



ASCLD FORENSIC RESEARCH COMMITTEE BULLETIN

FRC HOT TOPICS

I. Welcome new LEAP Partners:

- Gian Cho from the Belize National Forensic Sciences Service
- Scott Ford from the Midwest Regional Forensic Laboratory
- Voskanyan Patvakan from the National Bureau of Expertises of the National Academy of Sciences of the Republic of Armenia

II. LEAP is hitting important milestones:

- Close to 150 LEAP Partners
- 99 University LEAP Partners
- 47 Laboratory LEAP Partners
- On 5 continents, representing 9 countries and growing!

III. LEAP is now accepting Industry Partners!

- Labs + University Researchers + Industry Partners =
New Forensic Capabilities and Innovation Success!

IV. The FRC Awards were announced at the 2024 ASCLD Symposium. Check out this year's winners on page 8.

V. Announcing the next FRC Lighting Talk on page 5.



If you are a researcher looking for practitioners to participate in your study, complete the project [form](#) to advertise your project to practitioners looking for research opportunities. If you are a practitioner looking to become involved in research opportunities, the following researchers are **currently** looking for participants:

Occupational Exposures to Illicit Drugs in Forensic Science

Divisions

Research Organization: National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC)

Principal Investigator: Jennie Cox, PhD, CIH

Funding Source: National Occupational Research Agenda (NORA) Intramural Research Competition (IRC) funded research

Email Address: qxi3@cdc.gov

Phone Number: 513-458-7140

Discipline: Seized Drugs

Abstract:

Basic research is needed to better understand the physical health effects of unintentional occupational exposures to illicit drugs. Data are also needed to characterize and describe physical risks like potential inhalation, absorption of illicit drugs through mucous membranes and dermal contact. We are seeking volunteers who routinely handle and/or analyze suspected illicit drug evidence in law enforcement forensic divisions, such as forensic chemists and forensic technicians. For those who wish to participate, we will come to your facility and for 2.5 days to collect air, dermal, and surface sampling, as well as biomonitoring (urine) for cocaine, fentanyl, heroin, and methamphetamine. We make a concerted effort to have minimal impact to the individuals working. We will also have a questionnaire for participants, and lastly, evaluate current protocols and procedures to ensure best practices are utilized. Individuals can receive their personal results if they wish, and an anonymized overall report with recommendations to reduce exposures in the workplace will be provided to the laboratory point of contact.

Study Dates: **May 2, 2024 – June 1, 2026**

Support Requested: Participation

COLLABORATION HUB

The FRC Collaboration Hub connects researchers and practitioners to promote active engagement and participation to support forensic science research projects.

The FRC Collaboration Hub provides a “one-stop-shop” for researchers to solicit participation in specific projects and for practitioners to contribute their knowledge and experience to support research projects.

Forensic science practitioners can quickly and easily identify research projects related to their field of expertise and connect with the researchers to contribute to the success of the research while also advancing their field. Practitioners gain additional professional development opportunities while supporting and engaging in research projects.

Researchers gain an easier way to solicit support from practitioners and also ASCLD will help promote information about the project through ASCLD Social Media Channels.

Estimated Participant Time Involved: Total participation time, after the volunteer consents, will be about 1.5 hours throughout the 2.5 days. It will be approximately 15 minutes at the start and end of each day (~1 hr) and one 30-minute questionnaire.
Deliverable Anticipated: Peer-reviewed article, Oral Presentation, Poster Presentation, Individual Laboratory Reports

Solving the DNA Mixture Conundrum with Single-Cell Analysis

Research Organization: Rutgers University Camden
Principal Investigator: Catherine Grgicak
Funding Source: National Institute of Justice
Other Collaborators Involved: Desmond S. Lun; Ken R. Duffy
Email Address: c.grgicak@rutgers.edu
Phone Number: 617-913-9728
Discipline: Biology/Serology
Instrumentation Involved: Bespoke Software

Abstract:

We are interested in collaborating with a crime laboratory partner interested in exploring single-cell analysis for forensic purposes. We have a bespoke algorithm capable of interpreting single-cell EPGs from diploid cells across multiple clusters and are now working on expanding the model to be able to address haploid results. This work is of forensic relevance since the single cell likelihood ratio (LR) simplifies to its most informative form – i.e., the number of contributors being one and only one – which means that multiple contributors would not have jointly contributed to the group of cells. Recently, we developed an extension to the bespoke algorithm that allows us to report the weight of evidence (WoE) across all clusters of an admixture of cells, and these WoE were ca. [25-30) regardless of the TrueNOCs. We seek laboratories willing to alpha-test the software using their own samples, or samples we can provide.

Study Dates: **January 1, 2023 – December 31, 2024**

Estimated Participant Time Involved: 2 hours per month

Deliverable Anticipated: Peer-reviewed article, Oral Presentation

CSI and Forensic Lab Hiring Expectations Survey

Research Organization: Pace University
Principal Investigator: Joe Trevino
Email Address: joe.cruz.trevino@gmail.com
Discipline: Crime Scene & Laboratory Disciplines except Digital Evidence
Instrumentation Involved:

Abstract:

I am interested in establishing current minimum expectations and hiring requirements for entry-level Crime Scene Investigators (CSIs) and forensic laboratory personnel. While there are forensic science education accreditation

standards via the Forensic Science Education Programs Accreditation Commission (FEPAC), the needs of our field can change quickly and it is important to periodically report a baseline to keep all systems healthy.

There is some research into how FEPAC-accredited programs deliver their promise through curriculum and instruction, but the two surveys I am conducting ideally measure what Forensic Science Service Providers (FSSPs) expect from any institution, regardless of accreditation status or program type. Furthermore, the data collected in the surveys will identify better goals and targets for students, parents, educators, universities, FSSPs, etc.

Those who are involved in the hiring process for CSIs and forensic science laboratory personnel are encouraged to participate. This can be the public or private sector, manager or investigator/analyst, any level or agency type.

Crime Laboratories:

https://qfreeaccountssjcl.az1.qualtrics.com/jfe/form/SV_6YD4Ng3WudU5CIU

Crime Scene Units:

https://qfreeaccountssjcl.az1.qualtrics.com/jfe/form/SV_9t6dvyjO1UPicC2

Study Dates: April 1, 2024 – June 1, 2024

Estimated Participant Time Involved: