Study Re-Examining the Hartnett Adult Age-at-Death Estimation Methods as Component Systems**  
 Amelia Konda, BA\*; Sara Getz, PhD; Nicholas Passalacqua, PhD
- 11:30 a.m. – 1:00 p.m. **A128** **Application of the forAGE Program to Pubic Symphyseal Surface in a Korean Population**  
 Hyun Jin Park, MSc\*; Eun Jin Woo, PhD; Kyung-Seok Hu, DDS, PhD
- 11:30 a.m. – 1:00 p.m. **A129** **Age Estimation From Sternebral Fusion in an Indian Population: A Computed Tomographic Evaluation**  
 Rutwik Shedge, MSc\*; Tanuj Kanchan, MD; Pawan Garg, MD; Shilpi Dixit, MD; Varsha Warriar, MSc; Kewal Krishan, PhD\*
- 11:30 a.m. – 1:00 p.m. **A130** **Age Estimation Via Dry Bone Measurements: Evidence From Samples of Soldiers Exiled in Two Concentration Camps in Bari**  
 Mirko Leonardelli, PhD\*; Valeria Santoro, PhD; Antonio De Donno, MD; Federica Mele, MD; Mariagrazia Calvano, MD; Enrica Macorano, MD; Stefano Duma, MD; Carmelinda Angrisani, MD; Sara Sablone, MD; Francesco Introna, MD
- 11:30 a.m. – 1:00 p.m. **A131** **Developing Subadult Sex Estimation Standards Using Adult Morphological Sex Traits and an Ontogenetic Approach**  
 Stephanie Cole, MS\*
- 11:30 a.m. – 1:00 p.m. **A132** **Investigating Reproducibility of a Skeletal Age Estimation Method on Two Samples With Remarkably Different Demographic Profiles**  
 Elena Sierra-Serrano, MSc\*; John Albanese, PhD; Hugo F.V. Cardoso, PhD
- 11:30 a.m. – 1:00 p.m. **A133** **A Revised Method for Adult Age-at-Death Estimation From the Auricular Surface of the Ilium**  
 Krista Bennett, MA\*; Sophia Reck, MA; Teresa Wilson, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **A134** **The Application of Computed Tomography (CT) –Rendered Images for the Evaluation of Traits Associated With Ancestry Estimation in Children**  
 Marianna Cervantes, MSc\*; Hugo Cardoso, PhD

- 11:30 a.m. – 1:00 p.m. **A135** **Geometric Morphometrics for Sex Estimation of the Scapula**  
 Savannah Holcombe, BSc\*
- 11:30 a.m. – 1:00 p.m. **A136** **The Impact of Sex and Population Affinity on the Dental Development of Subadult Individuals**  
 Carolynn Sauter, BS\*; Kelly Kamnikar, MA; Joseph Hefner, PhD; Nicholas Herrmann, PhD;  
 Jennifer Spence, PhD
- 11:30 a.m. – 1:00 p.m. **A137** **The Correlation Between Spheno–Occipital Synchondrosis (SOS) Fusion and Pubertal Stage From Postmortem Computed Tomography (CT) Scans**  
 Francesca Dunn, MSc\*; Jordan Wright, MA; Zia Coblentz, BS; Jonathan Bethard, PhD
- 11:30 a.m. – 1:00 p.m. **A138** **A Comparison of Frontal Sinus Morphology Using Scout Radiographs and 3D Skull Images: Implications for Forensic Identification Methods**  
 Patricia Avent, BA\*; Jessica Campbell, PhD; Heather Garvin PhD; Lauren Butaric, PhD
- 11:30 a.m. – 1:00 p.m. **A139** **The Relationship Between Environmental Factors and Skeletal Metrics in Contemporary New Mexicans**  
 Chelsea Cataldo–Ramirez, MS\*; Kerianne Armelli, MS; Jessica Yopak, MS
- 11:30 a.m. – 1:00 p.m. **A140** **A Validation of Compatibility of the Median Sagittal Plane for 3D Metric Analysis of Facial Models: Cone Beam Computed Tomography (CBCT) and Multidetector Computed Tomography (MDCT)**  
 Dong–Ho Kim, BSc\*; Eun–Ju Jung; Se–Hyun Oh; Won–Joon Lee, PhD; Sang–Seob Lee, PhD;  
 Yi–Suk Kim, MD, PhD; U–Young Lee, MD, PhD
- 11:30 a.m. – 1:00 p.m. **A141** **A Validation of the Utilization of Automatic Placement of Anatomical and Sliding Landmarks on 3D Models for Shape Analysis of Human Pelves**  
 Thandolwethu Mbonani, BSc\*; Alieske Hagg, MSc; Ericka N. L'Abbé, PhD; Anna Oettlé, PhD;  
 Alison Ridel, PhD
- 11:30 a.m. – 1:00 p.m. **A142** **A Validation Test of the Total Difference Technique for Assessing the Frontal Sinus**  
 Jessica L. Campbell, PhD\*; Lauren Butaric, PhD
- 11:30 a.m. – 1:00 p.m. **A143** **The Precision of Standard Cranial Measurements in Dry Bones and Multi–Slice Computed Tomography (MSCT) Images: A Preliminary Study**  
 Ivan Jerković, MSc\*; Tina Bareša; Elvira Krešić; Anita Adamić Hadžić; Željana Bašić;  
 Krešimir Dolić; Marija Čavar Borić; Danijela Budimir Mršić; Mislav Čavka; Mario Šlaus;  
 Dragan Primorac. MD, PhD; Šimun Anđelinović; Ivana Kružić
- 11:30 a.m. – 1:00 p.m. **A144** **Uncovering Identities: A Case Study on Using Maxillary Sinus Morphologies in Human Identification**  
 Teresa Runge, MSc; Joel D. Irish, PhD; Alicia Ventresca Miller, PhD; Matteo Borrini, PhD\*
- 11:30 a.m. – 1:00 p.m. **A145** **The Sociodemographic Composition of a Modern Juvenile Postmortem Computed Tomography (CT) Collection: Examining Trends in Body Size, Manner of Death, and Demographic Parameters**  
 Julia Meyers, MA\*; Natalie Adolphi, PhD; Hugo Cardoso, PhD
- 11:30 a.m. – 1:00 p.m. **A146** **The Application of 3D Models in Age–at–Death and Sex Estimation of the Pubic Symphyseal Face**  
 Anthony V. Lanfranchi, MS\*; Luis L. Cabo, MS

- 11:30 a.m. – 1:00 p.m. **A147** **The Accuracy of Topographical and Shape Analysis Using 3D Surface Scanning Compared to Micro-Computed Tomography (Micro-XCT)**  
 Pearl Bothma, BSc\*; Leandi Liebenberg, MSc; Ericka N. L'Abbé, PhD; Anna Oettlé, PhD; Alison Ridel, PhD
- 11:30 a.m. – 1:00 p.m. **A148** **Myositis Ossificans Circumscripta: Evidence Contributing to the Reconstruction of a Life History**  
 Jennifer Love, PhD\*; Deborrah Pinto, PhD; Julie Fleischman, PhD; Jason Wiersema, PhD
- 11:30 a.m. – 1:00 p.m. **A149** **The Effects of Gender Reassignment Surgery and Related Hormone Treatment on Morphological Sex Estimation in Forensic Anthropology**  
 Shivani Sanger, MSc\*; Heather Bonney, PhD; Nikolas P. Lemos, PhD  
 (FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **A150** **Trotter's Tibia Error in Historical Context**  
 Emily Wilson\*
- 11:30 a.m. – 1:00 p.m. **A151** **Age Estimation From Cranial Suture Obliteration: A Computed Tomography (CT) –Based Evaluation**  
 Mohammed Akbar, MBBS\*; Raghvendra Singh Shekhawat, MD\*; Vikas Meshram, MD; Taruna Yadav, MD; Tanuj Kanchan MD; Rutwik Shedje, MSc
- 11:30 a.m. – 1:00 p.m. **A152** **Age Estimation From Pubic Symphyseal Morphological Changes: A Computed Tomography (CT) –Based Evaluation**  
 Seshagiri Raju Vempalli, MBBS; Vikas Meshram, MD\*; Rutwik Shedje, MSc; Tanuj Kanchan, MD; Raghvendra Singh Shekhawat, MD
- 11:30 a.m. – 1:00 p.m. **A153** **Personal Identification of the L1–L5 Lumbar Vertebra Using Antemortem Computed Tomography (AMCT) and Postmortem Computed Tomography (PMCT) Scans**  
 Summer J. Decker, PhD\*; Guy Ruttly, MBE; Daniel Martin, BS; Jonathan Ford, PhD
- 11:30 a.m. – 1:00 p.m. **A154** **The Limitations of Sex Estimation: A Comparison of Osteological, Genomic, and Proteomic Methods**  
 Glendon Parker, PhD\*; Jane Buikstra, PhD
- 11:30 a.m. – 1:00 p.m. **A155** **A Computed Tomography (CT) –Based Evaluation of the Acetabulum for Age Estimation in an Indian Population**  
 Varsha Warriar, MSc\*; Tanuj Kanchan, MD; Pawan Kumar Garg, MD; Shilpi Gupta Dixit, MD, PhD; Rutwik Shedje, MSc; Kewal Krishan, PhD

## Friday—Session II

### Taphonomy and the Postmortem Interval

*Moderator:*

Kyle A. McCormick, PhD  
 Defense POW/MIA Accounting Agency  
 Joint Base Pearl Harbor–Hickam, HI

*Co-Moderator:*

Michala K. Stock, PhD  
 Metropolitan State University of Denver  
 Denver, CO

- 8:45 a.m. – 9:00 a.m. **A156** **Toward a Model for Estimating Postmortem Interval (PMI) at High Altitude: Categorical Macromorphoscopic Changes Observed Throughout the Trajectory of Human Decomposition in the Colorado Rocky Mountains**  
 Christiane Baigent, MSc\*
- 9:00 a.m. – 9:15 a.m. **A157** **Modeling Scavenging Patterns Within the Willamette Valley of Oregon to Inform Search Structure in Medicolegal Investigations**  
 Cheyenne Collins, BS\*; Jeanne McLaughlin, PhD; Ashley Kendell, PhD
- 9:15 a.m. – 9:30 a.m. **A158** **WITHDRAWN**
- 9:30 a.m. – 9:45 a.m. **A159** **Testing the Efficacy of Bone Surface Swab Sampling of Microbial Colonization to Determine Postmortem Submersion Interval (PMSI) in Lentic and Lotic Environments**  
 Sarah Rose, BSc\*; Hannah Johnson, MSc; Claire Cartozzo, PhD; Jenise Swali, PhD;  
 Tal Simmons, PhD; Baneshwar Singh, PhD
- 9:45 a.m. – 10:00 a.m. **BREAK**

### Age-at-Death Estimation

*Moderator:*

Kate M. Lesciotto, PhD  
 Sam Houston State University  
 Conroe, TX

*Co-Moderator:*

Alex Wong, BA  
 University of Indianapolis  
 Indianapolis, IN

- 10:00 a.m. – 10:15 a.m. **A160** **Improving Age-at-Death Estimation in Forensic Anthropology Applying a Translational Approach**  
 Sara C. Zapico, PhD\*; Quentin Gauthier, PhD; Aleksandra Antevska, BS; Bruce McCord, PhD
- 10:15 a.m. – 10:30 a.m. **A161** **Reference and Target Sample Age Distribution Effects in Juvenile Dental Age Estimation**  
 Valerie Sgheiza, MA, MS\*; Helen Liversidge, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 10:30 a.m. – 10:45 a.m. **A162** **An Age-at-Death Estimation Using Cementochronology in Thermally Altered Teeth**  
 Ryen Weaver, MS\*; Anthony Falsetti, PhD; Timothy Gocha, PhD; Joseph DiZinno, DDS  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 10:45 a.m. – 11:00 a.m. **A163** **Estimating Adult Age Using Radiographs of the Proximal Femur**  
 Jong In Kim, HBSc\*; Tracy Rogers, PhD



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- 11:00 a.m. – 11:15 a.m. **A164** **From Subadult to Adult: Growth of the Cranial Complex and Its Implications in Forensic Anthropology**  
Christopher A. Wolfe, MA\*; Briana T. New, MA; Louise K. Corron, PhD; Kate Spradley, PhD;  
Kyra E. Stull, PhD
- 11:15 a.m. – 11:30 a.m. **A165** **From Subadult to Adult: The Expression of Cranial Macromorphoscopic Traits Through Ontogeny**  
Kyra E. Stull, PhD\*; Elaine Chu, MA; Louise Corron, PhD
- 11:30 a.m. – 11:45 a.m. **A166** **From Subadult to Adult: Understanding Univariate Craniometric Growth Patterns**  
Briana T. New, MA\*; Christopher A. Wolfe, MA; Louise K. Corron, PhD; Kate Spradley, PhD;  
Kyra E. Stull, PhD
- 11:45 a.m. – 1:00 p.m. **BREAK**

## Microscopic, Molecular, and Atomic Techniques

*Moderator:*

Heather A. Walsh-Haney, PhD  
Florida Gulf Coast University  
Fort Myers, FL

*Co-Moderator:*

Devin Adcox  
California State University at Chico  
Chico, CA

- 1:00 p.m. – 1:15 p.m. **A167** **Are Stable Isotopes Truly Stable Enough for Forensic Applications? Forensic Stable Isotope Research at a Human Decomposition Facility**  
Melanie Beasley, PhD\*
- 1:15 p.m. – 1:30 p.m. **A168** **The Significance of Sociocultural Covariates in Stable Oxygen Isotope Analysis: Implications for Region-of-Origin Predictions for Global Populations**  
Taylor Lambrigger, BS\*
- 1:30 p.m. – 1:45 p.m. **A169** **The Detection of Bone Particles in Non-Carbonate Soils**  
Angi Christensen, PhD\*; Ian Saginor, PhD
- 1:45 p.m. – 2:00 p.m. **A170** **Longitudinal Effects of Prolonged Opioid Use on Cortical Bone Remodeling in a Rabbit Model: Part II—Intrasketal Histological Variability and Regional Differences**  
Janna Andronowski, PhD\*; Mary Cole, PhD; Reed Davis, MSc; Adam Schuller, BSc;  
Gina Tubo, BSc; Abigail LaMarca, BSc; Joshua Taylor, BSc
- 2:00 p.m. – 2:15 p.m. **BREAK**



## Thermal Trauma & Burn Pattern Analysis

*Moderator:*

Lindsay H. Trammel, PhD  
 St. Louis County Office of the Medical Examiner  
 St. Louis, MO

*Co-Moderator:*

Elaine Chu, PhD  
 University of Nevada-Reno  
 Reno, NV

- 2:15 p.m. – 2:30 p.m. **A171** **Post-Fire Modifications of Burned Human Remains**  
 Elayne Pope, PhD\*; Chelsey Juarez, PhD; Alison Galloway, PhD
- 2:30 p.m. – 2:45 p.m. **A172** **The Effects of Experimental Whole-Body Burning on the Cortical Bone Microstructure of Ribs, Femora, and Metatarsals**  
 Lauren A. Meckel, PhD\*; Sophia Mavroudas, MA; Justin Goldstein, MA; Shelby Garza, MA; Timothy Gocha, PhD
- 2:45 p.m. – 3:00 p.m. **A173** **Estimating Exposure Time From a Set of Burned Human Remains**  
 Amanda Williams, PhD\*
- 3:00 p.m. – 3:15 p.m. **A174** **3D Analysis of the Microstructure of Heated Bone to Aid in Species Differentiation**  
 Hannah Cross, MS\*; Charlene Greenwood, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 3:15 p.m. – 3:30 p.m. **A175** **Do Bone Elasticity and Postmortem Interval Affect Forensic Fractographic Analyses of Bone?**  
 Jessica Skinner, PhD\*; Natalie Langley, PhD; Malin Joseph, MS;  
 Peter Goguen; Loukham Shyamsunder, PhD; Subramaniam Rajan, PhD

## Trauma Analysis

*Moderator:*

Diana L. Messer, PhD  
 Western Carolina University  
 Cullowhee, NC

*Co-Moderator:*

Jordan Roberson  
 University of Indianapolis  
 Indianapolis, IN

- 3:30 p.m. – 3:45 p.m. **A176** **The Value of Antemortem Skeletal Data in Interpretation of Acute Trauma: Context, Timing, Mechanism, and Likelihood Risk Assessment**  
 Donna Boyd, PhD\*
- 3:45 p.m. – 4:00 p.m. **A177** **tRauma: A New Application for Aiding in Blunt Rib Trauma Interpretations**  
 Cortney Hulse, MA\*; Elaine Chu, MA; Kyra Stull, PhD
- 4:00 p.m. – 4:15 p.m. **A178** **The Frequency of Wedge Fractures in Experimental Bending of the Tibia**  
 Angela Harden, PhD\*; A. Yun-Seok Kang, PhD; Alexander Bendig, MS; John Bolte, PhD; Carla Goldsmith; Amanda Agnew, PhD
- 4:15 p.m. – 4:30 p.m. **A179** **Correlation or Causation? Concealing the Victims and Survivors of Domestic Violence**  
 Micki David, MS\*; Heather Walsh-Haney, PhD; Erica Baer, PhD
- 4:30 p.m. – 4:45 p.m. **A180** **Indirect Gunshot Trauma to the Skeleton: A Meta-Analysis and Experimental View**  
 Samantha Coberly, PhD\*

## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **B1** **Development and Validation of the InnoXtract™ DNA Extraction Method for Bone and Teeth Samples**  
 Mah-Ro Khan, MS\*; Hiromi Brown, PhD; Hailey Holt, BS; Joanne B. Sgueglia, BA; Sudhir K. Sinha, PhD
- 11:30 a.m. – 1:00 p.m. **B2** **The Effects of Temperature and Precipitation on the Amount of Recoverable Human DNA From Soil During Decomposition**  
 Wesley Wagner\*; Pamela L. Marshall, PhD
- 11:30 a.m. – 1:00 p.m. **B3** **Extraction Efficiency Testing of Degraded Bone Samples: Comparing Two Extraction Methods for Use in Downstream Massively Parallel Sequencing (MPS) Applications**  
 Emily Deem, BS\*; Katie Zejdlik, PhD; Tiffany Saul, PhD; Frankie West, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B4** **Evaluating the Effectiveness of Microbial DNA Extraction Kits for Intimate Samples**  
 Grace Rutledge, BS\*; Aaron Lynne, PhD; Rachel Houston, PhD; Sheree Hughes, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B5** **The Development of a Fully Automated System Employing Parallel Processing for Highly Efficient Extraction and Purification of DNA From a Range of Challenging Samples**  
 Matthew Ludeman, PhD\*; Angela Chen, MS; Leo Lai, BSc; Julio Mulero, PhD; William Hutchens, BSc; Kevin Miller, PhD
- 11:30 a.m. – 1:00 p.m. **B6** **A Comparison of Five DNA Extraction Methods to Extract Genomic DNA From Human Body Fluid and Fly Artifact Samples**  
 Alexis Garloff\*; Kelly Elkins, PhD; David Rivers, PhD
- 11:30 a.m. – 1:00 p.m. **B7** **A Comparison of DNA Extraction Techniques for the Recovery of Bovine DNA From Maggot Crops**  
 Cesar Cantu, BS\*; Sibyl Bucheli, PhD; Rachel Houston, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B8** **Magnetic Bead Capture of Sperm Cells by Sperm-Specific Antibodies**  
 Samantha Davis, MS\*; Julia Wang, MS; Rachel Houston, PhD; Sheree Hughes, PhD; Brendan Chapman, BSc; Andrew Currie, PhD
- 11:30 a.m. – 1:00 p.m. **B9** **DNA Methylation of Decedent Blood Samples to Estimate the Chronological Age of Human Remains**  
 Patrick Yew, MS\*; Yessenia Anaya, MS\*; Katherine Roberts, PhD; Winters Hardy, PhD
- 11:30 a.m. – 1:00 p.m. **B10** **An Improved Method for the Analysis of Bisulfite Modified DNA Samples**  
 Deborah Silva, PhD\*; Caitlin Lydon
- 11:30 a.m. – 1:00 p.m. **B11** **The Use of a Mobile Fingerprint Identification Device in the Field and DNA Evidence: Benefits and Consequences**  
 Amber Wetherbee; Hope Hardman\*; Nasir Butt, DPhil; Dawn Schilens, BS; Thomas Gilson, MD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B12** **Evaluating Different Collection Tools for Transfer DNA Deposited on Wooden Surfaces**  
 Antonia Atkinson, BS\*; Alba Craig, BA; Krista Latham, PhD; Cynthia Cale, MS



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| 11:30 a.m. – 1:00 p.m. | <b>B13</b> | <b>Extraction Techniques to Increase DNA Recovery From Touch DNA Samples</b><br>Ryan James Hinojosa, BS; Jillian Conte, PhD*; Lawrence Quarino, PhD; Janine Kishbaugh, MSFS   |
| 11:30 a.m. – 1:00 p.m. | <b>B14</b> | <b>Modeling Assault From Touch DNA</b><br>Jamie Fredericks, PhD; Michael Lane, PhD; Beighley Ayers*   |
| 11:30 a.m. – 1:00 p.m. | <b>B15</b> | <b>The Persistence of Transfer DNA on Touched Objects Over Time</b><br>Alba Craig, BA*; Krista Latham, PhD; Cynthia Cale, MS; Stephen Nawrocki, PhD   |
| 11:30 a.m. – 1:00 p.m. | <b>B16</b> | <b>An Evaluation of Collection Methods for Direct Polymerase Chain Reaction (PCR) Amplification of Touch DNA Samples</b><br>Anna Salmonsén, MFS*; Abigail Bathrick, MFS*; Jonathan Davoren, MS  |
| 11:30 a.m. – 1:00 p.m. | <b>B17</b> | <b>A Combined Extraction of Protein and DNA From Touch Evidence on Ammunition Cartridge Cases</b><br>Ashlee Lynch, BS*; Glendon Parker, PhD   |
| 11:30 a.m. – 1:00 p.m. | <b>B18</b> | <b>Can Variations in DNA Profile Composition Collected From Different Areas of the Same Handgun Inform Future Sampling Strategies?</b><br>Cynthia Cale, MS*; Jessica Miller, MS; Krista Latham, PhD; Erica Cantor, MS   |
| 11:30 a.m. – 1:00 p.m. | <b>B19</b> | <b>The Quantification of Metal Ions Recovered During DNA Analysis of Brass Ammunition Using Inductively Coupled Plasma/Optical Emission Spectrometer (ICP/OES)</b><br>Natalia Czado, MSFS*; Sheree Hughes, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B20</b> | <b>Validation of a Lateral-Flow Immunoassay Test for the Rapid Screening of Cocaine Samples</b><br>Corey Nida, PhD*; Hunter Haddad, MS; Sandra Rodriguez-Cruz, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B21</b> | <b>The Extraction and Identification of Illicit Compounds From Baked Goods Using Paper Spray Ionization Tandem Mass Spectrometry</b><br>Isabella Haberstock*  |
| 11:30 a.m. – 1:00 p.m. | <b>B22</b> | <b>A Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Method Development and Validation for the Quantitation of Cannabinoids in Hemp and Marijuana Samples</b><br>Andrea Yarberry, PhD*; Jerome Mulloor, MS; Melissa Phillips, PhD; Aaron Urbas, PhD; Walter Wilson, PhD         |
| 11:30 a.m. – 1:00 p.m. | <b>B23</b> | <b>A Novel Approach for Quantitation of Total Tetrahydrocannabinol (THC) in Cannabis Plant Extracts by Isotope Dilution Gas Chromatography/Mass Spectrometry (GC/MS)</b><br>Jerome Mullor, PhD; Melissa Phillips, PhD; Aaron Urbas, PhD; Walter Wilson, PhD*; Andrea Yarberry, PhD        |
| 11:30 a.m. – 1:00 p.m. | <b>B24</b> | <b>The Classification of Cannabis Varieties Through Headspace Chemical Analysis and Transfer Learning</b><br>Ting-Yu Huang*; Jorn Chi-Chung Yu, PhD   |
| 11:30 a.m. – 1:00 p.m. | <b>B25</b> | <b>A Genetic and Chemical Characterization of the Cannabis Products Seized at the Croatian Cannabidiol (CBD) Stores</b><br>Slavena Cukrov-Bezbradica, PhD*; Lucija Barbarić, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B26</b> | <b>The Effects of Degradative Stress on the Headspace Profile of Fentanyl</b><br>Leann Forte, BS*; Stephanie Vaughan, PhD; Ashley Fulton, PhD; Lauryn DeGreeff, PhD; Howard K. Holness, PhD; Kenneth G. Furton, PhD<br><i>(FSF Emerging Forensic Scientist Award Poster Presentation)</i> |

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- 11:30 a.m. – 1:00 p.m. **B27** **Fentanyl Degradation in Syringes Obtained From Intravenous (IV) Drug Users in Washington, DC**  
Shayla Montalvo, BA\*; Alexandra Evans, MFS; Morgan Levitas, MFS; Luke Short, PhD
- 11:30 a.m. – 1:00 p.m. **B28** **The Use of Novel Gas Chromatography/Mass Spectrometry (GC/MS) and Gas Chromatography/Infrared Spectroscopy (GC/IR) Libraries for the Differentiation of Positional Isomers of Fentanyl-Related Substances (FRS)**  
Kimiko Ferguson, MSc\*; Michael Gilbert, BS; Reta Newman, MA; Jose Almirall, PhD
- 11:30 a.m. – 1:00 p.m. **B29** **The Application of Electrospun Polymers With Metallic Nanoparticles for Use in the Detection of Fentanyl by Surface-Enhanced Raman Spectroscopy (SERS)**  
Daniel Rubin, BA\*; Mario Vendrell-Dones, MS; Ling Wang, PhD; Bruce McCord, PhD
- 11:30 a.m. – 1:00 p.m. **B30** **Identifying the Similarity Between In-Source Collision-Induced Dissociation (IS-CID) Fragment Ion Spectra and Tandem Mass Spectrometry (MS/MS) Product Ion Spectra for Seized Drug Identifications**  
Jared Sharp, BS\*; J. Tyler Davidson, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B31** **Silver-Doped Nanofibers as Surface-Enhanced Raman Spectroscopy (SERS) Substrates for the Detection of Synthetic Cathinones**  
Mario Vendrell-Dones, MS\*; Daniel Rubin, BA; Ling Wang, PhD; Bruce McCord, PhD
- 11:30 a.m. – 1:00 p.m. **B32** **The Extraction of Cannabidiol (CBD) From Gelatin Edibles With Analysis by Paper Spray Ionization-Mass Spectrometry (PSI-MS)**  
Cheyenne Granger, BA\*
- 11:30 a.m. – 1:00 p.m. **B33** **The Quantitation of Cannabinoids in *Cannabis Sativa* L. Plants From Pakistan Using Gas Chromatography/Flame Ionization Detector (GC/FID)**  
Tahir Jamshaid, MPhil\*; Muhammad Chaudhary, MPhil; Muhammad Usman, MS; Zahid Mehmood, MPhil; Muhamamd Irfan Ashiq, PhD; Muhammad Tahir, PhD; Amina Iqbal
- 11:30 a.m. – 1:00 p.m. **B34** **The Quantitation of Opium Alkaloids in Seized, Crushed, and Mowed Plant Material**  
Muhammad Chaudhary, MPhil\*; Tahir Jamshaid, MPhil; Muhammad Irfan Ashiq, PhD; Mohammad Tahir, PhD; Atiqa Asif, MPhil
- 11:30 a.m. – 1:00 p.m. **B35** **The Use of Urine Rapid Response Fentanyl Test Strips to Detect Fentanyl in Seized Substances**  
Lauren Bishop\*
- 11:30 a.m. – 1:00 p.m. **B36** **Continuous Vapor Sampling of Volatile Organic Compounds (VOCs) Associated With Explosives and Cocaine Using Capillary Microextraction of Volatiles (CMV)**  
Jacqueline Rodriguez, MS\*; Jose Almirall, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B37** **An Assessment of Robotic Solid Phase and Immunoaffinity Microextraction With Intact Mass Analysis for Saliva Identification in Forensic Samples**  
Catherine Brown, PhD; Phillip Danielson, PhD; Kevin Legg, PhD\*
- 11:30 a.m. – 1:00 p.m. **B38** **The Separation of Natural and Synthetic Hallucinogenic Tryptamines Using High-Performance Liquid Chromatography-Photodiode Array (HPLC-PDA) and Ultra-High Performance Liquid Chromatography-Photodiode Array/Mass Spectrometry (UHPLC-PDA/QDa)**  
Mia Fabbri, BS\*; Marianne Staretz, PhD; Matthew Wood, PhD; Daniel Garrison, BS; Peter Harrsch, PhD; Thomas Brettell, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
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## Thursday—Session I

### Standards Development and What We Think

*Moderator:*

Ashley Hall, PhD  
 University of Illinois at Chicago  
 Chicago, IL

*Co-Moderator:*

Lucio Avellaneda, BS  
 Sam Houston State University  
 Huntsville, TX

- 8:30 a.m. – 8:45 a.m. **B39** **Community Resources and Updates From the Scientific Working Group for DNA Analysis Methods (SWGAM) Next Generation Sequencing (NGS) Committee**  
 Katherine Gettings, PhD\*
- 8:45 a.m. – 9:00 a.m. **B40** **Standards Development Activities in Human Forensic Biology**  
 Kristy Kadash, PhD\*; Beth Ordeman, MS
- 9:00 a.m. – 9:15 a.m. **B41** **A Short Tandem Repeat (STR) Sequence Nomenclature Update From the Short Tandem Repeat: Align, Name, Define (STRAND) Working Group**  
 Katherine Gettings, PhD\*; David Ballard, PhD; Martin Bodner, PhD; Jonathan King, MS; Walther Parson, PhD; Christopher Phillips
- 9:15 a.m. – 9:30 a.m. **B42** **An Evaluation of the Current Opinion of Next Generation Sequencing (NGS) Technology in Forensics Through a Global Survey**  
 Megan Foley, MSFS\*; Fabio Oldoni, PhD
- 9:30 a.m. – 9:45 a.m. **B43** **American Forensic Practitioners' Opinions on Activity-Level DNA Reporting**  
 Yoon Yang MS; Mechthild Prinz, PhD; Heather McKiernan, PhD; Fabio Oldoni, PhD\*
- 9:45 a.m. – 10:00 a.m. **BREAK**

### Forensic Biology at Human Decomposition Facilities

*Moderator:*

Sheree R. Hughes, PhD  
 Sam Houston State University  
 Huntsville, TX

*Co-Moderator:*

Emma M. Giacomello, BS  
 Texas State University  
 San Marcos, TX

- 10:00 a.m. – 10:15 a.m. **B44** **Microbial Dynamics of Human Decomposition Accurately Estimate Postmortem Interval**  
 Zachary Burcham\*; Aerial Belk; Alexandra Emmons, PhD; Heather Deel, BS; Amina Bouslimani; Zhenjiang Xu, PhD; Qiyun Zhu; Sibyl Bucheli, PhD; Aaron Lynne, PhD; Melissa Connor, PhD; Dawnie Steadman, PhD; Giovanna Vidoli, PhD; Sasha Reed; Michael Shaffer; Kelly Wrighton; Parsa Ghadermazi; Joshua Chan; David Carter, PhD; Rob Knight, PhD; Jessica Metcalf, PhD
- 10:15 a.m. – 10:30 a.m. **B45** **A Pilot Study of Microbial Succession in Human Rib Skeletal Remains During Terrestrial Decomposition**  
 Heather Deel, BS\*; Alexandra Emmons, PhD; Jennifer Kiely, BS; Franklin Damann, PhD; David Carter, PhD; Aaron Lynne, PhD; Rob Knight, PhD; Zhenjiang Xu, PhD; Sibyl Bucheli, PhD; Jessica Metcalf, PhD
- 10:30 a.m. – 10:45 a.m. **B46** **Forensic Microbiology of Human Cadavers in an Experimental Mass Grave**  
 Noemi Procopio, PhD\*; Sarah Gino, MD; Onengiye Ogbanga, MSc; Timothy P. Gocha, PhD; Daniel J. Wescott, PhD; Hayley L. Mickleburgh, PhD



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| 10:45 a.m. – 11:00 a.m. | <b>B47</b> | <b>Bone Fluorescence, Taphonomy, and the Postmortem Interval (PMI)</b><br>Natalie Moss*; Alexander Smith; Melissa Connor, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>  |
| 11:00 a.m. – 11:15 a.m. | <b>B48</b> | <b>Bone “Soft” Maceration Procedures at Human Taphonomy Facilities: How “Soft” Are They Really?</b><br>Noemi Procopio, PhD*; Luke William Gent, BS; Andrea Bonicelli, PhD  |
| 11:15 a.m. – 11:30 a.m. | <b>B49</b> | <b>The Optimization of the InnoXtract™ Extraction and Purification System for DNA Extraction From Skeletal Samples and Analysis of Subsequent Downstream Processing Methods</b><br>Jennifer Snedeker, BS*; David Russell, MS; Michelle Peck, MSc; Amy Holmes, PhD; Elayna Ciuzio, MS; Christina Neal, MS; Carmen Reedy, PhD; Sheree Hughes, PhD; Rachel Houston, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i> |
| 11:30 a.m. – 11:45 a.m. | <b>B50</b> | <b>The Application of Ancient DNA Methodologies to Burned Forensic Samples and Their Potential to Aid in the Identification and Analyses of Difficult Samples</b><br>Cody Parker, PhD*; Erin Rawls, BS; Katelyn Bolhofner, PhD; Laura C. Fulginiti, PhD; Giovanna Vidoli, PhD; Joanna Devlin, PhD; Sree Kanthaswamy, PhD; Anne Stone, PhD  |
| 11:45 a.m. – 12:00 p.m. | <b>B51</b> | <b>Rapid DNA Profiling for Disaster Victim Identification (DVI)</b><br>Jeremy Watherston, MSFS*; David Bruce, PhD; Dennis McNevin, PhD; Jodie Ward, PhD  |
| 12:00 p.m. – 1:00 p.m.  |            | <b>BREAK</b>   |

## All the ‘omes: Microbiome, Virome, and Proteome

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*Moderator:*  
Nicole Fernandez-Tejero, MSc  
Florida International University  
Miami, FL

*Co-Moderator: TBD*  
Noemi Procopio, PhD  
Northumbria University  
New Castle upon Tyne, United Kingdom

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| 1:00 p.m. – 1:15 p.m. | <b>B52</b> | <b>The Identification and Characterization of Viral Biomarkers</b><br>Ema Graham, MS*; Michael Adamowicz, PhD; Jennifer Clarke, PhD; Samodha Fernando, PhD; Joshua Herr, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>   |
| 1:15 p.m. – 1:30 p.m. | <b>B53</b> | <b>Seasonal Comparisons Between Soil Fungal and Bacterial Communities Impacted by Human Decomposition</b><br>Lois Taylor, PhD*; Allison Mason, BS; Jennifer DeBruyn, PhD   |
| 1:30 p.m. – 1:45 p.m. | <b>B54</b> | <b>Body Mass Index (BMI) Impacts on Soil Chemical and Microbial Responses During Human Decomposition</b><br>Allison Mason, BS*; Hayden McKee, MS; Katharina Hoeland, MS; Sarah Schwing, MA; Erin Patrick, MS; Shawn Campagna, PhD; Dawnie Steadman, PhD; Jennifer DeBruyn, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i> |
| 1:45 p.m. – 2:00 p.m. | <b>B55</b> | <b>Proteomic Genotyping in Compromised Skeletal Remains</b><br>Glendon Parker, PhD*; Jennifer Snedeker, BS; Trevor Borja, MSFS; Rachel Houston, PhD  |
| 2:00 p.m. – 2:15 p.m. | <b>B56</b> | <b>The Use of Proteomic Genotyping to Estimate Genetic Ancestry for Intelligence Purposes</b><br>Zachary Goecker, PhD*; Noah Herrick, MSFS; Bailey Wills, MSFS; Susan Walsh, PhD; Glendon Parker, PhD  |
| 2:15 p.m. – 2:30 p.m. |            | <b>BREAK</b>   |

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## DNA Extraction

*Moderator:*

Jillian Conte, PhD  
MicroGEM  
Charlottesville, VA

*Co-Moderator:*

Jennifer L. Snedeker, BS  
Sam Houston State University  
Huntsville, TX

- 2:30 p.m. – 2:45 p.m. **B57** **The Development and Evaluation of Two DNA Collection/Extraction Techniques for Cartridge Cases**  
Kyleen Elwick, PhD\*; Quentin Gauthier, PhD; Stephanie Rink, MFS; Emily Cropper, MS; Mark Kavlick, PhD
- 2:45 p.m. – 3:00 p.m. **B58** **A Comparison of the Effect of Manual Versus Robotic DNA Extraction Methods on the Microbial Communities Associated With Forensically Relevant Human Biological Samples**  
Denise Wohlfahrt, BS\*; Sarah Seashols-Williams, PhD; Paul Brooks, PhD; Baneshwar Singh, PhD
- 3:00 p.m. – 3:15 p.m. **B59** **Using Bone Biology to Optimize Forensic and Ancient DNA Extraction From Post-Cranial Skeletal Elements**  
Keith Biddle, MA\*
- 3:15 p.m. – 3:30 p.m. **B60** **Compositional Analysis of Human Skeletal Samples Using Raman Spectroscopy and Correlation to DNA Recovery**  
Cody Silverman\*; Brooke Kammrath, PhD; Angie Ambers, PhD
- 3:30 p.m. – 3:45 p.m. **B61** **An Enhanced DNA Extraction Method for Charred Bone Remains Using Pressure Cycling Technology (PCT)**  
Kira Hurley, BS\*; Lisa Ludvico, PhD; Angie Ambers, PhD; Pamela L. Marshall, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 3:45 p.m. – 4:00 p.m. **B62** **Alternative Sperm Cell Lysis Methods for Sexual Assault Samples**  
Sarah K. Schellhammer, MS; Brittany C. Hudson, MS\*; Jordan O. Cox, MS; Tracey Dawson Green, PhD

## Thursday—Session II

### Methylation, Tissues, and Body Fluids

*Moderator:*

Glendon Parker, PhD  
University of California, Davis  
Davis, CA

*Co-Moderator:*

Ya Chi (Jessica) Cheng, MS  
Sam Houston State University  
Huntsville, TX

- 8:30 a.m. – 8:45 a.m. **B63** **An Evaluation of a Body Fluid Identification Method Using MicroRNAs (miRNAs) Co-Extracted With DNA**  
Kelsey Price, BS\*; Carolyn Lewis, BS; Ciara Rhodes, BS; Anaya Valentine, MS; Edward Boone, PhD; Sarah Seashols-Williams, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 8:45 a.m. – 9:00 a.m. **B64** **A Demonstration of a Semi-Automated, Extraction-Free, MicroRNA (miRNA) Gene Expression Profiling Method for the Simultaneous Detection of Biofluids**  
Amy Brodeur, MFS\*; Frank Kero, PhD; B.J. Kerns, BS



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- 9:00 a.m. – 9:15 a.m. **B65** **Direct Messenger RNA (mRNA) Sequencing for the Identification and Analysis of Human Body Fluids**  
Quentin Gauthier, PhD\*; Patrick Rydzak, PhD; Kyleen Elwick, PhD; Mqrk Kavlick, PhD
- 9:15 a.m. – 9:30 a.m. **B66** **The Development of Pyrosequencing-Based DNA Methylation Assay for Menstrual Blood Identification**  
Mirna Ghemrawi, MSFS\*; Nicole Fernandez-Tejero, MS; Valeria Castaneda, BS; Bruce McCord, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:30 a.m. – 9:45 a.m. **B67** **The Optimization of a Rotationally Driven Microfluidic Method for Forensic DNA Methylation Sample Preparation**  
Rachelle Turiello, MS\*; Leah Dignan, BS; Francine Garrett-Bakelman, MD, PhD; James Landers, PhD
- 9:45 a.m. – 10:00 a.m. **BREAK**

## In the Lab and Databases

### Moderator:

Pamela L. Marshall, PhD  
Duquesne University  
Pittsburgh, PA

### Co-Moderator:

Mark Profili, MS  
Towson University  
Towson, MO

- 10:00 a.m. – 10:15 a.m. **B68** **A Quantiplex™-High Resolution Melt (HRM) Integrated Assay for Early Mixture Detection Using Support Vector Machine Modeling for “Whole Curve” Analysis/Proof-of-Concept Testing**  
Chastyn Smith, BS\*; Andrea Williams, MS; Hannah Wines, MS; Darianne Cloudy, MS; Jordan Cox, MS; Dayanara Torres, BS; Sarah Williams, PhD; Edward Boone, PhD; Tracey Dawson Green, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 10:15 a.m. – 10:30 a.m. **B69** **The Integration of a High Resolution Melt (HRM) Mixture-Prescreening Assay Into the Quantifiler® Trio Quantification Chemistry Using the QuantStudio™ 6 Flex Real-Time Polymerase Chain Reaction (PCR) System**  
Dayanara Torres, BS\*; Chastyn Smith, BS; Andrea Williams, MS; Edward Boone, PhD; Tracey Dawson Green, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 10:30 a.m. – 10:45 a.m. **B70** **Using Mitochondrial DNA (mtDNA) and the Y-Chromosome to Estimate Population Affinity and Region of Origin**  
Andrew Schweighardt, PhD\*; Angela Soler, PhD
- 10:45 a.m. – 11:00 a.m. **B71** **Solving Cold Cases With Databases: Considerations for the Application of Advanced DNA Searching Methodologies**  
Ashley Rodriguez\*
- 11:00 a.m. – 11:15 a.m. **B72** **FauxDIS: An Interactive Online Forensic DNA Profile Database**  
Ashley Hall, PhD\*; Jonathan Bisson, PhD





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## A Little Bit of This and a Little Bit of That

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*Moderator:*

Megan M. Foley, MSFS  
The George Washington University  
Washington, DC

*Co-Moderator:*

Mirna Ghemrawi, MSFS  
Florida International University  
Miami, FL

- 11:15 a.m. – 11:30 a.m. **B73** **WITHDRAWN**
- 11:30 a.m. – 11:45 a.m. **B74** **The Interpretation of Y-Chromosome Short Tandem Repeats (Y-STRs) for Missing Persons Cases**  
Jianye Ge, PhD\*; Benjamin Crysups, PhD; Dixie Peters, MS; Meng Huang, PhD;  
Bruce Budowle, PhD
- 11:45 a.m. – 12:00 p.m. **B75** **An Evaluation of a 74 Microhaplotypes (MHs) Assay for Kinship Testing in Four Major United States Population Groups**  
Fabio Oldoni, PhD\*; Chiara Della Rocca, BS; Daniele Podini, PhD
- 12:00 p.m. – 12:15 p.m. **B76** **Microwave Pre-Processing for Enhanced Rapid DNA Analysis of Forensic Samples**  
Nicole Fernandez-Tejero, MSc\*; Fabiana Taglia, MS; Casandra Hernandez-Setser, PhD;  
Ling Wang, PhD; Robert O'Brien, BS; Kevin Lothridge, MS; Bruce McCord, PhD\*;  
Steven B. Lee, PhD
- 12:15 p.m. – 12:30 p.m. **B77** **Touch DNA Recovery to Inform Activity-Level Propositions: Fingerprints in the Wild and Their Domesticated Counterparts**  
Ashley Hall, PhD\*; Ray Wickenheiser, DPS; Megan Tyahla, BS; Nivida Shete, MS
- 12:30 p.m. – 1:30 p.m. **BREAK**

## Bashinski Special Session

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*Moderator:*

Sandra B. Sachs, PhD  
Oakland Police Department  
Oakland, CA

- 1:30 p.m. – 1:50 p.m. **B78** **A Responsive Academy Seeing the Modern Forensic World Through the Lens of Its History: Lessons Learned From the Pioneering Jan Bashinski**  
Sandra B. Sachs, PhD\*
- 1:50 p.m. – 2:10 p.m. **B79** **The Important Role of Generalists in the Modern Forensic Science World of Specialists**  
JoAnn Buscaglia, PhD\*; Jack Hietpas, PhD\*; Peter De Forest, PhD
- 2:10 p.m. – 2:30 p.m. **B80** **Taking the Lead: Jan Bashinski and the Development of Modern Analytical Methods for the Chemical Detection of Gunshot Residues**  
Michelle D. Miranda, PhD\*
- 2:30 p.m. – 2:45 p.m. **B81** **Jan Bashinski's Progressive Approach to Crime Lab Management: The Development of the Systematic Approach for the Analysis of Semen Evidence From 1978 to 1985**  
George Sensabaugh, DCrim\*; Edward Blake, DCrim
- 2:45 p.m. – 3:00 p.m. **B82** **Examining the Analytical Threshold (AT) Methods Used in Interpreting Capillary Electrophoresis (CE) -Based Short Tandem Repeat (STR) Profiles**  
Sarah Riman, PhD\*; Hari Iyer, PhD; Peter Vallone, PhD



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| 3:00 p.m. – 3:15 p.m. | <b>B83</b> | <b>Lessons Learned From a 40-Year Career in Forensic Science</b><br>Barry Fisher, MS, MBA*   |
| 3:15 p.m. – 3:30 p.m. | <b>B84</b> | <b>Fixing Forensic Science by Learning How to Learn From Our Mistakes</b><br>Brian Gestring, MS*   |
| 3:30 p.m. – 3:45 p.m. | <b>B85</b> | <b>Reclaiming Forensic Science: A Closer Look at the Sydney Declaration</b><br>Michelle D. Miranda, PhD; Sheila Willis, PhD; Patrick Buzzini, PhD*; Rebecca Bucht, PhD                 |
| 3:45 p.m. – 4:00 p.m. |            | <b>BREAK</b>   |
| 4:00 p.m. – 4:15 p.m. | <b>B86</b> | <b>Case Contextual Information and Its Variation Among Forensic Laboratories</b><br>Taylor Hopkins*; Lyndsie Ferrara, PhD<br>(FSF Emerging Forensic Scientist Award Oral Presentation) |
| 4:15 p.m. – 5:00 p.m. |            | <b>DISCUSSION</b>  |

## Thursday—Session III

### Fire Debris, Explosives, and Firearms

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*Moderator:*

Christopher Chany, MS  
Texas Department of Public Safety  
Austin, TX

*Co-Moderator:*

Reta Newman, MA  
Pinnellas County Forensic Lab  
Largo, FL

|                         |            |  |
|-------------------------|------------|--|
| 8:30 a.m. – 8:45 a.m.   | <b>B87</b> | <b>The Development of an <i>In Situ</i> Sampling Interface for Thermal Desorption Direct Analysis in Real-Time Mass Spectrometry (TD/DART®-MS) Analysis of Ignitable Liquid Residues (ILRs) in Fire Debris Samples</b><br>Briana Capistran, PhD*; Matthew Staymates, MS; Edward Sisco, PhD |
| 8:45 a.m. – 9:00 a.m.   | <b>B88</b> | <b>A Sensitivity Analysis of Dynamic Vapor Microextraction With Simulated Fire Debris</b><br>Jennifer Berry*; Mary Gregg; Amanda Koepke; Chris Suiter; Reta Newman, MA; Kavita Jeerage   |
| 9:00 a.m. – 9:15 a.m.   | <b>B89</b> | <b>Gasoline Identification by Pattern Recognition: Facts and Myths</b><br>Reta Newman, MA*; Brenda Christy, MS; Kelsey Winters, MS; Michael Gilbert, BS  |
| 9:15 a.m. – 9:30 a.m.   | <b>B90</b> | <b>Standards Development Activities Related to Ignitable Liquids, Explosives (ILE), and Gunshot Residue (GSR)</b><br>Brenda Christy, MS*   |
| 9:30 a.m. – 10:00 a.m.  | <b>B91</b> | <b>Standards Development Activities in Firearm and Toolmark Examination</b><br>Jennifer Floyd, BS*; Gregory Laskowski, MPA   |
| 10:00 a.m. – 10:15 a.m. | <b>B92</b> | <b>Bullet Ricochet of Polymer-Coated Bullets</b><br>Stephen Daly*; Peter Diaczuk, PhD  |
| 10:15 a.m. – 10:30 a.m. | <b>B93</b> | <b>A Forensic-Related Study on AK Bullet (7.62mm X 39mm) Holes on 1mm Sheet Metal and the Designing of the First Android-Based Field Investigation Tool for AK Gun-Related Bullet Trajectory Reconstructions</b><br>Bandula Nishshanka, MS*; Randika Ariyaratna, MS; Chris Shepherd, PhD   |
| 10:30 a.m. – 10:45 a.m. | <b>B94</b> | <b>The Forensic Discrimination of Aluminum Sources in Improvised Explosive Devices (IEDs) Using Quantitative Trace Elemental Analysis</b><br>Anjuli Bhandari, PhD*; Michelle Jordan, PhD; Christopher Saunders, PhD; Danica Ommen, PhD; JoAnn Buscaglia, PhD                               |



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## Latent Prints

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Moderator:

Ann Geisendorfer, JD  
Schenectady, NY

- 10:45 a.m. – 11:00 a.m. **B95** **Loading Artificial Fingerprints Onto Brass Shell Casings for Improved Method Development and Proficiency Testing**  
Curt Hewitt\*; Danielle LeSassier; Benjamin Ludolph; Kathleen Schulte; Myles Gardner
- 11:00 a.m. – 11:15 a.m. **B96** **Standards Development Activities Related to the Examination of Friction Ridge Detail**  
Heidi Eldridge, PhD\*
- 11:15 a.m. – 11:30 a.m. **B97** **Understanding and Generating Close Non-Matches in Latent Prints for Training, Testing, and Research**  
Heidi Eldridge, PhD\*; Christophe Champod, PhD
- 11:30 a.m. – 11:45 a.m. **B98** **How Do Latent Print Examiners Perceive Blind Proficiency Testing? A Survey of Practicing Examiners**  
Brett Gardner, PhD\*; Sharon Kelley, PhD; Maddisen Neuman, MA
- 11:45 a.m. – 12:00 p.m. **B99** **What Types of Information Can and Do Latent Print Examiners Review? A Survey of Practicing Examiners**  
Brett Gardner, PhD\*; Sharon Kelley, PhD; Maddisen Neuman, MA
- 12:00 p.m. – 12:15 p.m. **B100** **Does Image Editing Improve the Quality of Latent Prints? An Analysis of Image-Enhancement Techniques in One Crime Laboratory**  
Brett Gardner, PhD; Maddisen Neuman, MA\*; Sharon Kelley, PhD
- 12:15 p.m. – 1:00 p.m. **BREAK**

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## Poster Session

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- 11:30 a.m. – 1:00 p.m. **B101** **The Validation of a Systematic Method for Duct Tape Physical Fits Through Inter-Laboratory Studies**  
Meghan Prusinowski\*; Evie Nguyen; Tatiana Trejos, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B102** **Student Perceptions of the Forensic Science Major at Middle Tennessee State University**  
Cole Buffalini, BS\*; Frank Bailey, PhD; Karen Reed, PhD
- 11:30 a.m. – 1:00 p.m. **B103** **Optimization Parameters of Fragmentary Voltage and Collision Energy for Identification and Separation of RDX (1,3,5-Trinitro-1,3,5-Triazinane) From Other Explosives With Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
Blerim Olluri; Milazim Tahirukaj\*; Andriana Surleva; Xhemajl Ademaj; Herolind Krasniq, MS
- 11:30 a.m. – 1:00 p.m. **B104** **Automated Particle Micromorphometry and Statistical Scoring for Improved Characterization of Aluminum (Al) Powders in Improvised Explosive Devices (IEDs)**  
Kayla Moquin, BS\*; Cami Fuglsby, MS; JenaMarie Baldaino, MS; Danica Ommen, PhD\*; Christopher Saunders, PhD; Jack Hietpas, PhD; JoAnn Buscaglia, PhD
- 11:30 a.m. – 1:00 p.m. **B105** **The Impact of Ultraviolet (UV) Radiation and Plane Polarized Light (PPL) Microspectrophotometry (MSP) in the Characterization and Differentiation of Deeply Colored Automotive Fibers**  
Andra Lewis, MSFS\*; Patrick Buzzini, PhD



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- 11:30 a.m. – 1:00 p.m. **B106** **Using Capillary Columns for Measurements of Relative Distribution Constants of Vaporized Hydrocarbons Between Headspace and Polydimethylsiloxane (PDMS) Solid-Phase Microextraction (SPME) Fibers for Quantitative Chemical Analysis of Ignitable Liquids**  
Joonyeong Kim, PhD\*
- 11:30 a.m. – 1:00 p.m. **B107** **The Evaluation of a Thermodynamic Model to Predict the Weathering of Ignitable Liquids at Different Temperatures**  
Hannah L. McMillen\*; Glen P. Jackson, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B108** **Quantitative Ballistic Cartridge Case Analysis Using Micro-Computed Tomography (CT)**  
Kirsty Alsop, MS\*; Danielle Norman, PhD; Guillaume Remy, PhD; Paul Wilson, PhD; Mark Williams  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B109** **An Internal Validation Study of the TopMatch 3D Scanner for Cartridge Cases**  
Kayli Carrillo, BS\*; Alexis Moser, BS; Jennifer Turner, MS  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B110** **The Assessment of Modern Glass From Portable Electronic Devices (PED) and Their Accessories by Micro X-Ray Fluorescence ( $\mu$ -XRF) for Their Use in Forensic Investigations**  
Oriana Ovide, BS\*; Ruthmara Corzo, PhD; Tatiana Trejos, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B111** **A Microscopical Examination and Elemental Analysis of Automotive Lubricating Greases**  
Jared Estevanes, BS\*; Rajesh Balaraman, PhD; Patrick Buzzini, PhD; Geraldine Monjardez, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B112** **Rapid Spectrochemical Mapping Techniques for the Enhanced Detection and Visualization of Gunshot Residue (GSR) Patterns**  
Courtney Vander Pyl, MS\*; Korina Menking-Hoggatt, PhD; Tatiana Trejos, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. – 1:00 p.m. **B113** **Combining Novel Sampling Techniques and Electrochemical Detection in Gunshot Residue (GSR) Analysis for Bullet Hole Identification and Distance Determination**  
Kourtney Dalzell, BS\*; Courtney Vander, MS; Tatiana Trejos, PhD; Luis Arroyo, PhD
- 11:30 a.m. – 1:00 p.m. **B114** **A Characterization of Mounting Media for Hair and Fiber Microscopy**  
Maria Lawas, MS; Linda Otterstatter, BS; Joshua Friedman, MS; Joseph Donfack, PhD\*
- 11:30 a.m. – 1:00 p.m. **B115** **A Diagnosis of Abusive Head Trauma (AHT): The Role of Immunohistochemistry in a Multidisciplinary Approach**  
Eleonora Mezzetti, MD\*; Andrea Costantino, MD; Andrea Scatena, MD; Giacomo Visi, MD; Paola Santoro, MD; Fabio Del Duca, MD
- 11:30 a.m. – 1:00 p.m. **B116** **Visualizing Shed Skin Cells in Fingerprint Residue Using Dark Field Microscopy**  
Shin Muramoto, PhD\*
- 11:30 a.m. – 1:00 p.m. **B117** **An Evaluation of the Stability and Durability of an Inkless Method for Fingerprint Recordings**  
Sihai Li, BS\*; Josep De Alcaraz-Fossoul, PhD



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## Trace: Metals, Paint, Hair, Glass, Tire

### Moderator:

Brenda Christy, MS  
Virginia Department of Forensic Science  
Norfolk, VA

### Co-Moderator:

Heidi Eldridge, PhD  
RTI International  
Research Triangle Park, NC

- 1:00 p.m. – 1:15 p.m. **B118** **Standards Development Activities in Trace Materials**  
Celeste M. Grover, MSFS\*
- 1:15 p.m. – 1:30 p.m. **B119** **WITHDRAWN**
- 1:30 p.m. – 1:45 p.m. **B120** **The Forensic Discrimination of Copper Metal by Laser-Induced Breakdown Spectroscopy (LIBS)**  
Chase Notari, BS\*; Brooke Kammrath, PhD
- 1:45 p.m. – 2:00 p.m. **B121** **The Transfer of Metal Traces by Human Touch Detected Using a Scanning Electron Microscopy With Energy-Dispersive X-ray Spectroscopy (SEM/EDS) Technique: A Pilot Study**  
Sofia Bodini, MD\*; Alberto Amadasi, PhD; Giacomo Govoni; Giacomo Belli, MD;  
Elena Cavriani, MD; Paola Braga, MD; Matteo Moretti, MD; Silvia Damiana Visonà, PhD
- 2:00 p.m. – 2:15 p.m. **B122** **A Comparative Study on the Background Presence of Glass and Paint in Various Populations and Seasons in the United States**  
Lauryn Alexander, PhD\*; Oriana Ovide, MS; Olivia Duffett, BS; Andra Lewis-Krick, PhD;  
Patrick Buzzini, PhD; Tatiana Trejos, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 2:15 p.m. – 2:30 p.m. **B123** **WITHDRAWN**
- 2:30 p.m. – 2:45 p.m. **B124** **Interlaboratory Studies to Evaluate the Forensic Analysis and Interpretation of Glass Evidence**  
Katelyn Lambert, MS\*; Shirly Montero, PhD; Jose Almirall, PhD
- 2:45 p.m. – 3:00 p.m. **B125** **A Chemical Approach to Tire Mark Analysis—Preliminary Protocols From Collection on Scene to Elemental Profiling**  
John Lucchi, MS\*; Veronica Flores, BS; Matthieu Baudelet, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 3:00 p.m. – 3:15 p.m. **B126** **Evaluating the Discriminating Power of Hair Amino Acid Ratios for Distinguishing Individuals Using Gas Chromatography/Mass Spectrometry (GC/MS)**  
Timothy Yaroshuk, MS\*; Alyssa Marsico, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 3:15 p.m. – 3:30 p.m. **BREAK**

## Drugs I

### Moderator:

J. Tyler Davidson, PhD  
Sam Houston State University  
Huntsville, TX

### Moderator:

Jason R. Bory, MS  
U.S. Custom & Border Protection, New York Lab  
Newark, NJ

- 3:30 p.m. – 3:45 p.m. **B127** **Standards Development Activities in Seized Drugs**  
Agnes D. Winokur, MS\*
- 3:45 p.m. – 4:00 p.m. **B128** **A Comparison of Analytical Workflows for Seized Drug Analysis**  
Edward Sisco, PhD\*; Amber Burns, MSFS; Elizabeth Schneider, BS; Charles R. Miller IV,  
MSFS; Laurel Bobka, MSFS



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- 4:00 p.m. – 4:15 p.m. **B129** **Evaluating the Robustness and Ruggedness of a Statistical Method to Compare Mass Spectra**  
Andrew Sacha, BS\*; Victoria McGuffin, PhD; Ruth Waddell Smith, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:15 p.m. – 4:30 p.m. **B130** **WITHDRAWN**
- 4:30 p.m. – 4:45 p.m. **B131** **The Development of an Expert Algorithm for Substance Identification (EASI) of Fentanyl Analogs Using Mass Spectrometry**  
Alexandra Adeoye, BS\*; Glen P. Jackson, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:45 p.m. – 5:00 p.m. **B132** **Extracted Volatiles From Cannabis Smoke: A Potential Source for the Determination of Detectable Exhalable Breath Components in Users**  
Katherine E. Zink, PhD\*; Kavita M. Jeerage, PhD; Tara M. Lovestead, PhD
- 5:00 p.m. – 5:15 p.m. **B133** **Gas Chromatography/Mass Spectrometry (GC/MS) of Phencyclidine (PCP) Analogs**  
Alexandra Kuchinos, BS\*; Thomas Brettell, PhD; Lawrence Quarino, PhD; Jennifer Bonetti, MS  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 5:15 p.m. – 5:30 p.m. **B134** **High-Performance Thin-Layer Chromatography (HPTLC) Separation of Tryptamine-Based Hallucinogens**  
Kelsey Patterson, BS\*; Matthew Wood, PhD; Jeanne Berk, PhD; Thomas Brettell, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*

## Friday—Session I

### DNA Mixtures

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*Moderator:*

Kristy Kadash, PhD  
Jefferson County Regional Crime Lab  
Golden, CO

*Co-Moderator:*

Rachelle A. Turiello, MS  
University of Virginia  
Charlottesville, VA

- 8:30 a.m. – 8:45 a.m. **B135** **Interpreting DNA Mixtures With Extreme Allele Overlap**  
Timothy Kalafut, PhD\*; Jo-Anne Bright, PhD; Duncan Taylor, PhD; John Buckleton, DSc
- 8:45 a.m. – 9:00 a.m. **B136** **The Effect of Pull-Up on the Allele Peak Heights and the Weights of Genotypes for Minor Donors**  
Damani Johnson, BS\*; Tim Kalafut, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:00 a.m. – 9:15 a.m. **B137** **The Detection and Analysis of DNA Mixtures With the MiSeq® FGx™**  
Rachel Houston, PhD\*; Timothy Kalafut, PhD; Ryan Gutierrez, PhD
- 9:15 a.m. – 9:30 a.m. **B138** **Enhanced Mixture Interpretation With Macrohaplotypes Based on Long Read DNA Sequencing**  
Jianye Ge, PhD\*; Jonathan King, MS; Sammed Mandape, MS; Bruce Budowle, PhD
- 9:30 a.m. – 9:45 a.m. **BREAK**



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## Mixture Deconvolution and Probabilistic Genotyping

*Moderator:*

Tim Kalafut, PhD  
Sam Houston State University  
Huntsville, TX

*Co-Moderator:*

Andrew Schweighardt, PhD  
NYC Office of Chief Medical Examiner  
New York, NY

- 9:45 a.m. – 10:00 a.m. **B139** **Results From a Probabilistic Genotyping Software for the Continuous Interpretation of Next Generation Sequencing (NGS) Autosomal Short Tandem Repeat (aSTR) Mixtures**  
Kevin Cheng, MS\*; Jo-Anne Bright, PhD; James Curran, PhD; John Buckleton, DSc
- 10:00 a.m. – 10:15 a.m. **B140** **The Recovery of Probative DNA Information From Complex Mixtures Involving First-Degree Relatives or Marginally Detectable Minor Donors Using Direct Single Cell Subsampling (DSCS) and Probabilistic Genotyping (PG)**  
Kaitlin Huffman, MS\*; Erin Hanson, PhD; Jack Ballantyne, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 10:15 a.m. – 10:30 a.m. **B141** **Automated Familial Search Using a Probabilistic Genotype Database**  
Matthew Legler, BS; Kevin Miller, PhD; Mark Perlin, MD, PhD\*; Garrett Sugimoto, MS
- 10:30 a.m. – 10:45 a.m. **B142** **Using DNA Mixtures for Relationship Inference and Missing Persons Identification**  
Maarten Kruijver, PhD\*
- 10:45 a.m. – 11:00 a.m. **B143** **“Essentially, All Models Are Wrong, but Some Are Useful”—A Comparison of Likelihood Ratios Obtained From EuroForMix and STRmix™**  
Kevin Cheng, MS\*; Øyvind Bleka, PhD; Peter Gill, PhD; James Curran, PhD; Jo-Anne Bright, PhD; Duncan Taylor, PhD; John Buckleton, DSc  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 11:00 a.m. – 11:15 a.m. **B144** **Peeling Away Uncertainty: A Probabilistic Approach to DNA Mixture Deconvolution**  
William Allan, MS; Hajara Chaudhry, MS; John Donahue, MA; Mark Perlin, MD, PhD\*; Mark Wilson, PhD

## Forensic Genealogy

*Moderator:*

Kyleen E. Elwick, PhD  
Federal Bureau of Investigation Laboratory  
Quantico, VA

*Co-Moderator:*

Rachel M. Houston, PhD  
Sam Houston State University  
Huntsville, TX

- 11:15 a.m. – 11:30 a.m. **B145** **How Forensic Genetic Genealogy (FGG) Is Supporting the Combined DNA Index System (CODIS) and the Criminal Justice System**  
Colleen Fitzpatrick, PhD\*
- 11:30 a.m. – 11:45 a.m. **B146** **The Development and Implementation of Forensic Genealogy Casework Acceptance Criteria and Testing Guidelines and Their Impact on Developing Valuable High-Density Single Nucleotide Polymorphism (SNP) Datafiles**  
Robert Bever, PhD\*; Teresa Vreeland, BS
- 11:45 a.m. – 12:00 p.m. **B147** **Internal Validation of the ForenSeq™ Kintelligence Kit for Application to Forensic Genetic Genealogy Cases**  
Michelle Peck, MFS\*; Stephen Turner, PhD; V. Peter Nagraj, MS; David Russell, MS; Jessica Bouchet, BS; Amy Holmes, PhD; Rachel Houston, PhD; Jennifer Snedeker, BS; Carmen Reedy, PhD; Christina Neal, MS



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- 12:00 p.m. – 12:15 p.m. **B148** **An Analysis of the Genealogy Process in Investigative Genetic Genealogy**  
Su Erturk, BS; Lawrence Wein, PhD\*
- 12:15 p.m. – 12:30 p.m. **B149** **A Theft of Consent: How FGG Solved One of the Most Difficult Unsolved Serial Rapist Cases in Texas and Louisiana**  
Leighton D'Antoni, JD\*
- 12:30 p.m. – 1:30 p.m. **BREAK**

## Poster Session

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- 11:30 a.m. – 1:00 p.m. **B150** **Nuclear DNA Single Nucleotide Polymorphism (SNP) Profiles Derived From a Human Hair Shaft**  
Daniele Podini, PhD\*; Elaine Lewis, PhD
- 11:30 a.m. – 1:00 p.m. **B151** **A Comprehensive Evaluation of the ForenSeq™ DNA Signature Prep Kit on the MiSeq® FGx™ Next Generation Sequencing (NGS) System**  
Chelsea Jones, BS\*; Megan Foley, MSFS; Thomas Walsh, MSFS; Justina Nichola, BS;  
Fabio Oldoni, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B152** **Developmental Validation of the Illumina® Infinium™ Assay Using the Global Screening Array (GSA) on the iScan® System for Use in Forensic Laboratories**  
David A. Russell, MS\*; Carmen Reedy, PhD; Stephen D. Turner, PhD; Stephanie Guertin, PhD;  
Mary Heaton, MS; Jessica Bouchet, BS; Michelle Peck, MFS; Erin Gorden, MFS;  
Elayna Ciuzio, MS; Christina Neal, MS
- 11:30 a.m. – 1:00 p.m. **B153** **Joint Data Analysis of DNA Mixtures Using Probabilistic Genotyping**  
Sara Antillon, MS; Jennifer Hornyak Bracamontes, MS, Kevin Miller, PhD, Mark Perlin, MD, PhD\*;  
Mark Wilson, PhD
- 11:30 a.m. – 1:00 p.m. **B154** **An Evaluation of the QIAamplifier® 96 Thermal Cycler**  
Madeline Roman, PhD\*; Josh Abernathy, MSFS; Bryan Davis, BS
- 11:30 a.m. – 1:00 p.m. **B155** **Toward a Sample In-Answer Out Centrifugal Microfluidic Platform for Nucleic Acid Detection**  
Leah Dignan, BSc\*; Michael Woolf, PhD; Will Treene; James Landers, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **B156** **Using a Non-Destructive Method to Estimate the Number of Contributors and Predict DNA Yield in Touch DNA Mixtures**  
Susan Greenspoon, PhD; Christopher Ehrhardt, PhD; Christin Lee, MS\*; Sarah Ingram, PhD
- 11:30 a.m. – 1:00 p.m. **B157** **An Evaluation of Microhaplotype Markers in Kinship Analysis in a Korean Population**  
Sohee Cho, PhD\*; Soong Deok Lee, MD, PhD
- 11:30 a.m. – 1:00 p.m. **B158** **Examining the Ancestry of the Spring Street Presbyterian Church Burial Vault Population Using Mitochondrial DNA (mtDNA) Analysis**  
Stephanie Gladysck, PhD\*; Shannon A. Novak, PhD; Jodi Lynn Barta, PhD
- 11:30 a.m. – 1:00 p.m. **B159** **Contemporary Population Genetics Data and Haplogroup Prediction Using 27 Y-Chromosomal Short Tandem Repeat (Y-STR) Loci in the Croatian Population**  
Dragan Primorac, MD, PhD\*; Vedrana Skaro; Petar Projic, PhD; Sasa Missoni;  
Ivana Horjan Zanki; Sinisa Merkas; Jelena Sarac; Natalija Novokmet; Andrea Ledic;  
Adela Makar; Gordan Lauc; Simun Andjelinovic; Zeljana Basic; Ivana Kruzic; Marijana Neuberg;  
Martina Smolic; Robert Smolic; Irena Hrstic; Dragan Trivanovic; Rijad Konjhdzic;  
Lana Salihefendic; Naida Babic Jordamovic; Damir Marjanovic





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| 11:30 a.m. – 1:00 p.m. | <b>B160</b> | <b>Rapidly Mutating Y-Chromosomal Short Tandem Repeats (RM Y-STRs) in Punjabi Deep-Rooted Endogamous Pedigrees From Pakistan</b><br>Shahid Nazir, PhD*  |
| 11:30 a.m. – 1:00 p.m. | <b>B161</b> | <b>Developing Effective and Sustainable Teaching Labs for Forensic DNA Courses</b><br>Catherine Cupples Connon, PhD*  |
| 11:30 a.m. – 1:00 p.m. | <b>B162</b> | <b>The Evaluation of Cannabinoid Synthase Polymorphisms for Distinguishing Between Marijuana and Hemp</b><br>Ya-Chih Cheng, MS*; Rachel Houston, PhD; Sarah Kerrigan, PhD; Madeline Roman, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B163</b> | <b>An Evaluation of Chloroplast DNA Barcoding Markers to Individualize <i>Papaver Somniferum</i> for Forensic Intelligence Purposes</b><br>Kari Graham, BS*; Rachel Houston, PhD<br>(FSF Emerging Forensic Scientist Award Poster Presentation)   |
| 11:30 a.m. – 1:00 p.m. | <b>B164</b> | <b>The Development and Validation of a Rapid Color Test for Acetic Anhydride</b><br>Muhammad Chaudhary, MPhil*; Tahir Jamshaid, MPhil; Rabia Naveed, MPhil; Muhamamd Irfan Ashiq, PhD; Mohammad Tahir, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B165</b> | <b>A Journey: The International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17020: 2012 Accreditation for Crime Scene Units in Latin America</b><br>Alejandro Madrigal, BS; Abraham Aysa, JD; Domingo Villarreal, BA; Ramon Diaz, MS*  |
| 11:30 a.m. – 1:00 p.m. | <b>B166</b> | <b>The Effect of Household Cleaning Agents on the Fluorescein Presumptive Blood Test</b><br>River Williams*; Jaymelee Kim, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B167</b> | <b>Soil Mineral Analysis by Particle Correlated Raman Spectroscopy (PCRS): Optimized Dispersion and Double-Pass Raman Analysis</b><br>Savannah Brown, BS*; Gabrielle Messe, BA; Hannah Garvin, MS; Nicholas Gogola, MS; Chase Notari, BS; Virginia Maxwell, PhD; John Reffner, PhD; Peter De Forest, PhD; Christopher Palenik, PhD; Peter Harrington, PhD; Deborah Huck-Jones, PhD; Bridget O'Donnell, PhD; Andrew Whitley, PhD; Brooke Kammrath, PhD |
| 11:30 a.m. – 1:00 p.m. | <b>B168</b> | <b>Feature Occurrence and Error Rates in Textile Physical Fit Comparisons</b><br>Zachary Andrews, BS*; Colton Diges; Tatiana Trejos, PhD<br>(FSF Emerging Forensic Scientist Award Poster Presentation)   |
| 11:30 a.m. – 1:00 p.m. | <b>B169</b> | <b>The Detection of Animal Blood Using Green Synthesized Surface-Enhanced Raman Spectroscopy (SERS)</b><br>Geraldine Monjardez, PhD*; Erin Bruner, MS; Rajesh Balaraman, PhD; Patrick Buzzini, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>B170</b> | <b>The Visualization of Bruises Using an Alternate Light Source (ALS)</b><br>Wan Yu Tan, BS*; Karen Kelly, MD; Ann Marie Mires, PhD; Sabra Jones, MS  |
| 11:30 a.m. – 1:00 p.m. | <b>B171</b> | <b>The Case of a Ferocious Double Homicide: When Your Home Hides the Killer and the Murderer's Weapon</b><br>Matteo Scopetti; Martina Padovano*; Federico Manetti; Martina Zanon; Alessandro Santurro; Stefano D'Errico   |
| 11:30 a.m. – 1:00 p.m. | <b>B172</b> | <b>The Effects of Improper Ammunition Storage</b><br>Victoria Andre, MS*; Peter Diaczuk, PhD; Patrick McLaughlin, MS  |



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## What's Next in Next Generation Sequencing

*Moderator:*

Michelle A. Peck, MFS  
Signature Science  
Charlottesville, VA

*Co-Moderator:*

Katherine Gettings, PhD  
National Institute of Standards and Technology  
Gaithersburg, MD

- 1:30 p.m. – 1:45 p.m. **B173** **The Forensic Utility of the ForeSeq™ MainstAY Kit With Challenging Samples**  
Lucio Avellaneda, BS\*; Ryan Gutierrez, PhD; Rachel Houston, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 1:45 p.m. – 2:00 p.m. **B174** **A Modified ForeSeq™ DNA Signature Prep Kit Protocol for Increased Allele Recovery From Low DNA Quantities**  
Sana Enke, BS; Kimberly Eskey, MS; Tracy Ferguson, MS; Rebecca Just, PhD\*
- 2:00 p.m. – 2:15 p.m. **B175** **Predicting Short Tandem Repeat (STR) Genotypes From Identity-Informative Single Nucleotide Polymorphisms (SNPs) Across Three Ancestry Population Groups**  
Anjalika Balasuriya, HBSc; Nicole Novroski, PhD\*; Frank Wendt, PhD
- 2:15 p.m. – 2:30 p.m. **B176** **The Development of an Enhanced Buffer to Overcome Polymerase Chain Reaction (PCR) Inhibition for DNA Typing by Targeted Next Generation Sequencing (NGS)**  
Shan-Fu Wu\*; Keenan Fleming; Richelle Barta; June Snedecor; Samantha Snow; Joana Antunes; Sarah Radecke; Juan Perez; Gothami Padmabandu; Kathryn Stephens
- 2:30 p.m. – 2:45 p.m. **B177** **Evaluating Library Preparation Improvements of Short Tandem Repeats (STRs) Using the PowerSeq™ 46GY System for Massively Parallel Sequencing (MPS)**  
Kyleen Elwick, PhD\*; Patrick Ryzak, PhD; James Robertson, PhD
- 2:45 p.m. – 3:00 p.m. **B178** **Forensic Autosomal Short Tandem Repeat (STR) Profiling Using the Promega® PowerSeq™ Kit on Oxford Nanopore® Technologies' MinION Device**  
Courtney Hall, MS; Rupesh Kesharwani, PhD; Nicole Phillips, PhD; John Planz, PhD; Fritz Sedlazeck, PhD; Roxanne Zascavage, PhD\*
- 3:00 p.m. – 3:15 p.m. **BREAK**

## Crime Scene Tools and Techniques

*Moderator:*

John Lentini, BA  
Scientific Fire Analysis, LLC  
Islamorada, FL

*Co-Moderator:*

Ann Geisendorfer, JD  
Schenectady, NY

- 3:15 p.m. – 3:30 p.m. **B179** **GeoFOR: An Innovative Geographic Information Systems (GIS) -Based Application and Accumulated Degree Days (ADD) Calculator**  
Cristina Tica, PhD\*; Katherine Weisensee, PhD; Patrick Claflin; Patricia Carbajales-Dale, MS
- 3:30 p.m. – 3:45 p.m. **B180** **The Billey Joe Johnson Homicide**  
Bryan Burnett, MS\*
- 3:45 p.m. – 4:00 p.m. **B181** **The Application of Artificial Intelligence (AI) Image Analysis Techniques to Bloodstain Pattern Analysis**  
James Creecy, PhD\*; Jicheng Fu, PhD; Craig Gravel, MA



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- 4:00 p.m. – 4:15 p.m. **B182** **Determining the Minimum Size of Soil Samples For Forensic Geological Analysis**  
Brittany Claassen, BS\*; Emma Redman; Ted Schwartz, MS; Thomas Brettell, PhD;  
Lawrence Quarino, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:15 p.m. – 4:30 p.m. **B183** **The Development of a Technique for the Forensic Identification of Carrion Beetles**  
Amy Osborne, BS\*; Jennifer Rosati, PhD; Rabi Musah, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:30 p.m. – 4:45 p.m. **B184** **Human Scent Biometrics: A Pilot Study in Source-Origin Determination**  
Vidia A. Gokool, MS\*; Howard K. Holness, PhD; Kenneth G. Furton, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:45 p.m. – 5:00 p.m. **B185** **Volatile Organic Compounds (VOCs) Produced by Bacteria Associated With Decomposition**  
Veronica Cappas, BS\*; Megan Morris; Dan Syles, PhD; Reena Roy, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 5:00 p.m. – 5:15 p.m. **B186** **Analyzing the “Cross-Hatch” Patterns of Clear Biaxially Oriented Polypropylene (BOPP) Tapes**  
Walter Rowe, PhD\*
- 5:15 p.m. – 5:30 p.m. **B187** **“Leaf” It to Direct Analysis in Real-Time High Resolution Mass Spectrometry (DART®-HRMS) and Multivariate Statistical Analysis for the Forensic Identification of Illegally Traded Timber**  
Mónica Ventura, BS\*; Samira Beyramysoltan, PhD; Meghan Appley, MS; Edgard Espinoza, PhD;  
Rabi Musah, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*

## Friday—Session II

### Gunshot Residue

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#### Moderator:

A. Bakarr Kanu, PhD  
Winston-Salem University  
Winston Salem, NC

- 8:30 a.m. – 8:45 a.m. **B188** **An Evaluation of Organic and Inorganic Gunshot Residues in Various Populations Using Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)**  
William Feeney, BS\*; Korina Menking-Hoggatt, PhD; Luis Arroyo, PhD; James Curran, PhD;  
Suzanne Bell, PhD; Tatiana Trejos, PhD
- 8:45 a.m. – 9:00 a.m. **B189** **The Association of Smokeless Powders and Lab-Generated Residues to Organic Gunshot Residue (OGSR) Using Gas Chromatography/Mass Spectrometry (GC/MS) and Direct Analysis in Real-Time High Resolution Mass Spectrometry (DART®-HRMS) Analysis Followed by Chemometrics**  
Emily Lennert, MS\*; Candice Bridge, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 9:00 a.m. – 9:15 a.m. **B190** **Elemental Profiling of Total Gunshot Residue (tGSR) Using Total Reflection X-Ray Fluorescence (TXRF) Spectrometry**  
Samantha Gong, BS\*; Ling Huang, PhD; Jason Berger, MS; Nicole Homburger, BS
- 9:15 a.m. – 9:30 a.m. **B191** **A Pilot Study of Lead Isotopes and Trace Element Utility in Shooting Investigations**  
Aaron Hernandez Flores, AS\*; Gwyneth Gordon, PhD; Shirley Montero, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*



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- 9:30 a.m. – 9:45 a.m. **B192** **A Study on the Longevity of Primer Gunshot Residue (pGSR) in an Outdoor Environment**  
Christopher Chany, MS\*; Thomas White, BS; Juan Rojas, BS; Rebekah Lloyd, BS;  
Marcos Rivera, BSA
- 9:45 a.m. – 10:00 a.m. **B193** **A Probabilistic Interpretation of a Large Population Study of Gunshot Residue (GSR) and Background Profiles Using Laser-Induced Breakdown Spectroscopy (LIBS), Electrochemistry, and Scanning Electron Microscopy With Energy-Dispersive X-Ray Spectroscopy (SEM/EDS)**  
Korina Menking-Hoggatt, PhD\*; Colby Ott, MS; Courtney H. Vander Pyl, MS;  
Kourtney Dalzell, BS; James Curran, PhD; Luis Arroyo, PhD; Tatiana Trejos, PhD
- 10:00 a.m. – 10:15 a.m. **BREAK**

## This and That

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### Moderator:

Jose Gonzalez, BS  
LAPD-FSD  
Los Angeles, CA

- 10:15 a.m. – 10:30 a.m. **B194** **Acid Phosphatase (AP) Detection in Food Products and Mold**  
Katrina Ostapovicz, MS; Amy Brodeur, MFS\*
- 10:30 a.m. – 10:45 a.m. **B195** **Reducing Interference in the Ultraviolet/Visible (UV/Vis) Spectra of Blood Samples to Detect Ethylenediaminetetraacetic Acid (EDTA) Via the Reverse EDTA Detection in Blood Using Eriochrome® Black T (EBT) and UV/Vis (RED-BLEU) Assay**  
Kristen M. Atkinson, BS\*; Brittany C. Hudson, MSFS; Catherine Cupples Connon, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 10:45 a.m. – 11:00 a.m. **B196** **Volatile Organic Compounds (VOCs) Associated With Diseased Human Blood**  
Megan Morris\*; Veronica Cappas, BS; Dan Sykes, PhD; Virginia Greenberger, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 11:00 a.m. – 11:15 a.m. **B197** **The Stages of Heat Damage to Fabrics Encountered in Forensic Clothing Examination: A Microscopic Examination**  
Cheyenne Smith\*; Chesterene Cwiklik, BS; Braeden Camarota; Lauren Bouoju Davies
- 11:15 a.m. – 11:30 a.m. **B198** **The Effect of Washing on the Transfer and Persistence of Fiber Evidence**  
Madison Carter, BS\*; Brooke Kamrath, PhD; John Reffner, PhD; Virginia Maxwell, DPhil

## Drugs II

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### Moderator:

Catherine Dunn  
WA State Patrol Crime Lab  
Vancouver, WA

- 11:30 a.m. – 11:45 a.m. **B199** **The Identification of Toxic Adulterants in Seized Drug Material Around the World**  
Judith Rodriguez Salas, MSFS\*; Amanda Mohr, MSFS; Thom Browne, MA; Barry Logan, PhD
- 11:45 a.m. – 12:00 p.m. **B200** **X-Ray Powder Diffraction: A Unique Approach for Identifying and Differentiating Controlled Substances**  
Hillary Culbertson, PhD\*
- 12:00 p.m. – 12:15 p.m. **B201** **An Evaluation of Two Portable Devices for the Detection of Common Drug-Facilitated Crimes (DFC) Drugs**  
Hannan Latif, MS\*; Nikolas P. Lemos, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 12:15 p.m. – 1:15 p.m. **BREAK**

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## Drugs III

### Moderator:

Alison Kidder-Mostrom, MSFS  
Washington State Patrol Crime Laboratory  
Marysville, WA

### Co-Moderator:

Geraldine Monjardez, PhD  
Sam Houston State University  
Huntsville, TX

- 1:15 p.m. – 1:30 p.m. **B202** **Understanding Research Methods, Limitations, and Appropriate Applications of Drug Data Collected by the National Forensic Laboratory Information System (NFLIS-Drug)**  
Wayne Pitts, PhD; David Heller, BS; Hope Smiley-McDonald, PhD; BeLinda J. Weimer, MA; Megan Grabenauer, PhD; Katherine Bollinger; Jeri Roper-Miller, PhD; DeMia Pressley, MS\*
- 1:30 p.m. – 1:45 p.m. **B203** **Project REMEDY: Providing Emerging Drug Data and Materials to the Community**  
Edward Sisco, PhD\*; Aaron Urbas, PhD; Sara Driscoll, BS; Hunter Haddad, MS; Rebecca Jones, BS; Trinette Spratley, BS; Sherri L. Tupik, BS
- 1:45 p.m. – 2:00 p.m. **B204** **Using the Drug Enforcement Administration's (DEA's) Forensic Laboratory Drug Chemistry Report Data to Validate the Federal Bureau of Investigation's (FBI's) Law Enforcement Drug Seizure Data**  
Nick Richardson, PhD\*; Wayne Pitts, PhD; David Heller, BS; Hope Smiley-McDonald, PhD; Megan Grabenauer, PhD; DeMia Pressley, MS
- 2:00 p.m. – 2:15 p.m. **B205** **WITHDRAWN**
- 2:15 p.m. – 2:30 p.m. **B206** **An Evaluation of the Physical and Chemical Variation in Tablets Found to Contain Fentanyl**  
Emily Lockhart, MS\*; James Jordan, PhD
- 2:30 p.m. – 2:45 p.m. **B207** **An Analysis of Fentalogs and Illicit Fentanyl Vapor Profiles**  
Stephanie Vaughan, PhD\*; Ashley Fulton, PhD; Lauryn DeGreeff, PhD\*
- 2:45 p.m. – 3:00 p.m. **B208** **The New National Institute of Standards and Technology/National Institute of Justice (NIST/NIJ) Direct Analysis in Real-Time Mass Spectrometry (DART®-MS) Data Interpretation Tool (DIT)**  
Arun Moorthy PhD\*; Edward Sisco, PhD; Stephen Tennyson, BS; Ruthmara Corzo, PhD
- 3:00 p.m. – 3:15 p.m. **B209** **Best Buds—Ambient Ionization Coupled With Mass Spectrometry for the Forensic Analysis of Cannabinoid-Infused Complex Matrices**  
Megan Chambers, BS\*; Rabi Musah, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 3:15 p.m. – 3:30 p.m. **BREAK**



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## Drugs IV—Cannabis Quantitation

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*Moderator:*

Barry Shearer, MS  
Colorado Bureau of Investigation  
Arvada, CO

- 3:30 p.m. – 3:45 p.m.    **B210**    **A Retrospective Review of Hemp/Marijuana Decision Point Assays in Operational Laboratories**  
James Miller, MA\*; Kay McClain, BS; Charles Cline, BS; Ya-Chih (Jessica) Cheng, MS;  
Sarah Kerrigan, PhD
- 3: 45 p.m. – 4:00 p.m.    **B211**    **Factors Influencing the *In Situ* Formation of Psychoactive Cannabinoids From Cannabidiol During Gas Chromatography/Mass Spectrometry (GC/MS) Analysis**  
Ya-Chih Cheng, MS\*; Sarah Kerrigan, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 4:00 p.m. – 4:15 p.m.    **B212**    **An Analysis of Cannabis Plant Materials by Infrared Spectroscopy for Differentiating Hemp and Marijuana**  
Aaron Urbas, PhD\*; Ewelina Mistek-Morabito, PhD; Igor Lednev, PhD; Walter Wilson, PhD;  
Melissa Phillips, PhD
- 4:15 p.m. – 4:30 p.m.    **B213**    **The National Institute of Standards and Technology (NIST) Cannabis Quality Assurance Program (CannaQAP): A Tool for Improving Quantitative Measurements in Cannabis**  
Melissa Phillips, PhD; Walter Wilson, PhD\*
- 4:30 p.m. – 4:45 p.m.    **B214**    **Testosterone as an Internal Standard in Qualitative Decision-Point Assays for the Differentiation of Hemp From Cannabis: Optimization and Limitations in High Cannabidiol (CBD) Matrices**  
Jose Gonzalez, BS\*
- 4:45 p.m. – 5:00 p.m.    **B215**    **WITHDRAWN**



# DIGITAL & MULTIMEDIA SCIENCES

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## Thursday

### Scientific Rigor: Image Analysis

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*Moderator:*

Kathryn C. Seigfried-Spellar, PhD  
Purdue University  
West Lafayette, IN

*Co-Moderator:*

J. Levi White, PhD  
Defense Forensic Science Center  
Forest Park, GA

|                         |           |  |
|-------------------------|-----------|--|
| 8:30 a.m. – 8:35 a.m.   |           | <b>Welcome</b>   |
| 8:35 a.m. – 8:55 a.m.   | <b>C1</b> | <b>The Validation of Imagery Enhancement Tools</b><br>James Zjalic, MSc*; Jake Harrison, BSc   |
| 8:55 a.m. – 9:15 a.m.   | <b>C2</b> | <b>Score-Based Likelihood Ratios for Camera Device Identification Using Cameras of the Same Brand for the Alternative Device Population</b><br>Stephanie Reinders, PhD*; Danica Ommen, PhD; Alicia Carriquiry, PhD |
| 9:15 a.m. – 9:35 a.m.   | <b>C3</b> | <b>The Influence of Compression on Forensic Deepfake Detection</b><br>Meike Kombrink, MFS; Zeno Geradts, PhD*  |
| 9:35 a.m. – 9:55 a.m.   | <b>C4</b> | <b>The Performance of Automated Age Assessment Methods in Images of Subadults</b><br>Petra Urbanova, PhD*; Pavel Bednar  |
| 9:55 a.m. – 10:15 a.m.  | <b>C5</b> | <b>Methods for Evaluating and Optimizing Automated Detection/Classification Systems in the Forensic Environment</b><br>Jeff Smith, MS*   |
| 10:15 a.m. – 10:30 a.m. |           | <b>BREAK</b>   |

### Promoting Justice: Audio & Video Analysis

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*Moderator:*

Andrew Crouse, BA  
Epiq  
Washington, DC

*Co-Moderator:*

Brian Smith, BS  
Epiq  
Warner Robins, GA

|                         |           |  |
|-------------------------|-----------|--|
| 10:30 a.m. – 10:50 a.m. | <b>C6</b> | <b>A Quantitative Analysis of Video Software Frame Extraction Methods for Use in Forensic Science</b><br>Gregory Wales, MSc*; Christopher Lemon, BA; Gregory Savage, BSc; Stephen Wells, BA; Jesus Valenzuela, BSc |
| 10:50 a.m. – 11:10 a.m. | <b>C7</b> | <b>WITHDRAWN</b>   |
| 11:10 a.m. – 11:30 a.m. | <b>C8</b> | <b>The Use of Electric Network Frequency Presence Due to Rolling Shutter Effect in Video Material for Time Estimation</b><br>Zeno Geradts, PhD*; Guus Frijters, MSc  |



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11:30 a.m. – 11:50 a.m. **C9** **A Review of Axon Citizen From a Forensic Perspective as a Tool for Law Enforcement Investigations**  
Jesus Valenzuela, BSc\*; Gretchel Lomboy, MSc; Catalin Grigoras, PhD; Jason Latham, BA

11:50 a.m. – 12:10 p.m. **BREAK**

## Poster Session

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11:30 a.m. - 1:00 p.m. **C10** **Constructing Digital Video Recorder (DVR) Datasets for Multimedia Forensics Validation**  
Rayna Mock, BS\*; Josh Brunty, MS

11:30 a.m. - 1:00 p.m. **C11** **Likelihood Ratios for Categorical Evidence With Applications in Digital Evidence**  
Rachel Longjohn, MS\*; Padhraic Smyth, PhD; Hal Stern, PhD

## A Modern Forensic Science World: Cyber Challenges

*Moderator:*  
Patrick A. Eller, MS  
Metadata Forensics LLC  
Richmond, VA 23219

*Co-Moderator:*  
Jeff Smith, MS  
The MITRE Corporation  
McLean, VA

1:00 p.m. – 1:20 p.m. **C12** **Skills for Success: Advancing Pattern of Life Analysis in Cyber Forensics Using a Multidimensional Approach**  
Mohammad Meraj Mirza, MS\*; Umit Karabiyik, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)

1:20 p.m. – 1:40 p.m. **C13** **Virtualization, Self-Hosting, and File/Storage Systems—Recent Technological Advances and the Search for Digital Evidence**  
Jason Paroff, JD\*

1:40 p.m. – 2:00 p.m. **C14** **Keeping Forensic Tools Sharp: A Case Study of Updating Bulk\_Extractor 1.6 to 2.0**  
Simson Garfinkel, PhD\*

2:00 p.m. – 2:20 p.m. **C15** **A Case Study of Virtual Programmable Logic Controllers (PLC) Forensic Framework on Investigating Control Logic Attacks in a Belt Conveyor System**  
Syed Qasim, BS\*; Irfan Ahmed, PhD

2:20 p.m. – 2:40 p.m. **C16** **Exploiting the Post-Attendee URL Feature in Zoom Webinar to Distribute Malware: Implications for Digital Forensics**  
Austin Cauley, BS\*; Mark McCoy, EdD

2:40 p.m. – 3:10 p.m. **C17** **Revealing the Invisible: Investigating Evidence of Automated and Behind-the-Scenes Computer Activity**  
Josiah Dykstra, PhD\*

3:10 p.m. – 3:20 p.m. **BREAK**





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## Ensuring Excellence: Policy & Procedures

*Moderator:*

Jason M. Paroff, JD  
Epiq  
New York, NY

*Co-Moderator:*

Yong Guan, PhD  
Iowa State University  
Ames, IA

- 3:20 p.m. – 3:40 p.m. **C18** **The Decontamination of Drug-Contaminated Mobile Devices Using VTO Labs’ Decontamination Kits**  
Arcelia Cohen\*; Josh Brunty, MS; Lauren Richards-Waugh, PhD
- 3:40 p.m. – 4:00 p.m. **C19** **Crowdsourcing Forensics: The Digital Artifact Catalog**  
Lam Nguyen, MS\*; Eoghan Casey, PhD
- 4:00 p.m. – 4:20 p.m. **C20** **Standards Development Activities in Digital and Multimedia Forensic Science**  
Tracy Walraven, MFS\*
- 4:20 p.m. – 4:40 p.m. **C21** **Key Takeaways From a National Institute of Standards and Technology (NIST) Digital Forensic Scientific Foundations Study**  
James Lyle, PhD\*; Barbara Guttman, BA
- 4:40 p.m. – 5:00 p.m. **C22** **What Is the Computer Forensic Tools and Techniques (CFTT) Catalog?**  
Jenise Reyes-Rodriguez, BS\*; Richard Ayers, MS

## Friday

### Integrity: (Not So) Dead-Box Forensics

*Moderator:*

Kathryn C. Seigfried-Spellar, PhD  
Purdue University  
West Lafayette, IN

*Co-Moderator:*

J. Levi White, PhD  
Defense Forensic Science Center  
Forest Park, GA

- 8:30 a.m. – 8:35 a.m. **Welcome**
- 8:35 a.m. – 8:55 a.m. **C23** **A Forensic Analysis of Microsoft® Teams**  
Herschel Bowling, MS\*; Kathryn Seigfried-Spellar, PhD; Umit Karabiyik, PhD; Marcus Rogers, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 8:55 a.m. – 9:15 a.m. **C24** **The Correlation of Garbage Collection and Object Recovery in Userland Forensic Analysis**  
Sneha Sudhakaran, MTech\*; Aisha Ali-Gombe, PhD; Golden G. Richard III, PhD
- 9:15 a.m. – 9:35 a.m. **C25** **The Forensic Use of Sparse Files**  
Mark Guido, MS\*; Justin Grover, MS\*
- 9:35 a.m. – 9:55 a.m. **C26** **Google® Chromebook™ and Takeout™ Forensics: A Comparative Analysis of Data Recovered From a Logical Acquisition of a Chromebook™ as Compared to Data From a Google® Takeout**  
Jessica Hyde, MS\*
- 9:55 a.m. - 10:10 a.m. **C27** **The Examination of Questioned Digital Documents Customized From a Database**  
Oluwasola Mary Adedayo, PhD\*; Martin S. Olivier, PhD
- 10:10 a.m. – 10:20 a.m. **BREAK**



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## Connectivity: Mobile Device Forensics

*Moderator:*

Christina A. Malone, MSFS Defense  
Forensic Science Center  
Forest Park, GA

*Co-Moderator:*

Austin Cauley, BSc  
University of Central Oklahoma  
Edmond, OK

- 10:20 a.m. – 10:40 a.m. **C28** **A Comparison of Apple® iPhone® Extraction Methods for Multimedia**  
Jeff Smith, MS\*
- 10:40 a.m. – 11:00 a.m. **C29** **CoreDuet, KnowledgeC, and InteractionC: Just How Much Does My iPhone® Really Need to Know About Me?**  
Joseph Levi White, PhD\*
- 11:00 a.m. – 11:20 a.m. **C30** **SQLite Data Recovery**  
Richard Ayers, MS\*; Jenise Reyes, BS
- 11:20 a.m. – 11:40 a.m. **C31** **A Forensic Analysis of the Viber Instant Messaging Application on iPhone® Devices**  
Akshata Thole, BTech\*; Nina Matulis, BS; Marcus Rogers, PhD
- 11:40 a.m. – 12:00 p.m. **C32** **Forensic Analysis on Cryptocurrency Wallet Apps**  
Chen Shi, MS\*; Yong Guan, PhD
- 12:00 p.m. - 1:00 p.m. **BREAK**

## Poster Session

- 11:30 a.m. - 1:00 p.m. **C33** **Memory Forensic Analysis for Programmable Logic Controllers (PLCs)**  
Muhammad Rais, MS\*; Irfan Ahmed, PhD

## Multidisciplinary Session: Digital & Multimedia Sciences and Psychiatry & Behavioral Science

*Moderator:*

Kathryn C. Seigfried-Spellar, PhD  
Purdue University  
West Lafayette, IN

*Co-Moderator:*

Vivian Shnaidman, MD  
Princeton, NJ

- 1:00 p.m. – 1:05 p.m. **Welcome**
- 1:05 p.m. – 2:00 p.m. **I22** **A Psychopath in the House: How Digital Media Is Used to Exploit Even the Safest Homes**  
Jessica Morel, DO\*; Vivian Shnaidman, MD; Anna-Renee Labak
- 2:00 p.m. – 2:30 p.m. **C34** **The Analysis of a Digital Diary to Aid in a Child Sexual Assault Investigation: A Case Study**  
Joseph Levi White, PhD\*
- 2:30 p.m. – 3:00 p.m. **I23** **Virtual Reality as a Treatment Medium for Sex Offenders**  
Jacob Pourat, MD\*
- 3:00 p.m. – 3:30 p.m. **I24** **From Online Personas to Mass Murderers: The Incel Ideology and the Struggles of Mental Health**  
Eva Ip, BS\*
- 3:30 p.m. – 4:15 p.m. **C35** **Sextortion: Understanding Perpetrator Behavior and the Digital Evidence Available to Investigators**  
Martin Novak, MPA\*; Danielle Crimmins, MS; Kathryn Seigfried-Spellar, PhD
- 4:15 p.m. – 4:45 p.m. **I25** **3D Interactive Lineups Improve Eyewitness ID Accuracy**  
Heather Flowe, PhD\*



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## Wednesday

### Poster Session

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- 11:30 a.m. - 1:00 p.m. **D1** **The Characterization of Disperse Dyes in Polyester Fibers Via Direct Analysis in Real Time (DART®) Ionization Mass Spectrometry**  
Zoe Millbern, BS\*; Nelson R. Vinueza, PhD
- 11:30 a.m. - 1:00 p.m. **D2** **Portable Dynamic Vapor Microextraction (P-DVME) for Forensic and Environmental Field Studies**  
Adam Friss, PhD\*; Adam Broerman, BS; Megan Harries, PhD; Tara Lovestead, PhD
- 11:30 a.m. - 1:00 p.m. **D3** **The Use of Atmospheric Pressure Ionization (APPI) Coupled With Mass Spectrometry (MS) to Increase Sensitivity for the Identification of Disperse Dyes in Trace Evidence**  
Morgan Demmler, MS\*; Nelson R. Vinueza, PhD
- 11:30 a.m. - 1:00 p.m. **D4** **An Analysis of Polymer Composition and Dye of Textile Fibers by Direct Analysis in Real Time-Mass Spectrometry (DART®-MS) and Raman Microscopy**  
Miquellie B. Bonner\*; Ngee Sing Chong, PhD; Mengliang Zhang, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **D5** **A Comparison of Weathering Profiles of Ignitable Liquids (ILs) by Gas Chromatography/Mass Spectrometry (GC/MS) and Direct Analysis in Real-Time Mass Spectrometry (DART®-MS)**  
Shruthi Perna, MS\*; Ngee Sing Chong, PhD, Mengliang Zhang, PhD

## Thursday

### Linguistics

#### Moderator:

Cristina Aggazzotti, PhD  
Institute for Linguistic Evidence  
Meridian, ID

#### Co-Moderator:

Awni Etaywe  
University of New South Wales  
Sydney, New South Wales, Australia

- 8:30 a.m. - 8:50 a.m. **D6** **Validation Testing of a Syntactic Authorship Identification Method Using Ground Truth Data From 20 Authors**  
Mariam Dar, PhD\*
- 8:50 a.m. - 9:05 a.m. **D7** **Examining Conceptual Burstiness and Its Discursive Purpose in Violent Extremism Cases**  
Awni S. Etaywe\*
- 9:05 a.m. - 9:25 a.m. **D8** **Validation Testing for Authorship Identification Outside and Inside Casework**  
Carole E. Chaski, PhD\*
- 9:25 a.m. - 9:40 a.m. **BREAK**
- 9:40 a.m. - 10:00 a.m. **D9** **Algorithmic Fairness: Sampling and Algorithmic Bias Correction in Machine Learning With Applications to Forensic Evidence**  
Ganesh Krishnan, PhD\*; Heike Hofmann, PhD
- 10:00 a.m. - 10:15 a.m. **D10** **Validation Testing of the SynAID Method for Authorship Identification Using Ground Truth Data From Four Non-Native English Authors**  
Ángela Almela, PhD\*; Pascual Cantos Gómez, PhD



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- 10:15 a.m. - 10:30 a.m. **D11** **A Comparison of Two Computational Approaches to Analyzing Last Words**  
Cristina Aggazzotti, PhD\*
- 10:30 a.m. - 10:50 a.m. **D12** **The Lineup Technique for Forensic Author Identification**  
Carole E. Chaski, PhD\*
- 10:50 a.m. - 11:05 a.m. **D13** **A Comparison of Authorship Identification Methods Using Ground Truth Data From Four Non-Native English Authors**  
Pascual Cantos Gómez, PhD\*; Angela Almela, PhD
- 11:05 a.m. - 11:20 a.m. **D14** **A Quantitative Comparison of Last Words to Related Text Genres**  
Cristina Aggazzotti, PhD\*
- 11:20 a.m. - 12:50 p.m. **BREAK**

## Poster Session

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- 11:30 a.m. - 1:00 p.m. **D15** **Critical Flow Behavior in Forensic Engineering Accidents**  
Chan-Seong Park, PhD\*; Kwnag-Soo Choi, MSe; Hong-Pil Jeon, MSe; Seung-Ho Chae, MSe
- 11:30 a.m. - 1:00 p.m. **D16** **A Visualization of Overlapping Fingerprints by Hyperspectral Imaging in the Visible Region**  
Norimitsu Akiba, PhD\*; Atsushi Nakamura, PhD; Takayuki Sota, PhD; Kazuhito Hibino; Hidetoshi Kakuda, PhD; Kazunari Shibasaki, MSc; Ken'ichi Tsuchiya, PhD; Kosuke Tanabe, MSc
- 11:30 a.m. - 1:00 p.m. **D17** **A Semi-Permeable Membrane Device for Canine Explosive-Detection: A Rate of Evaporation Study**  
Madison Reavis, BS\*; John Goodpaster, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)
- 11:30 a.m. - 1:00 p.m. **D18** **Noble Metal-Decorated Silica Monoliths for Forensic Analysis of Drugs and Pesticides Using Mass Spectrometry (MS)**  
Entesar Al-Hetlani, PhD\*; Mariam Ismail, MSc; Mohamed Amin, MSc
- 11:30 a.m. - 1:00 p.m. **D19** **Automation In Forensic Science: The Future Ahead**  
Rattandeep Kaur, MSc\*; Surya Kant Tripathi, PhD

## Vehicle Forensics/Collision Analysis

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### Moderator:

Harold Franck, MSEE  
Advanced Engineering Associates, Inc.  
St. Petersburg, FL

### Co-Moderator:

Darren Frank, MSME  
Advanced Engineering & Associates, Inc.  
Charleston, WV

- 12:50 p.m. - 1:10 p.m. **D20** **Physical Evidence Demonstrating Poor Maintenance in the Cause of an Axle Fracture and a Rollover Crash With Injuries**  
Kurt Weiss, MSME\*; Mark Pozzi, MS; David Bosch, PhD
- 1:10 p.m. - 1:25 p.m. **D21** **The Mechanics of All-Terrain Vehicle (ATV) Rollovers**  
David Pienkowski, PhD\*
- 1:25 p.m. - 1:40 p.m. **D22** **Runaway Mustang**  
Michael Rosenfield, BS\*; Robert Anderson, MS



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- 1:40 p.m. - 2:00 p.m. **D23** **Recreation Vehicle (RV) Crashworthiness: Enhanced Injury Caused by Unsafe Vehicle Interior Structures Combined With Predictable Seat and Belt Failures**  
Mark Pozzi, MS\*; Vijay Gupta, PhD; Jack Bish, PhD
- 2:00 p.m. - 2:15 p.m. **BREAK**
- 2:15 p.m. - 2:35 p.m. **D24** **Heavy Truck Fuel Tank Protection in Frontal Impacts**  
Brian Herbst, BS\*; Steven E. Meyer, PE; Jack Bish, PhD; Lauren Bell, BS; Christopher Clarke, BS; Chuck Rogers
- 2:35 p.m. - 2:55 p.m. **D25** **Unintended Recliner Connecting Rod Actuation in Rear Impacts: A Forensic Analysis**  
Steve E. Meyer, PE; Brian R. Herbst, PE; Jeremy McMillin\*; Arin Nelson; Davis Hock; Jack Bish, PhD
- 2:55 p.m. - 3:10 p.m. **D26** **Event Data Recorder (EDR) Data and Forensic Video Analysis Defends Municipality in Civil Rights Lawsuit After Officer Forcefully Subdues Fleeing Driving Under the Influence (DUI) Suspect**  
Kurt Weiss, MSME\*; Parris Ward, JD
- 3:10 p.m. - 3:25 p.m. **D27** **A Method for the Evaluation of Recreational Off-Highway Vehicle (ROV) Rollover Protective Structures (ROPS)**  
Brian Herbst, BS\*; Christopher Clarke, BS
- 3:25 p.m. - 3:40 p.m. **D28** **A Comparison of Restraint Load Marks for Retained vs. Ejected Occupants in a Fatal Rollover Crash**  
David Porta, PhD\*
- 3:40 p.m. - 4:00 p.m. **D29** **Criminal Engineering: The Ugly 50-Year History of Federal Motor Vehicle Safety Standard (FMVSS) 207 and Proposals for an Upgraded Safety Standard That Will Prevent Catastrophic Injury and Death**  
Mark Pozzi, MS\*; Kenneth Saczalski, PhD; Rachel Pozzi, MS

## Friday

### Biomechanics/Ballistics

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*Moderator:*

Kurt D. Weiss, MS  
Case Study Collision Science, LLC  
Santa Barbara, CA

*Co-Moderator:*

Mark C. Pozzi, MS  
Sandia Safety Sciences  
Edgewood, NM

- 8:30 a.m. - 8:55 a.m. **D30** **Failure of Suture Materials Used for a Caesarean Section**  
Sarah V. Hainsworth, PhD\*
- 8:55 a.m. - 9:15 a.m. **D31** **Fatal Compression of the Torso Due to the Sudden Trapping of a Saree in the Rotator of a Pulse Mill: An Unusual Incidence During the Performance of a Harmless Activity With a Careless Attitude**  
Nilesh Tumram, MD\*
- 9:15 a.m. - 9:45 a.m. **D32** **The Biomechanics of Strangulation: Should Limits Be Placed on Restraint Tactics?**  
Harold Franck, MSEE\*; Darren Franck, MSME



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| 9:45 a.m. - 10:00 a.m.  | <b>D33</b> | <b>The Fatal Explosion of a Rubber Plug</b><br>Helmut Brosz, BAsC*; Renee Knight, BSc   |
| 10:00 a.m. - 10:20 a.m. | <b>D34</b> | <b>An Exotic Treatment for Chronic Paralysis by Kerosene Oil Ingestion: An Unusual Fatality by a Bizarre Form of Self Medication</b><br>Nilesh Tumram, MD*  |
| 10:20 a.m. - 10:40 a.m. | <b>D35</b> | <b>The Determination of Lumbar Disc Injury Potential From a Chair Collapse Incident</b><br>Michelle Hoffman, MS*; Robert Anderson, MS   |
| 10:40 a.m. - 10:55 a.m. |            | <b>BREAK</b>  |
| 10:55 a.m. - 11:20 a.m. | <b>D36</b> | <b>Technicalities of the Shotgun, Its Ammunition, and the Forensic Implications</b><br>John Nixon, MBA*   |
| 11:20 a.m. - 11:35 a.m. | <b>D37</b> | <b>A Visualization of Organic Gunshot Residues With Hyperspectral Imaging (HSI) and Correlation Analysis</b><br>Kazunari Shibasaki, MSc*; Norimitsu Akiba, PhD; Hidetoshi Kakuda, PhD; Kosuke Tanabe, MSc |
| 11:35 a.m. - 11:55 a.m. | <b>D38</b> | <b>An Accessible Open-Source Implementation of the Congruent Matching Cells Algorithms for Cartridge Case Analysis</b><br>Joseph Zemmels, MSc*; Susan VanderPlas, PhD; Heike Hofmann, PhD                 |
| 11:55 a.m. - 1:25 p.m.  |            | <b>BREAK</b>  |

## Poster Session

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|                        |            |  |
|------------------------|------------|--|
| 11:30 a.m. - 1:00 p.m. | <b>D39</b> | <b>A Multifaceted Method for Evaluating the Driving Ability of Elderly Drivers: Toward Identifying Causes of Accidents Involving Elderly Drivers and Broadening the Recognition of Negligence Types</b><br>Syunsuke Tsuchiya, BE*; Yasumi Ito, PhD; Kazuki Kamiunten, BE; Qin Xu, MA; Ryuichi Yamada, PhD; Yoshiyuki Kagiya, PhD; Yuji Tanaka, PhD; Kei Sato, PhD                    |
| 11:30 a.m. - 1:00 p.m. | <b>D40</b> | <b>A Study of Injury Risk Assessment Methods for Pediatric Impacts With the Floor: An Estimation of Acceleration and Load the Human Body Is Subjected to Using Multi-Body Dynamics</b><br>Yuki Kunugi, BE*; Ito Yasumi, PhD; Sonoka Okura, BE; Taiki Watanabe; Ryuichi Yamada, PhD; Yamanashi Kagiya, PhD; Toshiyuki Harama, BE; Kosuke Kurata, MS; Takao Ogura; Tetsuya Nemoto, PhD |
| 11:30 a.m. - 1:00 p.m. | <b>D41</b> | <b>The Forensic Approach in the Analysis of Trauma: The Application of 3D Technology in the Reconstruction of Death</b><br>Isabella Aquila, MD, PhD*; Roberto Raffaele, MD; Matteo Antonio Sacco, MD; Pietrantonio Ricci, MD, PhD  |
| 11:30 a.m. - 1:00 p.m. | <b>D42</b> | <b>Macro Photography in Forensic Pathology: A Useful Tool to Focus on Skin Lesions</b><br>Federico Manetti, MD*; Matteo Scopetti, MD; Vittorio Gatto, MD; Martina Padovano, MD; Alessandro Santurro, MD; Vittorio Fineschi, MD. PhD  |



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## The Grand Finale

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*Moderator:*

Michelle R. Hoffman, MS  
Forensic Injury Analysis, LLC  
Tempe, AZ

*Co-Moderator:*

David Pienkowski, PhD  
University of Kentucky  
Lexington, KY

- 1:25 p.m. - 1:40 p.m. **D43** **The Challenges in Reproducible Capture and Analysis of Cannabinoids With an Impaction Filter Device**  
Kavita Jeerage, PhD\*; Tara Lovestead, PhD; Veruska Malave, PhD; Adam Friss, PhD;  
Cheryle Beuning, PhD; Cinnamon Bidwell, PhD; Edward Garboczi, PhD
- 1:40 p.m. - 1:55 p.m. **D44** **A Forensic Analysis of Cosmetic Smudges Using Mass Spectrometry: The Effect of Sampling, Surface, and Time**  
Entesar Al-Hetlani, PhD\*; Halemah AlSaeed, MSc; Mohamed Amin, MSc
- 1:55 p.m. - 2:10 p.m. **D45** **Fluorescence Lifetime Imaging (FLIM) of Latent Fingerprints on Paper Emitting Strong Fluorescence at Excitation by 532 Nanometers (Nm) Pulsed Laser**  
Hidetoshi Kakuda, PhD\*; Norimitsu Akib, PhD; Kazuhito Hibino; Kazunari Shibasaki, MSc;  
Ken'ichi Tsuchiya, PhD; Kosuke Tanabe, MSc
- 2:10 p.m. - 2:25 p.m. **D46** **A Simulation Triad for Evaluating the Use of Engineering Simulation**  
Bart Kemper, BSME\*
- 2:25 p.m. - 2:45 p.m. **D47** **A Forensic Readiness Model for the Fused Filament Fabrication (FFF) -Based Additive Manufacturing (AM) Process**  
Muhammad Rais, MS\*; Irfan Ahmed, PhD
- 2:45 p.m. - 3:00 p.m. **BREAK**
- 3:00 p.m. - 3:20 p.m. **D48** **Microscopy—Criminalistics and Environmental Forensic Applications**  
James Millette, PhD\*
- 3:20 p.m. - 3:40 p.m. **D49** **Who Is a Good Boy? Finding Out What Makes a Performance Detection Dog**  
Clément Martin, MS\*; François Verheggen; Claire Diederich
- 3:40 p.m. - 4:00 p.m. **D50** **An Evaluation of the Application of Data Fusion Technology to Sand Analysis**  
Sergey Mamedov, PhD\*

## Wednesday

### Poster Session

- |                        |            |  |
|------------------------|------------|--|
| 11:30 a.m. - 1:00 p.m. | <b>E1</b>  | <b>The Use of Smart Phone Applications in Crime Scene Analysis: Forensic Advantages and Limitations</b><br>Matteo Antonio Sacco, MD; Pietrantonio Ricci, MD, PhD; Isabella Aquila, MD, PhD*  |
| 11:30 a.m. - 1:00 p.m. | <b>E2</b>  | <b>Autopsy Findings in Hydrogen Sulfide Toxicity</b><br>Robyn Parks, MD*; Christopher Rogers, MD   |
| 11:30 a.m. - 1:00 p.m. | <b>E3</b>  | <b>A Case of Skully: An Investigation of X-Files Proportion</b><br>Ashley Holmes, MS*; Patrick Lantz, MD; Jerri McLemore MD  |
| 11:30 a.m. - 1:00 p.m. | <b>E4</b>  | <b>Medicolegal Investigation in Two Cases of Suspected Anticoagulant Overdose</b><br>Camilla Bonci, MD*; Lucia Tattoli, MD, PhD; Francesca Capello, MD; Luana Bonaccorso, MD; Giuliana Mattioda, MD; Giancarlo Di Vella, MD, PhD   |
| 11:30 a.m. - 1:00 p.m. | <b>E5</b>  | <b>Sudden Cardiac Death in Myocardial Bridging</b><br>Angela Baldwin, MD, MPH*; Sarah Thomas, MD, MS; Barbara Sampson, MD, PhD   |
| 11:30 a.m. - 1:00 p.m. | <b>E6</b>  | <b>Light Detection And Ranging (LiDAR) Sensor for 3D Reconstructions in the Autopsy Room</b><br>Alice Chiara Manetti, MD*; Andrea Scatena, MD; Giacomo Visi, MD; Paola Santoro, MD; Fabio Del Duca, MD; Massimiliano Dell'Aquila, MD; Aniello Maiese, MD, PhD  |
| 11:30 a.m. - 1:00 p.m. | <b>E7</b>  | <b>Enhancing Postmortem Care for Transgender Decedents: An Analysis of Global Violence and Forensic Methodologies</b><br>Taylor Flaherty, MSc*; Corrie Strayer, MA; Adrienne Dizon; Jennifer Byrnes, PhD<br><i>(FSF Emerging Forensic Scientist Award Poster Presentation)</i>   |
| 11:30 a.m. - 1:00 p.m. | <b>E8</b>  | <b>Suicide Rates and Trends in Allegheny County, Pennsylvania, During 2010–2019</b><br>Odile Enslin, BS*; Lyndsie Ferrara, PhD; Anita Zuberi, PhD; Mandy Tinkey, MS  |
| 11:30 a.m. - 1:00 p.m. | <b>E9</b>  | <b>The Recent Rise of Eutylone Intoxications in Onondaga County, New York</b><br>Michel Tawil, MD*; Katrina Thompson, MD; Lorenzo Gitto, MD  |
| 11:30 a.m. - 1:00 p.m. | <b>E10</b> | <b>A Review of In-Custody Deaths at the West Tennessee Regional Forensic Center</b><br>William Stout*; Danielle Harrell, DO  |
| 11:30 a.m. - 1:00 p.m. | <b>E11</b> | <b>A Death in the Pool Is Not Just Drowning</b><br>Gianluca Musci, MD*; Carmelinda Angrisani, MD; Adriano Acella, MD; Giulia Gubinelli, MD; Gianluca Gravili, MD; Antonio De Donno   |
| 11:30 a.m. - 1:00 p.m. | <b>E12</b> | <b>Hanging: Between Doubts and Certainties</b><br>Isabella Aquila, MD, PhD*; Pietrantonio Ricci, MD, PhD   |
| 11:30 a.m. - 1:00 p.m. | <b>E13</b> | <b>Sudden Cardiac Death Related to COVID-19 in an Asymptomatic Teenager With a Negative Postmortem Swab</b><br>Mirella Sabatino, MD; Giulia Bini, MD*; Giacomo Belli, MD; Giorgia Lodetti, MD; Dario Galatone, MD; Elena Mercuri, MD; Gulnaz T. Javan, PhD; Silvia Damiana Visonà, PhD; Luca Morini, PhD; Pierangela Grignani, PhD; Carlo Previderé, PhD; Matteo Moretti, MD |





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| 11:30 a.m. - 1:00 p.m. | <b>E14</b> | <b>Older Adult Suicides in Clark County, Nevada (2017-2021): The Trends and Potential Impact of the COVID-19 Pandemic</b><br>Katherine Gaddis MA*; Jennifer Byrnes, PhD   |
| 11:30 a.m. - 1:00 p.m. | <b>E15</b> | <b>Excess Deaths in Shelby County, Tennessee, During the COVID-19 Pandemic</b><br>Morgan Lyttle, MS*; Erica Curry, MD; Benjamin Figura  |
| 11:30 a.m. - 1:00 p.m. | <b>E16</b> | <b>COVID-19 Pandemic From the Forensic Standpoint: A Platform Against Future Biological Threats</b><br>Marina Korolija PhD*; Rosa Karlić, PhD; Ana Livun, PhD; Robert Belužić, PhD; Vjekoslav Tomaić, PhD; Dunja Glavaš, MSc; Antonija Mamić, BS; Andrea Ledić, MSc; Kristian Vlahoviček, PhD |
| 11:30 a.m. - 1:00 p.m. | <b>E17</b> | <b>Organizational, Adaptational, and Continuous Changes of the Forensic Sciences During the COVID-19 Pandemic: An Overview</b><br>Francesco Sessa, MS, PhD*; Massimiliano Esposito, MD; Cristoforo Pomara, MD, PhD; Monica Salerno, MD, PhD   |
| 11:30 a.m. - 1:00 p.m. | <b>E18</b> | <b>Determining Postmortem Intervals of Fetal Pigs Buried in Fayetteville, Tennessee, in June 2021 Using Attenuated Total Reflectance Fourier Transform Infrared Instrumentation Blood Analysis</b><br>Catherine Walters, BS*; Elizabeth Gardner, PhD  |
| 11:30 a.m. - 1:00 p.m. | <b>E19</b> | <b>Equine Scent Detection in Search and Rescue and Search and Recovery</b><br>Elsie-Kay Banks, MA*; Liam Funte, PhD, MD; Anatasia Holobinko, PhD  |
| 11:30 a.m. - 1:00 p.m. | <b>E20</b> | <b>Insect Activity During Decomposition in the Extreme Sonoran Desert Climate</b><br>Meghan Gast, BS*; Kaitlyn Fulp, MA; Jacob Harris, PhD; Katelyn Bolhofner, PhD<br><i>(FSF Emerging Forensic Scientist Award Poster Presentation)</i>  |
| 11:30 a.m. - 1:00 p.m. | <b>E21</b> | <b>Forensic Species Identification Using Phylogenetic Proteomics</b><br>Nicole Slattengren, BSc*; Ashley Spicer, MSFS; Glendon Parker, PhD  |

## Thursday—Session I

### Death Investigation I

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*Moderator:*

Monica Broncucua-Jordan  
Brighton, CO

- |                       |            |   |
|-----------------------|------------|---|
| 8:45 a.m. – 9:00 a.m. | <b>E22</b> | <b>Forensic and Investigative Scene Factors Associated With the Undetermined Manner of Death</b><br>Betsy Adelizzi, PhD*  |
| 9:00 a.m. – 9:15 a.m. | <b>E23</b> | <b>“Our Hearts Are Not at Rest”: A Critical Look at the Adequacy of Indigenous Death Investigations</b><br>Steff King, MA*; Ted Palys, PhD; Annie Ross, PhD; Gail Anderson, PhD |
| 9:15 a.m. – 9:30 a.m. | <b>E24</b> | <b>Forensic Science Data Integration and Stakeholder Workflow for Medicolegal Death Investigation Systems</b><br>Matthew Gamette, MS*; Jeri Roper-Miller, PhD                   |



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| 9:30 a.m. – 9:45 a.m.   | <b>E25</b> | <b>Medicolegal Systems and Forensic Services Assessments: Methods to Better Understand the Needs and Challenges of Providing Structured Support and Building Sustainable Forensic Capacities</b><br>A. Skylar Joseph, MS*; Maria Dolores Morcillo Mendez, MD; Pierre Guyomarc’h, PhD; Denise Abboud, PhD; Eliane El Hajj, MBA; Rawan Chaaban, MPH; Myriam El Helou, BS; Luis Fondebrider, PhD |
| 9:45 a.m. – 10:00 a.m.  | <b>E26</b> | <b>Addressing Emerging Humanitarian Challenges Through an Innovative Concept: The International Centre for Humanitarian Forensics (ICHF)</b><br>Melahat Elif Gunce Eskikoy, PhD*; Govindarajulu Rajesh Babu, PhD; Darshana Ishwarbhai Sharma, PhD; Abraham Johnson, PhD   |
| 10:00 a.m. – 10:15 a.m. | <b>E27</b> | <b>Tapping an Overlooked Resource: Preparing and Utilizing Crime Scene Investigators to Recognize and Document Criminal Asphyxiation Cases</b><br>Kelsey McKay, JD*; Andrea Zaferes, BA*; Rachel Johnson, MS*   |
| 10:15 a.m. – 10:30 a.m. | <b>E28</b> | <b>Forensics in the Wilderness: Lessons Learned</b><br>David Kintz, BS*   |
| 10:30 a.m. – 10:45 a.m. | <b>E29</b> | <b>Homicide Victims and Location, Location, Location: Utilizing Body Dump Patterns and Forensic Archaeology in Outdoor Searches</b><br>Sharon Moses, PhD*   |
| 10:45 a.m. – 11:00 a.m. |            | <b>BREAK</b>  |

## COVID

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*Moderator:*

Cliff Akiyama, MA, MPH  
Akiyama and Associates, LLC  
Philadelphia, PA

|                         |            |   |
|-------------------------|------------|---|
| 11:00 a.m. – 11:15 a.m. | <b>E30</b> | <b>How the COVID-19 Pandemic and Related Restrictions Impacted Crime in Italy</b><br>Francesco Sessa, MS, PhD*; Massimiliano Esposito MD; Monica Salerno, MD, PhD; Cristoforo Pomara, MD, PhD                                 |
| 11:15 a.m. – 11:30 a.m. | <b>E31</b> | <b>COVID-19 Impacts on Medical Examiner/Coroner Offices and Their Response to the Pandemic</b><br>BeLinda Weimer, MA*; Peyton Attaway, BS; Daye Crystal, MPA; Camille Gourdet, JD; Paul Speaker, PhD; Jeri Roper-Miller, PhD* |
| 11:30 a.m. – 11:45 a.m. | <b>E32</b> | <b>An Examination of Medical Examiner/Coroner (ME/C) Outsourcing Practices</b><br>Peyton Attaway, BS*; BeLinda Weimer, MA; Crystal Daye, MPA; Camille Gourdet, JD; Paul Speaker, PhD; Jeri Roper-Miller, PhD                  |
| 11:45 a.m. – 12:00 p.m. | <b>E33</b> | <b>“Cutting” for Profit in a Pandemic</b><br>Abby Chapman*; Cindy Moran; Daniel Dye, MD; Brandi McCleskey, MD   |
| 12:00 p.m. – 1:00 p.m.  |            | <b>BREAK</b>  |



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## Poser Session

- 11:30 a.m. – 1:00 p.m. **E34** **The Assessment of Skin Lesions in Trafficking Victims: A Medicolegal Approach**  
Francesca Capello, MD\*; Camilla Bonci, MD; Niccolò Dino Melloni, MD; Alice Porceddu, MD; Davide Santovito, MD; Giancarlo Di Vella, MD, PhD
- 11:30 a.m. – 1:00 p.m. **E35** **The Role of MicroRNAs (miRNAs) as New Molecular Biomarkers for Dating the Age of Wound Production: A Systematic Review**  
Stefania De Simone, MD\*; Elena Giacani, MD; Maria Antonella Bosco, MD; Francesco Sessa, MS, PhD; Giuseppe Bertozzi, MD; Luigi Cipolloni, MD; Raffaele La Russa, MD
- 11:30 a.m. – 1:00 p.m. **E36** **The Dirty Truth: Does Bathing After Sexual Assault Prevent the Development of Combined DNA Index System (CODIS) -Eligible DNA Profiles?**  
Emily Black\*, Samuel Payne, Julie Valentine, PhD
- 11:30 a.m. – 1:00 p.m. **E37** **Increased Sexual Assault Kit Submissions May Not Mean Increased Sexual Assault Prosecutions**  
Julie Valentine, PhD\*; Leslie Miles, DNP; Connor Alder; Luke Johnson
- 11:30 a.m. – 1:00 p.m. **E38** **The Detection and Determination of the Levels of Physiologically Active Substances in Non-Alcoholic Beverages**  
Amarnath Mishra, PhD\*; Akanksha Behl, MSc
- 11:30 a.m. – 1:00 p.m. **E39** **Improving the Signal Detection Limit of a Portable Raman Spectrometer for Surface Enhanced Raman Spectroscopy (SERS) Detection of Gunshot Residue (GSR)**  
Megan Harper, BS\*; Dariush Aligholizadeh, BS; Lynn Krushinski, BS; Mary Devadas, PhD; Ellen Hondrogiannis, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **E40** **A New Method for the Preservation of Forensic Fragrance/Odor Evidence for Future Analysis Using Gas Chromatography/Mass Spectrometry (GC/MS)**  
Rylee Bosse\*; Susannah Sherwood; Mariah Fernandez, BS; Aspen DeGolier, BS; Chesterene Cwiklik, BS; Kristen Skogerboe, PhD
- 11:30 a.m. – 1:00 p.m. **E41** **A Chemometrics Study for the Forensic Evidence Classification of Pet Foods Using Solid-Phase Microextraction-Gas Chromatography/Mass Spectrometry (SPME-GC/MS)**  
Susannah Sherwood\*; Rylee Bosse; Hazel Tran, BS; Anna Tran, BS; Aspen DeGolier, BS; Mariah Fernandez, BS; Luke Marney, PhD; Kristen Skogerboe, PhD
- 11:30 a.m. – 1:00 p.m. **E42** **Magnetic Resonance Imaging (MRI) of the Skin: Research Hypothesis, Objectives, Limitations, and Postmortem Examples**  
Giuseppe Bertozzi MD\*; Michela Ferrara, MD; Giovanni Gurgoglione, MD; Maria Antonella Bosco, MD; Francesco Pio Cafarelli, MD; Giuseppe Guglielmi, MD, PhD; Luigi Cipolloni, MD, PhD; Raffaele La Russa, MD, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **E43** **The Development of a Rapid Drug Detection Method for Insects Using Paper Spray Ionization-Mass Spectrometry (PSI-MS)**  
Alexandria Plyler, BS\*
- 11:30 a.m. – 1:00 p.m. **E44** **WITHDRAWN**



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- 11:30 a.m. – 1:00 p.m. **E45** **Multiplex Reverse Transcription Polymerase Chain Reaction (RT-PCR) on a Centrifugal Microfluidic Platform for Field-Forward Messenger RNA (mRNA) Body Fluid Profiling**  
Renna Nouwairi, BS\*; Tiffany Layne, PhD; Rachel Fleming, PhD; M. Shane Woolf, PhD;  
James Landers, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **E46** **Preliminary Perspectives of Environmental Conditions on Cocaine’s Chemical Odorant Methyl Benzoate Via Dynamic Airflow Sampling**  
Ryan Thompson, BS\*; Edgar O. Aviles-Rosa, PhD; Nathaniel J. Hall, PhD;  
Paola A. Prada-Tiedemann, PhD
- 11:30 a.m. – 1:00 p.m. **E47** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **E48** **Backlog Reduction by Implementing Shorter Gas Chromatography/Mass Spectrometry (GC/MS) Confirmation of Seized Drugs**  
Muhammad Chaudhary, MPhil\*; Imtiaz Hussain, MPhil; Tahir Jamshaid, MPhil;  
Muhammad Amjad Nadeem, MPhil; Muhammad Irfan Ashiq, PhD; Mohammad Tahir, PhD
- 11:30 a.m. – 1:00 p.m. **E49** **Rapid Fentanyl Sensing Via Biochemical Assay**  
Giana Biddle\*; Jan Halamek, PhD; Ashley Newland
- 11:30 a.m. – 1:00 p.m. **E50** **A Characterization of Metal-Peroxide Explosive Complexes Using Paper Spray Ionization-Tandem Mass Spectrometry (PSI-MS)**  
Kayla Massari\*
- 11:30 a.m. – 1:00 p.m. **E51** **Determining the Method Threshold of Identification Via Gas Chromatography/ Mass Spectrometry (GC/MS) of Weathered Gasoline Extracted From Laminate Flooring**  
Ellen Hondrogiannis, PhD; Allyson Wesley\*  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **E52** **Assessing the Rate of Loss of Fibers in Primary, Secondary, and Tertiary Transfers**  
Samantha Hadley BS\*; Steven Burmeister, MS; Cary Oien, MS  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **E109** **The Terminal Deposition of Latent Fingermarks Determined by Chemical and Physical Developers** *(poster moved from Friday session to Thursday Session)*  
Hannah Hubbard\*; Josep De Alcaraz-Fossoul, PhD

## Death Investigation II & Taphonomy

*Moderator:*  
Joe Trevino, MS  
NYPD Forensics Laboratory  
Queens, NY

*Co-Moderator:*  
Taylor Lowry, BS  
Centennial, CO

- 1:00 p.m. – 1:15 p.m. **E53** **A Physical Assessment of Torture: An Analysis on Medicolegal Degrees of Consistency Expressed According to the Istanbul Protocol**  
Lorenzo Franceschetti, MD\*; Francesca Magli, MSc, MA; Chiara Nava, MD; Lidia Maggioni, MD;  
Andrea Verzeletti, PhD; Cristina Cattaneo, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 1:15 p.m. – 1:30 p.m. **E54** **Record Depths: 2019 Deep Water Recovery of “Password 33” at 18,600 Feet**  
Katherine Grosso, MA\*



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| 1:30 p.m. – 1:45 p.m. | <b>E55</b> | <b>A Dismembered Pedestrian and a Debris Field: A Case Report of a Fatal Hit and Run</b><br>Stacey Chepren, MFS*  |
| 1:45 p.m. – 2:00 p.m. | <b>E56</b> | <b>How Hot Is Too Hot? The Interior Temperature in Unattended Vehicles and the Effect on Children Left Inside</b><br>Laura Lathrop, MS*   |
| 2:00 p.m. – 2:15 p.m. | <b>E57</b> | <b>Have Cocaine, Will Travel: A Case Report of Body Packing</b><br>Anita Hasert, BS*  |
| 2:15 p.m. – 2:30 p.m. | <b>E58</b> | <b>Necrobiome Succession in Muscle Tissue as a Potential Indicator of Postmortem Interval (PMI)</b><br>Anna Wacker, MS*; Josh Sharp, PhD; Jane Harris, PhD  |
| 2:30 p.m. – 2:45 p.m. | <b>E59</b> | <b>Human Taphonomy Facilities: Considerations for Establishment in the United Kingdom</b><br>Claire Power, MSc*; Fiona Jane Wilcox, MD; Richard Walters, LLB; Nikolas Petros Lemos, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i> |
| 2:45 p.m. – 3:00 p.m. | <b>E60</b> | <b>The Effect of Necrophagous Entomofauna on Textile Damage During the Summer in Western Australia</b><br>Sotirios Ziogos, MFSc*<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>  |
| 3:00 p.m. – 3:15 p.m. |            | <b>BREAK</b>  |

## Dogs & Animals in Forensic Science

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### Moderator:

Gerald DeMenna, PhD  
Chem-Chek Labs  
Cape May, NJ

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| 3:15 p.m. – 3:30 p.m. | <b>E61</b> | <b>Step-Wise Lead-Poisoning of a Sheep: A Case Report Combining Virtopsy and Autopsy in a Ballistic Veterinary Case</b><br>Dagmar Mierzwiak*; Matthias Dennler; Monika Hilbe; Michael Thali, MD; Wolf Schweitzer, MD; Stephan Bolliger, MD  |
| 3:30 p.m. – 3:45 p.m. | <b>E62</b> | <b>Morphology and Behavior: What Can Dog Bite Wound Morphology Tell Us About the Behavior Involved in Fatal Dog Attacks?</b><br>James Crosby, MS*   |
| 3:45 p.m. – 4:00 p.m. | <b>E63</b> | <b>Are We Barking Up the Wrong Tree When Selecting Detection Canine Candidates?</b><br>Keir Davies, MSc*; Nikolas Lemos, PhD  |
| 4:00 p.m. – 4:15 p.m. | <b>E64</b> | <b>An Analysis of the Degradation and Contamination of Canine Training Aids Stored in Semi-Permeable Membrane Devices (SPMDs) and Traditional Storage Conditions Via Fourier Transform Infrared Spectroscopy (FTIR) and Gas Chromatography/Mass Spectrometry (GC/MS)</b><br>Kymeri Davis, MS*; Courtney Cruse, BS; John Goodpaster, PhD |



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## Thursday—Session II

### Forensic Nursing I

*Moderator:*

Lindsey Crim, MCJ  
Office of the Chief Medical Examiner  
Nashville, TN

*Co-Moderator:*

Tara Godoy, BSN  
Godoy Medical Forensics  
Livermore, CA

- 8:30 a.m. – 8:45 a.m. **E65** **Forensic Nurse Roles: Exploring the Future Within a Modern Forensic Science World** Joyce Williams, DNP, RN\*
- 8:45 a.m. – 9:00 a.m. **E66** **A Global Response in the Frontiers of Forensic Nursing Science** Virginia A. Lynch, MSN\*
- 9:00 a.m. – 9:15 a.m. **E67** **Responding to the Future Challenges of Emergency Preparedness in a Modern Forensic Science World** Joyce Williams, DNP, RN\*
- 9:15 a.m. – 9:30 a.m. **E68** **Forensic Nursing Science: A Contemporary Response to Humanitarian and Human Rights** Virginia A. Lynch, MSN\*
- 9:30 a.m. – 9:45 a.m. **E69** **Forensic Nurse Hospitalist: The Comprehensive Role of the Forensic Nurse in a Hospital Setting** Kelly Berishaj, DNP\*; Christina Boyland, MSN; Kristin Reinink, MSN; Virginia A. Lynch, MSN
- 9:45 a.m. – 10:00 a.m. **E70** **Exploring the Conditions, Challenges, and Situations for Nurses Involved in Forced Organ Transplants in China** Nancy Cabelus, DNP\*
- 10:00 a.m. – 10:15 a.m. **E71** **The Forensic Nurse Response to Elder Abuse: Meeting and Surpassing the Challenges** Amy Carney, PhD\*
- 10:15 a.m. – 10:30 a.m. **BREAK**

### Forensic Nursing II

*Moderator:*

Pardeep Jasra, PhD  
University of Windsor  
Windsor, Ontario, Canada

*Co-Moderator:*

Alireza Bagherian, DC  
San Francisco, CA

- 10:30 a.m. – 10:45 a.m. **E72** **Forensic Nursing Science as an Indispensable Core Service in Modern Patient Care: The First Implementation Outcomes in Switzerland** Valeria Kaegi, RN\*; Michael J. Thali, MD; Rosa Maria Martinez, MD
- 10:45 a.m. – 11:00 a.m. **E73** **Improving Care for the Sexual Assault Patient** Kathleen Sekula, PhD\*
- 11:00 a.m. – 11:15 a.m. **E74** **The Development and Successful Implementation of a State-Wide Sexual Assault Nurse Examiner (SANE) Coordinator Role: A Rural Perspective** Matthew Gamette, MS; Deborah Wetherelt, RN\*



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| 11:15 a.m. – 11:30 a.m. | <b>E75</b> | <b>WITHDRAWN</b>   |
| 11:30 a.m. – 11:45 a.m. | <b>E76</b> | <b>The Sexual Assault Nurse Examiner (SANE): A Responsive Strategy to Global Sexual Violence</b><br>Jamie Ferrell, MBA, BSN, RN*   |
| 11:45 a.m. – 12:00 p.m. | <b>E77</b> | <b>Sexual Assault Victim and Assault Characteristics and Development of Combined DNA Index System (CODIS) -Eligible Short Tandem Repeat (STR) DNA Profiles</b><br>Julie Valentine, PhD*; Sam Payne, PhD; Leslie Miles, DNP; Luke Johnson; Connor Alder |
| 12:00 p.m. – 1:00 p.m.  |            | <b>BREAK</b>   |

## Trace Evidence

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*Moderator:*

Anita Hasert, BS  
Charleston County Coroner's Office  
North Charleston, SC

*Co-Moderator:*

Frank Bailey, PhD  
Middle Tennessee State University  
Murfreesboro, TN

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| 1:00 p.m. – 1:15 p.m. | <b>E78</b> | <b>An Estimation of Error Rates in Library Matching of Forensic Textile Evidence Classified by Attenuated Total Reflectance/Fourier Transform Infrared (ATR/FTIR) Spectroscopy</b><br>Lauren Bouju Davies*; Braeden Camarota; Kristen Skogerbo, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>                                     |
| 1:15 p.m. – 1:30 p.m. | <b>E79</b> | <b>An Assessment of Heat Damage on Fourier Transform Infrared (FTIR) Spectral Characteristics of Various Fabric Samples for Applications to Forensic Clothing Examination</b><br>Braeden Camarota*; Cheyenne Smith; Lauren Bouju Davies; Chesterene Cwiklik, BS; Kristen Skogerboe, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i> |
| 1:30 p.m. – 1:45 p.m. | <b>E80</b> | <b>A Quantitative Analysis of Smokeless Powder Particles in Post-Blast Debris Via Gas Chromatography/Vacuum Ultraviolet Spectroscopy (GC/VUV)</b><br>Madison Reavis BS*; John Goodpaster, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>   |
| 1:45 p.m. – 2:00 p.m. | <b>E81</b> | <b>Addressing the Quantitative Aspect of Single Grain Forensic Palynology</b><br>Luz Kelley, MS*; Matthieu Baudalet, PhD<br><i>(FSF Emerging Forensic Scientist Award Oral Presentation)</i>  |
| 2:00 p.m. – 2:15 p.m. | <b>E82</b> | <b>Chemometrics in Forensic Examination</b><br>Vishal Sharma, PhD*  |
| 2:15 p.m. – 2:30 p.m. | <b>E83</b> | <b>Spectrally Based Color Calibration of Microscopes for the Analysis of Birefringence</b><br>Olivia Field, BS*; Matthieu Baudalet, PhD   |
| 2:30 p.m. – 2:45 p.m. | <b>E84</b> | <b>The Persistence of Diatoms as Trace Evidence in Clothing Fabrics: The Effect of Active Removal (Machine Washing) and Passive Removal (Time and Environment)</b><br>Ross Flynn, MSc; Paola Magni, PhD; Ashiwin Vadiveloo, PhD; Navid Moheimani, PhD; Kari Pitts, PhD*   |
| 2:45 p.m. – 3:00 p.m. | <b>E85</b> | <b>An Assessment of Swab Efficiency for Body Fluid Identification and DNA Isolation and Analysis in Different Types of Fabric</b><br>Gabriela Roca, PhD*; Sara C. Zapico, PhD   |
| 3:00 p.m. – 3:15 p.m. |            | <b>BREAK</b>  |



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## Analytical Techniques

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*Moderator:*

Imron G. Ramos, MFS  
Clovis, CA

*Co-Moderator:*

Alicia Carriquiry, PhD  
CSAFE-Iowa State University  
Ames, IA

- 3:15 p.m. – 3:30 p.m. **E86** **An Elemental Analysis of Bullets Via Atomic Absorption Spectroscopy**  
Jan Halámek, PhD; Ashley Newland, MS\*; Giana Biddle, MS; Morgan Eldridge, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 3:30 p.m. – 3:45 p.m. **E87** **A Pre-Post Experimental Study on the Life of Blood Stains on Different Soil Samples**  
Eleena Philip, MS\*
- 3:45 p.m. – 4:00 p.m. **E88** **Investigation Into the Aging Mechanism of Bloodstains Post-Deposition Using Steady-State Fluorescence Spectroscopy for Forensic Purposes**  
Alexis Weber, MSFS\*; Anna Wójtowicz, BS; Igor Lednev, PhD
- 4:00 p.m. – 4:15 p.m. **E89** **A Membrane-Modulated Centrifugal Microfluidic Platform for Field-Forward Immunodetection of Opioids**  
Leah Dignan, BSc\*; Michael Woolf, PhD; Jennifer Ross, MD, MPH; Carly Baehr, PhD; Christopher Holstege, MD; Marco Pravetoni, PhD; James Landers, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 4:15 p.m. – 4:30 p.m. **E90** **Non-Contact Detection of Fentanyl by a Field-Portable Ion Mobility Spectrometer**  
Ashley Fulton, PhD\*; Stephanie Vaughan, PhD; Lauryn DeGreeff, PhD
- 4:30 p.m. – 4:45 p.m. **E91** **Sweat Analysis Leading to Possible On-Site Detection for Drugs and Alcohol in the Body**  
Jan Halamek, PhD; Morgan Eldridge; Giana Biddle\*; Ashley Newland
- 4:45 p.m. – 5:00 p.m. **E92** **A Multidisciplinary Forensic Approach: The Investigation of a “Kuman Thong”**  
Alessandra Radogna, MD\*; Chiara Siodambro, MD; Laura Scotti, MD; Anna Lisa Nanni, MD; Maria Sole Prevedoni Gorone, MD; Silvia Damiana Visonà, MD, PhD; Matteo Moretti, MD; Pierangela Grignani, PhD; Carlo Previderè, PhD

## Friday

### Traditional & Non-Traditional Pattern Evidence

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*Moderator:*

Frances Wheatley, MA  
Office of the State Chief Medical Examiner  
Nashville, TN

*Co-Moderator:*

Jessica Crowson, MS  
Sherwood, OR

- 8:45 a.m. – 9:00 a.m. **E93** **Automatic Class Characteristic Recognition in Shoe Tread Images**  
Jayden Stack\*; Susan VanderPlas PhD
- 9:00 a.m. – 9:15 a.m. **E94** **A Comparison of Dust Cover Impact Marks on 200 Consecutively Fired Cartridge Cases From a Saiga 7.62x39mm Rifle**  
Malory Molt, BS\*; V. Rick Wyant, MS; Brian Smelser  
(FSF Emerging Forensic Scientist Award Oral Presentation)





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| 9:15 a.m. – 9:30 a.m.   | <b>E95</b> | <b>An Open-Source Implementation of the Congruent Matching Profile Segments (CMPS) Algorithm for Assessing the Similarity of Bullets</b><br>Wangqian Ju, MSc*; Heike Hofmann, PhD                                |
| 9:30 a.m. – 9:45 a.m.   | <b>E96</b> | <b>Blind Testing in Firearms: Preliminary Results From a Blind Quality Control Program</b><br>Maddisen Neuman, MA*; Callan Hundl, BS; Aimee Grimaldi, MS; Donna Eudaley, BS; Darrell Stein, BS; Peter Stout, PhD |
| 9:45 a.m. – 10:00 a.m.  | <b>E97</b> | <b>Ordinal Regression for Error Rates in a Black-Box Face Recognition Study</b><br>Larry Tang, PhD*; Ngoc-Ty Nguyen, PhD   |
| 10:00 a.m. – 10:15 a.m. | <b>E98</b> | <b>A Forensic Decryption of Ludlings</b><br>David Simpson, BS*   |
| 10:15 a.m. – 10:30 a.m. | <b>E99</b> | <b>Examining New Trends Exclusive to Latino Youth Gang Violence</b><br>Cliff Akiyama, MPH, MA*   |
| 10:30 a.m. – 10:45 a.m. |            | <b>BREAK</b>   |

## Fingerprints & Fingerprinting

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*Moderator:*

Robert L. Hunkeler III, MFS  
Montgomery County Coroner's Office  
Dayton, OH

*Co-Moderator:*

Jessica Volz, DNP  
Adventist Healthcare Shady Grove Medical Center  
Rockville, MD

|                         |             |   |
|-------------------------|-------------|---|
| 10:45 a.m. – 11:00 a.m. | <b>E100</b> | <b>WITHDRAWN</b>  |
| 11:00 a.m. – 11:15 a.m. | <b>E101</b> | <b>Magnetic Nanoparticles Combined With Mass Spectrometry for the Extraction and Detection of Drugs and Toxic Metal From Fingermarks: A Novel Approach for the Forensic Chemist</b><br>Mohamed O. Amin, MSc*; Entesar Al-Hetlani, PhD; Simona Francese, PhD |
| 11:15 a.m. – 11:30 a.m. | <b>E102</b> | <b>The Use of Morphological Image Processing and MATLAB® Tools in Fingerprint Forgery—An Emerging Challenge</b><br>Awais Amin, MS*  |
| 11:30 a.m. – 11:45 a.m. | <b>E103</b> | <b>Investigative Leads in Latent Prints: A Comparison of Laboratory Procedures</b><br>Amanda Wilson, MS*; Sharon Kelley, JD, PhD; Jeniffer Molina, BS; Brett Gardner, PhD; Maddisen Neuman, MA  |
| 11:45 a.m. – 12:00 p.m. | <b>E104</b> | <b>Measuring Proficiency Among Latent Print Examiners: A Statistical Approach From Standardized Testing</b><br>Amanda Luby, PhD*  |
| 12:00 p.m. – 1:00 p.m.  |             | <b>BREAK</b>  |



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## Poster Session

- 11:30 a.m. – 1:00 p.m. **E105** **Modeling Latent Fingerprint Aging Processes by 2D Optical Methodologies**  
Josep De Alcaraz-Fossoul, PhD\*
- 11:30 a.m. – 1:00 p.m. **E106** **Similarities of Fingerprints Among Siblings**  
Angelina Lopez, MFS\*; Ismail Sebetan, MD, PhD; Paul Stein, PhD
- 11:30 a.m. – 1:00 p.m. **E107** **An Examination of Pattern Types in Twins' Fingerprints and Bilateral Symmetry in an Unrelated Population**  
Kristine Duran, MFS\*; Ismail Sebetan, MD, PhD; Paul Stein, PhD
- 11:30 a.m. – 1:00 p.m. **E108** **An Analysis and Discrimination of Fingermarks Contaminated With Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) Tablets Using Raman Spectroscopy and Chemometrics**  
Mohamed O. Amin, MSc\*; Entesar Al-Hetlani, PhD; Igor K. Lednev, PhD
- 11:30 a.m. – 1:00 p.m. **E109** **Moved to the Thursday Poster Session**
- 11:30 a.m. – 1:00 p.m. **E110** **The Development of Fingerprints After Prolonged Submersion in Freshwater**  
Haley Bolt, MSFS\*; Katrina Willis; Bruce Willis; Catherine Rushton
- 11:30 a.m. – 1:00 p.m. **E111** **Environmental Influences on Latent Fingerprint Recovery**  
Madison Frese, BA\*; Caitlin Porterfield, MS
- 11:30 a.m. – 1:00 p.m. **E112** **Forensic Phenomics—An Applied Approach to Fingerprint Profiling for Intelligence Guided Investigations**  
Georgia Cottnam\*; Brendan Chapman; Berin Boughton; Torben Kimhofer
- 11:30 a.m. – 1:00 p.m. **E113** **The Impact of Packaging and Transportation on the Preservation and Processing of Latent Friction Ridge Impressions**  
Sydney Baber\*; Caitlin Porterfield
- 11:30 a.m. – 1:00 p.m. **E114** **Raman Spectroscopy to Tackle the Analysis of Bloodstains in Crime Scene Conditions**  
Alexis Weber, MSFS\*; Alexis Barber, BS; Igor Lednev, PhD
- 11:30 a.m. – 1:00 p.m. **E115** **Optimizing Blood Removal Methodology for Visualizing Gunshot Residue (GSR) Patterns**  
Ashley Smith, BS\*; Michael Kusluski, MFS
- 11:30 a.m. – 1:00 p.m. **E116** **Utilizing the ECHO Model to Virtually Train Medical Examiners and Coroners on Drug Overdose Investigations and Mortality Data Improvement**  
Rachel Redding, MPH\*; Richa Ranade, MPH
- 11:30 a.m. – 1:00 p.m. **E117** **Are Medical Students Prepared to Recognize Child Abuse and Neglect? The Evaluation of an Italian Sample**  
Francesco Lupariello, MD\*; Francesca Capello, MD; Camilla Bonci, MD; Giancarlo Di Vella MD, PhD
- 11:30 a.m. – 1:00 p.m. **E118** **Characterizing the Use of Blind Verification and Blind Proficiency Testing at Forensic Laboratories**  
Anni Hong, BS\*; Maddisen Neuman, MA; Sharon Kelley, JD, PhD; Brett Gardner, PhD; Robin Mejia, MPH, PhD
- 11:30 a.m. – 1:00 p.m. **E119** **A Million Little Pieces: Pursuing Justice Through Methodology in Evidence**  
Michela Ferrara, MD\*; Giovanni Pollice, MD; Giovanni Gurgoglione, MD; Elena Giacani, MD; Stefania De Simone, MD; Francesco Sessa, MS; Giuseppe Bertozzi, MD



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## Standards, Management, & Best Practice

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*Moderator:*

Frances Wheatley, MA  
Office of the State Chief Medical Examiner  
Nashville, TN

*Co-Moderator:*

Caitlin Porterfield, MS  
Forensic Science Institute-UCO  
Edmond, OK

- 1:00 p.m. – 1:15 p.m.    **E120**    **Taking a Sniff Ahead: Updates on the Development of National Standards for Canine Detection Applications**  
Paola Prada-Tiedemann, PhD\*; Kenneth Furton, PhD; Suzanne Perry; Cynthia Otto, PhD
- 1:15 p.m. – 1:30 p.m.    **E121**    **Standards Development Activities in Medicolegal Death Investigation**  
Kelly A. Keyes, BS\*
- 1:30 p.m. – 1:45 p.m.    **E122**    **Evidence Management and the Forensic Lab: Results From a Nationwide Survey of Evidence Handlers**  
Shannan Williams-Mitchem, MPP\*
- 1:45 p.m. – 2:00 p.m.    **E123**    **A National Perspective of How Unidentified Human Remains Are Handled in the United States Using a 2018 Census of Medical Examiner and Coroner Office Data**  
Ashley Rodriguez\*; Kelly Keyes; Christopher Williams; Donia Slack; Stirling Cummings; Jeri Roper-Miller, PhD; Patricia Melton
- 2:00 p.m. – 2:15 p.m.    **E124**    **Variation in Laboratory Policies and Procedures Related to Interpretation of DNA Mixtures**  
R. Austin Hicklin, PhD\*; Nicole Richetelli, PhD; Mitch Holland, MS; Robert Bever, PhD; Lauren Brinkac, MS; Jonathan Davoren, MS
- 2:15 p.m. – 2:30 p.m.    **E125**    **Toward the Quantitative Evaluation of Pattern Evidence**  
Alicia Carriquiry, PhD\*
- 2:30 p.m. – 2:45 p.m.    **E126**    **Border Police Officers Versus Automatic Border Control Systems**  
Andrijana Filko\*
- 2:45 p.m. – 3:00 p.m.    **E127**    **New Jersey's Drug Monitoring Initiative: Developing Forensic Intelligence to Identify Drug Trends, Support Law Enforcement Investigations, and Share Information With Laboratory and Public Health Partners**  
Adam Polhemus, BA\*; Jason Piotrowski, BS
- 3:00 p.m. – 3:15 p.m.    **BREAK**



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## Forensic Training & Education

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*Moderator:*

Cliff Akiyama, MA, MPH  
Akiyama and Associates, LLC  
Philadelphia, PA

*Co-Moderator:*

Imron G. Ramos, MFS  
Clovis, CA

- 3:15 p.m. – 3:30 p.m.    **E128**    **How Educators in the American Academy of Forensic Sciences (AAFS) Have Met and Surpassed the Challenges of Providing Forensic Science Education During COVID-19 to Produce Improved Education and Training for the Modern Forensic Science World**  
Stewart Walker, PhD\*
- 3:30 p.m. – 3:45 p.m.    **E129**    **Integrating Cold Case Investigations in Forensic Science Education: Student Engagement in Research, Information Literacy, and Data Visualization**  
Krystal Hans, PhD\*; Rachael Rosselet, MPhil
- 3:45 p.m. – 4:00 p.m.    **E130**    **Examples and Lessons Learned From Virtual Reality Simulation Inclusion in Forensic Humanitarian Training**  
Ivett Kovari, PhD\*; Sherry Fox, PhD; Pierre Guyomarc’h, PhD; Melissa Kiehl; Christian Rouffaer; Xuan Wei; Kristy Winter
- 4:00 p.m. – 4:15 p.m.    **E131**    **Mental Health and Resilience Education for Forensic Science Students**  
Karen Woodall, PhD\*; Grace Gregory-Alcock, BSc
- 4:15 p.m. – 4:30 p.m.    **E132**    **Understanding Foundational Ethical Content Necessary for Educating Future Forensic Scientists**  
Sarah McKendrick, BA\*; Lyndsie Ferrara, PhD, Pamela Marshall, PhD, Sara Bitner MS; James Schreiber PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 4:30 p.m. – 4:45 p.m.    **E133**    **Bias—It’s Not Just in Your Numbers: The Importance of Teaching Unconscious Bias in Forensic Education**  
Charla Skinner Perdue MS, MFS\*
- 4:45 p.m. – 5:00 p.m.    **E134**    **Facing the Field: An Innovative Virtual Reality Training for Recoveries in Weapon-Contaminated Environments**  
A. Skylar Joseph, MS\*; Xuan Wei MA; Ryan Yates, BSc; Daniel Perkins, MEng; Pierre Guyomarch, PhD



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## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **F1** **Post-Conviction DNA Testing: Annual Summary of a Law School and University Collaboration to Identify and Evaluate Post-Conviction Case**  
Katherine Roberts, PhD\*; Paula M. Mitchell, JD; Nikki Herst-Cook, JD; Paige McGrail, JD; Mehul Anjaria, MS
- 11:30 a.m. – 1:00 p.m. **F2** **Qui Custodiet Ipsos Custodes? (Who Guards the Guards?) Obligations and Rights of Parents and Children**  
Benedetta Pia De Luca, MD\*; Maricla Marrone; Nicola Laforgia, MD; Alessandra Stellacci, MD; Luigi Buongiorno, MD; Francesco Vinci, MD
- 11:30 a.m. – 1:00 p.m. **F3** **Mandatory Vaccination for COVID-19? The Italian Case: Prevention Obligations and Ethical Profiles**  
Alberto Marchese, PhD; Cristina Mondello, MD, PhD; Luigi Cardia, MD\*; Elvira Ventura Spagnolo, MD, PhD; Aurora Vesto, PhD

## Thursday

### Standards—Legacy Technology-Part I

*Moderator:*

Leigh Tomlin, JD  
Texas Forensic Science Commission  
Austin, TX

*Co-Moderator:*

Lynn Garcia, JD  
Texas Forensic Science Commission  
Austin, TX

- 8:45 a.m. – 9:00 a.m. **F4** **Standards Development Activities in Forensic Science: Legal Impacts Moving Forward**  
Christopher Plourd JD\*
- 9:00 a.m. – 9:30 a.m. **F5** **Strengthening Forensic Science Through Independent Verification and Validation: The Path Forward**  
Marc Canellas, JD, PhD\*
- 9:30 a.m. – 9:45 a.m. **F6** **Giving the Defense Bar a Seat at the Table: The Importance of Ensuring a Defense Perspective in Standard Development in the Firearms Identification Field**  
Kyla J. Wells, JD\*
- 9:45 a.m. – 10:00 a.m. **F7** **Sniffing Out Crime?: The Science and the Law of Drug Detection Dogs**  
Dana Delger, JD\*; Michelle Grant
- 10:00 a.m. - 10:30 a.m. **BREAK**
- 10:30 a.m. – 11:00 a.m. **F8** **Current Scientific Issues for Human Remains Detection Dog Cases in Court: Animal Remains and Residual Odor**  
Mary Cablk, PhD\*
- 11:00 a.m. – 11:30 a.m. **F9** **Firearms Tool Mark Comparison: The 2008/2009 NAS Report, the 2016 PCAST Report, and the AMES Study**  
John Nixon, MBA\*



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- 11:30 a.m. – 12:00 p.m. **F10** **Mixtures and Baskerville Data—The Importance of What Isn't There**  
Charles Brenner, PhD\*
- 12:00 p.m. – 12:15 p.m. **F11** **A Forensic Analysis of “Gang Cop” Testimony**  
Sarah Sanger, JD\*
- 12:15 p.m. – 1:15 p.m. **BREAK**

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## Legacy Technology—Part II/Juries and Jurists

*Moderator:*

Mary Dayton, JD  
Georgia State University  
Atlanta, GA

*Co-Moderator:*

Kathleen Pakes, JD  
Wisconsin State Public Defender Office  
Madison, WI

- 1:15 p.m. - 1:45 p.m. **F12** **Fire Investigation Experts: Recommendations for Expressing Opinions in Reports and Testimony**  
Dawn Hewitt, LLM\*; McKenna Hewitt
- 1:45 p.m. - 2:15 p.m. **F13** **The History of Bitemark Evidence in America**  
Christopher Plourd, JD\*
- 2:15 p.m. - 2:30 p.m. **F14** **Y-Chromosomal Short Tandem Repeat (Y-STR) Testing in Indian Country: The Injustice of Ignoring Y-Chromosomal Variation Within and Among Tribal Communities**  
J.D. Schmid, JD\*
- 2:30 p.m. - 2:45 p.m. **BREAK**
- 2:45 p.m. - 3:15 p.m. **F15** **Understanding Juror Comprehension of Forensic Testimony: Assessing Jurors' Decision Making and Evidence Evaluation**  
Cassidy Koolmees, BS, BA\*; Devon LaBat, BS; Jacqueline Evans, PhD; Nadja Schreiber Compo, PhD; Deborah Goldfarb, JD, PhD
- 3:15 p.m. - 3:45 p.m. **F16** **Juror Understanding of the Weight of Evidence Presented as a Likelihood Ratio and the Impact on the Deliberative Process**  
Bess Stiffelman, JD\*
- 3:45 p.m. - 4:45 p.m. **F17** **The Role of Opinions, Probability, and Likelihood Ratios in Forensic Evidence Communication by Experts**  
Hari Iyer, PhD\*; Steve Lund, PhD
- 4:45 p.m. - 5:15 p.m. **F18** **Should Low Likelihood Ratios (LRs) Be Admissible? Considering the Kinship Problem**  
Clinton Hughes, JD\*
- 5:15 p.m. - 5:30 p.m. **F19** **Touch DNA Communication in the Courtroom: Developing Methods for the Effective Communication of Forensic Science Data**  
Julie Burrill, PhD\*  
(FSF Emerging Forensic Scientist Award Oral Presentation)



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## Friday—Session I

### Ethics and Fairness/New Technology Part I

*Moderator:*

Kyla Wells, JD  
The Legal Aid Society  
Bronx, NY

*Co-Moderator:*

Terri Rosenblatt, JD  
The Legal Aid Society  
Bronx, NY

- 8:30 a.m. – 9:00 a.m. **F20** **The Application of the OSAC Registry of Standards to the Revised Federal Rules of Evidence Rule 702**  
Mark D. Stolorow, MS, MBA\*
- 9:00 a.m. – 9:30 a.m. **F21** **Medical Biobanks—Different Aims, Same Controversies: How to Approach the Constitutional Lens to Bioethical Dilemmas of Human Rights, Civil Claims, and Solving Crimes**  
Maria Ciruzzi, PhD\*
- 9:30 a.m. – 10:00 a.m. **F22** **Shifting Forensic Science Development From the Organization to the Discipline**  
Claude Roux, PhD\*; Sheila Willis, PhD; Celine Weyermann, PhD
- 10:00 a.m. - 10:30 a.m. **F23** **Forensic Science Leading the Fight Against Illicit Pharmaceuticals**  
Geoffrey Albert-Bolinski, BA\*; Belen Gonzalez Amoros, MSc; Janine Brouillette, MSc; John Douglass, BSc; Stephanie Beer, MSc; Dorottya Sallos, MSc; Christopher Hopkins, MSc; Tony Zook, PhD
- 10:30 a.m. – 11:00 a.m. **F24** **Court Proceedings During the COVID-19 Pandemic**  
Julianna Firek\*; Lyndsie N. Ferrara, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 11:00 a.m. – 11:30 a.m. **F25** **Perpetuating the Presumption of Guilt: The Role of Implicit Racial Bias in Forensic Testimony**  
Janis Puracal, JD\*; Aliza Kaplan, JD
- 11:30 a.m. – 1:00 p.m. **BREAK**

### New Technology Part II

*Moderator:*

Barry A.J. Fisher, MS, MBA  
Indio, CA

*Co-Moderator:*

Kenneth E. Melson, JD  
GWU Law School  
Kinsale, VA

- 1:00 p.m. – 1:15 p.m. **F26** **The Art of Retrieving Documents From Messaging Apps**  
John Carney, JD\*
- 1:15 p.m. – 1:45 p.m. **F27** **Pandemonium in Social Media: A Collision Course With the Fourth Amendment**  
Gary McDonald, JD\*
- 1:45 p.m. – 2:15 p.m. **F28** **Picture Me Rollin': Personal Privacy in the Land of Automated License Plate Readers**  
Michael Buresh, JD\*



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- 2:15 p.m. – 3:15 p.m. **F29** **Michael Williams v. Forensic Gunshot Audio Detection: How Unvalidated Forensic Evidence Sent an Innocent Man to Jail**  
Brendan Max, JD\*
- 3:15 p.m. – 3:45 p.m. **BREAK**
- 3:45 p.m. – 4:30 p.m. **F30** **The Dangerous Creep of Investigative Forensic Techniques Into Criminal Trials**  
M. Chris Fabricant, JD\*; Tania Brief, JD\*
- 4:30 p.m. – 4:45 p.m. **F31** **A Strict Metrological Approach to the Validity as Applied of DNA Profiling**  
Veronica Scotti, JD\*; Alessandro Ferrero, MSc
- 4:45 p.m. - 5:00 p.m. **F32** **Making Something Out of Nothing: The Inconclusive Fallacy**  
Kelley Kulick, JD; Mark Perlin, PhD, MD,\*

## Friday—Session II

### Case Studies

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*Moderator:*

Clinton Hughes, MA, JD  
Legal Aid Society  
Bronx, NY

*Co-Moderator:*

Nicolas Hughes, JD  
Harris County Office of Managed Assigned Counsel  
Houston, TX

- 1:00 p.m. – 1:30 p.m. **F33** **The Impact of Post-Traumatic Stress Disorder (PTSD) on the Crime Scene: Expected Results**  
Donatella Curtotti, PhD\*; Giovanni Messina, PhD; Francesco Sessa, PhD\*;  
Wanda Nocerino, PhD, MD; Fabrizio Vanaria, MD
- 1:30 p.m. – 2:00 p.m. **F34** **Flawed Forensic Evidence in South Korea's Wrongful Convictions**  
Myeonki Kim, SJD\*
- 2:00 p.m. – 2:30 p.m. **F35** **When DNA Lies: One Family's Reckoning With an Erroneous Test Result**  
Melanie Armstrong, BA\*; Tynan Peterson, MA
- 2:30 p.m. – 3:00 p.m. **F36** **Cannabis Green Tongue: Anecdotal Science and Legal Fiction**  
Gerald Feigin, MD\*; Gil Sapir, JD, MSc





# ODONTOLOGY

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## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **G1** **Forensic Odontology—Where We've Been, Where We Are, and Where We Are Going: Part 2**  
David Williams, DDS\*
- 11:30 a.m. – 1:00 p.m. **G2** **Deaths After Tooth Extraction and Treatment in the Dentist's Office in Turkey**  
Huseyin Afsin, PhD\*; Gulnaz Javan, PhD
- 11:30 a.m. – 1:00 p.m. **G3** **Dental Evidence of the Human Remains of a Slavic Soldier Population Deported to Concentration Camps During World War II**  
Federica Mele, MD\*; Antonio De Donno, MD; Sara Sablone, MD; Mariagrazia Calvano, MD; Mirko Leonardelli, MD; Stefano Duma, MD; Enrica Macorano, MD, PhD; Valeria Santoro, PhD; Francesco Introna, MD
- 11:30 a.m. – 1:00 p.m. **G4** **Dental Injuries During General Anesthesia: Risk Management and Forensic Perspectives**  
Emilio Nuzzolese, DDS, PhD\*; Giulio L. Rosboch, MD; Fabio Innocenzi, MD; Davide Santovito, MD; Francesco Lupariello, MD

## Thursday

### Dental Identification

#### Moderator:

Angela Gum, DDS  
Columbus, OH

- 8:30 a.m. - 8:45 a.m. **G5** **The Role of Charting Dental Anomalies in Human Identification**  
Jayapriya Jayakumar, BDS, MSc\*; Scheila Manica, DDS, MSc, PhD
- 8:45 a.m. – 9:00 a.m. **G6** **Smile Selfie Images in Forensic Dental Identification: A Novel Procedure Proposal**  
Hugues Grégoir, DDS; Anna Ravera, DDS; Emilio Nuzzolese, PhD\*
- 9:00 a.m. – 9:20 a.m. **G7** **Computer-Aided Dental Identification Using Intra-Oral Scanning Techniques**  
Lise Malfroy Camine, DDS, MSc\*; Aimé Conigliaro, MSc; Gilles Amador Del Calle, DDS, PhD
- 9:20 a.m. – 9:40 a.m. **G8** **A Catastrophic Bus Crash in Hungary—Another Disaster Victim Identification (DVI) Operation**  
Ajang Armin Farid, DMD\*
- 9:40 a.m. – 10:00 a.m. **BREAK**
- 10:00 a.m. – 10:20 a.m. **G9** **Dental Identification in a Case of Purposeful Commingling of Remains by a Toronto Serial Killer Operating in the Gay Community of Toronto, 2010–2017: The Bruce McArthur Case**  
Taylor Gardner, BFS; Yolanda Nerkowski, BA; Robert E. Wood, DDS, MSc, PhD\*
- 10:20 a.m. – 10:40 a.m. **G10** **The Digitalization of Dental Arcades in Forensic Dentistry**  
Nelson Freitas, MS\*; Silvia Nuñez, PhD; Daniel Magalhães, PhD



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| 10:40 a.m. – 11:00 a.m. | <b>G11</b> | <b>Second Expert Opinion in Human Identification Through a Virtual, Digital, and Remote Dental Autopsy</b><br>Emilio Nuzzolese, DDS, PhD*; Ymelda Wendy Velezmoro Montes, BDS;<br>Wassim Rihawi, BDS; Khalid Mohamed Khalid, BDS, MSc; Jayasankar Pillai, BDS;<br>Baig Mirza Humayoun Temoor, BDS, MSc; Hemlata Pandey, PhD |
| 11:00 a.m. – 11:20 a.m. | <b>G12</b> | <b>Identification Via a Digital 3D-Simulated Dental Cast: A Case Report</b><br>John Nase, DDS*; Christina VandePol, MD  |
| 11:20 p.m. – 11:40 a.m. | <b>G13</b> | <b>How Scientific Evidence Can Lead to Human Identification Without a Corpse</b><br>Luciene Corradi, MS*  |
| 11:40 a.m. – 1:00 p.m.  |            | <b>BREAK</b>  |

## Poster Session

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| 11:30 a.m. – 1:00 p.m. | <b>G14</b> | <b>The Role of Dental Pathologies, Anomalies, and Restorations in Forensic Identifications: Its Application to Ajnala Dental Remains</b><br>Jagmahender Singh Sehrawat, PhD*; Priyanshi Sood, MSc                                  |
| 11:30 a.m. – 1:00 p.m. | <b>G15</b> | <b>Odontology Forensic Identification in the Case of a Flash Fire Death</b><br>Massimiliano Esposito, MD*; Lucio Di Mauro, MD; Giuseppe Cocimano, MD; Andrea Failla, MD;<br>Edmondo Scoto, MD; Angelo Montana, MD                  |
| 11:30 a.m. – 1:00 p.m. | <b>G16</b> | <b>Dental Hygiene Students' Matching Accuracy When Comparing Antemortem Dental Radiographs and Oral Photos to Simulated Postmortem WinID3® Records</b><br>Brenda Bradshaw, MS*; Emily Ludwig, MS; Amber Hunt, MS; Tara Newcomb, MS |
| 11:30 a.m. – 1:00 p.m. | <b>G17</b> | <b>Histological and Elemental Markers in Teeth Help Reconstruct Decedent-Specific Lived Experiences</b><br>Paola Cerrito, MPhil*; Bin Hu, MD; Rachel Kalisher; Shara Bailey, PhD; Timothy Bromage, PhD                             |

## Dental Age Assessment

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*Moderator:*

Lisa Marin, DMD, MD  
Valdosta, GA

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| 1:00 p.m. – 1:20 p.m. | <b>G18</b> | <b>The Use of Computer Image Recognition and Interpretation Software (CIRIS) for Automation of Dental Age Assessment: An Update</b><br>Kaiming Xu, BSc; Kenneth Aschheim, DDS*; Sakher AlQahtani, PhD; Arie Nakhmani, PhD;<br>Allen Tannenbaum, PhD |
| 1:20 p.m. – 1:40 p.m. | <b>G19</b> | <b>WITHDRAWN</b>  |
| 1:40 p.m. – 2:00 p.m. | <b>G20</b> | <b>WITHDRAWN</b>  |



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- 2:00 p.m. – 2:20 p.m. **G21** **Deep-Learning-Based Age Estimation From Panoramic Radiographs: Unraveling the Learning Process**  
Yung-Hsuan Fang, MSc, DDS\*; Laurens Ghyselen, MSc; Jeroen Bertels, MSc;  
Jannick De Tobel, PhD, MD; Dirk Vandermeulen, PhD, MSc; Patrick Thevissen, PhD, DMD
- 2:20 p.m. – 2:40 p.m. **G22** **Age Estimation Using Third Molar Maturation Based on Demirjian’s Criteria**  
Tanuj Kanchan, MD\*; Vinay Chugh, MDS; Chugh Ankita, MDS; Vikas Meshram, MD;  
Rutwik Shedge, MSc; Arun Patnana MDS; Kewal Krishan, PhD
- 2:40 p.m. – 3:00 p.m. **BREAK**
- 3:00 p.m. – 3:20 p.m. **G23** **Magnetic Resonance Imaging for Multi-Factorial Age Estimation Using a Bayesian Approach: A Validation Study in Two Independent Samples**  
Heleen Coreelman, MSc\*; Patrick W. Thevissen, PhD; Thomas Widek, PhD;  
Martin Urschler, PhD; Elke Hillewig, MSc; Steffen Fieuws, PhD; Koenraad L. Verstraete, PhD;  
Jannick De Tobel, PhD
- 3:20 p.m. – 3:40 p.m. **G24** **Ethnic Variations in the Development of Third Molars Between Chinese and Hispanic Children and Adolescents**  
Jayakumar Jayaraman, PhD, MDS\*
- 3:40 p.m. – 4:00 p.m. **G25** **The Reproducibility of Third Molar Development Stage Allocation on Panoramic Radiographs and Cone Beam Computed Tomographs (CBCT): Comparing Imaging Modalities, Observer Experience, and Observer Calibration**  
Ahmad Rabah, MSc, DDS\*; Mustafa Hayder, MSc, BDS; Dana Ahmed, MSc, BDS;  
Aspalilah Alias, PhD, DDS; Steffen Fieuws, PhD, MSc; Maximilian Timme, MD, DMD;  
Patrick Thevissen, PhD, DMD; Jannick De Tobel, PhD, MD
- 4:00 p.m. – 4:20 p.m. **G26** **Finding John “Little Zion” Doe: When the Science of Forensic Dentistry Proves Itself Above Rational Thinking**  
Grace Chung, DDS\*

## Friday

### Tom Krauss Memorial Bitemarks Session

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*Moderator:*

Julie Wallace, DDS  
Elk River, MN

- 9:00 a.m. – 9:30 a.m. **G27** **Bitemarks That I Have Known**  
Peter Hampl, BS, DDS\*
- 9:30 a.m. – 9:50 a.m. **G28** **The Crash of Flight IY 626: Bitemark Identification on Victims’ Bodies**  
Charles Georget, DDS\*; Aime Conigliaro, MSc
- 9:50 a.m. – 10:10 a.m. **G29** **Bitemarks: Do They Still Exist?**  
Richard Fixott, DDS\*
- 10:10 a.m. – 10:30 a.m. **BREAK**



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- 10:30 a.m. – 10:50 a.m. **G30** **Progress on a National Institute of Standards and Technology (NIST) Scientific Foundation Review Assessing Bitemark Analysis**  
Kelly Sauerwein, PhD\*; Christina Reed, MS; John Butler, Ph
- 10:50 a.m. – 11:10 a.m. **G31** **Stress on Forensic Odontologists**  
Wassim Rihawi, DDS\*
- 11:10 a.m. – 11:30 a.m. **G32** **Hot Off the Press—New Standards and Technical Reports in Forensic Odontology**  
Kenneth Aschheim, DDS\*; Kathleen Kasper, DDS; Raymond Miller, DDS

## Poster Session

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- 11:30 a.m. – 1:00 p.m. **G33** **A Morphometric Analysis of Cone Beam Computed Tomography (CBCT) Images of the Mastoid Process for Sex Determination in the Adolescent Population**  
Avni Bhula, DDS, MSc\*; Ritu Tiwari, MDS; James Fancher, DDS, PhD; David Senn, DDS
- 11:30 a.m. – 1:00 p.m. **G34** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **G35** **Let's Only Use What Really Counts! A New Formula for Age-at-Death Assessment Using Root Translucency**  
Joe Adserias-Garriga, DDS, PhD\*; Anthony Lanfranchi, MS; Kristine Kortonick, MS;  
Douglas H. Ubelaker, PhD; Sara C. Zapico, MS, PhD



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## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **H1** **A Triple “Suicide Pact”: A Case Report With a Review of the Literature**  
Matteo Cecchetti, MD\*; Ilaria Tarozzi, MD; Silvia Raddi, MD; Silvio Chericoni, PhD;  
Sara Bortolini, PhD; Valentina Bugelli, PhD
- 11:30 a.m. – 1:00 p.m. **H2** **A Reconstruction of Events, Including a Self-Inflicted Gunshot Wound, Leading to a Fatal Motor Vehicle Collision**  
Molly House, DO\*; Wendy M. Gunther, MD
- 11:30 a.m. – 1:00 p.m. **H3** **Takayasu Arteritis Involving Coronary Arteries in a Young Black Male: A Case Report and Literature Review**  
John Hu, MD, PhD\*
- 11:30 a.m. – 1:00 p.m. **H4** **A Fuel Tank Injury In a Fatal Motorcycle Accident**  
Gianluca Rossi, MD\*; Giancarlo Di Vella, MD, PhD; Marta Moretti, MD; Lucia Tattoli, PhD
- 11:30 a.m. – 1:00 p.m. **H5** **What Causes the Triad in Diagnosed Abusive Head Trauma (AHT)? Is It the Shaking?**  
Thomas Young, MD\*
- 11:30 a.m. – 1:00 p.m. **H6** **The Forensic Medicolegal System in Qatar**  
Khalid BinMarzook, BSc\*
- 11:30 a.m. – 1:00 p.m. **H7** **Railway Fatalities: A Retrospective Analysis of 21 Years**  
Christina R. Shreve, BS\*; Mario A. Rascon, MD, MHCM; Lorenzo Gitto, MD
- 11:30 a.m. – 1:00 p.m. **H8** **Pitfalls in Postmortem Computed Tomography**  
Angela Baldwin, MD, MPH\*; Stacia Semple, MD
- 11:30 a.m. – 1:00 p.m. **H9** **Disseminated Coccidioidomycosis in the Human Skeleton**  
Laura C. Fulginiti, PhD\*; Zachary Michalicek, DO; Andrew C. Seidel, PhD\*;  
Katelyn L. Bolhofner, PhD\*; Caroline L. Cross, MD
- 11:30 a.m. – 1:00 p.m. **H10** **Scuba Diving Fatalities: A Case Report of a Death Due to a Massive Air Embolism**  
Valentina Bugelli, PhD, MD\*; Silvia Raddi, MD; Matteo Cecchetti, MD; Ilaria Tarozzi, MD;  
Franceschetti, MD; Gianfranco Simonini, MD; Davide Machado, MD
- 11:30 a.m. – 1:00 p.m. **H11** **FVIII Expression to Differentiate Vital Hemorrhages From Postmortem Artifacts**  
Giuseppe Bertozzi, MD\*; Michela Ferrara, MD; Giovanni Pollice, MD; Stefania De Simone, MD;  
Santina Cantatore; Luigi Cipolloni, MD, PhD; Raffaele La Russa, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H12** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **H13** **Evaluating Trends and Demographics of Accidental Drug Deaths in Harris County, Texas, From 2016 to 2020**  
Varsha Podduturi, MD\*; Namrata Walia, MD, MHA; Daryl Shorter, MD



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- 11:30 a.m. – 1:00 p.m. **H14** **An Unexpected and Rare Cause of Child Death: A Large Obstructing Fecaloma**  
Stefania De Simone, DM\*; Elena Giacani, DM; Maria Antonella Bosco, DM;  
Giovanni Gurgoglione, DM; Michela Ferrara, DM; Luigi Cipolloni, DM
- 11:30 a.m. – 1:00 p.m. **H15** **Streptococcal Toxic Shock Syndrome: A Cautionary Tale**  
Meredith Reynolds, MD\*; Pouya Jamshidi, MD; James Bellis, MS; Nicole Jackson, MD, MPH;  
Michael Eckhardt, MD; Pauline Chou, MD
- 11:30 a.m. – 1:00 p.m. **H16** **Air Embolism: An Important Autopsy Finding in Fatal Gunshot Wounds of the Head**  
Xin Zhang, MD\*; Michael D. Eckhardt, MD; Benjamin J. Soriano, MD
- 11:30 a.m. – 1:00 p.m. **H17** **Anomalous Ligature Materials and Means in Hangings: A Report of Ten Cases**  
Maria Antonella Bosco, MD; Giovanni Gurgoglione, MD; Elena Giacani, MD\*;  
Giovanni Pollice, MD; Michela Ferrara, MD; Benedetta Baldari, MD; Giuseppe Bertozzi, MD
- 11:30 a.m. – 1:00 p.m. **H18** **The Use of Forensic Radiology in the Assessment of the Emergency Department Presentation of Near-Hanging Victims in the United Kingdom**  
Sarah A. Gaier, MSc\*; Curtis Edward Offiah, MD; Nikolas P. Lemos, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **H19** **Wound Vitality and the Estimation of Wound-Age Production: New Frontiers Through Immunohistochemistry Investigation**  
Michela Ferrara, MD\*; Stefania De Simone, MD; Giovanni Pollice, MD; Giuseppe Bertozzi, MD;  
Santina Cantatore; Raffaele La Russa, MD, PhD; Luigi Cipolloni, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H20** **A Forensic Approach to an Italian Mass Disaster: The Collapse of the Morandi Bridge**  
Francesca Frigiolini, MD\*; Camilla Tettamanti, MD, PhD; Davide Bedocchi, MD;  
Fiorella Caputo, MD; Martina Drommi, MD; Sara Lo Pinto, MD; Anna Roncallo, MD;  
Francesco De Stefano, MD, PhD; Francesco Ventura, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H21** **The Death of a Professional Scuba Diver Due to Gas Embolism: An Autopsy Case**  
Cemyigit Deveci, MD\*; Mehmet Atilgan, MD; İbrahim Demir, MD; K. Aylin Aksoy, MD
- 11:30 a.m. – 1:00 p.m. **H22** **An Anomalous Origin of Left Coronary Artery With Retro-Aortic Course and Sudden Cardiac Death**  
Paolo Fais, PhD; Clara Fiorentini, PhD\*; Gabriele Bronzetti, PhD; Arianna Giorgetti, PhD;  
Guido Pelletti, PhD; Ornella Leone, PhD; Susi Pelotti
- 11:30 a.m. – 1:00 p.m. **H23** **Things Are Never What They Seem—A Fatal Injection in a Drug Abuser: Hemorrhagic Shock, Pulmonary Embolism, Fulminant Sepsis, Acute Methadone Poisoning, or Medical Liability? A Case Report**  
Maria Silvestre, MD\*; Serena Corradi, MD, PhD; Andrea Marzullo, PhD;  
Lucia Aventaggiato, PhD, MD; Alessandro Dell’Erba, MD, PhD; Biagio Solarino, MD;  
Davide Ferorelli
- 11:30 a.m. – 1:00 p.m. **H24** **Sudden and Unexpected Death After an Induced Abortion: Medical Responsibility or a Hidden Cause?**  
Francesco Lupariello, MD\*; Federica Mirri, MD; Fabio Innocenzi, MD; Alessandro Gabriele, MD;  
Giancarlo Di Vella, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H25** **The Walking Dead: A Strange Case of Falls From a Staircase**  
Mauro Ciavarella\*; Natascha Pascale; Valeria Bruno; Maurizio Scarpa; Aldo Di Fazio



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| 11:30 a.m. – 1:00 p.m. | <b>H26</b> | <b>Suicides by Barbiturate Intoxication</b><br>Joy O. Edegbe, MD*; Tiffany A. Hollenbeck, DO  |
| 11:30 a.m. – 1:00 p.m. | <b>H27</b> | <b>An Extremely Rare Case of Hemorrhagic Shock Caused by an Early Post-Implant Saphenous Vein Graft Pseudoaneurysm Rupture</b><br>Eleonora Mezzetti, MD*; Alessandra De Matteis, MD; Andrea Scatena, MD;<br>Andrea Costantino, MD; Arianna Baronti, MD; Lavinia Pellegrini, MD; Alice Chiara Manetti, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H28</b> | <b>“She Don’t Lie, She Don’t Lie, She Don’t Lie—Cocaine!” Homicide, Suicide, or Accident? The Unresolved Question About Drug-Related Deaths</b><br>Michele Telegrafo, MD*; Alessandro Dell’Erba, MD; Enrica Macorano, MD;<br>Maurizio Mastrapasqua, MD; Francesco Carravetta, MD; Federica Misceo, MD;<br>Maria Silvestre, MD; Serena Corradi, MD; Roberto Maselli, MD; Lorenzo Spagnolo, MD;<br>Sara Sablone |
| 11:30 a.m. – 1:00 p.m. | <b>H29</b> | <b>Another Case of Femicide? No, That’s Another Case of Underlying Sudden Unexpected Death in Epilepsy (SUDEP)</b><br>Natascha Pascale, MD, PhD*; Mauro Ciavarella, MD; Maurizio Scarpa, MD; Aldo Di Fazio, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H30</b> | <b>The “Pathologic” Mother-Son Bond: An Unusual Case of Matricide With “Overkill”</b><br>Cristina Mondello MD, PhD*; Gennaro Baldino, MD; Chiara Stassi, MD; Cataldo Raffino, MD;<br>Alessio Asmundo, MD; Elvira Ventura Spagnolo, MD, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>H31</b> | <b>Charred Bodies: Homicidal, Suicidal, or Accidental Death? A Case Series</b><br>Chiara Stassi, MD*; Chira Rizzo, MD; Gennaro Baldino, MD; Martina Ciriminna, MD;<br>Jurij De Francisci, MD; Cristina Mondello, MD; Antonio Micali, MD; Cataldo Raffino, MD;<br>Alessio Asmundo, MD; Elvira Ventura Spagnolo, MD   |
| 11:30 a.m. – 1:00 p.m. | <b>H32</b> | <b>The Immunofluorescence Survey and the Persistence of SARS-CoV-2 After Death</b><br>Isabella Aquila, MD, PhD*; Matteo Antonio Sacco, MD; Maria Manno, MD;<br>Pietrantonio Ricci, MD, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>H33</b> | <b>Hepatodiaphragmatic Interposition of the Colon: Radiological Evidence and Autopsy Findings in a Case of Chilaiditi Syndrome</b><br>Martina Padovano, MD*; Federico Manetti, MD; Matteo Scopetti, MD;<br>Alessandro Santurro, MD; Paola Frati, PhD; Vittorio Fineschi, PhD, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H34</b> | <b>Rare Congenital Diseases and Infant Deaths: Postmortem Investigations of a Case of Fraser Syndrome</b><br>Federico Manetti, MD*; Martina Padovano, MD; Matteo Scopetti, MD;<br>Alessandro Santurro, MD; Paola Frati, PhD; Vittorio Fineschi, PhD, MD   |
| 11:30 a.m. – 1:00 p.m. | <b>H35</b> | <b>The Role of Superstitions in Sexual Assault: A Case Discussion</b><br>Sarah Al Hinnawj, MD*  |



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## Thursday—Session I

### Tools of the Trade

*Moderator:*

Erin G. Brooks, MD  
University of Wisconsin Hospital and Clinics  
Madison, WI

*Co-Moderator:*

Mirra Chinta  
University of Washington  
Seattle, WA

- 8:30 a.m. - 8:45 a.m. **H36** **Standards Development Activities in Forensic Medicine**  
Jason M. Wiersema, PhD\*; Keith Pinckard, MD, PhD
- 8:45 a.m. – 9:00 a.m. **H37** **Standards Development Activities in Wildlife Forensic Biology**  
Kimberly Frazier, MS\*
- 9:00 a.m. – 9:15 a.m. **H38** **Professionals of the Medicolegal Death Investigation Workforce—The State of the Talent Pipeline**  
Jeri Roper-Miller, PhD\*; Hope Smiley-McDonald, PhD; Crystal Daye, MPA; Kelly Keyes, BS; Connor Brooks, MSc
- 9:15 a.m. – 9:30 a.m. **H39** **Addressing the Future of Forensic Pathology in the Caribbean: The Need for Mentorship Among Caribbean Medical Students**  
Ann-Marie Ming, BMedSc\*; Catherine Morris, MD; Alfredo Walker, MBBS
- 9:30 a.m.— 9:45 a.m. **H40** **The Utilization of Blood Smears and Flow Cytometry to Diagnose Hematologic Malignancies and Triage Cases for Autopsy**  
Jolee Suddock, DO\*; Molly Biggs, BS; Daniel Babu, MD; Clarissa Krinsky, MD
- 9:45 a.m. – 10:00 a.m. **H41** **Histological and Immunofluorescent Imaging of Infant Bridging Veins**  
Neil Harris, MSc\*; Emma Cheshire, MSc; Guy Ruttly, MD; Roger Malcomson, PhD
- 10:00 a.m. – 10:15 a.m. **BREAK**
- 10:15 a.m. – 10:30 a.m. **H42** **Improving the Postmortem Examination Process Using Complete Body Radiographic Imaging**  
Clayton Carter, BS\*; Jered B. Cornelison, PhD; Christine M. Pink, PhD; Joyce L. deJong, DO; Joseph A. Prahlow, MD
- 10:30 a.m. – 10:45 a.m. **H43** **Iatrogenic Changes Related to Perimortem Cardiopulmonary Resuscitation (CPR) as Documented by Postmortem Computed Tomography (CT) Scanning**  
Aneesa Baig, MSc\*; Curtis Edward Offiah, MD; Nikolas P. Lemos, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 10:45 a.m. – 11:00 a.m. **H44** **Keeping Up With the Drug/Opioid Epidemic: In-House Testing Program of the King County, Washington, Medical Examiner's Office**  
Jordan Taylor, MD\*; Richard C. Harruff, MD, PhD; Nicole A. Yarid, MD; Katie Heidere, MSW; Celia Simpson
- 11:00 a.m. – 11:15 a.m. **H45** **An Internal Validation of the ANDE® 6C Expert System for the Analysis of Unidentified Human Remains in a Forensic Laboratory Setting**  
Mariel Candelario-Gorbea, MSFS\*; Fabiola Fernández-Padín, MS; Carmen Tirado-Neris, MS





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- 11:15 a.m. – 11:30 a.m. **H46** **Forensic Photography—An Invaluable Tool During Forensic Autopsies**  
Rachael Landrie, BS\*
- 11:30 a.m. – 11:45 a.m. **H47** **The Logic of Forensic Pathology Opinion**  
Hans de Boer, MD, PhD\*; Judith Fronczek, MD, PhD; Charles Berger, PhD; Marjan Sjerps, PhD
- 11:45 a.m. - 1:00 p.m. **BREAK**

## Poster Session

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- 11:30 a.m. – 1:00 p.m. **H48** **Work-Related Fatal Injuries in the Genoa District of Northwest Italy: A Forensic Analysis of the 2011–2020 Decade**  
Giulia Molinari, MD\*; Martina Drommi, MD; Valentina Calamano, MD; Rosario Barranco, MD; Stefano Errico, MD; Francesco Ventura, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H49** **Diving Accidents and Related Deaths in the Genoa District of Northwest Italy: A Forensic Analysis of the Period From 1968 to 2020**  
Arianna Balbo, MD\*; Martina Drommi, MD; Filippo Spigno, MD; Francesca Frigiolini, MD; Rosario Barranco, MD; Francesco Ventura, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H50** **An Unusual Gunshot Wound Suicide With Findings Mimicking a Second Entrance Wound**  
Harrison Moosavi, MD\*; Andrew Koopmeiners, MD
- 11:30 a.m. – 1:00 p.m. **H51** **WITHDRAWN**
- 11:30 a.m. – 1:00 p.m. **H52** **A Tale of Two Suicides—Gunshot Wounds to the Occiput**  
Jiemin Zhou, MD\*; Zabiullah Ali, MD; Stephanie Dean, MD; J. Laron Locke, MD
- 11:30 a.m. – 1:00 p.m. **H53** **Deaths Associated With SARS-CoV-2 Vaccination: The Importance of Autopsy**  
Francesco Sessa, MS, PhD\*; Massimiliano Esposito, MD; Monica Salerno, MD, PhD; Cristoforo Pomara, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H54** **The Time and Temperature Dependence of Volatile Organic Compounds' (VOCs') Appearance in Autolytic Rat and Pig Liver**  
Gabrielle Messe, BA\*; Robert Powers, PhD  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **H55** **A Complex Suicide by Drowning and Stabbing: The First Italian Case Reported in the Literature**  
Stefano Duma, MD\*; Federica Mele, MD; Mariagrazia Calvano, MD; Mirko Leonardelli, MD; Enrica Macorano, MD; Francesco Introna, MD
- 11:30 a.m. – 1:00 p.m. **H56** **Spectrophotometric Analysis of Postmortem Lividity: A New Objective Measure to Define Time of Death**  
Mariagrazia Calvano, MD\*; Antonio De Donno, MD; Chiara Lauretti, MD; Iliaria Santoiemma, MD; Carmelinda Angrisani, MD; Federica Mele, MD; Mirko Leonardelli, MD; Stefano Duma, MD; Enrica Macorano, MD; Francesco Introna, MD
- 11:30 a.m. – 1:00 p.m. **H57** **The Effect of Multiple Washes and Thread Count on Semen-Stained Sheets**  
Jenna Hedlich, MSFS\*; Jason Linville, PhD



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| 11:30 a.m. – 1:00 p.m. | <b>H58</b> | <b>The First Italian Suicide Death Due to Helium Inhalation: The First Histological Findings and Pathogenesis</b><br>Enrica Macorano, MD*; Andrea Marzullo; Federica Mele, MD; Mariagrazia Calvano, MD; Mirko Leonardelli, MD; Stefano Duma, MD; Francesco Introna, MD   |
| 11:30 a.m. – 1:00 p.m. | <b>H59</b> | <b>Postmortem Findings in 11 Cases of Death Occurring After the Administration of an Anti-SARS-CoV-2 Vaccine</b><br>Chiara Franzetti, MD*; Sofia Bodini, MD; Alessandra Radogna, MD; Claudia Carelli, MD; Vittorio Bolcato, MD; Paola Braga, MD; Valeria Prandini, MD; Gulnaz Javan, PhD; Silvia Visonà, MD, PhD; Matteo Moretti, MD; Luca Morini, PhD   |
| 11:30 a.m. – 1:00 p.m. | <b>H60</b> | <b>Postmortem Computed Tomography (PMCT) in Luxembourg: A Retrospective Analysis</b><br>Thorsten Schwark, MD*; Martine Schaul, MD; Vincent Lens, MD; Andreas Schuff, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H61</b> | <b>Congenital Rib Abnormalities: A Presentation of Two Case Studies and a Literature Review</b><br>Gregory Dickinson, MD*; Hannah C. Jarvis, MRCS; Angela Soler, PhD; Julie Fleischman, PhD  |
| 11:30 a.m. – 1:00 p.m. | <b>H62</b> | <b>A Forensic Investigation of Fatal Myocardial Infarctions—A Gender-Wise Comparison, Autopsy Findings, and Biological Rhythms: A Study From Greece</b><br>Konstantinos Katsos, MD, PhD; Evmorfili Zouzia, MD, MSc; Konstantinos Moraitis, BSc, PhD; Dimitrios Vlachodimitropoulos, MD, PhD; Nikolaos Goutas, MD, PhD; Chara Spiliopoulou, PharmD, MD, PhD; Emmanouil Sakelliadis, MD, MSc, PhD* |
| 11:30 a.m. – 1:00 p.m. | <b>H63</b> | <b>The Determination of Manner of Death When Evaluating Intent: An Examination of Two Cases of Brodifacoum Adulteration of Synthetic Cannabinoids</b><br>Libby S. Aronson, MD*; Michael D. Eckhardt, MD; Danial S. Isenschmid, PhD; Kristin C. Escobar Alvarenga, MD   |
| 11:30 a.m. – 1:00 p.m. | <b>H64</b> | <b>A Study of Post Severe Traumatic Brain Injury (sTBI): Pathological and Radiological Diffuse Axonal Injury (DAI) Changes</b><br>Meenakshi Sharma, MSc*; Dipin Sudhakaran, MD; Arulselvi Subramaniam, MD; Kangana Sengar, DNB; Shivanand Gamanagatti, MD; Vaishali Suri, MD; Rajesh Malhotra, MD; Sanjeev Lalwani, MD   |
| 11:30 a.m. – 1:00 p.m. | <b>H65</b> | <b>A Fatal Snap: Death by Extrinsic Percussion of the Neck</b><br>Andrea Costantino, MD*; Alice Chiara Manetti, MD; Eleonora Mezzetti, MD; Arianna Baronti, MD; Paola Santoro, MD; Lavinia Pellegrini, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H66</b> | <b>A Case of Traumatic Internal Carotid Artery Dissection: A Rare Event With Devastating Consequences</b><br>Giacomo Visi, MD*; Eleonora Mezzetti, MD; Andrea Scatena, MD; Aniello Maiese, MD; Paola Santoro, MD; Alessandra De Matteis, MD; Massimiliano Dell'Aquila, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H67</b> | <b>The Hazard of Grabbing a Quick Bite: A Case of Fatally Choking on Ham</b><br>Arianna Baronti, MD*; Andrea Costantino, MD; Andrea Scatena, MD; Giacomo Visi, MD; Zoe Del Fante, MD; Lavinia Pellegrini, MD; Silvia Romano  |
| 11:30 a.m. – 1:00 p.m. | <b>H68</b> | <b>Massive Insulin Injection: A Rare Case of Suicide</b><br>Paola Santoro, MD*; Andrea Costantino, MD; Arianna Baronti, MD; Eleonora Mezzetti, MD; Umberto De Gennaro, MD; Alice Chiara Manetti, MD; Fabio Del Duca, MD; Lavinia Pellegrini, MD  |
| 11:30 a.m. – 1:00 p.m. | <b>H69</b> | <b>When Chronic Venous Insufficiency Becomes a Life-Threatening Condition: A Case of Fatal Hemorrhage From a Varicose Veins' Ulcer</b><br>Zoe Del Fante, MD; Arianna Baronti, MD; Eleonora Mezzetti, MD; Alice Chiara Manetti, MD; Fabio Del Duca, MD*; Silvia Romano  |



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- 11:30 a.m. – 1:00 p.m. **H70** **Death by Arterial Injury: Two Unusual Cases of Sharp Force Fatalities**  
Lavinia Pellegrini, MD\*; Fabio Del Duca, MD; Paola Santoro, MD; Andrea Costantino, MD;  
Giacomo Visi, MD; Alice Chiara Manetti, MD
- 11:30 a.m. – 1:00 p.m. **H71** **Postmortem Degradation of Porcine Skeletal Muscle Proteins During a Heat Wave in Northern Germany**  
Janine Geissenberger, MSc\*; Jens Amendt, PhD; Fabio Carlo Monticelli, PhD;  
Peter Steinbacher, PhD; Stefan Pittner, PhD
- 11:30 a.m. – 1:00 p.m. **H72** **A Cocaine-Related Left Ventricle Rupture: A Case Report**  
Gabriele Licciardello, MD\*; Federico Privitera, MD; Massimiliano Esposito, MD;  
Edmondo Scoto, MD; Sabrina Franco, MD; Aldo Liberto, MD
- 11:30 a.m. – 1:00 p.m. **H73** **Ischemic Heart Disease Due to Intramyocardial Amyloidosis and Undiagnosed Plasma Cell Myeloma**  
Nicole E. Stanley, MD\*; Erik Christensen, MD
- 11:30 a.m. – 1:00 p.m. **H74** **An Indoor Postmortem Dog Scavenging: A Case Study**  
Andrea Vittorio Maria Failla, MD\*; Gabriele Licciardello, MD; Giulio Di Mizio, MD;  
Mario Giuseppe Chisari, MD; Francesco Amico, MD; Monica Salerno, MD
- 11:30 a.m. – 1:00 p.m. **H75** **A Multidisciplinary Investigation of a Corpse Found at Sea, With Particular Focus on the Use of Barnacles for the Estimation of the Time Spent in Water**  
Marco Torrisi, MD\*; Fabrizio Vanaria, MD; Manuela Coci, MD; Paola Magni, MD, PhD;  
Cristoforo Pomara, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H76** **Bodies in a Pool of Blood: Murder or Natural Death?**  
Fausto Licciardello, MD\*; Federico Privitera, MD; Salvatore Iannuzzi, MD; Giuliana Pennisi, MD;  
Pietro Mazzeo, MD; Aldo Liberto, MD
- 11:30 a.m. – 1:00 p.m. **H77** **An Unusual Suicide Using a Screwdriver: A Case Report**  
Bayan Alzumaili, MD\*; Kristen K. Landi, MD; Avneesh Gupta, MD
- 11:30 a.m. – 1:00 p.m. **H78** **Post-Vaccination Myocarditis and Thrombosis: Monitoring Strategies and Impact on the Vaccines' Benefit-Risk Assessment**  
Giulio Perrone, MD\*; Clio Bilotta, MD; Corinne La Spina, MD; Vanessa Milazzo, MD;  
Giuliana Malandrino, MD; Valeria Provenzano, MD; Daniela Guadagnino, MD;  
Mario Spanò, MD; Walter Pitingaro, MD; Mattia Palmeri, MD; Valeria Tullio, PhD;  
Stefania Zerbo, PhD; Antonina Argo, PhD
- 11:30 a.m. – 1:00 p.m. **H79** **Sudden Cardiac Death and Thymic Hypertrophy: A Recurrent Cycle in Medicine**  
Simona Nicoli, MD\*; Marcello Benevento, MD; Giampiero Bottari, MD;  
Cristina Elena Rosa Caterino, MD; Francesco Clemente, MD; Biagio Dolarino, PhD, MD
- 11:30 a.m. – 1:00 p.m. **H80** **A Rare Case of Sudden Death Due to Endomyocardial Fibrosis in Italy: A Differential Diagnosis With Other Causes of Restrictive Cardiomyopathy**  
Chiara Rossetti, MD\*; Giacomo Belli, MD; Paola Braga, MD; Lorenzo Franceschetti, MD;  
Cesare Garberi, MD; Mario Picozzi; Jutta M. Birkhoff, MD, PhD
- 11:30 a.m. – 1:00 p.m. **H81** **Formalin-Fixed Paraffin-Embedded (FFPE) Extraction of DNA From Tumor Samples: A Revolutionary Breakthrough**  
Kelly Burns, BS\*; Dennis J. DeLuca, PhD



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## Case Studies

### Moderator:

Lorenzo Gitto, MD  
SUNY Upstate, Department of Pathology  
Syracuse, NY

### Co-Moderator:

Mark Beneke, PhD  
International Forensic Research & Consulting  
Cologne, Germany

- 1:00 p.m. - 1:15 p.m. **H82** **Chronic Mineral Oil Aspiration: A Case of Exogenous Lipoid Pneumonia**  
Valeria Prandini, MD\*; Chiara Franzetti, MD; Gianmarco Di Palma, MD; Paolo Musto, MD;  
Alessandra Radogna, MD; Silvia Visonà, MD, PhD; Luca Morini, PhD; Matteo Moretti, MD
- 1:15 p.m. – 1:30 p.m. **H83** **Tell Me What You Ate and I'll Tell You When You Died**  
Fabio Policino, MD, PhD; Emanuele Capasso, MD\*, PhD; Pierpaolo Di Lorenzo;  
Serena Dei Medici, MD; Mariagrazia Marisei, MD; Gianluca Auriemma, MD; Massimo Niola
- 1:30 p.m. - 1:45 p.m. **H84** **Sometimes Common Stuff Can Kill: Pay Attention to Your Phone**  
Giulia Bini, MD; Mirella Sabatino, MD\*; Domenico De Stradis, MD; Sofia Bodini, MD;  
Ludovico Re, MD; Laura Scotti, MD; Chiara Siodambro, MD; Silvia Damiana Visonà, PhD;  
Gulnaz T. Javan, PhD; Luca Morini, PhD; Fabrizio Scapin, MD; Matteo Moretti, MD
- 1:45 p.m. – 2:00 p.m. **H85** **Drowning at Home: Risk Factors and Prevention in Adults**  
Adrienne Aardema, BS\*; Theodore Brown, MD; Joseph A. Prahlow, MD
- 2:00 p.m. - 2:15 p.m. **H86** **The Differential Diagnosis Between Accidental Injury and Fatal “Shaken Elderly Syndrome”:  
Insights From a Case Report**  
Valentina Bugelli, MD; Ilaria Tarozzi, MD\*; Matteo Cecchetti, MD; Arturo Abruzzese, MD;  
Francesca Iannaccone, MD; Marco Di Paolo, MD
- 2:15 p.m. - 2:30 p.m. **H87** **A Fatal Case of Delayed Post-Tonsillectomy Hemorrhage: Potential Medicolegal Implications**  
Rasmey Thach, DO\*; Lorenzo Gitto, MD
- 2:30 p.m. – 2:45 p.m. **H88** **Disseminated Fungal Infections at Forensic Autopsy**  
Amy R. Lorber, AB\*; Joseph A. Prahlow, MD
- 2:45 p.m. - 3:00 p.m. **BREAK**
- 3:00 p.m. - 3:15 p.m. **H89** **Krönlein Shots and Pseudo-Krönlein Shots**  
Christopher Ramos, MD\*; Joseph A. Prahlow, MD; Elizabeth Douglas, MD
- 3:15 p.m. - 3:30 p.m. **H90** **Mutual Homicide Including Immediate Revenge Homicide by Two Unrelated Assailants  
Utilizing One Sword**  
Wendy M. Gunther, MD\*; Molly House, DO
- 3:30 p.m. - 3:45 p.m. **H91** **WITHDRAWN**
- 3:45 p.m. – 4:00 p.m. **H92** **Woman-to-Woman Sexual Violence: A Case Discussion**  
Sarah Al Hinnawi, MD\*
- 4:00 p.m. - 4:15 p.m. **H93** **Fatalities Due to the February 2021 Winter Storm in Harris County, Texas**  
Noah Reilly, DO\*; Varsha Podduturi, MD; Hannah C. Jarvis, MRCS



## Thursday—Session II

### A Year of SARS-CoV-2

**Moderator:**

Kristinza W. Giese, MD  
Office of the Chief Medical Examiner  
Washington, DC

**Co-Moderator:**

Jamie Elifritz, MD  
University of New Mexico  
Albuquerque, NM

- 8:30 a.m. - 8:45 a.m. **H94** **COVID Testing and Postmortem Interval**  
Breanna Cuchara, MS\*; Francisco J. Diaz, MD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 8:45 a.m. – 9:00 a.m. **H95** **SARS-CoV-2 Active Replication in Cadavers**  
Francesca Cazzato\*; Simone Grassi; Alessandro Alfonsetti; Massimo Zedda; Paola Cattani;  
Flora Marzia Liotti; Marco Dell'Aquila; Vincenzo Lorenzo Pascali; Maurizio Sanguinetti;  
Vincenzo Arena; Antonio Oliva
- 9:00 a.m. – 9:15 a.m. **H96** **The Postmortem Persistence Time of Sars-CoV-2 Virus: An Analysis of a Case Series**  
Isabella Aquila, MD, PhD\*; Matteo A. Sacco, MD; Pietrantonio Ricci, MD, PhD
- 9:15 a.m. – 9:30 a.m. **H97** **Ventilated Postmortem Imaging of COVID-19-Related Lung Disease With Clinicopathologic Correlation**  
Nadia Solomon, MD, MSc, MA\*; Inga Melvindottir, MD; Shin Rong Lee, MD, PhD;  
Roxanne Wadia, MD; Savannah Gisriel, MD, MPH; Donald Turbiville, MD;  
Declan McGuone, FRCPath, MBBCh; S. David Hudnall, MD; Albert Sinusas MD
- 9:30 a.m.– 9:45 a.m. **H98** **Postmortem Computed Tomography (PMCT): A Valuable Tool in the Study of SARS-CoV-2-Related Deaths?**  
Francesco Nardoni\*; Simone Grassi; Massimo Zedda; Guglielmo Manenti; Roberto Floris;  
Cesare Colosimo; Vincenzo Arena; Vincenzo Lorenzo Pascali; Laura Filograna; Antonio Oliva
- 9:45 a.m. – 10:00 a.m. **H99** **COVID-19-Associated Myocarditis at Autopsy**  
Charles Rohrer, MD\*; Adam Bailey, MD, PhD; Erin Brooks, MD
- 10:00 a.m. – 10:15 a.m. **H100** **Anosmia and COVID-19: A Search for the Virus in the Brain Through Immunohistochemical Investigations With the Anti-Sars-CoV-2 Antibody**  
Stefania De Simone, DM\*; Maria Antonella Bosco, DM; Elena Giacani, DM;  
Michela Ferrara, DM; Raffaele La Russa, DM; Luigi Cipolloni, DM
- 10:15 a.m. – 10:30 a.m. **BREAK**
- 10:30 a.m. – 10:45 a.m. **H101** **Died From or Died With COVID-19? The Application of Frailty Scores in the Assessment of Causality in 41 Autopsy Cases in Elderly Community Settings**  
Martina Zanon, MD\*; Martina Montanaro, MD; Francesca Sinopoli, MD; Matteo Dri, MD;  
Davide Radaelli, MD; Carlo Moreschi, MD; Stefano D'Errico, MD, PhD
- 10:45 a.m. – 11:00 a.m. **H102** **Pediatric SARS-CoV-2 Infection in the Forensic Setting**  
Rebecca Folkerth, MD\*; Michelle Stram, MD, MSc; Dimath Alyemni, MD, MPH;  
Michael Greenberg, MD; Avneesh Gupta, MBBS; Amanda Krausert, MD; Lauren Mecca, MD;  
Sophia Rodriguez, MD; Jay Stahl-Herz, MD
- 11:00 a.m. – 11:15 a.m. **H103** **Overdose Analysis in a Year of COVID-19 in Orange County, California**  
Kelly Keyes, BS\*; Chelsea Brown, MA



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- 11:15 a.m. – 11:30 a.m. **H104** **A Year of Mandatory, Universal COVID-19 Postmortem Testing in San Francisco: Lessons Learned**  
Rand Miyashiro, MA\*; Willi McFarland, MD, PhD
- 11:30 a.m. – 11:45 a.m. **H105** **The Challenges of the Disposal of COVID-19-Deceased Bodies in Mumbai, India**  
Manoj Parchake, MD\*
- 11:45 a.m. - 12:00 p.m. **H106** **The Challenges in Managing Dead Bodies With COVID-19 in Indonesia**  
Yudy Yudy, MD; Klarisa Salim, MD; Denys Alim, MD\*
- 12:00 p.m. – 1:00 p.m. **BREAK**

## Invertebrates and Microbes

### Moderator:

David Carter, MD  
Chaminade University of Honolulu  
School of Natural Sciences & Mathematics  
Honolulu, HI

### Co-Moderator:

Heather R. Jordan, PhD  
Mississippi State University  
Mississippi State, MS

- 1:00 p.m. - 1:15 p.m. **H107** **Estimating the Postmortem Interval (PMI) Using Decomposition Scoring Systems: A Comparative Study**  
Valentina Bugelli, MD\*; Silvia Raddi, MD; Matteo Cecchetti, MD; Ilaria Tarozzi, MD; Sara Bortolini, PhD; Carlo Pietro Campobasso, MD, PhD
- 1:15 p.m. – 1:30 p.m. **H108** **A Long-Term Study of Decomposition at a Tropical Taphonomy Facility: 2013–2021**  
David O. Carter, PhD\*; Alexis J.L. Peterson, BS; Adam Orimoto, MS; Agathe Ribereau-Gayon, PhD; Carlos A. Gutierrez, PhD; Katelynn A. Perrault, PhD
- 1:30 p.m. - 1:45 p.m. **H109** **A Longitudinal Study of Human Decomposition Across Summer and Winter in Quebec, Canada**  
Agathe Ribereau-Gayon, PhD\*; Shari Forbes, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 1:45 p.m. – 2:00 p.m. **H110** **WITHDRAWN**
- 2:00 p.m. - 2:15 p.m. **H111** **Pre-Colonization Data Improves Larval Age Estimations With Human Remains**  
Charity G. Owings, PhD\*; Hayden McKee, MSc; Erin Patrick, MS; Sarah Schwing, BA, BSc; Thomas Delgado, BA; Dawnie W. Steadman, PhD
- 2:15 p.m. - 2:30 p.m. **BREAK**
- 2:30 p.m. – 2:45 p.m. **H112** **Successional Changes in the Entomological, Bacteriological, and Fungal Communities During the Decomposition of Swine Carcasses**  
Denise Gemmellaro, PhD\*; Rachel Domke, BA; Kristina Kovalska; Amanda Joy O'Connor; Olivia Pate; Gloria Raise; Nicholas Lorusso, PhD; Maria Shumskaya, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*
- 2:45 p.m. - 3:00 p.m. **H113** **A Characterization of Volatiles Produced by Five Aerobic Postmortem Bacterial Species**  
Kyle Furuta, BSFS; Julianne Byrne, BSFS; Cynthia Cheung, MSFS; David O. Carter, PhD; Katelynn A. Perrault, PhD\*
- 3:00 p.m. - 3:15 p.m. **H114** **Determining Human Identity From Leeches**  
Veronica M. Cappas, BS\*; Reena Roy, PhD  
*(FSF Emerging Forensic Scientist Award Oral Presentation)*



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## Thursday—Session III

### 2022 Jay Dix Lecture Series

*Moderator:*

Michael A. Graham, MD  
Saint Louis University School of Medicine  
St. Louis, MO

- 9:00 a.m. – 10:00 a.m. **H115** **Deaths Due to Electricity**  
Joseph A. Prahlow, MD\*
- 10:00 a.m. – 10:15 a.m. **BREAK**
- 10:15 a.m. – 11:05 a.m. **H115** **Firearm Injuries**  
Andrew M. Baker, MD\*
- 11:05 a.m. – 12:00 p.m. **H115** **Investigation of Death Due to Asphyxia**  
Jonathan Hayes, MD\*
- 12:00 p.m. – 2:00 p.m. **BREAK**
- 2:00 p.m. – 2:50 p.m. **H115** **Deaths Associated With Sports**  
Joyce L. deJong, DO\*
- 2:50 p.m. – 3:05 p.m. **BREAK**
- 3:05 p.m. – 3:55 p.m. **H115** **Deaths Due to Drugs and Other Toxic Agents**  
James R. Gill, MD\*

## Friday—Session I

### Retrospective Studies

*Moderator:*

Gregory M. Dickinson, MD  
Office of the Chief Medical Examiner  
New York, NY

*Co-Moderator:*

Denise Wohlfahrt, BS  
Virginia Commonwealth University  
Richmond, VA

- 8:30 a.m. - 8:45 a.m. **H116** **The National Center for Forensics—Forensic Workforce Development**  
Danny A. Milner, Jr., MD, MSc; Joseph A. DiZinno, DDS; Anthony B. Falsetti, PhD; Amie Ely, JD;  
Robert A. Kurtzman, DO\*
- 8:45 a.m. – 9:00 a.m. **H117** **The National Center for Forensics—The Medical Examiner’s Role**  
Robert A. Kurtzman, DO\*; Danny A. Milner, Jr., MD, MSc; Anthony B. Falsetti, PhD;  
Joseph A. DiZinno, DDS; Amie Ely, JD
- 9:00 a.m. – 9:15 a.m. **H118** **Gunshot-Related Fatalities in the Pediatric Population: A Retrospective Study From the Cook County Medical Examiner’s Office**  
Lorenzo Gitto, MD\*; Ponni Arunkumar, MD



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- 9:15 a.m. – 9:30 a.m. **H119** **Human Fatalities Caused By Dogs: A 17-Year Retrospective Study in Harris County, Texas, and New York City, New York**  
Hannah C. Jarvis, MBBS, MRCS\*; Gregory M. Dickinson, MD
- 9:30 a.m. – 9:45 a.m. **H120** **Homeless Mortality Reporting by the King County, Washington, Medical Examiner’s Office: Impact and Importance**  
Nicole A. Croom, MD, MPH\*; Richard C. Harruff, MD, PhD
- 9:45 a.m. – 10:00 a.m. **BREAK**
- 10:00 a.m. – 10:15 a.m. **H121** **An Analysis of Two Decades of Intimate Partner Femicide-Suicide in Turkey**  
Nüket Paksoy Erbaydar, MD, PhD; Nilufer Dilara Ar Mutlu, MSc;  
Aysun Balseven Odabaş, MD, PhD; Mehmet Cavlak, MD\*
- 10:15 a.m. – 10:30 a.m. **H122** **Influencing Factors on Postmortem Protein Degradation for Postmortem Interval (PMI) Estimation: A Systematic Review**  
Angela Zissler\*; Walter Stoiber; Janine Geissenberger, MSc; Peter Steinbacher, PhD;  
Fabio Carlo Monticelli; Stefan Pittner, PhD\*
- 10:30 a.m. – 10:45 a.m. **H123** **Postmortem Computed Tomography (PMCT) in Unwitnessed Choking: A Case Report and Retrospective Review of Seven Cases of Airway Obstruction**  
Michael Harrell, MD\*; Lauren Decker, MD  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 10:45 a.m. – 11:00 a.m. **H124** **The Status of Internal Neck Structures in Violent Compression of the Neck: A Ten-Year Autopsy Study**  
Nilesh Tumram, MD\*
- 11:00 a.m. – 11:15 a.m. **H125** **A Comparison of Findings Identified at Traditional Invasive Autopsy and Postmortem Computed Tomography (PMCT) in Suicidal Hangings**  
James Lyness, MB, BCh\*; Anthony Collins, MB, BCh; Guy Ruddy, MB, MD; Jane Ruddy, PhD, MSc

## Friday—Session II

### Cases of Cardiac Arrest, Asphyxia, and Suicide

*Moderator:*

Jonathan Parrott, PhD  
Arizona State University  
Glendale, AZ

*Co-Moderator:*

Gregory A. Schmunk, MD  
Urbandale Forensics, P.C.  
Urbandale, IA

- 8:30 a.m. - 8:45 a.m. **H126** **An Autopsy Study of Anthropometric Measurements and Indices of Obesity and Their Relationship With Coronary Artery Atherosclerosis in a South Indian Population**  
Francis Nanda Prakash Monteiro, MD, DNB\*; Shyna Quadras; Tanush Shetty, MD
- 8:45 a.m. – 9:00 a.m. **H127** **A Tale of Unrelenting Chest Pain: The “Short” Versus the “Tall”**  
Robyn Parks, MD\*
- 9:00 a.m. – 9:15 a.m. **H128** **Restraint-Related Asphyxia, Excited Delirium, and Drugs: The Role of Counterfactual Causation in Assessing the Cause of Death in Custody**  
Michael Freeman, MD, PhD; Ellen Strommer, MPH\*





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- 9:15 a.m. – 9:30 a.m. **H129** **Prone Restraint Cardiac Arrest: A Comprehensive Review of the Scientific Literature and an Explanation of the Physiology**  
Alon Steinberg, MD\*
- 9:30 a.m.– 9:45 a.m. **H130** **Prone Restraint Cardiac Arrest**  
Victor Weedn, MD, JD\*; Alon Steinberg, MD; Pete Speth, MD
- 9:45 a.m. – 10:00 a.m. **H131** **The Role of Mast Cells in Deaths Associated With Fatal Asphyxia: An Immunohistochemical Study Utilizing the CD117 Marker**  
Raghendra Shekhawat, MD\*; Vikas P. Meshram, MD; Meenakshi Rao, MD; Tanuj Kanchan, MD; Rutwik Shedje, MSFS; Rahul Panwar
- 10:00 a.m. – 10:15 a.m. **BREAK**
- 10:15 a.m. – 10:30 a.m. **H132** **A Suicidal Transnasal Hunting Crossbow Bolt Head Shot: A Case Report**  
Wolf Schweitzer, MD; Michael Thali, MD; Christina Herbst, MD, Lars Ebert, PhD\*; Rilana Baumeister, MD, PD; Garyfalia Ampanozi, MD; Ni Jian, MD; Stephan Bolliger, MD
- 10:30 a.m. – 10:45 a.m. **H133** **Bad Manners: Suicide by Starvation**  
Debra Berry, MD, MS\*; Sterling McLaren, MD; Ian Puffenberger, MD; Meredith Frank, MD; James Caruso, MD
- 10:45 a.m. – 11:00 a.m. **H134** **Suicide and Mental Health: Observations From a Coroner/Medical Examiner Office**  
Nicole Panzica\*; Brandi C. McCleskey, MD
- 11:00 a.m. – 11:15 a.m. **H135** **Web-Enabled Suicide Using Sodium Nitrite: An Old Forensic Challenge in New Clothes**  
Monica Concato, MD\*; Davide Radaelli, MD; Michela Peruch, MD; Martina Zanon, MD; Lara Consoloni, MD; Alessandro Manfredi, MD; Giovanna Bettoli; Riccardo Addobbati; Stefano D’Errico, MD, PhD



# PSYCHIATRY & BEHAVIORAL SCIENCE

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## Wednesday

### Poster Session

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- 11:30 a.m. – 1:00 p.m. **I1** **Schema Mode Work, Limited Reparenting, and Empathic Confrontation in Solution-Focused Therapy (SFT) in the Treatment of Forensic Late Adolescent Patients With Antisocial Personality Disorders Who Committed Offenses and in Precautionary Measures in the Community**  
Melania Lugli, PhD\*, Davide Bregoli, PhD
- 11:30 a.m. – 1:00 p.m. **I2** **Housing Conservatorship: New Paradigm or Unfunded Boondoggle?**  
Michael Cheng, MD\*
- 11:30 a.m. – 1:00 p.m. **I3** **From Neomycin-Bacitracin-Polymyxin to Sexually Transmitted Diseases (STDs): The Significance of Interpretation and Attentiveness When Treating Developmentally Disabled Patients With Severe Mental Illness**  
Yasmine Razi, BS\*; Davin Agustines, DO
- 11:30 a.m. – 1:00 p.m. **I4** **A Case of Neonaticide With Homicidal Defenestration of the Child**  
Bernat-Noël Tiffon Nonis, PsyD\*
- 11:30 a.m. – 1:00 p.m. **I5** **A Homicidal Outburst and Preservation of the Corpse at Home**  
Bernat-Noël Tiffon Nonis, PsyD\*

## Thursday

### Behavioral Sciences

#### Moderator:

Jessica Morel, DO  
Fayetteville, NC

#### Co-Moderator:

Corina Freitas  
Syracuse, NY

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- 9:45 a.m. - 10:30 a.m. **I6** **Death Due to Autoerotic Practices: Evidence for Diagnosis Resulting From a Systematic Review**  
Salvatore Rocuzzo, MD\*; Giuseppe Li Rosi, MA; Federico Giuseppe Patanè, MD;  
Fabrizio Vanaria, MD; Cristoforo Pomara, MD
- 10:30 a.m. – 11:30 a.m. **I7** **A Five-Year Review (2016–2020) of Intimate Partner Homicides at the Harris County Institute of Forensic Sciences**  
Jennifer L. Ross, MD\*
- 11:30 a.m. – 12:15 p.m. **I8** **Homicides Committed by Delusional Patients in the Early 20th and 21<sup>st</sup> Centuries: A Study Conducted in a French Secure Unit**  
Eloise Provoost, MD\*
- 12:15 p.m. - 1:30 p.m. **BREAK**



# PSYCHIATRY & BEHAVIORAL SCIENCE

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## Poster Session

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- 11:30 a.m. – 1:00 p.m. **I9** **Hair Toxicology Identifies Greater Substance Use Than Self-Reported in High-Risk Youth Enrolled in the Adolescent Brain Cognitive Development<sup>SM</sup> (ABCD) Study**  
Natasha Wade, PhD\*; Vanessa Diaz, BS; Susan Tapert, PhD; Krista Lisdahl, PhD;  
Marilyn A. Huestis, PhD; Frank Haist, PhD
- 11:30 a.m. – 1:00 p.m. **I10** **Death of a Doppelgänger: A Peculiar Case of Homicide**  
Caterina Bosco, MD\*; Dott Lucia Tattoli, PhD; Cristiano Barbieri, MD; Gabriele Rocca, MD;  
Ignazio Grattagliano, PsyD; Giancarlo Di Vella, PhD
- 11:30 a.m. – 1:00 p.m. **I11** **Strangulation and Drowning: Homicide or Suicide?**  
Andreana Nicoletta Maria Maglitto, MD\*; Giuliana Pennisi, MD; Federica Ministeri, MD;  
Francesco Amico, MD; Giuseppe Li Rosi, MA; Aldo Liberto, MD
- 11:30 a.m. – 1:00 p.m. **I12** **A Massive Suicidal Ingestion of Flurazepam and Lamotrigine: A Case Report**  
Alessandro Santurro, MD; Federico Manetti, MD\*; Matteo Scopetti, MD; Martina Padovano, MD;  
Maria Chiara David, PhD; Antonio Grande, MD, PhD
- 11:30 a.m. – 1:00 p.m. **I13** **Massive Sigmoid Volvulus: An Unexpected and Deadly Twist**  
Matteo Scopetti, MD; Federico Manetti, MD\*; Martina Padovano, MD; Alessandro Santurro, MD;  
Paola Frati, PhD; Vittorio Fineschi, MD, PhD

## Behavioral Sciences

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*Moderator:*

Jessica Morel, DO  
Fayetteville, NC

*Co-Moderator:*

Corina Freitas  
Syracuse, NY

- 1:30 p.m. – 2:30 p.m. **I14** **Work-Related Stress Among Medicolegal Death Investigator Professionals: Sources of Stress, Health Outcomes, and Protective Factors**  
Jennifer Rineer, PhD\*; Crystal Daye, MPA; Sean Wire, MA; Kelly Keyes, BS\*
- 2:30 p.m. – 3:30 p.m. **I15** **WITHDRAWN**
- 3:30 p.m. – 5:30 p.m. **I16** **Copping Crazy and Getting Off: What Do You Need to Know About the Insanity Defense?**  
George David Annas, MD, MPH\*; Corina Freitas, MD



# PSYCHIATRY & BEHAVIORAL SCIENCE

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## Friday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **I17** **The Emotional State of Sexual Assault Survivors Regarding Legal Proceedings: Analysis of Connotation in Online Forums**  
Haruka Mori\*
- 11:30 a.m. – 1:00 p.m. **I18** **Suicide Trends in Adults and COVID-19: A Retrospective Analysis in Georgia**  
Jenna Aungst, BS\*; Brinley Bowen, MPH  
*(FSF Emerging Forensic Scientist Award Poster Presentation)*
- 11:30 a.m. – 1:00 p.m. **I19** **Outpatients' Social Reintegration in the Community in Italy After High Security Hospitals Close**  
Lia Parente, PsyD\*; Amedeo Bottaro, JD; Alan. R. Felthous, MD; Fulvio Carabellese, JD; L. Paparella, MD; D. La Tegola, PsyD; D. Montalbò, MD; M. Urbano, JD; I. Rossetto, MD; F. Franconi, MD; F. Spadaro, MD; Felice Carabellese, MD
- 11:30 a.m. – 1:00 p.m. **I20** **DUNDRUM: An Italian Validation Project**  
Donatella La Tegola, PhD, PsyD\*; Harry Kennedy, MD; M. Davoren, MD; Fulvio Carabellese, JD; Lia Parente, PsyD; Viola Ferrante, TRP; Ilaria Rossetto, MD; Gabriele Mandarelli, MD, Francesco Spadaro, MD; Domenico Montalbò, MD; Michele Bruno, MD; Luigi Paparella, TRP; Marika Leozappa, PsyD; Giusi Lombardo, PsyD; Giuseppe Nicolò, MD; Felice Francesco Carabellese, MD
- 11:30 a.m. – 1:00 p.m. **I21** **The Differences Between Readmitted and Non-Readmitted Women in an Italian Forensic Unit: A Retrospective Study**  
Ilaria Rossetto, MD, PhD\*

### Multidisciplinary Session: Digital & Multimedia Sciences and Psychiatry & Behavioral Science

*Moderator:*

Kathryn C. Seigfried-Spellar, PhD  
Purdue University  
West Lafayette, IN

*Co-Moderator:*

Vivian Shnaidman, MD  
Princeton, NJ

- 1:00 p.m. – 1:05 p.m. **Welcome**
- 1:05 p.m. – 2:00 p.m. **I22** **A Psychopath in the House: How Digital Media Is Used to Exploit Even the Safest Homes**  
Jessica Morel, DO\*; Vivian Shnaidman, MD; Anna-Renee Labak
- 2:00 p.m. – 2:30 p.m. **C34** **The Analysis of a Digital Sexual Diary to Aid in a Child Sexual Assault Investigation: A Case Study**  
Joseph Levi White, PhD\*
- 2:30 p.m. – 3:00 p.m. **I23** **Virtual Reality as a Treatment Medium for Sex Offenders**  
Jacob Pourat, MD\*
- 3:00 p.m. – 3:30 p.m. **I24** **From Online Personas to Mass Murderers: The Incel Ideology and the Struggles of Mental Health**  
Eva Ip, BS\*
- 3:30 p.m. – 4:15 p.m. **C35** **Sextortion: Understanding Perpetrator Behavior and the Digital Evidence Available to Investigators**  
Martin Novak, MPA\*; Danielle Crimmins, MS; Kathryn Seigfried-Spellar, PhD
- 4:15 p.m. – 4:45 p.m. **I25** **3D Interactive Lineups Improve Eyewitness ID Accuracy**  
Heather Flowe, PhD\*



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## Wednesday

### Poster Session

- 11:30 a.m. – 1:00 p.m. **J1** **The Department of Justice Uniform Language for Testimony and Reports (ULTR) For Forensic Document Examination (FDE)**  
Carl R. McClary, MS\*
- 11:30 a.m. – 1:00 p.m. **J2** **Classification of Handwriting Using Pen Pressure Patterns**  
Yoko Seki, MA\*
- 11:30 a.m. – 1:00 p.m. **J3** **Contemporary Studies Via Chemometric and Spectroscopic Techniques for the Investigation of Questioned Documents**  
Vishal Sharma, PhD\*
- 11:30 a.m. – 1:00 p.m. **J4** **Indentations Developed on Three Reams of Paper Using an Electrostatic Detection Device (EDD)**  
Rafal K. Turek, MS\*; Martin G. Shlaymoon, PhD
- 11:30 a.m. – 1:00 p.m. **J5** **Assessing the Dependency Structure Between Shape Codes for Forensic Handwriting Data**  
Cami Fuglsby, MS\*; Kayla M. Moquin, BS; Christopher P. Saunders, PhD; Danica Ommen, PhD; Michael Caligiuri, PhD; JoAnn Buscaglia, PhD  
(FSF Emerging Forensic Scientist Award Poster Presentation)

## Thursday

### Questioned Documents

*Moderator:*

Carolyn Bayer-Boring, MFS  
Immigration & Customs Enforcement  
McLean, VA

*Co-Moderator:*

Samiah Ibrahim, BSc  
Ottawa, Ontario, Canada

- 8:30 a.m. - 8:45 a.m. **J6** **Standards Development Activities Related to Forensic Document Examination**  
Kevin P. Kulbacki, MSFS\*
- 8:45 a.m. – 9:45 a.m. **J7** **The Accuracy and Reliability of Forensic Handwriting Examiner Decisions**  
Linda Eisenhart, BS, MBA\*; R. Austin Hicklin, PhD; Brian Eckenrode, PhD;  
Peter J. Belcastro, Jr., MA; Ted M. Burkes, BS; Connie L. Parks, MA;  
Meredith DeKalb Miller, MFS; Joann Buscaglia, PhD; Michael A. Smith, PhD
- 9:45 a.m. – 10:15 a.m. **J8** **Expert Disclosure Requirements in the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure**  
Jan Seaman Kelly, BA\*
- 10:15 a.m. – 10:30 a.m. **BREAK**
- 10:30 a.m. – 10:45 a.m. **J9** **Institutional Prejudice by the Courts Involving Certain Opposing Handwriting Opinions**  
Thomas W. Vastrick, BS\*; Jan Seaman Kelly, BA



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- 10:45 a.m. – 11:00 a.m. **J10** **The Manual Reconstruction of Shredded Documents**  
Meg OBrien, MS\*
- 11:00 a.m. – 12:00 p.m. **J11** **Electrostatic Detection Apparatus (ESDA): Something Old, Something New**  
Larry A. Olson, MFS\*
- 12:00 p.m. – 1:00 p.m. **BREAK**

## Questioned Documents

*Moderator:*

Linton A. Mohammed, PhD  
Forensic Science Consultants, Inc.  
Poway, CA

*Co-Moderator:*

Zain Bhaloo, MSc  
Canada Border Services Agency  
Ottawa, Ontario, Canada

- 1:00 p.m. – 2:00 p.m. **J12** **Exploring Digital Capture and Comparison of Indented Writing Developed With an Electrostatic Detection Device (EDD)**  
Mark Goff, BA\*
- 2:00 p.m. – 2:30 p.m. **J13** **An Objective Inter-Comparison of Trash Mark Constellations From 50 Photocopiers Utilizing Manual and Automated Detection Methods**  
Linda Eisenhart, BS, MBA\*; Joseph C. Stephens, MFSF; Jocelyn V. Abonamah, MFS; Paige Riley; Brian Eckenrode, PhD; Colbey Ryman
- 2:30 p.m. – 3:00 p.m. **J14** **Barcodes: Basics and Cases**  
Carolyn Bayer-Broring, MFS\*; Elaine Wooton, MFS
- 3:00 p.m. – 3:15 p.m. **BREAK**
- 3:15 p.m. – 3:30 p.m. **J15** **Forensic Methods to Detect the Presence of Hidden Messages**  
Kirsten Tate, BS\*
- 3:30 p.m. – 4:00 p.m. **J16** **The Forensic Document Examiner Forum**  
Karen Nobles, MFS\*; Carl R. McClary, MS; Samiah Ibrahim, BSc, BA

## Friday

## Questioned Documents

*Moderator:*

Zain Bhaloo, MSc  
Canada Border Services Agency  
Ottawa, Ontario, Canada

*Co-Moderator:*

Meg OBrien  
U.S. Secret Service  
Washington, DC

- 8:30 a.m. - 8:45 a.m. **J17** **A Type of Forgery in a Forensic Document Recently Seen in Turkey: A Case Report**  
Dilara Oner, PhD\*; Berna Senel Eraslan; Gursel Cetin, PhD
- 8:45 a.m. – 9:00 a.m. **J18** **Fraudulent Backdating and Writing Sequence in Questioned Documents**  
Mohamed Awadalla, PhD\*



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| 9:00 a.m. –10:00 a.m.   | <b>J19</b> | <b>Forensic Handwriting Examination Education and Training Curriculum Development: Making the Ideal Real</b><br>Mara L. Merlino, PhD*; Veronica B. Dahir, PhD; Charles Edwards, MA                           |
| 10:00 a.m. – 10:15 a.m. |            | <b>BREAK</b>   |
| 10:15 a.m.– 12:00 p.m.  | <b>J19</b> | <b>Forensic Handwriting Examination Education and Training Curriculum Development: Making the Ideal Real (continued)</b><br>Mara L. Merlino, PhD*; Grant Sawyer; Veronica B. Dahir, PhD; Charles Edwards, MA |
| 12:00 p.m. – 1:00 p.m   |            | <b>BREAK</b>   |

## Questioned Documents

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*Moderator:*

Karen J. Nobles, MFS  
Forensic Document Services, LLC  
Pensacola, FL

*Co-Moderator:*

Mark Goff, BA  
MSP Lansing Laboratory  
Lansing, MI

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| 1:00 p.m. - 1:15 p.m. | <b>J20</b> | <b>Revealing the Deposition Order of Optically Indistinguishable Blue Ballpoint Pens Using Mega Electron-Volt-Secondary Ion Mass Spectrometry (MeV-SIMS) Coupled With Multivariate Analysis</b><br>Marko Barac, MSc*; Andrijana Filko, MSc; Zdravko Siketić, PhD; Marko Brajković, MSc; Andrea Ledić, MSc; Iva Bogdanović Radović, Ph |
| 1:15 p.m. – 1:30 p.m. | <b>J21</b> | <b>Hyperspectral Imaging and Gray Value Analysis of Porous-Tipped Pen Samples Composed of Unknown Inks</b><br>Clarra G. Moore, BS*; Patrick Buzzini, PhD  |
| 1:30 p.m. - 1:45 p.m. | <b>J22</b> | <b>Indented Writing Examinations: Rubber Stamp Image Transfers</b><br>James A. Green, BS*   |
| 1:45 p.m. – 2:00 p.m. | <b>J23</b> | <b>Dating Watermarks</b><br>Jane A. Lewis, MFS*   |
| 2:00 p.m. - 2:15 p.m. | <b>J24</b> | <b>Digital Image Processing for Determining Edge and Feature Detection for Pattern Recognition on the Shroud of Turin</b><br>Janis Winchester, MS*  |

## Wednesday

### Poster Session

*Moderator:*

Donna Papsun, MS  
 NMS Labs  
 Horsham, PA

*Co-Moderator:*

Aaron Shapiro, PhD  
 B.C. Provincial Toxicology Centre  
 British Columbia, Canada

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|-----------------------|------------|---|
| 7:30 p.m. – 9:00 p.m. | <b>K1</b>  | <b>Phenibut, You Say What? A Phenibut and 2-Methyl AP-237 Overdose in a Sober Living Facility</b><br>Robyn Parks, MD*; Sarah Buxton de Quintana, MS; Juan Carrillo, MD  |
| 7:30 p.m. – 9:00 p.m. | <b>K2</b>  | <b>Fentanyl Analogs in Dried Plasma Spots (DPS): A Novel Technique</b><br>Kintress Watson, MS*; Kaitlyn B. Palmquist, PhD; Madeleine J. Swortwood, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K3</b>  | <b>Simultaneous Determination and Quantitation of Five Synthetic Cathinones in Postmortem Blood and Urine by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)</b><br>Yun-Chen Tsao, MS*; Chao-Ching Huang, MS; Hsiu-Chuan Liu, PhD; Ray H. Liu, PhD; Dong-Liang Lin, PhD |
| 7:30 p.m. – 9:00 p.m. | <b>K4</b>  | <b>Trazodone-Related Deaths in Taiwan From 2011 to 2020: A Report on 591 Fatalities</b><br>Yun-Chen Tsao, MS*; Chao-Ching Huang, MS; Hsiu-Chuan Liu, PhD; Ray H. Liu, PhD; Dong-Liang Lin, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K5</b>  | <b>A Study on the Characteristics of New Psychoactive Substances (NPS) in Korea From 2014 to Recent Years</b><br>Byungsook Cho, MS; Jung Hyun Kim, MS, PhD; Hyewon Baik, MS; Yujin Park, MS, PhD; Jongsook Rhee, MS, PhD; Eunmi Kim, MS, PhD*                                     |
| 7:30 p.m. – 9:00 p.m. | <b>K6</b>  | <b>Death Via Ingestion of Zinc Phosphide</b><br>Erin A. Spargo, PhD*; Beth M. Slaybaugh, MPS; Lindsay Cheeseman, BS; Lee M. Blum, PhD   |
| 7:30 p.m. – 9:00 p.m. | <b>K7</b>  | <b>Profiling Trace Element Contaminants of Toxicological Interest in Commercially Available Cannabidiol (CBD) Tincture Oils</b><br>Tom J. Gluodenis, Jr., PhD*; Robert Thomas, BS; Marjani Walton   |
| 7:30 p.m. – 9:00 p.m. | <b>K8</b>  | <b>A Toxicological Analysis of Methadone and Oxycodone in Decomposition Fluid and Liver Tissue From Decomposed Bodies</b><br>Kaitlin Collura, MD, PhD*; Jack M. Titus, MD; Stephanie A. Dean, MD; Rebecca Phipps, PhD   |
| 7:30 p.m. – 9:00 p.m. | <b>K9</b>  | <b>The Effects of Ethanol on GABA Catabolism: Succinyl Semialdehyde Dehydrogenase</b><br>Natalia Gabrys, BS*; Robert H. Powers, PhD   |
| 7:30 p.m. – 9:00 p.m. | <b>K10</b> | <b>The Effects of Storage Time, Adverse Storage Conditions, and Lab Exposure on Blood Alcohol Concentrations</b><br>Ruby E. Liliedahl, BS*; Tifani Parker, MS   |
| 7:30 p.m. – 9:00 p.m. | <b>K11</b> | <b>In Vitro Metabolic Profile of the New Synthetic Opioid Bucinnazine by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)</b><br>Karissa N. Resnik, MS*; Emanuele A. Alves, PhD  |



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| 7:30 p.m. – 9:00 p.m. | <b>K12</b> | <b>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)</b><br>Rebecca Smith, MS*; Anthony DeCaprio, PhD   |
| 7:30 p.m. – 9:00 p.m. | <b>K13</b> | <b>Gender Differences in Driving Under the Influence (DUI) of Psychoactive Drugs: A Systematic Review and Meta-Analysis</b><br>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 |
| 7:30 p.m. – 9:00 p.m. | <b>K14</b> | <b>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</b><br>Sara Gariglio, BS*; Maria Chiara David, PhD; Alessandro Mattia, PS; Vincenza Liviero, PhD, MD; Clementina Moschella, PhD |
| 7:30 p.m. – 9:00 p.m. | <b>K15</b> | <b>The Adulteration of Powder Milk (Lactogen-1) With Lambda-Cyhalothrin Causing the Death of a Baby Girl: A Case Study</b><br>Hafiz Faisal Usman, MS*; Muhammad Imran, MPhil; Asif Raza, MPhil; Muhammad Amjad, PhD; Mohammad Ashraf Tahir, PhD; Aabroo Imtiaz Gill, MS   |
| 7:30 p.m. – 9:00 p.m. | <b>K16</b> | <b>WITHDRAWN</b>  |
| 7:30 p.m. – 9:00 p.m. | <b>K17</b> | <b>Exo-THC: The Impact of Isobars on Cannabinoid Testing for Seized Drug and Toxicology Cases</b><br>Edward X. Zumaeta, MS*; Kelvin Morales-Colon, MS; Ilene K. Alford, MS; Nicholas B. Tiscione, MS  |
| 7:30 p.m. – 9:00 p.m. | <b>K18</b> | <b>An Unusual Case of Accidental Phosphine Inhalation in Pakistan</b><br>Muhammad Amir Nadeem, MPhil*; Muhammad Mubasher, MPhil; Muhammad Imran, MPhil; Muhammad Amjad, PhD; Mohammad Ashraf Tahir, PhD; Aabroo Imtiaz Gill, MS   |
| 7:30 p.m. – 9:00 p.m. | <b>K19</b> | <b>An Analysis of Cannabis Exposure and Oxidative Stress Biomarkers in Exhaled Breath Condensate and Oral Fluid</b><br>Meena Swaminathan, MS*; Anthony P. De Caprio; Anamary Tarifa   |
| 7:30 p.m. – 9:00 p.m. | <b>K20</b> | <b>A Quantitative Analysis of Cannabinoids in Exhaled Breath Aerosols by High-Performance Liquid Chromatography/Electrospray Ionization-Tandem Mass Spectrometry (HPLC/ESI-MS/MS)</b><br>Cheryle Beuning, PhD*; Adam J. Friss, PhD; Kavita M. Jeerage, PhD; Tara Lovestead, PhD; Cinnamon Bidwell, PhD          |
| 7:30 p.m. – 9:00 p.m. | <b>K21</b> | <b>A Sensitive Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Method for the Simultaneous Quantification of 32 Drugs in Oral Fluid</b><br>Kayla Marschke, BS; Marta Concheiro-Guisan, PhD*   |
| 7:30 p.m. – 9:00 p.m. | <b>K22</b> | <b>The Detection of Gabapentin in the Human Umbilical Cord</b><br>Amy Racines, MS; Andre J. Sukta, MSFS*; Joseph Jones, PhD   |
| 7:30 p.m. – 9:00 p.m. | <b>K23</b> | <b>Comparative Biotransformation of New Psychoactive Substances by Human Liver Microsomes, Electrochemical Oxidation, and <i>In Silico</i> Analysis</b><br>Leonardo Maya, BS*; Anthony P. DeCaprio, PhD   |



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| 7:30 p.m. – 9:00 p.m. | <b>K24</b> | <b>Method Development for Drug Court Samples</b><br>Kourtney M. Steen, MSFS*; Elizabeth A. Gardner, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K25</b> | <b>The Determination of 67 Analytes in Oral Fluid by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)</b><br>Kennedy Plude, BS*; Amy E. Kinkennon, PhD; Phillip Bost, MS; Matthew McGreevy, BS; James A. Bourland, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K26</b> | <b>When Being Positive Is Enough—Unlocking Child Abuse in a Non-Disclosing Child Via Toxicological Hair Testing: A Case Study</b><br>Jessica Volz, DNP*  |
| 7:30 p.m. – 9:00 p.m. | <b>K27</b> | <b>Electrochemical and Density Functional Theory (DFT) Studies for Fentanyl and Fentanyl Analogs</b><br>Ling Wang, PhD*; Gustavo Murilo Alves, BS; Sevde Dogruer, BS*; Bruce R. McCord, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K28</b> | <b>The Stability of Ethanol in Oral Fluid Samples Using the Quantisal® Collection Device</b><br>Mairin M. Higgins BS*; Kelvin Barnes, BS; Heather L. Harris, MFS, JD; Karen S. Scott, PhD  |
| 7:30 p.m. – 9:00 p.m. | <b>K29</b> | <b>The Development of a Method for the Extraction and Analysis of Fentanyl and Alprazolam From Dermestid Beetles, Larvae, Casings, and Frass</b><br>Stephanie R. VanLysebettens, BA*; Stephanie A. Rainer, MSFS; Lorna A. Nisbet, PhD; Karen S. Scott, PhD                                     |
| 7:30 p.m. – 9:00 p.m. | <b>K30</b> | <b>Validation of a Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Method for 23 Fentanyl Analogs in Oral Fluid</b><br>Nicole Haase, BS*; Erin Divito, PhD; Frederick W. Fochtman, PhD; Haley Berkland, MS; Ashley Trouten, BS; Stephanie J. Wetzel, PhD                             |
| 7:30 p.m. – 9:00 p.m. | <b>K31</b> | <b>An Investigation of Structural Features on the Binding of Synthetic Cannabinoids to the CB1 Receptor: A Computational Study of the JWH Compounds</b><br>Krishna Chaturvedi, PhD; Caroline Spencer, PhD; Pankaj Pandey, PhD; Robert Doerksen, PhD; Murrell Godfrey, PhD*                     |
| 7:30 p.m. – 9:00 p.m. | <b>K32</b> | <b>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</b><br>Shannon Palladino, MPS*; William Campbell, PhD |



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## 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, MSFS\*; Elizabeth A. Gardner, PhD; Curt E. Harper, PhD  
(FSF Emerging Forensic Scientist Award Oral Presentation)

12:00 p.m. – 1:15 p.m.

**BREAK**



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## 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**

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## 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  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 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



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- 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

*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, BS
- 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**



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## 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  
(FSF Emerging Forensic Scientist Award Oral Presentation)
- 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



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## Thursday

*Moderator:*

Kenneth E. Melson, JD  
GWU Law School  
Kinsale, VA

- |                       |            |   |
|-----------------------|------------|---|
| 8:00 p.m. – 8:20 p.m. | <b>LW1</b> | <b>WITHDRAWN</b>  |
| 8:20 p.m. – 8:40 p.m. | <b>LW2</b> | <b>Who Am I? What is My Name?</b><br>Colleen M. Fitzpatrick, PhD*   |
| 8:40 p.m. – 9:00 p.m. | <b>LW3</b> | <b>Who You Gonna Call? Forensic Scientists as Responsive and Responsible Practitioners</b><br>Matteo Borrini, PhD*; Marco Morocutti |
| 9:00 p.m. – 9:20 p.m. | <b>LW4</b> | <b>A Forensic Photo Mystery: The Railroad Picture</b><br>Colleen M. Fitzpatrick, PhD*   |
| 9:20 p.m. – 9:40 p.m. | <b>LW5</b> | <b>A Life for the Dead: In Memory of Bill Haglund (1943–2021)</b><br>Constantine Eliopoulos, PhD*                                   |



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## Friday

### Criminalistics

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- 11:30 a.m. – 1:00 p.m. **Y1** **DNA Integrity and Fungal Contamination as a Function of Time in Freshwater Drowning Deaths**  
Maevae Godshalk, BS\*
- 11:30 a.m. – 1:00 p.m. **Y2** **Production of Recombinant Semenogelin Protein Fragments for the Improved Antibody-Based Detection of Body Fluids**  
Thomas Washington, BS\*, William Gibbs, Clancy McIntyre, Pamela Marshall, PhD, Michael Jensen-Seaman, PhD
- 11:30 a.m. – 1:00 p.m. **Y3** **A New Algorithm for Source Identification of Look-Alike Footwear Impressions Based on Automatic Alignment**  
Hana Lee\*; Alicia Carriquiry, PhD
- 11:30 a.m. – 1:00 p.m. **Y4** **Ensemble of SLR Systems for Forensic Evidence**  
Federico Veneri, MS\*; Danica Ommen, PhD

### Digital & Multimedia Sciences

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- 11:30 a.m. – 1:00 p.m. **Y5** **Forensic Assessment of the Morphed Audios Using Conventional and Modern Techniques of Speaker Identification**  
Palak Aneja Pursuing, PhD\*; Sumit Choudhary, PhD; Surbhi Mathur, PhD

### General

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- 11:30 a.m. – 1:00 p.m. **Y6** **Toward a Score-Based Likelihood Ratio for Footwear Analysis**  
Valerie Han, BS\*; Alicia Carriquiry, PhD
- 11:30 a.m. – 1:00 p.m. **Y7** **Development of a Rapid Drug Detection Method for Insects Using Paper Spray Ionization Mass Spectrometry (PSI-MS)**  
Alexandria Plyler, BS\*
- 11:30 a.m. – 1:00 p.m. **Y8** **Characterization of Metal-Peroxide Explosive Complexes Using Paper Spray Ionization Tandem Mass Spectrometry (PSI-MS)**  
Kayla Massari\*
- 11:30 a.m. – 1:00 p.m. **Y9** **The Extraction and Identification of Illicit Compounds From Baked Goods Using Paper Spray Ionization Tandem Mass Spectrometry**  
Isabella Haberstock\*





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## Pathology/Biology

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11:30 a.m. – 1:00 p.m. **Y10** **Estimating Decomposition Time Via Bacteria From Rat Models**  
Kayce Boggess, BS\*; Jan Janecka, PhD; Lisa Ludvico, PhD; Evan Penrod, MS;  
Lyndsie Ferrara, PhD

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## Toxicology

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11:30 a.m. – 1:00 p.m. **Y11** **Identification of Counterfeit Alcohols in Cocktails by Paper Spray Ionization Mass Spectrometry**  
Derek Heacox, BS\*; Michael Van Stipdonk, PhD

11:30 a.m. – 1:00 p.m. **Y12** **The Analysis of Commercially Available Kratom Products in Richmond, Virginia, Using Direct Analysis in Real Time-Mass Spectrometry (DART®-MS) and Inductively Coupled Plasma/Optical Emission Spectroscopy (ICP/OES)**  
James (Hunter) Fleming , BS\*; Emanuele Alves, PhD



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| Briley, Eileen M.-Reviewer<br>Drug Enforcement Administration, Virginia Department of Forensic Science (Salary)   | Passalacqua, Nicholas V.-Reviewer<br>Elsevier, Wiley (Royalty)  |
| Brothers, Samuel I.-Reviewer<br>Hive International, MITRE (Salary)  | Prahlow, Joseph A.-Committee Member<br>Multiple Attorneys (Consulting Fees), Springer (Royalty), Western Michigan University School of Medicine (Salary)  |
| Browning, Theresa B.-Reviewer<br>United States Department of Justice (Salary)   | Schroder II, William M.-Reviewer<br>NMS Labs (Salary)   |
| Epstein, Brandon-Reviewer<br>Medex Forensics (Consulting Fees)  | Sinha, Sudhir K.-Reviewer<br>InnoGenomics (Royalty)   |
| Gill, James R.-Committee Member<br>(Personal Consulting)  | Smith, Ashley C.-Reviewer<br>University of Toronto (Salary)   |
| Hardy, Sarah-Reviewer<br>A2LA Workplace Training Independent Contractor (Consulting Fees)   | Smith, Ruth Waddell-Reviewer<br><i>Journal of Forensic Sciences</i> (Consulting Fees)   |
| Huestis, Marilyn A.-Reviewer<br>Pinney Associates (Consulting Fees)   | Speck, Patricia M.-Reviewer<br>Medical Education Speakers Network (Fees for Non-CE Services Received Directly from an Ineligible Entity or their Agents), Spouse and Son (Owners of MyEcoHealth, LLC) |
| Hughes, Sheree R. Hughes-Committee Member<br>Sam Houston State University (Salary)  |   |
| Lee, Steven B. Lee-Reviewer<br>Illumina Inc, Moderna (Ownership Interest greater than 5%)   |   |
| Mitchell, Stacey A. Mitchell-Reviewer<br>Kansas State Indigent Defense Bar (Consulting Fees), MyEcoHealth, LLC (Receipt of Intellectual Property Rights/Patent Holder, Ownership Interest less than 5%) |   |

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Anderson, Dan T.-Reviewer  
Anderson, Robert D.-Reviewer  
Angel Miriam-Reviewer  
Antoci, Philip R.-Reviewer

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Bartelink, Eric J.-Reviewer  
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Brettel, Thomas A. Brettel-Reviewer  
Burdett, Lisa M.-Reviewer  
Buzzini, Patrick-Committee Member

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Campbell, Timothy-Committee Member  
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Chaudhary, Taimoor-Reviewer  
Choo, Kim Kwang-Reviewer  
Conner, Melissa A.-Committee Member  
Corbett, Michael R.-Reviewer  
Cornelison, Jered B.-Reviewer  
Cox, Joseph A.-Reviewer

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Desrosiers, Nathalie A.-Reviewer  
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Downs, J.C.U.-Committee Member  
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Dunn, Catherine R.-Reviewer  
Dykstra, Josiah Dykstra-Reviewer

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Elwick, Kyleen E.-Reviewer  
Ellefsen, Kayla N.-Reviewer

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Finkelstein, Marissa J.-Reviewer  
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Fogarty, Melissa-Reviewer  
Franck, Darren-Committee Member  
Freeman, Adam J.-Committee Member  
Freitas, Corina-Committee Member  
Fuller, Dwain C.-Reviewer

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Geisendorfer, Ann B.-Reviewer  
Gicale, Stephen K.-Reviewer  
Gill, James R.-Committee Member  
Gorn, Michael E.-Reviewer  
Gray, Teresa R.-Reviewer

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Harnarine, Nina-Reviewer  
Hietpas, Jack-Reviewer  
Hoffman, Michelle R.-Reviewer  
Houston, Rachel M.-Reviewer  
Howard, Kathy-AAFS Staff  
Hughes, Nicolas R.-Committee Member

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Ingraham, Mark R.-Reviewer

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Johnson, Robert D.-Reviewer  
Juhascik, Matthew P.-Reviewer

## K

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Kadash, Kristy-Reviewer  
Kalafut, Tim-Reviewer  
Kanu, A. Bakarr-Reviewer  
Karabiyik, Umit-Reviewer  
Karschner, Erin L.-Reviewer  
Keller, Thomas J.-Reviewer  
Klaes, Alexandra R.-Reviewer  
Koch, Sandra-Reviewer  
Kronstrand, Robert-Reviewer  
Krotulski, Alex J.-Committee Member, Reviewer

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Lacey, Douglas S.-Committee Member  
Lamouse-Smith, Nana-Reviewer  
Latham, Krista E.-Committee Member  
Le, Jason V.-Reviewer  
Lien, Eugene Y.-Reviewer  
Love, Jennifer C.-Committee Member

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Malone, Christina A.-Reviewer  
Malone, Jennifer L.-Reviewer  
Marshall, Pamela L.-Reviewer  
Masters, Carmen L.-Reviewer

Mata, Dani C.-Reviewer  
McCord, Bruce R.-Reviewer  
McCoy, Mark R.-Reviewer  
Melson, Kenneth E.-Committee Member  
Merritt, Toni-AAFS Staff  
Messner, Paul-Committee Member  
Miller, Marilyn T.-Committee Member  
Milroy, Chris-Committee Member  
Mohammed, Linton A.-Committee Member  
Mohr, Amanda L.A.-Committee Member  
Moran, Kimberlee Sue-Committee Member  
Morel, Jessica-Committee Member  
Murmans, Denise C.-Committee Member

## N

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Nelson, Alex J.-Reviewer

## P

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Paroff, Jason M.-Reviewer  
Pechal, Jennifer L.-Committee Member  
Phipps, Rebecca-Reviewer  
Pope, Katherine Chapman-Reviewer  
Prahlow, Joseph A.-Committee Member

## Q

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Quarino, Lawrence-Reviewer

## R

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Rainwater, Christopher W.-Reviewer  
Rodda, Luke N.-Reviewer  
Rogers, Marcus-Reviewer  
Rohrig, Timothy P.-Reviewer  
Rosenbaum, Karen B.-Committee Member  
Rosenblatt, Terri-Committee Member  
Ryan, Julie J.C.H.-Reviewer

## S

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Sachs, Sandra B.-Committee Member, Reviewer  
Schneeweis, Lynn A.-Committee Member  
Scott, Karen S.-Reviewer  
Seaman Kelly, Jan-Committee Member  
Seehafer, Sabrina S.-Reviewer  
Seferyn, Season E.-Reviewer  
Seidel, Andrew C.-Committee Member  
Seigfried-Spellar, Kathryn C.-Committee Member  
Servello, John A.-Reviewer  
Shoff, Elisa N.-Reviewer  
Smith, Christie W.-Reviewer  
Spargo, Erin A. Spargo-Reviewer  
Stock, Michala K.-Reviewer  
Kyra E. Stull, PhD – Reviewer



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## T

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Tarver, James-Committee Member  
Tersigni-Tarrant, MariaTeresa A. PhD-Reviewer  
Thatcher, Jayne E.-Reviewer  
Tiscione, Nicholas B.-Reviewer  
Tramell, Lindsay H.-Reviewer  
Trejos, Tatiana-Reviewer

## V

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Vollner, Jennifer M.-Reviewer

## W

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Walsh-Haney, Heather A.-Reviewer  
Walter, Brittany S.-Reviewer  
Weaver, Trey-AAFS Staff  
Weiss, Kurt D.-Committee Member  
White, Joseph Levi-Committee Member  
Wilson-Taylor, Rebecca J.-Reviewer  
Winecker, Ruth E.-Reviewer  
Wold, David A.-Reviewer  
Worrell, Erin M.-Committee Member

## Y

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Yu, Jorn Chi-Chung-Reviewer

## Z

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Zinni, Debra Prince-Committee Member

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The University of Winnipeg (Stipend)

Adeoye, Alexandra-B131  
National Institute of Justice (Grant Support)

Aggazzotti, Cristina-D14  
ALIAS Technology LLC (Discussion of Commercial Products or Services)

Agnew, Amanda-A178  
National Institute of Justice (Grant Support)

Alexander, Lauryn-B122  
National Institute of Justice (Grant Support)

Al-Hetlani, Entesar-D18  
Kuwait University (Grant Support and Stipend)

Alsop, Kirsty-B108  
EPSRC (Grant Support, Stipend)

Amin, Mohamed-E101  
Kuwait University (Stipend)

Ammer, Saskia T.M.-A45  
European Research Council (Grant Support)

Anaya, Yessenia-B9  
California State University-Los Angeles (Stipend)

Anderson, Jeanne-BS3  
Federal Bureau of Investigation Laboratory (Employee)

Andrews, Zachary-B168  
National Institute of Justice (Grant Support)

Andronowski, Janna-A170  
National Institute of Justice (Grant Support)

Armstrong, Melanie-F35  
Ancestry.com (Discussion of Commercial Products or Services)

Atkinson, Antonia-B12  
Genturi, QIAGEN, Applied Biosystems (Discussion of Commercial Products or Services)

Atkinson, Kristen-B195  
Thermo Fisher Scientific, Sigma Aldrich, Products International (Discussion of Commercial Products or Services)  
Virginia Commonwealth University (Stipend)

Attaway, Peyton-E32  
National Institute of Justice (Grant Support)

Avellaneda, Lucio-B173  
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Avent, Patricia-A138  
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Ayala, Jessica-K58  
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Ayers, Richard-C30  
National Institute of Standards and Technology (Employee)

## B

Baig, Aneesa-H43  
The London School of Medicine and Dentistry (Stipend)

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Beasley, Melanie-A167  
Purdue University, University of Tennessee-Knoxville (Stipend)

Berry, Debra-H133  
Federal Bureau of Investigation (Employee)

Berry, Jennifer-B88  
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Beuning, Cheryle-K20  
Munkplast AB (Discussion of Commercial Products or Services)  
(Discussion of Unlabeled/Investigational Use of Product/Device)  
National Institute of Justice (Grant Support)

Bever, Robert-B146  
Illumina, Verogen, Family Tree DNA (Discussion of Commercial Products or Services)  
Bode Technology (Employee)

Bhandari, Anjuli-B94  
Federal Bureau of Investigation (Employee)  
ORISE (Stipend)  
South Dakota State University (Stipend)  
Iowa State University (Stipend)  
National Institute of Justice (Grant Support)

Biddle, Giana-E49, E91  
Maverick (Discussion of Commercial Products or Services)  
(Discussion of Unlabeled/Investigational Use of Product/Device)  
Texas Tech University (Stipend)

Biddle, Keith-B59  
University of Montana (Grant Support/Stipend)

Bierly, Jolene-K36  
NMS Labs (Discussion of Commercial Products or Services/Employee)

Bishop, Lauren-B35  
BTNX Inc. (Discussion of Commercial Products or Services)

Black, Emily-E36  
Brigham Young University (Grant Support/Stipend)

Bonner, Miquellie-D4  
National Science Foundation (Grant Support), MTSU (Stipend)

Bosse, Rylee-E40  
Seattle University (Stipend)

Bourgeault, Angelica-A111  
Medpor® and Zephyr ZSI 475 FTM® (Discussion of Commercial Products or Services)



# AUTHOR FINANCIAL DISCLOSURE

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- Bowling, Herschel-C23  
Microsoft, Magnet Axion Cellebrite UFED (Discussion of Commercial Products or Services)
- Brenner, Charles-F10  
ESR STRmix (Discussion of Commercial Products or Services)
- Brodeur, Amy-B64  
HTG Molecular Diagnostics (Discussion of Commercial Products or Services)
- Brown, Savannah-B167  
National Institute of Justice (Grant Support)
- Buffalini, Cole-B102  
Middle Tennessee State University (Stipend)
- Burcham, Zacharay-B44  
National Institute of Justice (Grant Support)
- Buresh, Michael-F28  
Vigilant Solutions, Motorola Solutions, Flock Safety (Discussion of Commercial Products or Services)
- Burns, Kelly-H81  
Thermo-Nocolet (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)
- Burrill, Julie-F19  
Alan Alda Center for Communicating Science (Stipend)
- Buscaglia, JoAnn-B79  
FBI, Microtrace (Employee)
- Byrd, John-A72  
Abacus Diagnostics, Arrowhead Forensics, First Aid Bandage Company MARKit Forensic Kit, Lynn Peavy, Sirchie, and Tri-Tech (Discussion of Commercial Products or Services)
- C**
- Cablk, Mary-F8  
Desert Research Institute (Employee)
- Cale, Cynthia-B18  
QIAGEN, Thermo Fisher Scientific (Discussion of Commercial Products or Services)
- Campbell, Jessica-A142  
U.S. Department of Justice, National Institute of Justice (Grant Support)
- Candelario-Gorbea, Mariel-H45  
ANDE (Discussion of Commercial Products or Services)  
(Discussion of Unlabeled/Investigational Use of Product/Device)  
Victims of Crime Assistance (Grant Support)
- Canellas, Marc-F5  
STRmix, DNA Software (Discussion of Commercial Products or Services)
- Cantu, Cesar-B7  
Sam Houston State University (Stipend)
- Cappas, Veronica-B185, H114  
American Type Culture Collection (Discussion of Commercial Products or Services)  
The Pennsylvania State University (Stipend)
- Copan, Promega, SoftGenetics LLC, Applied Biosystems (Discussion of Commercial Products or Services)  
The Pennsylvania State University (Stipend)
- Carrillo, Kayli-B109  
Cadre Forensics (Discussion of Commercial Products or Services)
- Carriquiry, Alicia-E125  
National Institute of Standards and Technology and Iowa State University (Grant Support and Stipend)
- Carter, Clayton-H42  
LODOX Imaging Scanners (Discussion of Commercial Products or Services)
- Carter, David-H108  
Chaminade University of Honolulu (Stipend)
- Cauley, Austin-C16  
Zoom Video Communications (Discussion of Commercial Products or Services)
- Cerrito, Paola-G17  
National Science Foundation (Grant Support)
- Chambers, Megan-B209  
National Institute of Justice, NEAFS (Grant Support)
- Chaski, Carole-D8, D12  
ALIAS Technology LLC (Discussion of Commercial Products or Services)
- Cheng, Kevin-B139, B143  
NIJ, SBIR, Institute of Environmental Science and Research (ESR), University of Auckland (Employee, Grant Support, Stipend)  
EuroForMix, STRmix™ (Discussion of Commercial Products or Services)  
Institute of Environmental Science and Research (Employee)  
National Institute of Justice, University of Auckland, University of Oslo, Forensic Science SA, Flinders University (Grant Support/ Stipend)
- Christy, Brenda-W3  
Agilent Technologies, Inc., Microsoft (Discussion of Commercial Products or Services)
- Claasen, Brittany-B182  
Cedar Crest College (Stipend)
- Coberly, Samantha-A180  
University of Florida (Grant Support)
- Cohen, Arcelia-C18  
VTO Labs (Discussion of Commercial Products or Services)  
U.S. Secret Service and National Computer Forensic Institute (Grant Support)
- Cole, Mary-A29  
National Institute of Justice (Grant Support)
- Cole, Stephanie-A131  
Forensic Sciences Foundation, National Institute of Justice (Grant Support)
- Collins, Cheyenne-A157  
California State University-Chico (Grant Support)
- Conte, Jillian-B13  
MicroGEM (Employee)
- Cottnam, Georgia-E112  
Murdoch University (Stipend)
- Craig, Alba-B15  
University of Indianapolis Human Identification Center (Stipend)
- Creecy, James-B181  
University of Central Oklahoma (Stipend)
- Cross, Hannah-A64, A174  
Keele University (Stipend)
- Cupples Connon, Catherine-B161  
Thermo Fisher Scientific (Discussion of Commercial Products or Services)  
Virginia Commonwealth University (Stipend)
- Czado, Natalia-B19  
Sam Houston State University (Stipend)

# AUTHOR FINANCIAL DISCLOSURE



## D

---

Dalzell, Kourtney-B113  
National Institute of Justice (Grant Support)

Das, Siddhartha-A28  
Jawaharlal Institute of Postgraduate Medical Education and Research (Stipend)

David, Kymeri-E64  
Department of Defense (Grant Support)

Davis, Reed-A16  
National Institute of Justice (Grant Support)

Decker, Summer-A153  
Materialise Mimics Innovation Suite (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Deel, Heather-B45  
Colorado State University (Grant Support, Stipend)

Demmler, Morgan-D3  
National Institute of Standards and Technology (Grant Support)

Desire, Mark-A77  
New York City Office of the Medical Examiner (Employee)

Dignan, Leah-B155, E89  
University of Virginia (Stipend)

Doro, Kennedy-A80  
The University of Toledo (Employee/Faculty Research Fund)

Downs, J.C.U.-L3  
APS Films, Simon & Schuster, Dan Abrams Production (Discussion of Commercial Products or Services)

## E

---

Edgar, Heather-A104  
UNM Department of Pathology (Grant Support)

Eldridge, Heidi-B97  
National Institute of Justice (Grant Support)

Elwick, Kyleen-B57, B177  
QIAGEN, Thermo Fisher Scientific, TaKaRa Bio, Axygen, Millipore Sigma, Puritan (Discussion of Commercial Products or Services)  
Promega, Illumina, KAPA/Roche, Beckman Coulter, Battelle, Verogen (Discussion of Commercial Products or Services)  
Federal Bureau of Investigation (Employee)

Estevanes, Jared-B111  
American Society of Trace Evidence Examiners (Grant Support)

## F

---

Fabbri, Mia-B38  
Cedar Crest College (Stipend)

Fabricant, M. Chris-F30  
ShotSpotter (Discussion of Commercial Products or Services)

Feeney, William-B188  
West Virginia University (Grant Support)

Ferguson, Kimiko-B28  
Florida International University (Stipend)

Fernandez-Tejero, Nicole-B76  
Rapid HIT, Philisa (Discussion of Commercial Products or Services)  
IWTSd, Florida International University (Grant Support, Stipend)

Flynn, Ross-E84  
Murdoch University (Stipend)

Forte, Leann-B26  
National Institute of Justice (Grant Support)

Friss, Adam-D2  
National Institute of Standards and Technology (Internal Funding)

Fuglsby, Cami-J5  
Sciometrics (Discussion of Commercial Products or Services)  
National Science Foundation and National Institute of Justice (Grant Support)

Fulp, Kaitlyn-A60  
Arizona State University (Stipend)

Fulton, Ashley-E90  
National Institute of Justice (Grant Support)

## G

---

Gaier, Sarah-H18  
Cameron Forensic Medical Sciences, Barts and The London School of Medicine and Dentistry, QMUL (Stipend)

Gamette, Matthew-E24  
RTI International (Employee)

Gardner, Brett-B98, B99, B100  
CSAFE, NIST, Iowa State University (Grant Support)

Garloff, Alexis-B6  
Towson University (Grant Support)

Garvin, Heather-A13  
National Institute of Justice (Grant Support)

Gast, Meghan-E20  
Arizona State University (Stipend)

Gauthier, Quentin-B65  
Thermo Fisher Scientific (Discussion of Commercial Products or Services)

Ge, Jianye-B74, B138  
National Institute of Justice (Grant Support)  
University of North Texas Health Science Center (Stipend)

Geissenberger, Janine-H71  
FWF Austrian Science Fund (Grant Support)

Gemmellaro, Denise-H112  
Kean University (Stipend)

Geradts, Zeno-C8  
Netherlands Forensic Institute (Employee)

Gettings, Katherine-B39, B41  
Verogen, Promega, Thermo Fisher (Discussion of Commercial Products or Services)

Getz, Sara-A49  
University of Wisconsin-Platteville (Stipend)

Ghemrawi, Mirna-B66  
QIAGEN, IDT (Discussion of Commercial Products or Services)

Gludenis, Jr., Tom-K7  
Milestone, Agilent Technologies, Inc. (Discussion of Commercial Products or Services)  
Forensic Sciences Foundation and Lincoln University (Grant Support)

Goecker, Zachary-B56  
National Institute of Justice (Grant Support)

Goff, Mark-J12  
Adobe (Discussion of Commercial Products or Services)

Graham, Kari-B163  
Sam Houston State University (Stipend)

Guido, Mark-C25  
The MITRE Corporation (Employee)



# AUTHOR FINANCIAL DISCLOSURE

## H

Hall, Ashley-B72, B77  
University of Illinois at Chicago (Grant Support)

Hans, Krystal-E129  
Uncovered (Discussion of Commercial Products or Services)

Harper, Megan-E39  
Towson University (Stipend)

Hedlich, Jenna-H57  
The University of Alabama at Birmingham (Stipend)

Hernandez Flores, Aaron-B191  
Western Alliance for Expanding Student Opportunities (Grant Support)

Herr, Hoshua-B52  
Department of Justice (Grant Support)

Hewitt, Curt-B95  
Office of the Director of National Intelligence, Intelligence Advanced (Grant Support)

Hicklin, R. Austin-E124  
National Institute of Justice (Grant Support)

Higgins, Mairin-K28  
Immunalysis (Discussion of Commercial Products or Services)

Hong, Anni-E118  
The Center for Statistics and Applications in Forensic Evidence, NIST Center of Excellence (Grant Support)

Hopkins, Taylor-B86  
Duquesne University (Stipend)

Horsley, SaMoura-A124  
National Science Foundation Epscore, McNair Scholarship Program (Grant Support)

Houston, Rachel-B137  
Sam Houston State University (Stipend)

Huang, Ting-Yu-B24  
National Institute of Justice, U.S. Department of Justice (Grant Support)

Hudson, Brittany-B62  
Promega Corporation, Thermo Fisher Scientific, Invitrogen, Applied Biosystems (Discussion of Commercial Products or Services) Virginia Commonwealth University (Stipend)

Huestis, Marilyn-K57  
Center for Plant Science and Health (Internal Funding)

Huffman, Kaitlin-B140  
Thermo Fisher Scientific (Discussion of Commercial Products or Services)  
State of Florida (Internal Funding)

Hughes, Clinton-F18  
True Allele, Cybergenetics (Discussion of Commercial Products or Services)

Hulse, Cortney-A177  
National Institute of Justice (Grant Support)

Hyde, Jessica-C26  
Magnet Forensics (Paid Consultant)

## J

Jeerage, Kavita-D43  
Munkplast AB (Discussion of Commercial Products or Services)  
(Discussion of Unlabeled/Investigational Use of Product/Device)  
National Institute of Justice (Grant Support)

Jeong, Yangseung-A86  
National Institute of Justice, Ministry of the Interior and Safety, National Research Foundation of Korea, Ministry of Science and ICT (Grant Support)

Jerkovic, Ivan-A143  
Croatian Science Foundation (Grant Support)

Johnson, Damani-B136  
QIAGEN, Niche Vision (Discussion of Commercial Products or Services)

Jones, Chelsea-B151  
Verogen (Discussion of Commercial Products or Services)

Joseph, A. Skylar-E134  
International Committee of the Red Cross (Employee)

Ju, Wangqian-E95  
SCAFE, NIST, and Iowa State University (Grant Support)

Just, Rebecca-B174  
Verogen, Agilent Technologies, Inc., Beckman Coulter, Thermo Fisher Scientific (Discussion of Commercial Products or Services and Discussion of Unlabeled/Investigational Use of Product/Device)  
National Biodefense Analysis and Countermeasures Center (Employee)

## K

Kakuda-Hidetoshi-D45  
Japan Society for the Promotion of Science (Grant Support)

Kalafut, Timothy-B135  
QOAGEN, Thermo Fisher Scientific, Niche Vision, LLC (Discussion of Commercial Products or Services)

Kelly, Luz-E81  
National Institute of Justice (Grant Support)

Khan, Mah-Ro-B1  
InnoQuant, InnoTyer (Discussion of Commercial Products or Services)  
InnoGenomics (Employee)

Kim, Dong-Ho-A140  
Mimics ver.22 (Discussion of Commercial Products or Services)

Kim, Eunmi-K5  
Korean Government (Internal Funding)

Kim, Myeonki-F34  
National Research Foundation of Korea (Grant Support)

Kombrink, Meike-C3  
Netherlands Forensic Institute (Employee)

Koolmees, Cassidy-F15  
National Institute of Justice (Grant Support)

Krishnan, Ganesh-D9  
CSAFE, NIST, Iowa State University (Grant Support)

Krotulski, Alex-K42, K53  
National Institute of Justice (Grant Support)

Kruijver, Maarten-B142  
Institute of Environmental Science and Research (Employee)

Kuchinos, Alexandra-B133  
Cedar Crest College (Stipend)



# AUTHOR FINANCIAL DISCLOSURE



## L

Lambert, Katelyn-B124  
National Institute of Justice (Grant Support)

Lambrigger, Taylor-A168  
California State University-Chico (Grant Support and Stipend)

Lanfranchi, Anthony-A146  
Artec 3D (Discussion of Commercial Products or Services)

Lathrop, Laura-E56  
Abacus Diagnostics, Arrowhead Forensics, First Aid Bandage Company MARKit Forensic Kit, LynnPeavy, Sirchie, and Tri-Tech Forensics (Discussion of Commercial Products or Services)

Latif, Hannan-B201  
Cameron Forensic Medical Sciences, Barts and The London School of Medicine and Dentistry (Stipend)

Legg, Kevin-B37  
U.S. Army Research Office and the Defense Forensic Science Center (Grant Support)

Lennert, Emily-B189  
National Institute of Justice (Grant Support)

Lewis, Jane-J23  
Lockwood-Post's Directory, Walden-Mott Corporation (Discussion of Commercial Products or Services)

Longjohn, Rachel-C11  
University of California-Irvine (Stipend), National Institute of Standards and Technology (Grant Support)

Luby, Amanda-E104  
CSAFE, NIST (Grant Support)

Lucchi, John-B125  
Sirchie (Discussion of Commercial Products or Services)

## M

Madden, Diana-A88  
The Center for ELSI Research and Analysis at Columbia University (Grant Support)

Marco, Stephanie-K54  
NMS Labs (Employee)

Mason, Allison-B54, A68  
University of Tennessee-Knoxville (Grant Support, Stipend)

Master, Christin Lee-B156  
National Institute of Justice (Grant Support)

Max, Brendan-F29  
ShotSpotter (Discussion of Commercial Products or Services)

Maxwell, Jasmine-K39  
Immunalysis (Discussion of Commercial Products or Services)

Maya, Leonardo-K23  
Florida International University (Stipend)

McMillen, Hannah-B107  
National Institute of Justice (Grant Support)

Megyesi, Mary-A3  
Department of Defense (Employee)

Menking-Hoggatt, Korina-B193  
National Institute of Justice (Grant Support)

Messer, Diana-A53  
Center for Injury Research and Policy, Centers for Disease Control (Grant Support)

Meyers, Julia-A145  
Social Science and Humanities Research Council (Grant Support)

Millbern, Zoe-D1  
National Institute of Justice (Grant Support)

Miller, Kevin-B5  
Thermo Fisher Scientific (Employee)

Milner, Danny-H116  
National Institute of Justice (Grant Support)

Mitchell-Mata, Christie-K45  
Immunalysis (Discussion of Commercial Products or Services) (Discussion of Unlabeled/Investigational Use of Product/Device)

Mock, Rayna-C10  
DVR Examiner, Amped 5, FTK Imager (Discussion of Commercial Products or Services) (Discussion of Unlabeled/Investigational Use of Product/Device)

U.S. Secret Service and National Computer Forensic Institute (Grant Support)

Monjardez, Geraldine-B169  
Sam Houston State University (Grant Support/Stipend)

Moquin, Kayla-B104  
FBI Laboratory (Employee)  
ORISE Fellowship, South Dakota State University, Iowa State University, NIJ, NSF (Grant Support)

Moraitis, Konstantinos-A9  
State Scholarships Foundation (Grant Support)

Morris, Megan-B196  
The Pennsylvania State University (Stipend)

Muramoto, Shin-B116  
Intelligence Advanced Research Projects Activity (Grant Support)

Murrell Godfrey-K31  
National Institute of Technology (Grant Support)

## N

Nase, John-G12  
Adope, TeroOrthoCAD (Discussion of Commercial Products or Services)

New, Briana-A166  
National Institute of Justice (Grant Support)

Newman, Reta-B89  
National Institute of Justice (Grant Support)

Nida, Corey-B20  
BTNX, Inc., Premier Biotech, Inc.) (Discussion of Commercial Products or Services)

Nishshanka, Bandula-B93  
Centre for Defence Research and Development (Internal Funding)

Nouwairi, Renna-E45  
University of Virginia (Stipend)

## O

Oldoni, Fabio-B75  
National Institute of Justice (Grant Support)

Olson, Larry-J11  
Foster & Freeman, Ltd. (Discussion of Commercial Products or Services)

Osborne, Amy-B183  
Forensic Sciences Foundation, National Institute of Justice (Grant Support)

Owings, Charity-H111  
National Institute of Justice (Grant Support)



# AUTHOR FINANCIAL DISCLOSURE

## P

Palladino, Shannon-K32  
The Pennsylvania State University (Grant Support)

Papsun, Donna-K43, W20  
NMS Labs (Employee)

Park, Hyun Jin-A128  
National Research Foundation of Korea (Grant Support)

Parker, Cody-B50  
National Institute of Justice (Grant Support)

Parker, Glendon-A154  
IP (USPTO 8,877,455) (Discussion of Commercial Products or Services)  
IP (USPTO 8,877,455) (Discussion of Unlabeled/Investigational Use of Product/Device)

Parks, Robyn-H127  
Invitae Corporation (Discussion of Commercial Products or Services)

Paroff, Jason-C13  
Open Source and/or free to use software such as Proxmox, Open Media Vault, Docker and Portainer (Discussion of Commercial Products or Services)

Parrish, Kassandra-A66  
Arizona State University (Stipend)

Patterson, Kelsey-B134  
Cedar Crest College (Stipend)

Peck, Michelle-B147  
Verogen (Discussion of Commercial Products or Services)

Perna, Shruthi-D5  
National Institute of Justice and U.S. Department of Justice (Grant Support)

Perrault, Katelynn-H113  
National Science Foundation (Grant Support)

Pienkowski, David-D21  
University of Kentucky (Grant Support)

Plude, Kennedy-K25  
Keystone Laboratory, Inc. (Internal Funding)

Porta, David-D28  
Bellarmine University (Stipend)

Power, Claire-E59  
The London School of Medicine and Dentistry (Stipend)

Pozzi, Mark-D29  
Ford, GM, Chrysler/Jeep, Toyota, Nissan, Honda, Bentley, Hyundai (Discussion of Commercial Products or Services)

Pressley, DeMia-B202  
U.S. Drug Enforcement Administration (Employee)

Price, Kelsey-B63  
National Institute of Justice (Grant Support)

Procopio, Noemi-B46, B48  
UKRI, VINNOVA MSCA (Grant Support)

Prusinowski, Meghan-B101  
National Institute of Justice (Grant Support)

## Q

Qasim, Syed-C15  
Micrologix 1400, Micrologix 1100, Micro 820, Micro 850, CLICK Koyo, Schneider Electric Modicon M221 (Discussion of Commercial Products or Services)

## R

Rais, Muhammad-C33  
Allen-Bradley (Discussion of Commercial Products or Services)

Reavis, Madison-D17  
Department of Defense (Grant Support)

Redding, Rachel-E116  
ASTHO (Employee)

Reinders, Stephanie-C2  
Apple, Samsung (Discussion of Commercial Products or Services)  
Center for Statistics and Applications in Forensic Science, Iowa State University (Grant Support/Stipend)

Ribereau-Gayon, Agathe-H109  
Fonds de Recherche du Québec (FRQ), Université du Québec à Trois-Rivières (Grant Support/Stipend)

Richardson, Nick-B204  
Zoom Video Communications (Discussion of Commercial Products or Services)  
Drug Enforcement Administration (Internal Funding)

Riman, Sarah-B82  
National Institute of Standards and Technology (Grant Support)

Rineer, Jennifer-I14  
National Institute of Justice (Grant Support)

Roberts, Katherine-F1  
QIAGEN (Discussion of Commercial Products or Services)  
California State University-Los Angeles (Stipend)

Roca, Gabriela-E85  
Promega PowerPlex, Thermo Fisher, IBM (Discussion of Commercial Products or Services)

Rodriguez, Ashley-B71  
Bureau of Justice Assistance (Grant Support)

Rodriguez, Jacqueline-B36  
Florida International University (Stipend)

Rodriguez-Cruz, Sandra-B215  
Big Sur Scientific (Discussion of Commercial Products or Services)

Roman, Madeline-B154  
QIAGEN (Discussion of Commercial Products or Services)  
Signature Science, LLC (Employee)

Ropero-Miller, Jeri-H38, K44  
RTI International (Employee)

Rubin, Daniel-B29  
Center for Advanced Research in Forensic Science (Grant Support)

Russell, David-B152  
Illumina (Discussion of Commercial Products or Services)

Rutledge, Grace-B4  
Sam Houston State University (Stipend)

## S

Sacha, Andrew-B129  
National Institute of Justice (Grant Support)

Sachs, Sandra-B78  
Oakland Police Department (Employee, Grant Support)

Salmonsén, Anna-B16  
Puritan, Whatman, and Thermo Fisher Scientific (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Sanger, Shivani-A149  
The London School of Medicine and Dentistry (Stipend)

# AUTHOR FINANCIAL DISCLOSURE



Sauter,Carolynn-A136  
Michigan State University (Stipend)

Schall, Jenna-A112  
University of Toronto, SSHRC (Grant Support and Stipend)

Schoonover, Kaitlyn-A22  
Artec 3D, Space Spider, Artec Studio (Discussion of Commercial Products or Services)

Schweighardt, Andrew-B70  
EDNAP mtDNA Population Database, Y Chromosome Haplotype Reference Database (Discussion of Commercial Products or Services)

Sekula, Kathleen-E73  
Department of Health Human Services (Grant Support)

Shekhawat, Raghvendra-H131  
All India Institute of Medical Sciences (Stipend)

Sherwood, Susannah-E41  
Seattle University (Stipend)

Silva, Deborah-B10  
Hofstra University (Stipend)

Singh Sehrawat, Jagmahender-A30, G14  
Merck KGaA (Discussion of Commercial Products or Services)  
Government of India (Grant Support)

Sisco, Edward-B128  
National Institute of Justice (Grant Support)

Skinner, Jessica-A175  
Thermo Fisher Scientific, Heratherm and Columbus McKinnon (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Slattengren, Nicole-E21  
University of California-Davis (Stipend)

Smith, Ashley-E115  
Image Access GmbH (Discussion of Commercial Products or Services)  
Pennsylvania State University (Stipend)

Smith, Chastyn-B68  
QIAGEN (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Smith, Christina-K46  
Sam Houston State University (Grant Support)

Snedeker, Jennifer-B49  
Center for Advanced Research in Forensic Science (Grant Support)

Southall-Malone, Amy-E75  
Arrowhead Forensics, First Aid Bandage Company, Lynn Peavy, Sirchi, Tri-Tech Forensics, Abacus Diagnostic (Discussion of Commercial Products or Services)

Spargo, Erin-K6  
NMS Labs (Discussion of Commercial Products or Services)

Spear, Brianna-K48  
National Institute of Justice (Grant Support)

Spencer, Francesca-A20  
Department of Defense (Grant Support)

Stack, Jayden-E93  
CSAFE, NIST, and Iowa State University (Grant Support)

Steen, Kourtney-K24  
DPX Technologies (Discussion of Commercial Products or Services)  
University of Alabama at Birmingham (Stipend)

Stone, Anne-A106  
Quantifiler, Promega (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Stull, Kyra-A165  
National Institute of Justice (Grant Support)

Sukta, Andre-K22  
USDTL (Employee)

Swaminathan, Meena-K19  
National Institute of Justice (Grant Support)

## T

Tahirukag, Milazim-B103  
INL (Internal Funding)

Tan, Wan Yu-B170  
Boston University School of Medicine (Stipend)

Tang, Larry-E97  
National Institute of Justice (Grant Support)

Tate, Kirsten-J15  
Federal Bureau of Investigation (Employee)

Taylor, Jordan-H44  
1 Step Detect, Lochness Medical, Randox, Thermo Fisher Scientific, Rigaku, 908 Devices (Discussion of Commercial Products or Services)  
Center for Disease Control (Grant Support)

Taylor, Lois-B53  
National Institute of Justice (Grant Support)

Thole, Akshata-C31  
Magnet AXIOM, Cellebrite BlackLight, Apple, SQLite (Discussion of Commercial Products or Services)

Thompson, Ryan-E46  
Department of Homeland Security Science and Technology Directorate (Grant Support)

Tica, Cristina-B178  
U.S. Department of Justice, National Institute of Justice (Grant Support)

Torres, Dayanara-B69  
Applied Biosystems (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Tsao, Yun-Chen-K3, K4  
MOJ (Internal Funding)

Turek, Rafal-J4  
Foster & Freeman, Ltd. (Discussion of Commercial Products or Services)

Turiello, Rachele-B67  
Bashinski Criminalistics Grant, National Institute of Justice (Grant Support)

## U

Unger, Carter-A51  
Deimhorst Instrument Company (Discussion of Commercial Products or Services)  
Western Carolina University (Grant Support/Stipend)

Urbanova, Petra-C4  
Masaryk University (Stipend)

Urbas, Aaron-B212  
National Institute of Justice (Grant Support)



# AUTHOR FINANCIAL DISCLOSURE

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## V

---

Valentine, Julie-E77  
National Institute of Justice (Grant Support)

Valenzuela, Jesus-C9  
Axon Enterprise, Inc., Evidence.com (Discussion of Commercial Products or Services)

Vander, Courtney-B112  
National Institute of Justice (Grant Support)

Vaughan, Stephanie-B207  
National Institute of Justice (Grant Support)

Vendrell-Dones, Mario-B31  
Center for Advanced Research in Forensic Science (Grant Support)

Vikingsson, Svante-K56  
Department of Health and Human Services, Substance Abuse and Mental Health Administration (Grant Support)

Vorder Bruegge, Richard-BS5  
Federal Bureau of Investigation (Employeee)

## W

---

Wacker, Anna-E58  
Northern Michigan University (Grant Support)

Wade, Natasha-I9  
NIDA (Grant Support)

Wagner, Wesley-B3  
Thermo Fisher Scientific (Discussion of Commercial Products or Services)  
Western Carolina University (Stipend)

Wales, Gregory-C6  
MATLAB, Amped Software, Input-Ace, Adobe, Salient Sciences, Axon, Open Source, Avidemux, FFMpeg, ForeVid (Discussion of Commercial Products or Services)  
(Discussion of Unlabeled/Investigational Use of Product/Device)

Walters, Catherine-E18  
Nebraska Scientific Institute (Discussion of Commercial Products or Services)

Watherston, Jeremy-B51  
Thermo Fisher Scientific and ANDETM (Discussion of Commercial Products or Services)

Watson, Kintress-K2  
Novilytic Noviplex (Discussion of Commercial Products or Services)  
Forensic Sciences Foundation (Grant Support)

Watson, Lucy Victoria-K59  
The London School of Medicine and Dentistry (Stipend)

Wesley, Allyson-E51  
Towson University (Stipend)

White, Joseph Levi-C29, C34  
Apple (Discussion of Commercial Products or Services)  
Defense Forensic Science Center (Employeee)  
Microsoft (Discussion of Commercial Products or Services)

Williams, River-B166  
Procter & Gamble, Reckitt, Clorox, Henkel, Evident (Discussion of Commercial Products or Services)

Williams-Mitchem, Shannan-E122  
National Institute of Standards and Technology (Employeee)

Wilson, Amanda-E103  
National Institute of Standards and Technology, Center for Statistics and Applications in Forensic Science (Grant Support)

Wilson, Walter-B23  
DJO, National Institute of Justice (Grant Support)

Wohlfahrt, Denise-B58  
Illumina, QIAGEN (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Wolfe, Christopher-A164  
National Institute of Justice (Grant Support)

Wong, Kameran-W19  
Verogen (Discussion of Commercial Products or Services)

Wu, Shan-Fu-B176  
Verogen, Thermo Fisher Scientific (Discussion of Commercial Products or Services)  
Verogen (Employeee)

## Y

---

Yew, Patrick-B9  
California State University-Los Angeles (Stipend)

Young, Thomas-W10  
CRC Press/Taylor & Francis Group (Discussion of Commercial Products or Services)

## Z

---

Zapico, Sara-A160  
Center for Advanced Research in Forensic Science (Grant Support)

Zascavage, Roxanne-B179  
Promega, Oxford Nanopore Technologies (Discussion of Commercial Products or Services)  
National Institute of Justice (Grant Support)

Zemmels, Joseph-D38  
CSAFE, NIST, Iowa State (Grant Support)

# AUTHOR FINANCIAL DISCLOSURE



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## A

Aardema, Adrienne-H85  
Aberle, Michael-B119  
Adams, Bradley-A78  
Adams, Donovan-A42  
Adelizzi, Betsy-E22  
Adolphi, Natalie L.-W12  
Adserias-Garriga, Joe-W14, G35  
Afra, Kamar-A118  
Afsin, Huseyin-G2  
Aggazzotti, Cristina-D11  
Agyemang, Ariana V.-A10  
Akbar Mohammed-A151  
Akiba, Norimitsu-D16  
Akiyama, Cliff-E99  
Akridge, Scott-W16  
Al Hinnawi, Sarah-H35, H92  
Alawadhi, Abdullah-A83  
Albert-Bolinski, Geoffrey-F23  
Aldy, Kim N.-W5  
Al-Hetlani, Entesar-D18  
Alim, Denys-H106  
Almela, Angela-D10  
AlQahtani, Sakher-W14  
Alzumaili, Bayan-H77  
Ambrosius, Teresa L.-BS1, W9  
Amin, Awais-E102  
Amin, Mohamed O.-E108  
Amir Nadeem, Muhammad-K18  
Ammer, Saskia T.M.-A44  
Andre, Victoria-B172  
Aneja Pursuing, Palek, PhD-Y5  
Angel, Miriam S.-W4  
Annas, George David-I16  
Aquila, Isabella-D41, E1, E12, H32, H96  
Archibald, Emily-A50  
Armelli, Kerianne-A17  
Aronson, Libby-H63  
Aschheim, Kenneth-G18, G32  
Aungst, Jenna-I18  
Awadalla, Mohamed-J18  
Aysa Bravo, Abraham-W11

## B

Baber, Sydney-E113  
Baker, Andrew M.-H115  
Balbo, Arianna-H49  
Baldwin, Angela-E5, H8  
Banks, Elsie-Kay-E19  
Baronti, Arianna-H67  
Barta, Jodi Lynn-B158  
Baumann, Michael R.-W20  
Bayer-Broring, Carolyn-J14  
Bennett, Krista-A133  
Berg, Gregory E.-A39  
Berishaj, Kelly-E69  
Bertozzi, Giuseppe-E42, H11  
Bhaloo, Zain-S2  
Bhula, Avni-G33  
Bieber, Frederick R.-W19  
Biedrzycki, Lynda-W20  
Bini, Giulia-E13  
BinMarzook, Khalid-H6  
Bishop, Brett M.D-W17  
Blout, Hillary-W15  
Bodini, Sofia-B121  
Bogges, Kayce-Y10

Bolt, Haley-E110  
Bonci, Camilla-E4  
Borrini, Matteo-A52, A144, LW3  
Bory, Jason R.-W5  
Bosco, Caterina-I10  
Botch-Jones, Sabra R.-W6  
Bothma, Pearl-A147  
Bouderdaben, Fatimah A.-A119  
Bouju Davies, Lauren-E78  
Boyd, Donna-A176  
Bradshaw, Brenda-G16  
Brandt-Litavec, Helen-A2  
Brodeur, Amy-B194  
Brosz, Helmut-BS6, D33  
Bugelli, Valentina-H10, H107  
Burnett, Bryan-B180  
Butler, John M.-W2  
Buzzini, Patrick-B85

## C

Cabelus, Nancy-BS7, E70  
Calvano, Mariagrazia-F2, H56  
Camarota, Braeden-E79  
Cano, Kris-W9  
Cantos Gómez, Pascual-D13  
Capello, Francesca-E34  
Capistran, Briana-B87  
Carabellese, Felice F.-W16  
Cardia, Luigi-F3  
Carney, Amy-BS7, E71  
Carney, John-F26  
Carter, Madison-B198  
Caruso, James L.-S1  
Cataldo-Ramirez, Chelsea-A139 Cavlak,  
Mehmet-H121  
Cazzato, Francesca-H95  
Cecchetti, Matteo-H1  
Cervantes, Marianna-A134  
Chany, Christopher-B192  
Chapman, Abby-E33  
Chaudhary, Muhammad-B34, B164, E48  
Cheng, Kevin-B139, B143  
Cheng, Michael-I2  
Cheng, Ya-Chih-B162, B211  
Chepren, Stacey-E55  
Cho, Sohee-B157  
Christensen, Angi-A169  
Christy, Brenda B.-B90  
Chu, Elaine Y.-A121  
Chu, Joyce-A55  
Chung, Grace-G26  
Ciavarella, Mauro-H25  
Cieri, Grace-K37  
Cirillo, Laura-A108  
Ciruzzi, Maria-F21  
Clemmons, Chaunese M.J.-A114  
Collord-Stalder, Hailey-A58  
Collura, Kaitlin-K8  
Concato, Monica-H135  
Concheiro-Guisán, Marta-K21, K47  
Coreelman, Heleen-G23  
Corradi, Luciene-G13  
Costantino, Andrea-H65  
Croom, Nicole A.-H120  
Crosby, James-E62  
Cross, Hannah-A64  
Crowder, Christian-W14

Cuchara, Breanna-H94  
Cukrov-Bezbradica, Slavena-B25  
Culbertson, Hillary-B200  
Cunningham, Lloyd W.-W17  
Currie, Krista A.-W15  
Curtotti, Donatella-F33

## D

Daly, Stephen-B92  
D'Antoni, Leighton-B149  
Dar, Mariam-D6  
Davidson, Marion-A103  
Davies, Keir-E63  
Davis, Kymeri-E64  
Davis, Lucy-S1  
Davis, Samantha-B8  
De Alcaraz-Fossoul, Josep-E105  
de Boer, Hans-H47  
De Cree, Theresa-A61  
De Crisce, Dean M.-W16, I15  
De Luca, Benedetta Pia-F2  
De Simone, Stefania-E35, H14, H100  
Decker, Summer J.-W12  
Dedouit, Fabrice-W12  
Deem, Emily-B3  
deJong, Joyce L.-H115  
Del Fante, Zoe-H69  
Delelio, Danielle-A62  
Delgado, Thomas-A109  
Delger, Dana-F7  
DeMenna, Gerald-L1  
DePaolo, Frank-A74  
Depp, Randi-A14  
Deveci, Cemyigit-H21  
Devers, Kelly G.-W7  
Devlin, Joanne-A41  
Diaz, Ramon-B165  
Dickinson, Gregory-H61  
Dirkmaat, Dennis C.-A73, A84  
Dominguez, Victoria M.-W14  
Donfack, Joseph-B114  
D'Orazio, Amanda L.-W6  
Dozier, Katherine-K49  
Dragovic, Ljubisa J.-W10  
Duma, Stefano-H55  
Dumais, Alexandre-W16  
Dunn, Francesca-A137  
Dunn, Rhian-A8  
Duran, Kristine-E107  
Dwyer, Isis-A116  
Dykstra, Josiah-C17

## E

Earwaker, Helen-E100  
Ebert, Lars C.-W12, H132  
Edegbe, Joy-H26  
Eisenhart, Linda-J7, J13  
Eldridge, Heidi-S1, B96  
Eliopoulos, Constantine-LW5  
Ellingham, Sarah-W14



# AUTHOR FINANCIAL DISCLOSURE

Enslin, Odile-E8  
Esposito, Massimiliano-G15  
Etaywe, Awni-D7  
Evans, Tiara-K34

## F

Failla, Andrea Vittorio Maria-H74  
Fais, Paolo-H22  
Fang, Yung-Hsuan-G21  
Farid, Ajang Armin-G8  
Feigin, Gerald-F36  
Felthous, Alan R.-W16  
Ferrara, Michela-E119, H19  
Ferrell, Jamie-E76  
Fetchet, Mary-A79  
Field, Olivia-E83  
Filko, Andrijana-E126  
Fiorentini, Clara-H22  
Firek, Julianna-F24  
Fisher, Barry-S3, B83  
Fitzpatrick, Colleen M.-W19, B145, LW2, LW4  
Fixott, Richard-G29  
Flaherty, Taylor-E7  
Flowe, Heather-I25  
Floyd, Jennifer P.-W9, B91  
Foley, Megan-B42  
Folkerth, Rebecca-H102  
Ford, Jonathan M.-W12  
Fox, Sherry-A93  
Franceschetti, Lorenzo-E53  
Franck, Darren-D32  
Franzetti, Chiara-H59  
Frazier, Kimberly-H37  
Fredericks, Jamie-B14  
Freeman, Kelly-S2  
Freitas, Nelson-G10  
Frese, Madison-E111  
Frigiolini, Francesca-H20  
Fudenberg, John-S3  
Fulginiti, Laura-H9

## G

Gabrys, Natalia-K9  
Gaddis, Katherine-E14  
Gaines, Allison N.-W21  
Garfinkel, Simson-C14  
Gariglio, Sara-K14  
Garrett, Brandon-BS2  
Garza, Shelby-A26  
Georget, Charles-G28  
Geradts, Zeno-C3  
Gestring, Brian-B84  
Gettings, Katherine-W2  
Getz, Allison-BS1  
Giacani, Elena-H17  
Gill, James-H115  
Gitto, Lorenzo-H118  
Go, Matthew C.-A33  
Goden, Christopher-A102  
Godfrey, Murrell-K31  
Godshalk, Maeve-Y1  
Gokool, Vidia A.-B184  
Goldstein, Justin Z.-A23

Goliath, Jesse R.-A115  
Gong, Samantha-B190  
Gonzalez, Jose-B214  
Goots, Alexis-A113  
Graham, Ema-B52  
Graham, Jason K.-A75  
Granger, Cheyenne-B32  
Green, James A.-J23  
Grosso, Katherine-E54  
Grover, Celeste M.-B118  
Gunce Eskikoy, Melahat Elif-E26  
Gunther, Wendy-H90

## H

Haase, Nicole-K30, Y12  
Haberstock, Isabella-B21, Y9  
Hadley, Samantha-E52  
Hainsworth, Sarah-D30  
Hampl, Peter-G27  
Han, Valeri-Y6  
Harden, Angela-A178  
Hardman, Hope-B11  
Harper, Curt E.-W6  
Harrell, Michael-H123  
Harris, Neil-H41  
Hasert, Anita-E57  
Hayes, Jonathan-H115  
Heacox, Derek-Y11  
Heidere, Katie S.-W5  
Henson, Tanisha-S3  
Hentschel-Fey, Kelsea-A40  
Herbst, Brian-D24, D27  
Hessel, Evin-A54  
Heustis, Marilyn A.-W16, K57  
Hewitt, Curt-B95  
Hirsch, Marissa-W16  
Ho, Sally-B131  
Hoffman, Michelle-D35  
Holcombe, Savannah-A135  
Holmes, Ashley-E3  
House, Molly-H2  
Houston, Rebecca J.-W16  
Hu, John-H3  
Hubbard, Hannah-E109  
Hunter, Cheryl-S2  
Hurley, Kira-B61  
Hyodoh, Hideki-W12

## I

Indra, Lara-A158  
Innocenzi, Fabio-H12  
Ip, Eva-I24  
Isa, Mariyam-A107  
Isenschmid, Daniel S.-W16  
Iula, Donna M.-W20  
Iyer, Hari-F17

## J

Jamshaid, Tahir-B33  
Janysek, Brian-S2  
Jarvis, Hannah-H119  
Jasiak, Caroline-A6

Jayakumar, Jayapriya-G5  
Jayaraman, Jayakumar-G24  
Johnson, Liam-A25  
Johnson, Rachel-E27  
Jones, Graham R.-W16  
Jones, John Paul-W2  
Jones, Joseph-W6  
Juarez, Chelsey-W19

## K

Kaegi, Valeria-E72  
Kanchan, Tanuj-G22  
Kaplan, Molly-A87  
Kaur, Rattandeep-D19  
Ke, Pucheng-K40  
KeChi-Okafor, Chimdia-E47  
Kemper, Bart-D46  
Kendell, Ashley-A34  
Kennedy, Roderick T.-S1  
Keyes, Kelly A.-E121, H103  
Kim, Dong-Ho-A140  
Kim, Eunmi-K5  
Kim, Jong In-A163  
Kim, Joonyeong-B106  
King, Pamela A.W.-W9  
King, Steff-E23  
Kintz, David-E28  
Klales, Alexandra-A46  
Klonsky, Ken-W15  
Klonsky, Ray-W15  
Knight, Renee-BS6  
Kolpan, Katharine-A7  
Konda, Amelia-A127  
Kootker, Lisette M.-A45  
Korolija, Marina-E16  
Kortonick, Kristine-A65  
Kovari, Ivett-E130  
Krauss, Shannon T.-W5  
Krebs, Kyle T.-W21  
Kroll, Jeroen J.F.-W12  
Kronstrand, Robert-K50  
Krotulski, Alex J.-W5, W20  
Kulbacki, Kevin P.-J6  
Kumar, Swathi A.-W19  
Kunugi, Yuki-D40  
Kurtzman, Robert A.-H117

## L

La Tegola, Donatella-I20  
L'Abbe, Ericka N.-A37  
Laing, Richard R.-W5  
Lamb, Michael-K51  
Landrie, Rachael-H46  
Lane, Katherine-A99  
Lanfranchi, Anthony-A69  
Lavine, Barry-B123  
Leach, Rose-A21  
LeBeau, Marc A.-W6, K33  
Lee, Dayong-W16  
Lee, Hana-Y3  
Leonardelli, Mirko-A130  
Lesciotto, Kate-A35  
Li, Sihai-B117

# AUTHOR FINANCIAL DISCLOSURE



Licciardello, Fausto-H76  
Licciardello, Gabriele-H72  
Liliedahl, Ruby E.-K10  
Lockhart, Emily-B206  
Logan, Barry K.-S1, W16, W20  
Lopez, Angelina-E106  
Lorber, Amy-H88  
Lösch, Sandra-A96  
Love, Jennifer-A148  
Lucas, Victoria-G20  
Ludeman, Matthew-B5  
Lugli, Melania-I1  
Lupariello, Francesco-E117, H24  
Lyle, James-C21  
Lynch, Ashlee-B17  
Lynch, Robert-S2  
Lynch, Virginia A.-BS7, E66, E68  
Lyness, James-H125  
Lyttle, Morgan-E15

## M

Macorano, Enrica-H58  
Madrigal Reyes, Alejandro-W11  
Maglitto, Andreana Nicoletta Maria-I11  
Maier, Christopher-A126  
Malfroy Camine, Lise-G7  
Maloney, Katherine F.-W7  
Mamedov, Sergey-D50  
Manetti, Alice Chiara-E6  
Manetti, Federico-D42, H34, I12, I13  
Manna, Modhuparna-S2  
Marisei, Mariagrazia-H83  
Marshall, Charla-W19  
Martin, Clément-D49  
Massari, Kayla-E50, Y8  
Mavroudas, Sophia-A36  
Mazuchowski, Edward L.-W12  
Mbonani, Thandolwethu-A141  
McArthur, Katherine-W16  
McCallum, David-W15  
McClary, Carl R.-S1, J1  
McDonald, Gary-F27  
McKay, Kelsey-E27  
McKendrick, Sarah-E132  
McKiel, Mary C.-W9  
Meckel, Lauren A.-A172  
Mele, Federica-G3  
Melinek, Judy-S3  
Meloro, Raphaela-A38, A110  
Menendez, M.J.-W20  
Merlino, Mara L.-J19  
Mertz, Lisa A.-W15  
Meshram, Vikas-A152  
Messe, Gabrielle-H54  
Messner, Paul-S1  
Mezzetti, Eleonora-B115, H27  
Michelen, Oscar-W15  
Mickleburgh, Hayley L.-A81  
Mierzwiak, Dagmar-E61  
Mikellide, Maria-A92  
Miller, James-B210  
Millette, James-D48  
Milroy, Christopher M.-S1  
Ming, Ann-Marie-H39

Miranda, Michelle D.-B80  
Miranker, Molly-A5  
Mirza, Mohammad Meraj-C12  
Mishra, Amarnath-E38  
Miyashiro, Rand-H104  
Moe, Mariah-A18  
Mogle, Mark D.-W11  
Mohammed, Linton A.-W9, W17  
Mohr, Amanda L.A.-W6  
Molinari, Giulia-H48  
Molt, Malory-E94  
Mondello, Cristina-H30  
Monetti, Lisa-A67  
Montalvo, Shayla-B27  
Monteiro, Francis Nanda Prakash-H126  
Moore, Clarra G.-J21  
Moorthy, Arun-B208  
Moosavi, Harrison-H50  
Morel, Jessica L.-W21, I22  
Mori, Haruka-I17  
Moses, Sharon-E29  
Moss, Aja-S2  
Moss, Natalie-B47  
Mundorff, Amy-A71  
Musci, Gianluca-E11  
Musile, Giacomo-K55

## N

Nardoni, Francesco-H98  
Nassif, Joe Bou-W16  
Nazir, Shahid-B160  
Nelson, Arin-D25  
Neuman, Maddisen-B100, E96  
Newland, Ashley-E86  
Newman, Reta M.-W3, W20  
Nguyen, Lam-C19  
Nguyen, Teresa-W7  
Nicoli, Simona-H79  
Nixon, John-D36, F9  
Noble, Andrea Carolina-K60  
Nobles, Karen J.-W17, J16  
Notari, Chase-B120  
Novak, Martin-C35  
Novroski, Nicole-B175  
Nuzzolese, Emilio-G4, G6, G11

## O

O'Brien, Meg-J10  
O'Donnell, Christopher J.-W12  
Oesterhelweg, Lars-W12  
Oettel, Bailey-A122  
O'Neal, Bobbi Jo-S3  
Oner, Dilara-J17  
Oranchak, David-BS3  
Ordeman, Beth-B40  
Ovide, Oriana-B110

## P

Padovano, Martina-B171, H33  
Palamone, Nicolina-G34  
Panzica, Nicole-H134  
Parchake, Manoj-H105

Parente, Lia-I19  
Park, Chan-Seong-D15  
Park, Hyun Jin-A128  
Parker, Glendon-B56  
Parks, Robyn N.-W20, E2, K1  
Pascale, Natascha-H29  
Passalacqua, Nicholas-A31  
Peace, Michelle R.-W5  
Peer, Michal-A105  
Pellegrini, Lavinia-H70  
Pelletti, Guido-K13  
Perdue, Charla Skinner-E133  
Pérez-Flórez, Aurora Marcela-A94  
Perkins, Ashley R.-W7  
Perlin, Mark-B141, B144, B153, F32  
Perrone, Giulio-H78  
Philip, Eleena-E87  
Plasencia, Enrique-A12  
Plourd, Christopher-F4, F13  
Plyler, Alexandria-E43, Y7  
Podduturi, Varsha-H13  
Podini, Daniele-B150  
Pokines, James T.-W8  
Polhemus, Adam-E127  
Pope, Elayne-A171  
Pourat, Jacob-I23  
Pozzi, Mark-D23  
Prada-Tiedemann, Paola-E120  
Prahlow, Joseph-H115  
Prandini, Valeria-H82  
Price, Jana M.-W6  
Primorac, Dragan-B159  
Provoost, Eloise-I8  
Puracal, Janis C.-W15, F25

## R

Rabah, Ahmad-G25  
Radogna, Alessandra-E92  
Rais, Muhammad-D47  
Ralston, Clair-A42  
Ram, Rachel-K38  
Ramey, Greg-S3  
Ramos, Christopher-H89  
Rayes, Omar-W7  
Razi, Yasmine-I3  
Recheis, Christina-A85  
Reczek, Karen-BS1, L2  
Redgrave, Anthony-A11  
Reilly, Noah-H93  
Reisig, Jeff-W15  
Renner, Lawrence L.-W18  
Resnik, Karissa-K11  
Reyes-Rodriguez, Jenise-C22  
Reynolds, Meredith-H15  
Rhinesmith-Carranza, Jennifer-H110  
Ridel, Alison F.-A101  
Rihawi, Wassim-G31  
Riman, Sarah-W2  
Roberts, Graham-G19  
Roberts, Julie-A95  
Rocuzzo, Salvatore-I6  
Rodriguez Salas, Judith-B199  
Rodriguez, Ashley-E123



# AUTHOR FINANCIAL DISCLOSURE

---

Rohrer, Charles-H99  
Rolland, Matthew-A70  
Rose, Sarah-A159  
Rosenfield, Michael-D22  
Ross, Jennifer-I7  
Rossetti, Chiara-A57, H80  
Rossetto, Ilaria-I21  
Rossi, Gianluca-H4  
Roux, Claude-F22  
Rowe, Walter-B186

## S

---

Saayman, Gert-H91  
Sabatino, Mirella-H84 Sakelliadis,  
Emmanouil-H62 Sanger, Sarah-F11  
Santillán, Perla-A82  
Santoro, Paola-H68  
Sarancha, Julianne-A24 Sauerwein,  
Kelly-G30  
Schmid, J.D.-F14  
Schwark, Thorsten-H60  
Schweighardt, Andrew J.-W15, B73  
Schwing, Sarah-A100  
Scott, Karen S.-W6  
Scotti, Veronica-F31  
Seaman Kelly, Jan-J8  
Seigfried-Spellar, Kathryn C.-W21  
Seiki, Yoko-J2  
Sensabaugh, George-B81  
Sessa, Francesco-E17, E30, H53  
Sgheiza, Valerie-A161  
Sharma, Meenakshi-H64 Sharma,  
Vishal-E44, E82, J3 Sharp, Jared-B30  
Sharplin, Allison-A91  
Shedge, Rutwik-A129  
Shi, Chen-C32  
Shibasaki, Kazunari-D37  
Singh Shekhawat, Raghvendra-A151  
Shnaidman, Vivian C.-W21 Shreve,  
Christina R.-H7  
Siegert, Courtney C.-A90  
Sierra-Serrano, Elena-A132  
Silverman, Cody-B60  
Silvestre, Maria-H23  
Simmons, Hannah-S2  
Simmons-Ehrhardt, Terrie-A63  
Simpson, David-E98  
Smith, Cheyenne-B197  
Smith, Jeff-C5, C28  
Smith, Michael L.-W16  
Smith, Rebecca-K12  
Solomon, Nadia-H97  
Sostaric, Sandra-A97  
Soto Martinez, Miriam-A56 Spence,  
Jennifer E.-A89  
Spiros, Micayla-A1  
Stacy, Megan N.-W21  
Stanley, Nicole-H73

Stassi, Chiara-H31  
Steffen, Carolyn R. "Becky"-W2  
Steinberg, Alon-H129  
Stevens, Edwin-S3  
Stiffelman, Bess-F16  
Stolorow, Mark D.-F20  
Stout, William-E10  
Strasheim, Ariana-A125  
Strommer, Ellen-H128  
Suddock, Jolee-H40  
Sudhakaran, Sncha-C24  
Sullivan, Mackenzie-A43

## T

---

Tanaka, Tobin A.-W4  
Tarozzi, Ilaria-H86  
Tawil, Michel-E9  
Taylor, Melissa K.-W2  
Telegrafo, Michele-H28  
Tesi, Chiara-A59  
Thach, Rasmey-H87  
Thali, Michael J.-W12  
Tiffon Nonis, Bernat-Noël-I4, I5  
Tiscione, Nicholas-K35  
Torrissi, Marco-H75  
Trevino, Joe-S2  
Troccoli, Giuseppe-W21  
Truver, Michael T.-K52  
Tsuchiya, Syunsuke-D39  
Tumram, Nilesh-D31, D34, H124

## U

---

Ubelaker, Douglas H.-W14, A76  
Ud Din, Najam-K16  
Usman, Hafiz Faisal-K15

## V

---

Vallone, Peter M.-W2  
Van Buren, Molly-S2  
van Rijn, Rick R.-W12  
VanBaarle, Alexis-A48  
VanLysebettens, Stephanie R.-K29  
Vastrick, Dirk-S2  
Vastrick, Thomas W.-J9  
Veneri, Federico-Y4  
Ventura, Mónica-B187  
Villarreal, Domingo-W11  
Visi, Giacomo-H66  
Volz, Jessica-K26

## W

---

Walker, Stewart-E128  
Walkup, Taylor-A123  
Walraven, Tracy-C20  
Walton, Sara-K41  
Wang, Ling-K27  
Warrier, Varsha-A155  
Washington, Thomas-Y2  
Waxenbaum, Erin-A4  
Weaver, Ryan-A162  
Webb, Milad-W7  
Weber, Alexis-E88, E114  
Weedn, Victor R.-W5, H130  
Weimer, Belinda-E31  
Wein, Lawrence-B148  
Weiss, Kurt-D20, D26  
Wells, Kyla-F6  
Wetherbee, Amber-B11  
Wetherelt, Deborah-E74  
Whitekus, Michael J.-W6  
Wiedenmeyer, Emilie L.-A27  
Wiersema, Jason M.-H36  
Williams, Amanda-A173  
Williams, David-G1  
Williams, John-A32  
Williams, Joyce-BS7, E65, E67  
Wilson, Emily-A150  
Wilson, Linda U.-W9  
Wilson, Walter-B213  
Winchester, Janis-J24  
Winokur, Agnes D.-W5, L2, B127  
Winters, Kelsey R.-W3  
Wood, Robert E.-G9  
Woodall, Karen-E131  
Woollen, Katharine-A47

## Y

---

Yarberry, Andrea-B22  
Yaroshuk, Timothy-B126  
Yim, An-Di-A117  
Young, Thomas W.-H5  
Yuky, Nandar-A120

## Z

---

Zadeh, Tanin-A15  
Zaferes, Andrea-E27  
Zaney, Mary Elizabeth-W5  
Zanon, Martina-H101  
Zapico, Sara C.-W14  
Zhang, Xin-H16  
Zhou, Jiemin-H52  
Zink, Katherine E.-B132  
Ziogos, Sotirios-E60  
Zissler, Angela-H122  
Zjalic, James-C1  
Zumaeta, Edward-K17



# KEY WORD INDEX



## Δ

Δ9-THC-B213

## μ

μ-XRF-B110

## 1

16S rRNA-B4  
1-Propanol-K50

## 2

2009 NAS Report-F9  
2016 PCAST Report-F9  
2-Methyl AP-237-K52  
2-Methyl-2-Butanol-K51

## 3

3D-A140, G7  
3D Modeling-E6  
3D Models-A146  
3D Printers-D47  
3D Prints-A37  
3D Scanning-G10, G12  
3D Scanning Modalities-A147  
3D Surface Scans-A100  
3D Technology-D41  
3D Topographic Measurements-D38, E95

## 7

7.62x39-E94

## 8

8-Aminoclonazepam-K35

## 9

9/11-A72, A74, A77, A78  
9/11 Attacks-A75  
9/11 Pentagon-A76  
9/11 Victims' Families-A79

## A

Ab Extrinsic Neck Percussion-H65  
Abortion-H24  
Abstract Readability-A42  
Abusive Head Trauma-B115, H5

Academia-A7  
Academic Institutions-A27  
Accident-H123  
Accidental Death-H70, H84  
Accreditation-A41, W11  
Accumulated Degree Days-A60  
Accumulated Degree Hours-A175  
Acetic Anhydride-B164  
ACE-V-E103  
Acid Phosphatase-B194  
Acsadi and Nemeskri Scoring Method-A151  
Activism-A38, A119  
Activity Capacity Index-D39  
Activity Level Propositions-B43  
Activity Tracking-C29  
Activity-Level Propositions-B77  
Acute Ab Ingestis Asphyxia-E11  
Acute Intoxication-H72  
ADA-G32  
Additive Manufacturing-D47  
Adolescent-I1  
Adulterant-K56  
Advanced Decomposition-A66  
Adverse Events-K44  
Adverse Events Following Immunization (AEFI)-H53  
AFIS-B97  
Age Assessment-C4, G33, G35  
Age Estimation-A122, A123, A125, A127, A128, A129, A132, A133, A136, A137, A152, A162, A163, G23, G26, W14  
Age-at-Death-A49, A160  
Aging-E105  
Aging Mechanism-E88  
Air Embolism-H10, H16  
Ajnala Dental Remains-G14  
Ajnala Skeletal Remains-A30  
AK Guns-B93  
AK-47-E94  
Alcohol Abuse-K14  
Algorithm for Source Identification-Y3  
Algorithms-D19  
Alias-A91  
All Ions-K58  
Alprazolam-K29  
ALS-B170  
Alternate Light Source-B47  
Aluminum-B94  
Aluminum Powder-B104  
Amelogenin-A154  
Amino Acid-B126  
Ammunition Degradation-B172  
Amyloidosis-H73  
Analysis-B84, LW4  
Analytical-F23  
Analytical Methods-B193  
Analytical Thresholds-B82

Anatomical and Sliding Landmarks-A141  
Ancestry-A134  
Ancestry Determination-B158  
Ancestry Estimation-A103  
Ancestry Informative Markers-B56  
Ancient DNA-A106  
Android™ Tool-B93  
Animal Blood-B169  
Animal Scavenging-A157  
Anomalous Ligature Means-H17  
Anomalous Origin of Left Coronary Artery-H22  
Anosmia-H100  
Antemortem-A176  
Anthropological Research-G3  
Anthropology-A32, A108, A110, A119, B59, G13  
Anti-CD15-H19  
Anticoagulant Therapy-E4  
Antiepileptic Overdose-I12  
Anti-Glycophorin A-H19  
Antisocial Personality Disorder-I1  
Aortic Dissection-H127  
AP Spot Test-B194  
AP-237-K11  
Applied Anthropology-A5  
Aquatic Taphonomy-A159  
Arterial Lesion-H70  
Artifacts-C19  
Artifacts in Forensics-E3  
Artificial Fingerprints-B95  
Artificial Intelligence-B181, D19  
ASB-F6, K33  
Asphyxia-D32, H65, H131  
Asphyxia in a Confined Environment-H58  
Asphyxiation-E27  
Assault-B14  
Asylum Seekers-E53  
Atherosclerosis-H126  
Atmospheric Pressure Ionization-D3  
Atomic Absorption Spectroscopy-E86  
ATR/FTIR-E18, E78, E79  
Atrioventricular Node Fibrosis-H79  
Attentiveness-I3  
ATV Accident-D21  
ATV Injury-D21  
ATV Rollover-D21  
Audio-F29  
Audio/Video Evidence-D26  
Auricular Surface-A133  
Authentic Hair Reference Material-K48  
Authorship Identification-D6, D10, D13  
Autoerotic Deaths-I6  
Automated Border Control Systems-E126  
Automated Identification Systems-J5  
Automatic Alignment-Y3  
Automatic Landmarking Approach-A141  
Automation-B5, C17  
Automotive Lubricating Greases-B111

Autopsy-E5, E57, H3, H6, H8, H21, H40, H46, H60, H80, H93, H94, H123, H124, H125  
 Autopsy Findings-H33  
 Autopsy Record-E6  
 Aviation Mishap-E54  
 Axle Failure-D20  
 Axon-C9

## B

Back of Head-H52  
 Backlog-E48  
 Bacterial Microbiome-A159  
 Baked Edibles-B21, Y9  
 Balkans-A93  
 Ballistics-B108, E61  
 Barcodes-J14  
 Barnacles-H75  
 Baseline Background-B122  
 Bayesian Statistics-G23  
 Bearing Race-D20  
 Behavior-E132  
 Behavioral Evidence-F39, I16  
 Benzodiazepines-K45  
 Bereavement-A79  
 Best Practice-E23  
 Beverage and Blood Serum-D18  
 Bias-B86, F25  
 Biased Objectivity-A114  
 Biological Anthropology-A132  
 Biological Damage Evaluation-H20  
 Biological Material-B17  
 Biological Profile-A98, A135, A139, A146  
 Biological Rythms-H62  
 Biomarker-B52  
 Biomechanics-A16  
 Biometry-A31  
 BIPOC-A115  
 Bitemark-E62, F13, G27, G28, G29, G30  
 Black Box Study-J7  
 Blade Class Interpretation-A56  
 Blind Proficiency Testing-B98  
 Blind Testing-E96  
 Blinding-E118  
 Blood-B195, B196, E87, K58  
 Blood Alcohol Concentration-K10  
 Blood Analysis-E88, E114  
 Blood Detection-B166  
 Blood Removal-E115  
 Bloodstain Pattern Analysis-B181  
 Bloodstain Patterns-W18  
 Blue-Orange Fluorescence-E115  
 Blunt Force Injury-B171  
 Blunt Force Trauma-A179  
 Blunt Trauma-A62, H25  
 Body Donation-A17  
 Body Donation Programs-E59

Body Dumps-E29  
 Body Fluid-E85  
 Body Fluid Analysis-B63  
 Body Fluid ID-B58  
 Body Fluid Identification-B62, B64, E45  
 Body Mass Index (BMI)-B54  
 Bolus Deaths-H67  
 Bone-A77, B1, B45  
 Bone Biomolecules-B48  
 Bone Biophysics-B48  
 Bone Collagen-A3  
 Bone Detection-A169  
 Bone Diagenesis-A61, B60  
 Bone Fractures-A175  
 Bone Histology-A172  
 Bone Maceration-B48  
 Bone Microarchitecture-A174  
 Bone Nanostructure-A64  
 Bone Remodeling-A170  
 Bone Resorption-A15  
 Bone Trauma-A37  
 Bone Weathering-A55  
 Borderline Personality Disorder-I5  
 Bowel Obstruction-I13  
 Brass Ammunition-B19  
 Brass Shell Casings-B95  
 Breath-B132  
 Breath Aerosols-D43, K20  
 Bridging Veins-H41  
 Brodifacoum-H63  
 Bruise-B170  
 Bucinnazine-K11  
 Bulk\_Extractor-C14  
 Bullet Hole Identification-B113  
 Bullet Ricochet-B92  
 Bullets-B120, B191  
 Burial of Corpse at Home-I5  
 Burned Bone-A171, A172  
 Burned Human Remains-A106, A171, A173  
 Burned Remains-B50

## C

Caffeine Toxicity-E38  
 Calibration-E83  
 Camera Identification-C2  
 Candida albicans-Y1  
 Canine Training Aids-D17, E64  
 Cannabidiol-B32, K7  
 Cannabinoids-B209, E48, H63, K19, K39  
 Cannabis-B22, B23, B24, B33, B132, B212, B213, B214, D43, K20, K38, K47  
*Cannabis Sativa*-B209  
*Cannabis Sativa* L.-B25  
 Capillary Electrophoresis-B151  
 Capillary Microextraction of Volatiles (CMV)-B36

Carcass-H108  
 Cardiopathology-H22  
 Cardiopulmonary Resuscitation (CPR)-H43  
 Caribbean-H39  
 Caring for the Dead-E26  
 Cartridge Cases-B17  
 Cartridges-B57  
 Case Acceptance Criteria-B146  
 Casearean-D30  
 Cause-B84  
 Cause of Death-E8, H101  
 CB1 Receptor-K31  
 CBCT-A140  
 CBD-B211, K7  
 CBD Stores-B25  
 Cell Lysis-B62  
 Cell Visualization-B116  
 Cementochronology-A162  
 Centrifugal Microfluidics-B66  
 Certification/Accreditation-B78  
 Chair Collapse-D35  
 Challenges-H105  
 Charred Bodies-H31  
 Charred Bones-B61  
 Chemometric-B183, B184, E44, E82, J3  
 Chilaiditi Syndrome-H33  
 Child Abuse-A53, D40, E117, G26, K26  
 Children-A134, E56, I9  
 Chip Swap-D22  
 Chloroplast DNA Barcoding-B163  
 Chokeholds-D32  
 Choking-H123  
 Choking on Food-H67  
 Chromatography-B22  
 Chrome OS™-C26  
 Chromebook™-C26  
 Chronic Paralysis-D34  
 Citric Acid Test-B164  
 Civil Rights-A38  
 Clandestine Graves-A83  
 Classification-A164  
 Cleaning Agents-B166  
 Clear Bixially Oriented Polypropylene Tapes-B186  
 Clinical Forensic Medicine-E53  
 Clonazepam-K35  
 Close Non-Match-B97  
 CMOS-C8  
 Coaching-B83  
 Cocaine-B20, C18, E46, E57, H72, K26  
 Cocaine Ingestion-H29  
 Coccidioides-H9  
 CODIS-F32, B145  
 CODIS-Eligible STR DNA Profile-E36  
 Cognitive Bias-A113, F7  
 Cold-H109  
 Cold Case-E129  
 Collaboration-A40

# KEY WORD INDEX



- Collaborative Study-B122  
Collagen-A61  
Collision Energy-B103  
Colonization-H111  
Color-E83  
Combinated Death Mechanism-H58  
Commingle Skeletal Remains-A86  
Commingle-A2, A3, A9, A10, A71  
Common Source-J1  
Comparative Soil Examination-B182  
Comparison-B124, C5, C28  
Competencies and Limits-E72  
Complete Body Imaging-H42  
Complete Body Scans-H42  
Complex Suicide-H55, I11  
Compression-C3  
Compression Fracture-D26  
Computational Forensic Linguistics-D11, D14  
Computed Tomography (CT)-A15, A63, A104, A105, A134, A145, A155  
Computer Forensics-C22  
Computer Image Recognition-G18  
Concentration Camps-A130  
Conclusions-J16  
Cone Beam Computed Tomography-G25  
Confirmation-B34  
Congenital Rib Abnormalities-H61  
Connective Tissue Disorder-H127  
Consensus-BS1  
Consensus Body-F6  
Conservatorship-I2  
Consultation-A4  
Contamination-B11, Y1  
Context-B85  
Contextual Effects-B99  
Contextual Identification-A87, B86  
Controlled Substances-B200  
Convolutional Neural Network-J2  
Copper-B19  
Copper Metal-B120  
Core-Structure Scheduling-W20  
Coronaries-H126  
Coronary-H73  
Coroner Liaison-H117  
Coroners-E32, E116  
Corrected RFU-B136  
Correlation Matrix-D37  
Cortical Bone-A54  
Cosmetic Products-D44  
Cotton Swabs-B12  
Counterfactual Causation-H128  
Counterfeit-F23  
Counterfeit Alcohol-Y11  
Court-F24, S1  
Courtroom-F19  
Courts-J9  
Covariate Shifts-D9  
COVID-19-E13, E14, E15, E30, E31, E33, E128, F24, H53, H94, H97, H98, H99, H101, H102, H103, I18  
COVID-19 Pandemic-F3, H106  
COVID-19 Postmortem Persistence-H104  
COVID-19 Testing-H104  
COVID-19 Vaccination-H78  
COVID-19-Deceased Bodies-H105  
CPS-C33  
Cranial Suture Obliteration-A151  
Cranial Sutures-A105  
Cranio-Cervical Trauma-E11  
Cranio-metrics-A104  
Cranio-metry-A143  
Cranium-A124  
Crashworthiness-D25  
Cremation-A67  
Crime Investigation-F21  
Crime Lab Management-B81  
Crime Scene-F33, H1, W11  
Crime Scene Investigation (CSI)-B165, E1, E30, E86, E113, I6  
Crime Scene Reconstruction-B180  
Crime Solving-B148  
Criminal Engineering-D29  
Criminal Investigations-E106  
Criminal Justice System-I17  
Criminalist-B79  
Criminalistics-B81  
Critical Flow-D15  
Critical Thinking-B72  
Croatia-B159  
Crossbow-H132  
Crowd Sourcing-A70  
Crowdsourcing-C19  
Cryptanalysis-J15, BS3  
Cryptocurrency Wallet-C32  
CSI-E27  
Curriculum-E131  
Cyanoacrylate Fuming-E110  
Cyber Forensics-C12  
Cybersecurity-C17  
Cytokeratins-B156
- D**
- Damaged DNA-B10  
DART®-D1, Y12  
DART®-HRMS-B183, B187, B189  
DART®-MS-B87, B128, B209, D4, D5  
Data-E116  
Data Exchange-E24  
Data Fusion-D50  
Data Recovery-C30, C34  
Data Sharing-E24  
Data Storage-C13  
Database-A11  
Database Forensics-C27  
Databases-B71  
Datasets-C10  
*Daubert*-A35, BS2  
Dead Bodies Management-H106  
Death-E28, G2  
Death Certification-H134  
Death in Custody-H128  
Death Investigation-A179, E3, E7, E23, H115, S1  
Deathcare-A109  
Debunking-LW3  
Decedent Blood-B9  
Decedent Identification-A91  
Decentering Whiteness-A33  
Decolonization-A21, A120  
Decomposition-A40, A43, A50, A51, A60, A156, B2, B45, B178, B185, B196, E18, E20, E58, H54, H112, K8, Y10  
Decompression Sickness-H21  
Decontamination Process-C18  
Deep Learning-G21  
Deep Ocean Salvage-E54  
Deepfake-C3  
Defect Marks-J13  
Degradation-B27  
Degraded DNA-B158, B173  
Delta-8-THC-K17, K34  
Delusions-I8  
Demographic Analysis-A145  
Dental Age Assessment-G18  
Dental Age Estimation-A161, G21, G22  
Dental Anomalies-G5  
Dental Anomalies and Pathologies-G14  
Dental Autopsy-G6, G11  
Dental Cementum-G17  
Dental Claims-G4  
Dental Development-G24  
Dental Histology-G17  
Dental Hygienist-G16  
Dental Identification-G6, G7  
Dental Metrics-A124  
Dentition-G30  
Dependency Structures-J5  
Deposition-E109  
Depression-A18  
Dermatoglyphics-E107  
Dermestidae-K29  
Desiccation-A43  
Designer Benzodiazepines-K40, K43  
Designer Stimulants-K44  
Detection-C5, E63  
Detection Dogs-D49  
Detector Dogs-E120  
Developmental Validation-B152  
Diagenesis-A44, A45

- Diagnosis-G29  
 Diagnostics-D42  
 Diatoms-E84  
 Differential Burning-A67  
 Differential Decomposition-B54  
 Differential Diagnosis-H29  
 Diffuse Axonal Injury-H64  
 Digital-C5, C21, C28  
 Digital and Multimedia Forensics-C16  
 Digital Audio-Y5  
 Digital Corporation-C14  
 Digital Dental Cast-G12  
 Digital Devices-C18  
 Digital Evidence-C2, C9, C11, C19, C32, C35  
 Digital Forensics-C17, C30  
 Digital Image Analysis-B186  
 Digital Imagery-C1  
 Digital Media-I22  
 Digital Pair-Matching-A86  
 Digital Pedagogy-A1  
 Digital Technology-F30  
 Digital Tools-C1  
 Digital/Multimedia-C20  
 Direct Amplification-B62, H114  
 Direct PCR-B16  
 Direct RNA Sequencing-B64  
 Disaster Morgue Operations-A73  
 Disaster Scene Recovery Protocols-A73  
 Disaster Victim Identification-A153, B51, H20  
 Discharge-I21  
 Discussion-J16  
 Dismemberment-A48  
 Dissection-H66  
 Distance Determination-B113  
 Distribution Constants-B106  
 Diversity-A115, A116, A117, A121, B159  
 Diversity and Inclusion-A33, A114  
 Diving-E11  
 DNA-A77, B5, B59, B145, B149, B161, E81, F32, H57, H81, LW2, W15  
 DNA Analysis-B76, B95  
 DNA Database-B72  
 DNA Evidence-F16  
 DNA Extraction-B1, B2, B3, B6, B7, B13, B49, B61  
 DNA Methylation-A160, B65  
 DNA Mixture-B82, B138, B142, E124, F10  
 DNA Persistence-B15  
 DNA Preservation-B60  
 DNA Profiling-F31  
 DNA Pyrosequencing-B9  
 DNA Recovery-B12  
 DNA Sequencing-B39, W19  
 DNA Testing-F35  
 DNA Transfer-B43  
 DNA Typing-B176  
 Document Analysis-J24  
 Document Backdating-J18  
 Document Examination-J22  
 Document Fraud-E126  
 Document Modification-C34  
 Document Reconstruction-J10  
 Document Retrieval-F26  
 Documentation-B170  
 Dog-F8  
 Dog Bite-E62, H119  
 Domestic Violence-A179, I7  
 Donor Age Estimation-B9  
 Doppelgänger-I10  
 Double Homicide-B171  
 DPX Tips-K24  
 Dried Plasma Spots (DPS)-K2  
 Driving Under the Influence-K13  
 Driving While Impaired-K59  
 Drowning-A93, H49, H85, I11, Y1  
 Drowning and Stabbing-H55  
 Drug Abuse-H23  
 Drug Deaths-H13  
 Drug Detection-E49, E91  
 Drug Dogs-F7  
 Drug Facilitated Sexual Assault DFSA  
 Drug Overdose Surveillance-H44  
 Drug Recognition Evaluation-K38  
 Drug Surveillance Reporting-B202, B204  
 Drug Testing-K40  
 Drug Trends-H13  
 Drug-Facilitated Crimes (DFC)-B201  
 Drug-Facilitated Sexual Assault (DFSA)-B201  
 Drugged-Driving-K36  
 Drug-Related Deaths-K1  
 Drugs-E9, E101, K37, W16  
 Drugs of Abuse-K32, K60  
 DUID-K21, K35  
 DUNDRUM-I19  
 Dust-D48  
 Dust Cover-E94  
 DVI-G8  
 DVR-C10  
 Dyes-D1, D3
- E**
- 
- Eating Habits-H83  
 EDD-J4, J11, J12  
 Edibles-B32, B209  
 EDR-D26  
 Education-B102, B161, E128, E131, E132, J19  
 Elder Abuse-E71, H86  
 Elderly-H101  
 Electrochemistry-B113  
 Electrocution-BS6, H84  
 Electrospinning-B29  
 Elemental Profiling-B190  
 ELISA-K45  
 Embodiment-A123  
 Emergency-G2  
 Emergency Department-H18  
 Emerging Drugs-B203  
 Emerging Initiatives-E66  
 Enamel Proteome-A154  
 Endangered Wood-B187  
 Endomyocardial Fibrosis-H80  
 Endotracheal Intubation-G4  
 Energy Drinks-E38  
 ENF-C8  
 Entomology-E43  
 Entomotoxicology-E43, Y7  
 Environment-H71  
 Environmental-E46  
 Environmental Conditions-B117, E111  
 Environmental Crime-E21  
 Environmental Insult-B172  
 Environmental Factors-A139  
 Enzyme Kinetics-K9  
 Enzyme-Linked Immunosorbent Assay (ELISA)-E89  
 Epidemiology-E15, K4  
 Equine Scent Detection-E19  
 Equine Search and Rescue-E19  
 Error Rate-B168, E97, F32, J7  
 ESDA-J11  
 Estimating Children's Behavior Through Simulation-D40  
 Estimating Wound Age-E35  
 EtG-K14  
 Ethanol-K9, K10, K28, K49  
 Ethics-A1, A108, E132  
 Ethnicity-G24  
 Ethology-D49  
 Ethylenediaminetetraacetic Acid (EDTA)-B195  
 Ethylsulphate-K50  
 Eutylone-E9  
 Evaluation-W17  
 Event Reconstruction-H2  
 Evidence-E55, W10  
 Evidence Collection-B16  
 Evidence Interpretation-H47  
 Evidence Management-E122  
 Evidence Retention Policies-E123  
 Evidence-Based-E76  
 Examiner Perceptions-B98  
 Excess Deaths-E15  
 Exhaled Breath Condensate-K19  
 Exhumation-K15  
 Exonerate-F10  
 Exo-THC-K17  
 Exotic Treatment-D34  
 Experience-B83  
 Experiential Learning-E129

# KEY WORD INDEX



Experiment-E87  
Experimental Taphonomy-A81  
Expert-F11  
Expert Bias-A118  
Expert Opinion-F12  
Explosives-B90  
Exposure-E2  
Extraction-B5  
Extraction Techniques-K48  
Extreme Climates-E20  
Extremism-D7, I24  
Eyewitness-I25

## F

Facial Parameters-A28  
Facial Recognition-E97, BS5  
Falls-H25  
Familial Genotype-B141  
Familial Searching-B71  
Family Reference Samples-A88  
Fast Track System-K5  
Fatal Accident-H49  
Fatal Attack-E62  
Fatal Compression-D31  
Fatal Fire-A171  
Fatal Hemorrhage-H69  
Fatal Injury-H48  
Fatality-D33  
Fatality Management-A75  
FBI-E98  
FBI Codebreaking-BS3  
FDE-J12  
Fecaloma-H14  
Federal Rules of Evidence-F20  
Female Forensic Psychiatry Inmates-I21  
Femicide-H121  
Fentanyl-B26, B27, B35, B206, B207, E33, E90, K29  
Fentanyl Analogs-B131, K2, K27, K30  
Fentanyl-Related Substances-B28  
FFPE-H81  
FGG-F32, B145, B149  
Fiber-B105, D4, E52  
Fiber Analysis-B114  
Fibers-B197, B198, D1  
Field Deployable-D2, E49  
Field Impairment Testing-K59  
File Transfer-C9  
Filicide-I4  
Fingermark-E101, E105, E108, E109  
Fingerprint-B116, D16, D45, E102, E107  
Fingerprint Analysis-E111, E113  
Fingerprint Development-E110  
Fingerprint Patterns-E106  
Fingerprint Processing-E113  
Fingerprint Profiling-E112

Fingerprinting-B117  
Fire Debris-B87, B88, W3  
Fire Debris Analysis-B89  
Fire Investigation-F12  
Firearm and Toolmarks-B91  
Firearm Evidence-D38, E95  
Firearm Examination-D9  
Firearm Malfunction-B172  
Firearm Toolmark Comparison-F9  
Firearms-H89  
Firearms/Toolmarks-F6  
Firearms Examination-E96  
Firearms Identification-B109  
Flash Fire Death-G15  
Flawed Forensic Evidence-F34  
Fleshed Bone-A64  
Floor Mat-D22  
Fluorescein-B166  
Fluorescence-B47, D16, D45  
Fluorescence Spectroscopy-E88  
Flurazepam-I12  
Fly Artifacts-B6  
FMVSS 207-D29  
Focus Groups-H116  
Food Forensics-E38  
Footwear-E93  
Footwear Evidence-Y6  
Footwear Impressions-Y3  
Force-B14, D32  
Forced Organ Harvesting-E70  
Foreign-Body Asphyxia-H67  
ForenSeq™ DNA Signature Prep Kit-B151  
Forensic-A54, A80, D19, LW4, W9  
Forensic Age Estimation-A151, A155  
Forensic Analysis-B33, B124  
Forensic Anthropology-A4, A8, A9, A12, A13, A14, A22, A26, A34, A35, A39, A40, A42, A50, A52, A56, A58, A70, A72, A76, A83, A84, A87, A95, A102, A103, A111, A112, A114, A116, A118, A125, A126, A129, A130, A133, A136, A137, A138, A144, A149, A152, A160, A163, A167, A168, A169, A173, E3, LW5, W14  
Forensic Archaeology-A6, A65, A69, E29  
Forensic Author Identification-D12  
Forensic Authorship Identification-D8  
Forensic Ballistics-E86  
Forensic Clothing Examination-B197  
Forensic Collections-A17  
Forensic Computational Linguistics-D10, D13  
Forensic Contexts -I20  
Forensic Data Management-A92  
Forensic Dentistry-G13  
Forensic DNA-B42, B50, B153, B155  
Forensic DNA Analysis-B179  
Forensic Document Examination-J20, J23

Forensic Drugs and Poison Analysis-D18  
Forensic Education-E133  
Forensic Engineering-D15  
Forensic Entomology-B7, B183, H111  
Forensic Epigenetics-B10, B66  
Forensic Evidence Preservation-E40  
Forensic Explosive Analysis-D17, E80  
Forensic Fabric Evaluation-E79  
Forensic Fabric/Textiles-E78  
Forensic Fractography-A175  
Forensic Genealogy-B146, B148  
Forensic Genetic Genealogy-B71, B147, B152, F35  
Forensic Genetics-F175  
Forensic Genomics-A106  
Forensic Geology-A169  
Forensic Hair Analysis-K48  
Forensic Identification-G10  
Forensic Image Analysis-C4  
Forensic Imaging-H97  
Forensic Investigation-H29, H31  
Forensic Laboratory-H45  
Forensic Linguistics-D7  
Forensic Medical Examination-I17  
Forensic Medicine-H36  
Forensic Metrology-F31  
Forensic Microbiology-E16  
Forensic Nurse-E65, E67, BS7  
Forensic Nursing-E69, E70, E71, E72  
Forensic Odontologist-G31  
Forensic Odontology-G1, G2, G3, G5, G9, G14, G16, G18, G22, G32, W14  
Forensic Pathology-B171, H7, H20, H39, H47, H98, H115, H116, I18  
Forensic Procedure-A17  
Forensic Provenance-A20  
Forensic Psychiatry-F39, I8, I16  
Forensic Questioned Document Examination-J17  
Forensic Radiology-A153, H60  
Forensic Readiness-D47  
Forensic Reporting-F32  
Forensic Science-A103, B43, B102, B111, B169, E1, E12, E17, E30, E119, F4, H32, H53, H87, H96, H118, Y11, BS1  
Forensic Science and Pathology-W10  
Forensic Science Disciplines-S1  
Forensic Science Education-A37, B72, E129  
Forensic Science History-A36  
Forensic Sciences-D41  
Forensic Significance-A13  
Forensic Smudge Analysis-D44  
Forensic Soil Analysis-B167  
Forensic Taphonomy-A47, A65, A70, A84, H113, W8  
Forensic Testimony-F15  
Forensic Tool Reliability-C31

Forensic Tools-C22  
 Forensic Toxicology-K6, K13, K23, K33, K55, K60  
 Forensic Toxicological Screening-K12  
 Forensic Trace Evidence-E84  
 Forensic Video-C6  
 Forensics-H93, S2  
 Forged Promissory Note-J17  
 Forgery-E102, J17  
 Fourth Rib-A127  
 Fractur3D-A63  
 Fractures-A180, D30  
 Fracture Classification-A178  
 Fracture Healing-A53  
 Fragmentary Voltage-B103  
 Fragmentation Behavior-B30  
 Fragrance/Odor-E40  
 Fraser Syndrome-H34  
 Friction Ridge-B96  
 Frontal Sinus Outlines-A142  
*Frye/Daubert*-F30  
 FTIR-E64  
 Fuel Tank-D24  
 Fuel Tank Injury-H4  
 Fungal-H88  
 Fungal Infections-H9  
 Fuzzy Rule-Based Inference Systems-A99  
 FVIII-H11

## G

GABA-K9  
 Gabapentin-K22, K36  
 Gang-F11  
 Garbage Collection-C24  
 Gas Chromatography-B23, E80  
 Gas Chromatography/Mass Spectrometry-B126, B129  
 Gas Embolism-H21  
 Gasoline-E51, W3  
 Gastric Content-H83  
 Gastrointestinal Death-I13  
 Gatekeeping-BS2  
 GC/FID-B33  
 GC/MS-B107, B129, B133, B189, B210, E48, E64, K24  
 GC/NPD-K18  
 Gender-K13  
 Gender Diversity-A107  
 Gender Reassignment Surgery-A149  
 Gender Variance-A113  
 Gender/Sex Diverse-A108  
 Gender-Wise Comparison-H62  
 General Linear Model-B131  
 Generalist-B79  
 Genetic Genealogy-F35

Genetically Variant Peptides-B56  
 Genotype Conditioning-B144  
 Genotype Weights-B136  
 Geometric Morphometric Methods (GMM)-A147  
 Geometric Morphometrics-A85, A101, A135, A146  
 Geophysics-A80  
 Ghost Hunting-LW3  
 GIS-A25, A82  
 GIScience-A5  
 GIZ-A94  
 Glass and Paint-B122  
 Glass Evidence-Y4  
 Graduate Student Training-A41  
 Graphical User Interface-A177  
 Grave Detection-A18  
 Green Tongue-F36  
 Groin Injury-H4  
 Ground Truth Data-D6  
 Group Aggression-I24  
 Growth and Development-A165  
 Growth Trajectory-A166  
 Gunshot-F29, H16  
 Gunshot Residue (GSR)-B80, B90, B112, B190, B192, B193, E39, E115  
 Gunshot Wound-A180, H118  
 Gunshot Wounds of the Head-H50  
 Gunshot Residues-D37

## H

Hair-B126, K47  
 Hair Isoscape-A24  
 Hair Samples-K14  
 Hair Shaft-B150  
 Hair Toxicology-I9  
 Hallucinogens-B38, B134  
 Handguns-B18  
 Hands-On-W18  
 Handwriting-J5, J7, J9  
 Handwriting Classification-J2  
 Handwriting Examination-W17  
 Hanging-E12, H125  
 Hangings-H17  
 Haplotype-B69  
 Hard Work-G31  
 Harris County-I7  
 Head-H16  
 Head Injury-H41  
 Headspace-B88  
 Health Risks-B199  
 Heart Rupture-H72  
 Heat Damage-E79  
 Heated Bone-A64, A174  
 Heavy Truck-D24  
 Helium Intoxication-H58  
 Hemorrhage-H11  
 Hemorrhagic Anemia-H27  
 Hemorrhagic Shock-H23  
 Hemp-B210, B211, B214  
 Heroin-B163  
 High Altitude-A156  
 High Resolution Melt (HRM)-B67  
 Higher Education-E26  
 High-Resolution Melt-B68  
 Histology-A54  
 Histomorphometry-A29, A170  
 Histopathology-W7  
 Historical-BS7  
 History-A31, A32, A117, G1  
 History of Forensic Anthropology-A33, A115  
 History of September 11, 2001-A73  
 Histotaphonomy-A172  
 Hit and Run-E55  
 Holocaust-LW2  
 Home Safety-H85  
 Homelessness-I2  
 Homicide-I10  
 Homicide/Suicide-H1, H121  
 HPTLC-B134  
 HS/SPME-GC/MS-B184  
 Human-K41  
 Human Blood-H114  
 Human Decomposition-A167, B53  
 Human Factors-E104  
 Human Forensic Biology-B40  
 Human Hair-A44  
 Human Identification-A92, A94, B3, B49, B52, B55, G5, G11, G13  
 Human Microbiome-B4  
 Human Performance Toxicology-K36  
 Human Remains Detection-E19  
 Human Remains-F8  
 Human Remains Notification-A79  
 Human Remains Recovery-E54  
 Human Rights-A119, E7, E70, F21, LW5  
 Human Rights Violation-A52  
 Human Scent-B184  
 Human Taphonomy-E59  
 Human Testing-D35  
 Human Tissue Samples-A45  
 Human Trafficking-E34  
 Human Variation-A132  
 Humanitarian Action-A38  
 Humanitarian Forensic Action-A92, E25, E26, E130, E134  
 Humanitarian GIS-A5  
 Hydrogen Sulfide-E2  
 Hyperspectral Imaging-D16, D37  
 Hypothermia-H93

# KEY WORD INDEX



## I

Iatrogenic Changes-H43  
ICP/MS-B94  
ICP/OES-Y12  
Idaho-E74  
Identification-A11, A25, A105, A107, B11, G8, G9, G12, G15, G28, I25  
Identification Match Accuracy-G16  
Identification of Human Remains-A130  
IED-E50, Y8  
Ignitable Liquids-B89, B90, B107, D5  
Immunofluorescence-H32  
Illegally Traded Timber-B187  
Image Analysis-A67, C6, J21, BS5  
Image Editing-B100  
Image Metadata-B180  
Image Modality-A138  
Image Processing-A29  
ImageJ-A29  
Image-Processing Method-B181  
Immediate Revenge Homicide-H90  
Immunoassay-B20  
Immunohistochemistry-B115, H14, H59, H131  
Immunomagnetic Beads-B8  
Impaction Filters-D43  
Impaired Driving-K37  
Impairment-B38, W6  
Implementation-W9  
Implementation and Barriers-E125  
Implicit-F25  
Impostors-E126  
Improved-E128  
Improvised Explosive Devices-B104  
*In Vitro* Biotransformation-K23  
Incarceration-E10  
Inclusion-A121  
Income Threshold-E8  
Inconclusive-F32  
In-Custody-E10  
In-Custody Deaths-H130  
Indentation-J4, J11  
Indented Writing-J22  
Independent Verification and Validation-F5  
Indigenous-E23  
Indirect Trauma-A180  
Individuals Experiencing Homelessness-H120  
Indonesia-H106  
Infant-H8  
Infant Remains-A10  
Infection-H88, W7  
Inference-W10  
Influencing Factors-H122  
Infrared Spectroscopy-B212  
In-House Drug Evidence Testing-H44

## Injury Risk-D40

Injury to Children-H119  
Ink Analysis-J21  
InnoXtract™-B1  
Insanity Defense-F39, I16  
Insect Activity-E20  
Insect Textile Damage-E60  
Insulin-H68  
Intact Protein Analysis-B37  
Intelligence-E127  
Interference-K39  
Interlaboratory Studies-B101  
Inter-Laboratory Variation-E124  
Interlandmark Distances-A164, A166  
Internal Carotid Artery-H66  
Internal Neck Structures-H124  
International Cooperation-A94  
INTERPOL-G8  
Interpretation-B74, W3  
Intimate Partner Homicide-I7  
Intoxication-E9, H68, K51  
Intraoral Scanners-G10  
Intra-Oral Scanning Technique-G7  
Inverted Drop Testing-D27  
Investigation-E28, E127  
Investigative Lead-E103  
Ion Mobility Spectrometry-E90  
Ion Ratios-E51  
iOS® Application Uninstallation-C31  
IR Spectroscopy-E44  
Ischemia-H73  
ISO/IEC ISO 17020:2012-B165  
Isoalleles-B137  
Isotope Analysis-A45  
Istanbul Protocol-E53, BS6  
Italian-H55

## J

Joint Data Analysis-B153  
Journalism-S3  
Junk Science-F36  
Jurisdictional Authority-A89  
Juror Decision Making-F15  
Justice-W15  
Juvenile-A131  
Juvenile Forensics-A145

## K

K-9 Dogs-E63  
Kerosene Oil-D34  
Kinship Analysis-B157, W19  
Kinship Testing-B75  
Korean-A86, A128, B157  
Kratom-Y12  
Krönlein Shot-H89  
Kuman Thong-E92

## L

Laboratory Issues-B78  
Lactogen-K15  
Ladder Logic-C15  
LA-ICP/MS-B124  
Lambda-Cyhalothrin-K15  
Lamotrigine-I12  
Large Bloodstains-H76  
Laser Ablation-B112  
Last Words-D11, D14  
Latent Print Analysis-E104  
Latent Print Comparison-B99, B100, E103  
Latent Prints-B97, B98  
Lateral-Flow Immunoassay-B35  
Latino Gangs-E99  
Laundered Semen Stains-H57  
Law Enforcement-E99  
Law School-University Collaboration-F1  
LC/MS/MS-K17, K21, K25, K30, K34, K40, K46  
LC/qTOF-K2, K58  
LDTD-K22  
Lead Isotopes-B191  
Learning Algorithms-Y4  
Leeches-H114  
Legal-F4  
Legal Standards-A35  
Legislation-K42  
Lessons Learned-A74  
Leukemia-H40  
LGBTQ+-A11  
Library-B200  
Library Matching Error Rate-E78  
LIBS-B120  
License Plate-F28  
LiDAR-A18, E6  
Light Microscopy-B114  
Likelihood Ratio-B188, C11, F16, F17, F18, H47  
Lineup-I25  
Lineup Technique-D12  
Lipoid Pneumonia-H82  
Lipstick-E44  
Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)-K32  
Litigant-J8  
Litigation-F7  
Liver-K8  
Load Marks-D28  
Location Information-F27  
Longevity-B192  
Long-Read DNA Sequencing-B138  
Long-Term Dead-A27  
Low Template Samples-B174  
Ludlings-E98  
Lumbar Disc Injury-D35  
Lung Disease-H82  
Luschka's Bifurcated Rib-H61

## M

Machine Learning-A161, E93  
 Macro Photography-D42  
 Macrohaplotype-B138  
 Maggots-B7  
 Magnetic Resonance Imaging-G23  
 Maltreatment-E71  
 Malware-C16  
 Management of the Dead-E130, E134  
 Mandatory Vaccination-F3  
 Mandible-A124  
 Manner-H63  
 Manner of Death-H31, H133  
 Marfan Syndrome-H127  
 Marijuana-B210, B211,  
 Marine Fauna-G28  
 Mass Disaster-A71  
 Mass Fatality-A76  
 Mass Fatality Incidents-A74  
 Mass Grave-A80, A81, A82, B46, LW5  
 Mass Immunization-F3  
 Mass Spectral Similarity-B30  
 Mass Spectrometry-B21, B22, B23, B32,  
 B37, B131, D3, D18, D44, E43, E50, E101,  
 E112, K20, Y7, Y8  
 Massively Parallel Sequencing-B3, B75,  
 B147, B177  
 Mast Cells-H131  
 Master's Programs-A34  
 Mastoid Process-G33  
 MATLAB®-E102  
 Matricide-H30  
 Maxillary Sinus-A144  
 MDCT-A140  
 MDMB-4en-PINACA-K5  
 Mechanical Asphyxia-I11  
 Mechanical Trauma-H48  
 Meconium-K32, K47  
 Media-S3  
 Medical Biobanks-F21  
 Medical Examiner-A75, H117  
 Medical Examiner and Coroner  
 Offices-E123  
 Medical Examiner and Coroner  
 Systems-H38  
 Medical Examiners-E32  
 Medical Examiners and Coroners-E31  
 Medical Liability-E4  
 Medical Students-E117  
 Medicolegal-A117  
 Medicolegal Death Investigation-E22, E121,  
 H38, H103, H117, K53  
 Medicolegal Death Investigation  
 Systems-E24  
 Medicolegal Death Investigators-I14  
 Medicolegal Implications-H87

Medicolegal Practitioner-A89  
 Medicolegal Systems-E25, H6  
 Medieval Violence-A59  
 Members-A32  
 Membership-F1  
 Memory Forensics-C33  
 Menopause-A62  
 Menstrual Blood-B65  
 Mental Health-I24  
 Mental Illness-H134, I20  
 Mentoring-B83, E73  
 Mentorship-H39  
 Messaging App Evidence-F26  
 Metabolism-K11  
 Metal Particles-B121  
 Metals-K7  
 Methadone-H23  
 Methemoglobinemia-H135  
 Method Development-B50  
 Method Development and Training-A81  
 Method Optimization-A161  
 Method Validation-K12  
 Methodology-A20  
 Methods-J16  
 Methods Comparison-A126  
 MeV-SIMS-J20  
 Microanalysis-D48  
 Microbial Ecology-B54  
 Microbial Succession-A68, B53  
 Microbiome-B44, B45, B58, B185, Y10  
 Micro-CT-B108  
 Microextraction-D2  
 Microfluidic Paper-Based Devices  
 (µPADs)-K55  
 Microfluidics-B155, E45, E89  
 Microhaplotypes-B75, B150, B157  
 Micromanipulation-B140  
 Micromorphometric Analysis-B104  
 Microscopy-B116, E83  
 Microsoft® Teams-C23  
 Microwaves-B76  
 Migrant-A93  
 Migration-A23  
 Mildred Trotter-A150  
 Mimics-H89  
 Mineral Oil-H82  
 MiRNA-B62, B63, E35  
 MiRNA Stability-B62  
 MiSeq® FGx™-B173  
 Missing Persons-A25, A88, B74, W19  
 Mitochondrial DNA-B177  
 Mitochondrial Genome Sequencing-E16  
 Mitragynine-K57  
 Mixture Analysis-B137  
 Mixture Deconvolution-B144  
 Mixture Detection-B68  
 Mixture Interpretation-B139, B143

Mixture Screening-B67  
 Mixtures-B135, B140, B174  
 MNI-A10  
 Mobile-B11  
 Mobile Device Forensics-F26  
 Mobile Forensics-C23, C29, C32 Mock  
 Fingerprint-B77  
 Modified Bisulfite Treatment-B10  
 Mold-B194  
 Molecular Modeling-K31  
 Morphing-Y5  
 Morphological Evaluation-A144  
 Morphometrics-A22, E105  
 Morphoscopic Traits-A100  
 Mortality Review-H120  
 Mother-Son Bond-H30  
 Motor Vehicle Collision-H2 Motorcycle  
 Accident-H4  
 Mounting Medium-B114  
 MSCT-A143  
 MtDNA-B158  
 Mule-E27  
 Multidimensional Approach-C12, E119  
 Multidisciplinary Age Estimation-E34  
 Multidisciplinary Approach-E17, E92  
 Multi-Isotope Analysis-A24, A30  
 Multimedia-C28  
 Multimedia Forensics-C6, C10  
 Multiple Firearm Suicide-H50  
 Multiple Stab Wound-H77  
 Multivariate Analysis-B112, E82  
 Mumbai-H105  
 Mummification-A51  
 Mutual Homicide-H90  
 Mycoses-H88  
 Myocardial Bridging-E5  
 Myocardial Infarction-H3, H62  
 Myocardial Tunneling-E5  
 Myocarditis-H99  
 Myositis Ossificans Circumscripta-A148  
 Myths-H35

## N

Nanofibers-B31  
 Nanoparticles-B29, E39  
 Nanopore® Sequencing-B179  
 Native American Subpopulations-F14  
 Natural Language Processing-D11  
 Near-Hanging Victims-H18  
 Necrobiome-E58  
 Necropolitics-A109  
 Necroviolence-A109, A110  
 Neglect-E117  
 Negligence-G4  
 Neonatal Deaths-H34  
 Neonaticide-I4  
 Network Analysis-A7, A8



# KEY WORD INDEX



Network Forensics-C15  
Neurobiology-W16  
Neurodevelopmental Disability-I3  
New Psychoactive Substances (NPS)-K3, K5, K12  
Next Generation Sequencing (NGS)-B42, B63, B137, B151, B173, B174, B176, K23  
NFLIS-B202, B204  
NFPA 921-F12  
NGS-B39, B139  
NIBRS-B204  
Nomenclature-B41, K53  
Non-Human-A13  
Non-Invasive Sensing-E91  
Non-Specific Stress Indicators-A12  
Novel-K45  
Novel Psychoactive Substance-B129, K43, K44, W20  
Novel Synthetic Opioids-K43, W20  
NSAIDs-E108  
(NAATs)-B155  
Nurse-Run Clinics-E66

## O

Obesity-H126  
Object-C24  
Objectivity-A118  
Observational Science-G27  
Odontology-F13, G15, G27, G29, G30  
Odor-E46, F8  
Offender Psychology-C35  
Olfaction-E63  
Olfactory System-H100  
Online Survey-B42  
Ontogeny-A164, A166  
Open Case Investigation-A87  
Open Source-A82  
Open-Source Digital Forensics Tools-C14  
Opinions-J9  
Opioid Use-A16  
Opium-B34  
Optical Techniques-J20  
Oral Fluid-K21, K25, K28, K30, K39, K46,  
Organic Gunshot Residue-B189  
OSAC-A39, B40, B91, B96, B118, B127, C20, E120, E121, H36, H37, J6  
OSAC for Forensic Science-F20  
Osteoarchaeology-A59  
Osteoarthritis-A125  
Osteological Sex-A99  
Osteology-B59  
Outburst-I5  
Outdoor Crime Scene Reconstruction-A84  
Outdoor Decomposition Facilities-A36  
Outsourcing-E31, E32  
Overdose-E4, H103, K41

Overkill-H30  
Overlap-B135  
Oxford Nanopore Technology-B64  
Oxidative Stress-K19

## P

Pair-Matching-A85  
Palate Shape-A102, A126  
Palyology-E81  
Pandemic-E67, H94  
Panoramic Radiograph-G25  
*Papaver Somniferum*-B163  
Paper-J23  
Paper Examination-J4  
Paper Spray Ionization-Y7, Y9, Y11  
Parachute Anthropology-A120  
Paraphilic Disorders-I6  
Particles-D48  
Partnerships-E65  
Part-to-Part Comparison-A153  
Pathology-E119, H46, H64, H115  
Patient Care-E72  
Pattern Comparison Disciplines-E125  
Pattern Evidence-D8  
Pattern Matching-D9, D38, E95  
Pattern of Life Analysis-C12  
Pattern Recognition-B89, E93, J24  
PCP-B133  
PCR-B154  
PCR Inhibition-B176  
PDF-417-J14  
PED Glass-B110  
Pedagogy-A98  
Pedestrian Death-E55  
Pediatric-H41, H118  
Peeling-B144  
Pen Pressure-J2  
Pentagon Attack-A72  
Pentobarbital-H26  
Perceptions-B102  
Performance Assessment-D49  
Perimortem Trauma-A59  
Peroxide-Based Explosives-E50, Y8  
Persistence-B198, E84  
Personal Identification-A142  
Personality Disorder-I4  
Pet Food/Foodstuffs-E41  
Pharmaceuticals-F23  
Pharmacokinetics-K57  
Phenibut-K1  
Phenobarbital-H26  
Phenomics-E112  
Phenotypic Variation-A165  
Pheochromocytoma-H24  
Phosphine-K18  
Photocopy-J13  
Photogrammetry-A6  
Photograph-LW4  
Photographic Comparison-BS5  
Photography-H46  
Phylogenetics-A7  
Physical Fits-B101, B168  
Pig Latin-E98  
PIM-A57  
Pit Bull-H119  
PLC-C33  
Plug-D33  
PMCT-E61, H60, H125  
PMI-A61, B46, E18, H71, H75  
PMI Estimation-H122  
Poisoning-K18  
Polarized Light Microscopy-B186  
Police Custody Death-H129  
Police-Involved-E10  
Police-Involved Deaths-H130  
Policy-W6  
Pollen-E81  
Polydrug Overdoses-W5  
Polymer-Coated Bullets-B92  
Polytrauma-H65  
Poppy-B34  
Population Affiliation Estimation-A104, A147  
Population Affinity-A102, A165, B69  
Population Study-B188  
Portable Instruments-B36  
Portable NIR Spectrometer-B201  
Positional Asphyxia -H129  
Positional Isomers-B28  
Positive Identification-A138  
Post-Conviction-W15  
Post-Conviction DNA Testing-F1  
Postformation Changes-G35  
Postmortem-K6, K49, K52, K54  
Postmortem Computed Tomography-E92, H10, H132  
Postmortem CT-H98  
Postmortem CT Scan-H43  
Postmortem Damage-H74  
Postmortem Ethanol Formation-K50  
Postmortem Imaging-H8  
Postmortem Interval (PMI)-A51, A55, A60, A65, A68, B44, B45, B178, E58, H54, H107, H109, H111, H112, Y10, W8  
Postmortem Investigation-E35, H34, H75  
Postmortem Lividity-F2, H56  
Postmortem Magnetic Resonance Imaging-E42  
Postmortem Microbiology-H113  
Postmortem Swab-H32, H96  
Postmortem Testing-H104  
Postmortem Toxicology-H44, K3, K4  
Postmortem-CT

Post-Traumatic Stress Disorder-F33  
Practices and Procedures-F5  
Praxis-A98  
Preallocated-C25  
Predators-H74  
Predicting Drug Threats-W5  
Prediction Modeling-B67  
Preparedness-E67  
Preservation-E122  
Pressure Cycling Technology-B61  
Pressure-Relief Device-D15  
Presumption of Innocence-F16  
Presumptive Test-B164  
Prevention-H85  
Principal Component Analysis-E41  
Print Evidence-F15  
Printing-J13  
Privacy-F27, F28  
Probabilistic Analysis-B148  
Probabilistic Genotyping-B18, B139, B141,  
B142, B143, B153, E124, F18  
Probabilistic Interpretation-B193  
Probability-F17  
Probable Cause-F36  
Processed Fur-E21  
Professional Training and Development-  
E133  
Professionalization-A34, A41, A95  
Proficiency Testing-E96, E118  
Program Evaluation-H120  
Prone Restraint Cardiac Arrest-H130  
Protection-D24  
Protection of the Dead-E25  
Protein Degradation-H71, H122  
Proteomic Genotyping-B55, B56  
Proteomics-E21  
Provenance-A30  
Provenancing-A168  
Proximal Femur-A163  
Pseudoaneurysm Rupture-H27  
Pseudo-Color Heat Maps-B24  
Pseudoscience-LW3  
Psychopath-I22  
Psychosis-I10  
Psychotic Crisis-H28  
Psychotic Homicide-I8  
PTSD-W21  
PTSD-C-W21  
Pubertal Age-A137  
Puberty-A131  
Pubic Bone-A127  
Pubic Symphysis-A128, A152  
Public Health-E14  
Pull-Up Peaks-B136  
Pyrosequencing-B65

## Q

---

Qatar-H6  
QPCR-B161  
QR Code-J14  
Quality-W11  
Quality Metrics-B100  
Quantification-B108  
Quantitative Chemical Analysis-B106  
Quantitative Methods-E125  
QuEChERS-B21, Y9  
Questioned Digital Documents-C27  
Questioned Documents-J3, J6, J10, J19, J21  
Questioned Document Examination-J1

## R

---

Race-F25  
Radiographic Comparison-A142  
Radiography-H42  
Radiological Evidence-H33  
Radiologic-Pathologic Correlation-H97  
Radiology-H18  
Railway Fatalities-H7  
Raman-E39  
Raman Microscopy-B125, D4  
Raman Spectroscopy-B60, B167, E108, E114  
Random Forest Model-A68  
Rapid DNA-B51, B76, H45  
Rapidly Mutating-B160  
RDX-B103  
Readmitted-I21  
Real-Time PCR-B68  
Rear Impact-D25  
Recombinant Proteins-Y2  
Reconstruction-C27  
Recovery-C24  
Recovery of Fingerprints-E111  
RED-BLEU-B195  
Region-Specific-A156  
Regression Models-A155  
Relatedness-B135, F18  
Relationship Testing-B142  
Relevance-F22  
Reliability-F17  
Remote Sensing-A83  
REMS-I19  
Repatriation-A21  
Representation-A117, C25  
Research and Development-F22  
Research Ethics-A120  
Research Methods-B202  
Resiliency-E131  
Respiratory Depression-K57  
Response-BS7

Restraint Physiology-H129  
Restraint-Related Asphyxia-H128  
Retention-A121  
Retention Indices-B133  
Retinal Hemorrhages-B115  
Reverse Transcription Polymerase Chain  
Reaction (RT-PCR)-E45  
Rib Fusion-H61  
Rib Trauma-A177  
Rinse-and-Swab-B57  
Risk of Violence/Recidivism-I20  
Robotic Extraction-B58  
Role Development-E69  
Roles-E65  
Rollover Crash-D20  
Root-B84  
Root Translucency-G35  
ROPS-D27  
ROV-D27  
Rubber -D33  
Rubber Stamps-J22  
Rule 16-J8  
Rule 26-J8  
Rupture of Varicose Veins-H76  
Rural/Underserved-E73  
RV Crashworthiness-D23

## S

---

Sacroiliac Joint-A2  
Saliva-E85  
Same-Sex Violence-H92  
Sample Collection-B13  
Sample Size-B182  
Sand Analysis-D50  
SANE-E74  
SANE—A Practice-E73  
Saree-D31  
SARS-CoV-2-E17, F2, H59, H95, H96, H99,  
H100  
SARS-CoV-2 Sequencing-E16  
Saw-A46, A48  
SCADA Forensics-C15  
Scarification-E34  
Scavengers-E29  
Scavenging-A47, A69  
Scene Documentation-A6  
Scene Investigation-E22  
Scene Significance-W18  
Schema Therapy-I1  
Science Communication-A42, F19  
Scientific Advocacy-A90  
Scientific Error-A150  
Score Likelihood Ratios-Y4  
Score-Based Likelihood Ratios-C2, Y6  
Screen Protector Glass-B110

# KEY WORD INDEX



- Screwdriver-H77  
Scrutiny-S3  
Scuba Diving-H10, H49  
Search Structure-A157  
Seat and Belt Failure-D23  
Seat Back-D25  
Seat Belt-D28  
Seat Failure-D29  
Secret Writing-J15  
Sectioning Points-A122  
Seized Drug Analysis-B203, B212  
Seized Drugs-B30, B127, B128, B199, B206, B208  
Seized Samples-B213  
Self-Hosting-C13  
Selfie Images-G6  
Self-Inflicted Gunshot Wounds-H52  
Sella Turcica-A15  
SEM-B192, H84  
SEM/EDS-B111, B121  
SEM/EDX-G17  
Semen Identification-Y2  
Semenogelin-Y2  
Semi-Automatic Landmark Detection-A85  
Semi-Permeable Membrane Device-D17  
Sensitivity-B182  
Sensitivity Analysis-B88  
Sepsis-H15  
Sequencing-B41  
Sequential-E109  
Serial-F149  
Serial Killer-G9  
Serology-B37  
SERS-B29, B31, B169  
Service-Learning Social Justice Program-F1  
Severe Mental Illness-I3  
Sex-A136  
Sex Estimation-A99, A111, A113, A131, A135, A141, A154  
Sex Offender-I23  
Sextortion-C35  
Sexual Assault-B4, B8, B62, B81, E77, H35, H92, I17  
Sexual Assault Case Prosecutions-E37  
Sexual Assault Evidence Collection Kit-E74  
Sexual Assault Kit Legislation-E37  
Sexual Assault Kits-E36, E37  
Sexual Assault Medical Forensic Examination-E36, E77  
Sexual Assault Nurse Examiner-E76  
Sexual Deviancy-C34  
Sexual Dimorphism-G33  
Sexual Violence-E76  
Shaken Baby Syndrome-H5  
Shaken Elderly Syndrome-H86  
Sharing-E127  
Sharp Force Injuries-H70, H90  
Sharp Force Trauma-A46, A48, A58  
Shooting Investigations-A191  
Shooting Reconstruction-B80, B93  
Short Tandem Repeats-B160, B175  
Shotgun-D36, F10  
Shotgun Ammunition-D36, F10  
Shotgun Myths-D36, F10  
ShotSpotter®-F29, F30  
Shredded Documents-J10  
Sibling Fingerprints-E106  
Sigmoid Volvulus-I13  
Signature Examination-W17  
Simulation-D46  
Single Cells-B140  
Single Nucleotide Polymorphisms-B55, B175  
Skeletal Biological Profile-A49  
Skeletal Biology-A16  
Skeletal Collection Management-A21  
Skeletal Collections-A14  
Skeletal Lesions-H9  
Skeletal Metrics-A139  
Skeletal Mid-Face-A101  
Skeletal Profile-A148  
Skeletal Remains-B49  
Skeletal Trauma-A63, A178  
Skeletalization-H74  
Skin Imaging-E42  
Skin Injuries-E42  
Skin Lesions-D42  
Smart Phone-E1  
Smoke-B132  
SNP Genotyping-B147  
SNPs-B146, B150  
Soaking-B57  
Sober Living Facility-K1  
Social Media-F27  
Social Reintegration-I19  
Social Responsibility-F2  
Social Science-A88  
Sociology-F11  
Sociopath-I22  
Sodium Bisulfite Conversion-B66  
Sodium Nitrite-H135  
Sodium Rhodizonate-B80  
Software-B208  
Soil-B2, E87  
Soil Chemistry-B53  
Solid Phase Microextraction-B106  
Solid-Phase Extraction-K24  
Sonoran Desert-A66  
Sorting-A9  
South Indian Population-A28  
South Korea-F34  
Southern Nevada-A47  
Sparse-C25  
Spatial Analyses-A26  
Speaker Identification-Y5  
Special Session-S2  
Specialist-B79  
Specialty Advancement-E69  
Species Differentiation-A174  
Spectrophotometric Analysis-F2, H56  
Spectroscopy-B28  
Spermatozoa-B8  
SPME-B207  
SPME-GC/MS-B26, E40, E41  
SQLite-C30  
Square Wave Screening Test-K27  
Stab Cuts-E60  
Stability-K28  
Stable Isotope Analysis-A24  
Stable Isotope Forensics-A168  
Stable Isotope Ratio Analysis-A3  
Stable Isotopes-A20, A167  
Staged Suicide-B180  
Staircase-H25  
Standard Operating Procedures (SOPs)-F33  
Standards-A39, B40, B91, B96, B118, B127, B203, C20, E120, E121, F4, F5, F20, G32, H36, H37, J6, J12, K33, BS1, W6, W9  
Starvation-H133  
State Policy-A90  
Statistical Analysis-C11  
Statistical Comparison-B129  
Statistical Variability and Uncertainty of Measurement-K59  
Statistical Weight-F14  
Statistics-E104, J15  
Stature Estimation-A28  
Sterebral Fusion-A129  
Stimulants-K46  
Storage-E122  
Storage Conditions-K10  
STR-B41, B143, B154, B177, B179  
STR DNA Codis-Eligible Profiles-E77  
STR Profiling-B6  
Strangulation-E27  
Strengthening Tips  
Streptococcus-H15  
Stress-G31  
Striation Pattern-A56  
STRmix™-B15  
Strontium-A44  
Structural Violence-A26  
Subadult-C4, G21  
Subaerial Weathering-W8  
Subdural Hematoma-H86  
Submerged Bone Degradation-A159  
Submission Form-B86  
Sub-Specific Discriminate Shape Matrices-A101  
Substance Use-I2, I9  
Sub-Threshold-F10

Succession-H112  
 Sudan Black-E110  
 Sudden and Unexpected Death-H24  
 Sudden Cardiac Death-E13, H22, H79  
 Sudden Child Death-H14  
 Sudden Death-H76, H80  
 Sudden Unexpected Death in Childhood-H102  
 Sudden Unexpected Death in Infancy-H102  
 Sudden Unintended Acceleration-D22  
 SUDEP-H29  
 Suicidal Gunshot Wound-H2  
 Suicide-E2, E8, E12, E14, H26, H52, H68, H77, H133, H134, H135, I18  
 Suicide Note-D14  
 Suicide Pact-H1  
 Suicides-H17  
 Superstition-H35  
 Surface-Enhanced Raman Spectroscopy-K27  
 Surveillance-F28  
 Survivor-LW2  
 Suture-D30  
 Swab-E85  
 Sweat Analysis-E91  
 SWGDAM-B39  
 Sydney Declaration-B85  
 Syntax-D10, D12  
 Syntech Ammunition-B92  
 Synthetic Cannabinoid-K31, K42, K49  
 Synthetic Cathinones-B31, K3  
 Synthetic Opioids-K52  
 Synthetic Urine-K56  
 Syringes-B27  
 Systematic Comparison-B101

## T

TA3-A49  
 Tablets-B206  
 Takayasu Arteritis-H3  
 Takeout™-C26  
 Tanatochronology-H83  
 Taphonomy-A36, A43, A55, A66, A69, A157, A173, B47, B51, B178, H108, H109  
 Task Relevance-B99  
 Taxonomy-K53  
 TBS (Total Body Score)-H107  
 TDS (Total Decomposition Score)-H107  
 Tear Damage-E60  
 Technology-F22  
 TEM-A57  
 Terrorism-E66  
 Tert-Amyl Alcohol-K51  
 Testimony-BS2  
 Testosterone-B214  
 Testosterone and Dihydrotestosterone-B156

Text Analysis-A8  
 Textiles-B168  
 (Thanato)microbiome-B46  
 THCA Synthase Gene-B25  
 Thermal Alteration-A58, A162  
 Thermal Cycler-B154  
 Thermal Damage-B197  
 Thermal Desorption-B87  
 Thermal Paper-B117  
 Third Molar-A122, G22, G24  
 Third Molar Development-G25  
 Thread Count-H57  
 Thymic Death-H79  
 Tibia-A150  
 Time Estimation-C8  
 Time Since Death-A50, F2, H56  
 Time Since Deposition-E114  
 Time Since Injury-A53  
 Time-Resolved Spectroscopy-D45  
 Tires-B125  
 Toner-J3  
 Tonsillectomy-H87  
 Tools-C23  
 Tools and Techniques Catalog-C22  
 Torso-D31  
 Torture-E68, BS6  
 Total Reflection X-Ray Fluorescence Spectrometry-B190  
 Touch DNA-B13, B14, B16, B19, B77, B156, F19  
 Touch Evidence-B17  
 Toxic Adulterants-B199, K60  
 Toxic Shock Syndrome-H15  
 Toxicology-H13, K8, K25, K37, K41, K42  
 Toxicology Findings-H28  
 Toxicology of Aggression-W16  
 Toxicology Testing-K26  
 Trace-B85, E52  
 Trace Elements-B94  
 Trace Evidence-B105, B125, E82  
 Trace Materials-B118  
 Traffic Accident Reconstruction for Elderly Driver-D39  
 Trail Making Test-D39  
 Train Accident-H7  
 Training-E116, J19  
 Tramadol-K54  
 Trans Men-A112  
 Transfer-B198, E52  
 Transfer by Touch-B121  
 Transfer DNA-B12, B15, B18  
 Transfer Learning-B24  
 Transgender-A107, A110, A111  
 Transgender Hormone Therapy-A149  
 Transgender Identification-A112  
 Transgender Violence-E7  
 Transnational Terrorism-D7

Trauma-A148, A176, D41, H66, W7  
 Trauma Analysis-A46, A52, A62, A177, A178  
 Traumatic Brain Injury-H64  
 Trazodone-K4  
 Treatment-I23  
 Trends-K54  
 Triad-H5  
 Triage-H40  
 Tropics-H108  
 True and False Positive Rates-B82  
 Truth-E68  
 Tryptamines-B38, B134  
 Twins-E107

## U

UHPLC-PDA/Qda-B38  
 Ulceration-H69  
 ULTR-J1  
 Ultrastructure-A57  
 Ultraviolet-Visible Microspectrophotometry-B105  
 Umbilical Cord-K22  
 Unattended-E56  
 Unbiased-E68  
 Uncertainty Quantification-E97  
 Unconscious Bias-E133  
 Undetermined-E22  
 Unidentified-G26  
 Unidentified Decedent-A91  
 Unidentified Human Remains-A27, A89, A90, E123, H45  
 Unidentified Migrants-A12  
 Unidentified Persons-A23  
 Unidentified Remains-B69  
 United Kingdom-A95, E59  
 United States-Mexico Border-A23  
 Unsafe Vehicle Interior-D23  
 Urine Adulteration-K55  
 User Activity-C29

## V

Vaccination-F2, H59  
 Vaccine Adverse Effects-H78  
 Vaccine-Related Complications-H78  
 Vacuum Dispersion-B167  
 Vacuum Ultraviolet Spectroscopy-E80  
 Validation-B20, B109, B141, C1, C21, D6, D46  
 Validation Testing-D8, D13  
 Validity-F13  
 Validity as Applied-F31  
 Vaping-W5  
 Vapor Detection-B207, E90  
 Vapor Sampling-D2  
 Varicose Veins-H69

# KEY WORD INDEX



Vehicle Inspection-D28  
Vehicles-E56  
Venous Grafts-H27  
Verification-C21, D46, E118  
Veterinary-E61  
Viber Forensics-C31  
Vicarious Trauma-W21  
Victim Identification-A78  
Video Manipulation-C3  
Violence Against Women-H121  
Violent Compression of the Neck-H124  
Viral Load-H95  
Viral Replication-H95  
Viridentopsy-G11  
Virome-B52  
Virtopsy-H132  
Virtual-F24  
Virtual Anthropology-A2, A100, A143  
Virtual Comparison Microscopy-B109  
Virtual Reality-E130, I23  
Virtual Reality Training Simulations-E134  
Virtualization-C13  
Visual Impression-J24  
Vitality-H11  
VOCs-B26, B185  
Volatiles Organic Compounds (VOCs)-B36,  
B196, H54, H113

## W

---

Weathering-A123, B107, D5, E51  
Weight of Evidence-Y6  
Wilderness-E28  
Wildlife Forensics-H37  
Wilton M. Krogman-A31  
Woman-to-Woman Assault-H92  
Work Accident-H48  
Workforce-H116, I14  
Workforce and Talent Pipeline-H38  
Working Group Standards-B78  
Workplace Drug Testing-K56  
Work-Related Stress-I14  
World Trade Center-A78  
World War II-G3  
Wound Vitality-H19  
Writing Circumstances-J18  
Writing Tools-J18  
Wrongful Conviction-F34  
WTC-A71

## X

---

XRF-D50  
XRPD-B200

## Y

---

Y-Chromosome-B159, B160  
YFSF-S2  
Younger Individuals-E13  
Youth Violence-E99  
Y-STR-B74  
Y-STR Testing-F14

## Z

---

Zinc Phosphide-K6  
Zodiac Killer-BS3  
Zooarchaeology-A22  
Zoom®-C16

The presenting author index can provide a quick reference to find when and in what section presenting authors are scheduled to present at the 2022 Annual Scientific Conference. The reference table below assists you in finding the section in which the presentation will be given. Letters correspond to the scientific discipline/section in which the presentation is being made while the number corresponds to the numerical sequence of the presentation within the section.

|   |                                |    |                                 |
|---|--------------------------------|----|---------------------------------|
| A | Anthropology                   | I  | Psychiatry & Behavioral Science |
| B | Criminalistics                 | J  | Questioned Documents            |
| C | Digital & Multimedia Sciences  | K  | Toxicology                      |
| D | Engineering & Applied Sciences | LW | Last Word Society               |
| E | General                        | BS | Breakfast Seminar               |
| F | Jurisprudence                  | L  | Luncheon Seminar                |
| G | Odontology                     | S  | Special Session                 |
| H | Pathology/Biology              | W  | Workshop                        |

## A

Aardema, Adrienne-H85  
 Adams, Bradley-A78  
 Adams, Donovan-A42  
 Adedayo, Oluwasola Mary-C27  
 Adelizzi, Betsy-E22  
 Adeoye, Alexandra-B131  
 Adolphi, Natalie L.-W12  
 Adserias-Garriga, Joe-W14, G35  
 Afra, Kamar-A118  
 Aggazzotti, Cristina-D11, D14  
 Agyemang, Ariana V.-A10  
 Akbar Mohammed-A151  
 Akiba, Norimitsu-D16  
 Akiyama, Cliff-E99  
 Akridge, Scott-W16  
 Al Hinnawi, Sarah-H35, H92  
 Alawadhi, Abdullah-A83  
 Albert-Bolinski, Geoffrey-F23  
 Aldy, Kim N.-W5  
 Alexander, Lauryn-B122  
 Al-Hetlani, Entesar-D18, D44  
 Alim, Denys-H106  
 Almela, Angela-D10  
 AlQahtani, Sakher-W14  
 Alsop, Kirsty-B108  
 Alzumaili, Bayan-H77  
 Ambrosius, Teresa L.-BS1, W9  
 Amin, Awais-E102  
 Amin, Mohamed O.-E101, E108  
 Amir Nadeem, Muhammad-K18  
 Ammer, Saskia T.M.-A44, A45  
 Anaya, Yessenia-B9  
 Anderson, Jeanne-BS3  
 Andre, Victoria-B172  
 Andrews, Zachary-B168 Andronowski, Janna-A170  
 Aneja Pursuing, Palek, PhD-Y5  
 Angel, Miriam S.-W4  
 Annas, George David-I16  
 Aquila, Isabella-D41, E1, E12, H32, H96  
 Archibald, Emily-A50  
 Armelli, Kerianne-A17  
 Armstrong, Melanie-F35  
 Aronson, Libby-H63

Aschheim, Kenneth-G18, G32  
 Atkinson, Antonia-B12  
 Atkinson, Kristen M.-B195  
 Attaway, Peyton-E32  
 Aungst, Jenna-I18  
 Avellaneda, Lucio-B173  
 Avent, Patricia-A138  
 Awadalla, Mohamed-J18  
 Ayala, Jessica L.-K58  
 Ayer, Beighley-B14  
 Ayers, Richard-C30  
 Aysa Bravo, Abraham-W11

## B

Baber, Sydney-E113  
 Baig, Aneesa-H43 Baigent, Christiane-A156 Baker, Andrew M.-H115 Balbo, Arianna-H49 Baldwin, Angela-E5, H8 Banks, Elsie-Kay-E19 Barac, Marko-J20 Baronti, Arianna-H67 Baumann, Michael R.-W20 Bayer-Broring, Carolyn-J14 Beasley, Melanie-A167 Bennett, Krista-A133 Berg, Gregory E.-A39 Berishaj, Kelly-E69 Berry, Debra-H133 Berry, Jennifer-B88 Bertozzi, Giuseppe-E42, H11 Beuning, Cheryl-K20 Bever, Robert-B146 Bhaloo, Zain-S2 Bhandari, Anjali-B94 Bhula, Avni-G33 Biddle, Giana-E49, E91 Biddle, Keith-B59 Bieber, Frederick R.-W19 Biedrzyski, Lynda-W20 Bierly, Jolene-K36 Bini, Giulia-E13 BinMarzook, Khalid-H6 Bishop, Brett M.D-W17

Bishop, Lauren-B35  
 Black, Emily-E36  
 Blout, Hillary-W15  
 Bodini, Sofia-B121  
 Boggess, Kayce-Y10  
 Bolt, Haley-E110  
 Bonci, Camilla-E4  
 Bonner, Miquellie-D4  
 Borrini, Matteo-A52, A144, LW3  
 Bory, Jason R.-W5  
 Bosco, Caterina-I10  
 Bosse, Rylee-E40  
 Botch-Jones, Sabra R.-W6  
 Bothma, Pearl-A147  
 Bouderdaben, Fatimah A.-A119  
 Bouju Davies, Lauren-E78  
 Bourgeault, Angelica-A111  
 Bowling, Herschel-C23  
 Boyd, Donna-A176  
 Bradshaw, Brenda-G16 Brandt-Litavec, Helen-A2 Brenner, Charles-F10 Brodeur, Amy-B64, B194 Brosz, Helmut-BS6, D33 Brown, Savannah-B167 Buffalini, Cole-B102 Bugelli, Valentina-H10, H107 Burcham, Zachary-B44 Buresh, Michael-F28 Burnett, Bryan-B180 Burns, Kelly-H81 Burrill, Julie-F19 Buscaglia, JoAnn-B79 Butler, John M.-W2 Buzzini, Patrick-B85 Byrd, John-A72

## C

Cabelus, Nancy-BS7, E70  
 Cablk, Mary-F8  
 Cale, Cynthia-B18  
 Calvano, Mariagrazia-F2, H56  
 Camarota, Braeden-E79  
 Campbell, Jessica L.-A142  
 Candelario-Gorbea, Mariel-H45

# PRESENTING AUTHOR INDEX



Canellas, Marc-F5  
Cano, Kris-W9  
Cantos Gómez, Pascual-D13  
Cantu, Cesar-B7  
Capello, Francesca-E34  
Capistran, Briana-B87  
Capasso, Emanuele-H83  
Cappas, Veronica-B185, H114  
Carabellese, Felice F.-W16  
Cardia, Luigi-F3  
Carney, Amy-BS7, E71  
Carney, John-F26  
Carrillo, Kayli-B109  
Carriquiry, Alicia-E125  
Carter, Clayton-H42  
Carter, David O.-H108  
Carter, Madison-B198  
Caruso, James L.-S1  
Cataldo-Ramirez, Chelsea-A139  
Cauley, Austin-C16  
Cavlak, Mehmet-H121  
Cazzato, Francesca-H95  
Cecchetti, Matteo-H1  
Cerrito, Paola-G17  
Cervantes, Marianna-A134  
Chambers, Megan-B209  
Chany, Christopher-B192  
Chapman, Abby-E33  
Chaski, Carole E.-D8, D12  
Chaudhary, Muhammad-B34, B164, E48  
Cheng, Kevin-B139, B143  
Cheng, Michael-I2  
Cheng, Ya-Chih-B162, B211  
Chepren, Stacey-E55  
Cho, Sohee-B157  
Christensen, Angi-A169  
Christy, Brenda B.-W3, B90  
Chu, Elaine Y.-A121  
Chu, Joyce-A55  
Chung, Grace-G26  
Ciavarella, Mauro-H25  
Cieri, Grace-K37  
Cirillo, Laura-A108  
Ciruzzi, Maria-F21  
Claassen, Brittany-B182  
Clemmons, Chaunesey M.J.-A114  
Coberly, Samantha-A180  
Cohen, Arcelia-C18  
Cole, Mary-A29  
Cole, Stephanie-A131  
Collins, Cheyenne-A157  
Collord-Stalder, Hailey-A58  
Collura, Kaitlin-K8  
Concato, Monica-H135  
Concheiro-Guisán, Marta-K21, K47  
Connon, Catherine Cupples-B161  
Conte, Jillian-B13  
Coreelman, Heleen-G23  
Corradi, Luciene-G13  
Costantino, Andrea-H65  
Cottnam, Georgia-E112  
Craig, Alba-B15  
Creedy, James-B181  
Croom, Nicole A.-H120  
Crosby, James-E62

Cross, Hannah-A64, A174  
Crowder, Christian-W14  
Cuchara, Breanna-H94  
Cukrov-Bezbradica, Slavena-B25  
Culbertson, Hillary-B200  
Cunningham, Lloyd W.-W17  
Currie, Krista A.-W15  
Curtotti, Donatella-F33  
Czado, Natalia-B19

## D

Daly, Stephen-B92  
Dalzell, Kourtney-B113  
D'Antoni, Leighton-B149  
Dar, Mariam-D6  
Das, Siddhartha-A28  
David, Micki-A179  
Davidson, Marion-A103  
Davies, Keir-E63  
Davis, Kymeri-E64  
Davis, Lucy-S1  
Davis, Reed-A16  
Davis, Samantha-B8  
De Alcaraz-Fossoul, Josep-E105  
de Boer, Hans-H47  
De Cree, Theresa-A61  
De Crisce, Dean M.-W16  
De Luca, Benedetta Pia-F2  
De Simone, Stefania-E35, H14, H100  
Decker, Summer J.-W12, A153  
Dedouit, Fabrice-W12  
Deel, Heather-B45  
Deem, Emily-B3  
deJong, Joyce L.-H115  
Del Duca, Fabio-H69  
Delelio, Danielle-A62  
Delgado, Thomas-A109  
Delger, Dana-F7  
DeMenna, Gerald-L1  
Demmler, Morgan-D3  
DePaolo, Frank-A74  
Depp, Randi-A14  
Deveci, Cemyigit-H21  
Devers, Kelly G.-W7  
Devlin, Joanne-A41  
Diaz, Ramon-B165  
Dickinson, Gregory-H61  
Dignan, Leah-B155, E89  
Dirkmaat, Dennis C.-A73, A84  
Dominguez, Victoria M.-W14  
Donfack, Joseph-B114  
D'Orazio, Amanda L.-W6  
Doro, Kennedy-A80  
Downs, JCU-S3  
Dozier, Katherine-K49  
Dragovic, Ljubisa J.-W10  
Duma, Stefano-H55  
Dumais, Alexandre-W16  
Dunn, Francesca-A137  
Dunn, Rhian-A8  
Duran, Kristine-E107  
Dwyer, Isis-A116  
Dykstra, Josiah-C17

## E

Ebert, Lars C.-W12, H132  
Edegebe, Joy-H26  
Edgar, Heather-A104  
Eduardoff, Mayra-W19  
Eisenhart, Linda-J7, J13  
Eldridge, Heidi-S1, B96, B97  
Eliopoulos, Constantine-LW5  
Ellingham, Sarah-W14  
Elwick, Kyleen-B57, B177  
Enslin, Odile-E8  
Esposito, Massimiliano-G15  
Estevanes, Jared-B111  
Etaywe, Awni-D7  
Evans, Tiara-K34

## F

Fabbri, Mia-B38  
Fabricant, M. Chris-F30  
Failla, Andrea Vittorio Maria-H74  
Fang, Yung-Hsuan-G21  
Farid, Ajang Armin-G8  
Feeney, William-B188  
Feigin, Gerald-F36  
Felthous, Alan R.-W16  
Ferguson, Kimiko-B28  
Fernandez-Tejero, Nicole-B76  
Ferrara, Michela-E119, H19  
Ferrell, Jamie-E76  
Fetchet, Mary-A79  
Field, Olivia-E83  
Filko, Andrijana-E126  
Fiorentini, Clara-H22  
Firek, Julianna-F24  
Fisher, Barry-S3, B83  
Fitzpatrick, Colleen M.-W19, B145, LW2, LW4  
Fixott, Richard-G29  
Flaherty, Taylor-E7  
Fleming, James-Y12  
Flowe, Heather-I25  
Floyd, Jennifer P.-W9, B91  
Foley, Megan-B42  
Folkerth, Rebecca-H102  
Ford, Jonathan M.-W12  
Forte, Leann-B26  
Fox, Sherry-A93  
Franceschetti, Lorenzo-E53  
Franck, Darren-D32  
Franzetti, Chiara-H59  
Frazier, Kimberly-H37  
Freeman, Kelly-S2  
Freitas, Nelson-G10  
Frese, Madison-E111  
Frigiolini, Francesca-H20  
Friss, Adam-D2  
Fudenberg, John-S3  
Fuglsby, Cami-J5  
Fulginiti, Laura-H9  
Fulp, Kaitlyn-A60  
Fulton, Ashley-E90



# PRESENTING AUTHOR INDEX

---

## G

---

Gabrys, Natalia-K9  
Gaddis, Katherine-E14  
Gaier, Sarah A.-H18  
Gaines, Allison N.-W21  
Gamette, Matthew-E24  
Gardner, Brett-B98, B99  
Garfinkel, Simson-C14  
Gariglio, Sara-K14  
Garloff, Alexis-B6  
Garrett, Brandon-BS2  
Garvin, Heather-A13  
Garza, Shelby-A26  
Gast, Meghan-E20  
Gauthier, Quentin-B65  
Ge, Jianye-B74, B138  
Geissenberger, Janine-H71  
Gemmellaro, Denise-H112  
Georget, Charles-G28  
Geradts, Zeno-C3, C8  
Gestring, Brian-B84  
Gettings, Katherine-W2, B39, B41  
Getz, Allison-BS1  
Getz, Sara M.-W14, A49  
Ghemrawi, Mirna-B66  
Giacani, Elena-H17  
Gill, James-H115  
Gitto, Lorenzo-H118  
Gladyck, Stephanie-B158  
Gluodenis, Jr., Tom J.-K7  
Go, Matthew C.-A33  
Goden, Christopher-A102  
Godfrey, Murrell-K31  
Godshalk, Maeve-Y1  
Goecker, Zachary-B56  
Goff, Mark T.-W9, J12  
Gokool, Vidia A.-B184  
Goldstein, Justin Z.-A23  
Goliath, Jesse R.-A115  
Gong, Samantha-B190  
Gonzalez, Jose-B214  
Goots, Alexis-A113  
Graham, Ema-B52  
Graham, Jason K.-A75  
Graham, Kari-B163  
Granger, Cheyenne-B32  
Green, James A.-J23  
Grosso, Katherine-E54  
Grover, Celeste M.-B118  
Guido, Mark-C25  
Gunce Eskikoy, Melahat Elif-E26  
Gunther, Wendy-H90

## H

---

Haase, Nicole-K30  
Haberstock, Isabella-B21, Y9  
Hadley, Samantha-E52  
Hainsworth, Sarah-D30  
Hall, Ashley-B72, B77  
Hampl, Peter-G27  
Han, Valeri-Y6  
Hans, Krystal-E129

Harden, Angela-A178  
Hardman, Hope-B11  
Harper, Curt E.-W6  
Harper, Megan-E39  
Harrell, Michael-H123  
Harris, Neil-H41  
Hasert, Anita-E57  
Hayes, Jonathan-H115  
Heacox, Derek-Y11  
Hedlich, Jenna-H57  
Heidere, Katie S.-W5  
Henson, Tanisha-S3  
Hentschel-Fey, Kelsee-A40  
Herbst, Brian-D24, D27  
Hernandez Flores, Aaron-B191  
Hessel, Evin-A54  
Heustis, Marilyn A.-W16, K57  
Hewitt, Curt-B95  
Hewitt, Terry-Dawn-F12  
Hicklin, R. Austin-E124  
Hietpas, Jack-B79  
Higgins, Mairin-K28  
Hirsch, Marissa-W16  
Hoffman, Michelle-D35  
Holcombe, Savannah-A135  
Holmes, Ashley-E3  
Hong, Anni-E118  
Hopkins, Taylor-B86  
Horsley, SaMoura-A124  
House, Molly-H2  
Houston, Rachel-B137  
Houston, Rebecca J.-W16  
Hu, John-H3  
Huang, Ting-Yu-B24  
Hubbard, Hannah-E109  
Hudson, Brittany C.-B62  
Huestis, Marilyn A.-W6, K57  
Huffman, Kaitlin-B140  
Hughes, Clinton-F18  
Hulse, Cortney-A177  
Hunter, Cheryl-S2  
Hurley, Kira-B61  
Hyde, Jessica-C26  
Hyodoh, Hideki-W12

## I

---

Ip, Eva-I24  
Isa, Mariyam-A107  
Isenschmid, Daniel S.-W16  
Iula, Donna M.-W20  
Iyer, Hari-F17

## J

---

Jamshaid, Tahir-B33  
Janysek, Brian-S2  
Jarvis, Hannah-H119  
Jasiak, Caroline-A6  
Javan, Gulnaz-G2  
Jayakumar, Jayapriya-G5  
Jayaraman, Jayakumar-G24  
Jeerage, Kavita-D43  
Jeong, Yangseung-A86

Jerković, Ivan-A143  
Johnson, Damani-B136  
Johnson, Liam-A25  
Johnson, Rachel-E27  
Jones, Chelsea-B151  
Jones, Graham R.-W16  
Jones, John Paul-W2  
Jones, Joseph-W6  
Joseph, A. Skylar-E25, E134  
Ju, Wangqian-E95  
Juarez, Chelsey-W19  
Just, Rebecca-B174

## K

---

Kadash, Kristy-B40  
Kaegi, Valeria-E72  
Kakuda, Hidetoshi-D45  
Kalafut, Timothy-B135  
Kanchan, Tanuj-G22  
Kaplan, Molly-A87  
Katsanis, Sara H.-H88  
Kaur, Rattandeep-D19  
Ke, Pucheng-K40  
Kelley, Luz-E81  
Kemper, Bart-D46  
Kendell, Ashley-A34  
Kennedy, Roderick T.-S1  
Keyes, Kelly A.-E121, H103, I14  
Khan, Mah-Ro-B1  
Kim, Dong-Ho-A140  
Kim, Eunmi-K5  
Kim, Jong In-A163  
Kim, Joonyeong-B106  
Kim, Myeonki-F34  
King, Pamela A.W.-W9  
King, Steff-E23  
Kintz, David-E28  
Klales, Alexandra-A46  
Klonsky, Ken-W15  
Klonsky, Ray-W15  
Knight, Renee-BS6  
Kolpan, Katharine-A7  
Konda, Amelia-A127  
Koolmees, Cassidy-F15  
Kootker, Lisette M.-A45  
Korolija, Marina-E16  
Kortonick, Kristine-A65  
Kovari, Ivett-E130  
Krauss, Shannon T.-W5  
Krebs, Kyle T.-W21  
Krishan, Kewal-A129  
Krishnan, Ganesh-D9  
Kroll, Jeroen J.F.-W12  
Kronstrand, Robert-K50  
Krotulski, Alex J.-W5, W20, K42, K53  
Kruijver, Maarten-B142  
Kuchinos, Alexandra-B133  
Kulbacki, Kevin P.-J6  
Kumar, Swathi A.-W19  
Kunugi, Yuki-D40  
Kurtzman, Robert A.-H116, H117



# PRESENTING AUTHOR INDEX



## L

La Tegola, Donatella-I20  
L'Abbe, Ericka N.-A37  
Laing, Richard R.-W5  
Lamb, Michael-K51  
Lambert, Katelyn-B124  
Lambrigger, Taylor-A168  
Landrie, Rachael-H46  
Lane, Katherine-A99  
Lanfranchi, Anthony-A69, A146  
Lathrop, Laura-E56  
Latif, Hannan-B201  
Leach, Rose-A21  
LeBeau, Marc A.-W6, K33  
Lee, Christin-B156  
Lee, Dayong-W16  
Lee, Hana-Y3  
Legg, Kevin-B37  
Lennert, Emily-B189  
Leonardelli, Mirko-A130  
Lesciotto, Kate-A35  
Lewis, Andra-B105  
Li, Sihai-B117  
Licciardello, Fausto-H76  
Licciardello, Gabriele-H72  
Liliedahl, Ruby E.-K10  
Lockhart, Emily-B206  
Logan, Barry K.-S1, W16, W20  
Longjohn, Rachel-C11  
Lopez, Angelina-E106  
Lorber, Amy-H88  
Love, Jennifer-A148  
Luby, Amanda-E104  
Lucchi, John-B125  
Ludeman, Matthew-B5  
Lugli, Melania-I1  
Lupariello, Francesco-E117, H24  
Lyle, James-C21  
Lynch, Ashlee-B17  
Lynch, Robert-S2  
Lynch, Virginia A.-B57, E66, E68  
Lyness, James-H125  
Lyttle, Morgan-E15

## M

Macorano, Enrica-H58  
Madrigal Reyes, Alejandro-W11  
Maglitter, Andreama Nicoletta Maria-I11  
Maier, Christopher-A126  
Malfroy Camine, Lise-G7  
Maloney, Katherine F.-W7  
Mamedov, Sergey-D50  
Manetti, Alice Chiara-E6  
Manetti, Federico-D42, H34, I12, I13  
Manna, Modhuparna-S2  
Marco, Stephanie-K54  
Marshall, Charla-W19  
Martin, Clément-D49  
Mason, Allison-A68, B54  
Massari, Kayla-E50, Y8  
Mavroudas, Sophia-A36  
Max, Brendan-F29  
Maxwell, Jasmine-K39

Maya, Leonardo-K23  
Mazuchowski, Edward L.-W12  
Mbonani, Thandolwethu-A141  
McArthur, Katherine-W16  
McCallum, David-W15  
McClary, Carl R.-S1, J1  
McDonald, Gary-F27  
McKay, Kelsey-E27  
McKendrick, Sarah-E132  
McKiel, Mary C.-W9  
McMillen, Hannah L.-B107  
McMillin-D25  
Meckel, Lauren A.-A172  
Megyesi, Mary-A3  
Mele, Federica-G3  
Melinek, Judy-S3  
Meloro, Raphaela-A38, A110  
Menendez, M.J.-W20  
Menking-Hoggatt, Korina-B193  
Merlino, Mara L.-J19  
Mertz, Lisa A.-W15  
Meshram, Vikas- A152  
Messe, Gabrielle-H54  
Messer, Diana-A53  
Messner, Paul-S1  
Meyers, Julia-A145  
Mezzetti, Eleonora-B115, H27  
Michelen, Oscar-W15  
Mickleburgh, Hayley L.-A81  
Mierzwak, Dagmar-E61  
Mikellide, Maria-A92  
Millbern, Zoe-D1  
Miller, James-B210  
Millette, James-D48  
Milroy, Christopher M.-S1  
Ming, Ann-Marie-H39  
Miranda, Michelle D.-B80  
Miranker, Molly-A5  
Mirza, Mohammad Meraj-C12  
Mishra, Amarnath-E38  
Mitchell-Mata, Christie L.-K45  
Miyashiro, Rand-H104  
Mock, Rayna-C10  
Moe, Mariah-A18  
Mogle, Mark D.-W11  
Mohammed, Linton A.-W9, W17  
Mohr, Amanda L.A.-W6  
Molinari, Giulia-H48  
Molt, Malory-E94  
Mondello, Cristina-H30  
Monetti, Lisa-A67  
Monjardez, Geraldine-B169  
Montalvo, Shayla-B27  
Monteiro, Francis Nanda Prakash-H126  
Moore, Clarra G.-J21  
Moorthy, Arun-B208  
Moosavi, Harrison-H50  
Moquin, Kayla-B104  
Moraitis, Konstantinos-A9  
Morel, Jessica L.-W21, I22  
Mori, Haruka-I17  
Morris, Megan-B196  
Moses, Sharon-E29  
Moss, Aja-S2  
Moss, Natalie-B47

Mundurff, Amy-A71  
Muramoto, Shin-B116  
Musci, Gianluca-E11  
Musile, Giacomo-K55

## N

Nardoni, Francesco-H98  
Nase, John-G12  
Nassif, Joe Bou-W16  
Nazir, Shahid-B160  
Neuman, Maddisen-B100, E96  
New, Briana T.-A166  
Newland, Ashley-E86  
Newman, Reta M.-W3, W20, B89  
Nguyen, Lam-C19  
Nguyen, Teresa-W7  
Nicolì, Simona-H79  
Nida, Corey-B20  
Nishshanka, Bandula-B93  
Nixon, John-D36, F9  
Noble, Andrea Carolina-K60  
Nobles, Karen J.-W17, J16  
Notari, Chase-B120  
Nouwairi, Renna-E45  
Novak, Martin-C35  
Novroski, Nicole-B175  
Nuzzolese, Emilio-G4, G6, G11

## O

OBrien, Meg-J10  
O'Donnell, Christopher J.-W12  
Oesterhelweg, Lars-W12  
Oettel, Bailey-A122  
Oldoni, Fabio-B43, B75  
Olson, Larry A.-J11  
Ommen, Danica-B104  
O'Neal, Bobbi Jo-S3  
Oner, Dilara-J17  
Oranchak, David-BS3  
Osborne, Amy-B183  
Ovide, Oriana-B110  
Owings, Charity-H111

## P

Padovano, Martina-B171, H33  
Palladino, Shannon-K32  
Panzica, Nicole-H134  
Papsun, Donna M.-W20, K43  
Parchake, Manoj-H105  
Parente, Lia-I19  
Park, Chan-Seong-D15  
Park, Hyun Jin-A128  
Parker, Cody-B50  
Parker, Glendon-A154, B56  
Parks, Robyn N.-W20, E2, H127, K1  
Paroff, Jason-C13  
Parrish, Cassandra-A66  
Pascale, Natascha-H29  
Passalacqua, Nicholas-A31  
Patterson, Kelsey-B134  
Peace, Michelle R.-W5  
Peck, Michelle-B147

Peer, Michal-A105  
 Pellegrini, Lavinia-H70  
 Pelletti, Guido-K13  
 Perdue, Charla Skinner-E133  
 Pérez-Flórez, Aurora Marcela-A94  
 Perkins, Ashley R.-W7  
 Perlin, Mark-B141, B144, B153, F32  
 Perna, Shruthi-D5  
 Perrault, Katelynn-H113  
 Perrone, Giulio-H78  
 Philip, Eleena-E87  
 Pienkowski, David-D21  
 Pitts, Kari-E84  
 Plasencia, Enrique-A12  
 Plourd, Christopher-F4, F13  
 Plude, Kennedy-K25  
 Plyler, Alexandria-E43, Y7  
 Podduturi, Varsha-H13  
 Podini, Daniele-B150  
 Pokines, James T.-W8  
 Polhemus, Adam-E127  
 Pope, Elayne-A171  
 Porta, David-D28  
 Pourat, Jacob-I23  
 Power, Claire-E59  
 Pozzi, Mark-D23, D29  
 Prada-Tiedemann, Paola-E120  
 Prahlow, Joseph-H115  
 Prandini, Valeria-H82  
 Pressley, DeMia-B202  
 Price, Jana M.-W6  
 Price, Kelsey-B63  
 Primorac, Dragan-B159  
 Procopio, Noemi-B46, B48  
 Provoost, Eloise-I8  
 Prusinowski, Meghan-B101  
 Puracal, Janis C.-W15, F25

## Q

Qasim, Syed-C15

## R

Rabah, Ahmad-G25  
 Radogna, Alessandra-E92  
 Rais, Muhammad-C33, D47  
 Ralston, Clair-A42  
 Ram, Rachel-K38  
 Ramey, Greg-S3  
 Ramos, Christopher-H89  
 Rayes, Omar-W7  
 Razi, Yasmine-I3  
 Reavis, Madison-D17, E80  
 Recheis, Christina-A85  
 Reczek, Karen-BS1, L2  
 Redding, Rachel-E116  
 Redgrave, Anthony-A11  
 Reilly, Noah-H93  
 Reinders, Stephanie-C2  
 Reising, Jeff-W15  
 Renner, Lawrence L.-W18  
 Resnik, Karissa-K11  
 Reyes-Rodriguez, Jenise-C22  
 Reynolds, Meredith-H15

Ribéreau-Gayon, Agathe-H109  
 Richardson, Nick-B204  
 Ridel, Alison F.-A101  
 Rihawi, Wassim-G31  
 Riman, Sarah-W2, B82  
 Rineer, Jenn-I14  
 Roberts, Julie-A95  
 Roberts, Katherine-B9, F1  
 Roca, Gabriela-E85  
 Rocuzzo, Salvatore-I6  
 Rodriguez Salas, Judith-B199  
 Rodriguez, Ashley-B71, E123  
 Rodriguez, Jacqueline-B36  
 Rohrer, Charles-H99  
 Rolland, Matthew-A70  
 Roman, Madeline-B154  
 Roper-Miller, Jeri-E31, H38, K44  
 Rose, Sarah-A159  
 Rosenfield, Michael-D22  
 Ross, Jennifer-I7  
 Rossetti, Chiara-A57, H80  
 Rossetto, Ilaria-I21  
 Rossi, Gianluca-H4  
 Roux, Claude-F22  
 Rowe, Walter-B186  
 Rubin, Daniel-B29  
 Russell, David A.-B152  
 Rutledge, Grace-B4

## S

Sabatino, Mirella-H84  
 Sacha, Andrew-B129  
 Sachs, Sandra-B78  
 Sakelliadis, Emmanouil-H62  
 Salmonsén, Anna-B16  
 Sanger, Sarah-F11  
 Sanger, Shivani-A149  
 Santillán, Perla-A82  
 Santoro, Paola-H68  
 Sarancho, Julianne-A24  
 Sauerwein, Kelly-G30  
 Sauter, Carolyn-A136  
 Schall, Jenna-A112  
 Schmid, J.D.-F14  
 Schoonover, Kaitlyn-A22  
 Schwark, Thorsten-H60  
 Schweighardt, Andrew J.-W15, A77, B70  
 Schwing, Sarah-A100  
 Scott, Karen S.-W6  
 Scotti, Veronica-F31  
 Seaman Kelly, Jan-J8  
 Sehwat, Jagmahender Singh-A30, G14  
 Seigfried-Spellar, Kathryn C.-W21  
 Seki, Yoko-J2  
 Sekula, Kathleen-E73  
 Sensabaugh, George-B81  
 Sessa, Francesco-E17, E30, F33, H53  
 Sgheiza, Valerie-A161  
 Sharma, Meenakshi-H64  
 Sharma, Vishal-E44, E82, J3  
 Sharp, Jared-B30  
 Sharplin, Allison-A91  
 Shedge, Rutwik-A129  
 Shekhawat, Raghvendra-H131  
 Sherwood, Susannah-E41  
 Shi, Chen-C32  
 Shibusaki, Kazunari-D37  
 Shnaidman, Vivian C.-W21  
 Shreve, Christina R.-H7  
 Siegert, Courtney C.-A90  
 Sierra-Serrano, Elena-A132  
 Silva, Deborah-B10  
 Silverman, Cody-B60  
 Silvestre, Maria-H23  
 Simmons, Hannah-S2  
 Simmons-Ehrhardt, Terrie-A63  
 Simpson, David-E98  
 Singh Shekhawat, Raghvendra-A151  
 Sisco, Edward-B128, B203  
 Skinner, Jessica-A175  
 Slattengren, Nicole-E21  
 Smith, Ashley-A98, E115  
 Smith, Chastyn-B68  
 Smith, Cheyenne-B197  
 Smith, Christina-K46  
 Smith, Jeff-C5, C28  
 Smith, Michael L.-W16  
 Smith, Rebecca-K12  
 Snedeker, Jennifer-B49  
 Solomon, Nadia-H97  
 Soto Martinez, Miriam-A56  
 Spargo, Erin A.-K6  
 Spear, Brianna-K48  
 Spence, Jennifer E.-A89  
 Spencer, Francesca-A20  
 Spiros, Micayla-A1  
 Stack, Jayden-E93  
 Stacy, Megan N.-W21  
 Stanley, Nicole-H73  
 Stassi, Chiara-H31  
 Steen, Kourtney-K24  
 Steffen, Carolyn R. "Becky"-W2  
 Steinberg, Alon-H129  
 Stevens, Edwin-S3  
 Stiffelman, Bess-F16  
 Stolorow, Mark D.-F20  
 Stone, Anne-A106  
 Stout, William-E10  
 Strasheim, Ariana-A125  
 Strommer, Ellen-H128  
 Stull, Kyra E.-A165  
 Suddock, Jolee-H40  
 Sudhakaran, Sncha-C24  
 Sukta, Andre-K22  
 Sullivan, Mackenzie-A43  
 Swaminathan, Meena-K19

## T

Tahirukaj, Milazim-B103  
 Tan, Wan Yu-B170  
 Tanaka, Tobin A.-W4  
 Tang, Larry-E97< w3  
 Tarozzi, Ilaria-H86  
 Tate, Kirsten-J15  
 Tawil, Michel-E9  
 Taylor, Jordan-H44  
 Taylor, Lois-B53  
 Taylor, Melissa K.-W2  
 Telegrafo, Michele-H28

# PRESENTING AUTHOR INDEX



Tesi, Chiara-A59  
Thach, Rasmey-H87  
Thali, Michael J.-W12  
Thole, Akshata-C31  
Thompson, Ryan-E46  
Tica, Cristina-B178  
Tiffon Nonis, Bernat-Noël-I4, I5  
Tiscione, Nicholas-K35  
Torres, Dayanara-B69  
Torrise, Marco-H75  
Trevino, Joe-S2  
Troccoli, Giuseppe-W21  
Truver, Michael T.-K52  
Tsao, Yun-Chen-K3, K4  
Tsuchiya, Syunsuke-D39  
Tumram, Nilesh-D31, D34, H124  
Turek, Rafal-J4  
Turiello, Rachelle-B67

## U

Ubelaker, Douglas H.-W14, A76  
Unger, Carter-A51  
Urbanova, Petra-C4  
Urbas, Aaron-B212  
Usman, Hafiz Faisal-K15

## V

Valentine, Julie-E37, E77  
Valenzuela, Jesus-C9  
Vallone, Peter M.-W2  
Van Buren, Molly-S2  
van Rijn, Rick R.-W12  
VanBaarle, Alexis-A48  
Vander Pyl, Courtney-B112  
VanLysebettens, Stephanie R.-K29  
Vastrick, Dirk-S2  
Vastrick, Thomas W.-J9  
Vaughan, Stephanie-B207  
Vendrell-Dones, Mario-B31  
Veneri, Federico-Y4  
Ventura, Mónica-B187  
Vikingsson, Svante-K56  
Villarreal, Domingo-W11  
Visi, Giacomo-H66  
Volz, Jessica-K26  
Vorder Bruegge, Richard-BS5

## W

Wacker, Anna-E58  
Wade, Natasha-I9  
Wagner, Wesley-B2  
Wales, Gregory-C6  
Walker, Stewart-E128  
Walkup, Taylor-A123  
Walraven, Tracy-C20  
Walters, Catherine-E18  
Walton, Sara-K41  
Wang, Ling-K27  
Warrier, Varsha-A155  
Washington, Thomas-Y2  
Watherston, Jeremy-B51

Watson, Kintress-K2  
Watson, Lucy Victoria-K59  
Waxenbaum, Erin-A4  
Weaver, Ryen-A162  
Webb, Milad-W7  
Weber, Alexis-E88, E114  
Weedn, Victor R.-W5, H130  
Weimer, Belinda-E31  
Wein, Lawrence-B148  
Weiss, Kurt-D20, D26  
Wells, Kyla-F6  
Wesley, Allyson-E51  
Wetherbee, Amber-B11  
Wetherelt, Deborah-E74  
White, Joseph Levi-C29, C34  
Whitekus, Michael J.-W6  
Wiedenmeyer, Emilie L.-A27  
Wiersema, Jason M.-H36  
Williams, Amanda-A173  
Williams, David-G1  
Williams, John-A32  
Williams, Joyce-BS7, E65, E67  
Williams, River-B166  
Williams-Mitchem, Shannan-E122  
Wilson, Amanda-E103  
Wilson, Emily-A150  
Wilson, Linda U.-W9  
Wilson, Walter-B23, B213  
Winchester, Janis-J24  
Winokur, Agnes D.-W5, L2, B127  
Winters, Kelsey R.-W3  
Wohlfahrt, Denise-B58  
Wolfe, Christopher A.-A164  
Wood, Robert E.-G9  
Woodall, Karen-E131  
Woollen, Katharine-A47  
Wu, Shan-Fu-B176

## Y

Yarberry, Andrea-B22  
Yaroshuk, Timothy-B126  
Yew, Patrick-B9  
Yim, An-Di-A117  
Young, Thomas W.-W10, H5  
Yukyi, Nandar-A120

## Z

Zadeh, Tanin-A15  
Zaferes, Andrea-E27  
Zaney, Mary Elizabeth-W5  
Zanon, Martina-H101  
Zapico, Sara C.-W14, A160  
Zascavage, Roxanne-B179  
Zemmels, Joseph-D38  
Zhang, Xin-H16  
Zhou, Jiemin-H52  
Zink, Katherine E.-B132  
Ziogos, Sotirios-E60  
Zissler, Angela-H122  
Zjalic, James-C1  
Zumaeta, Edward-K17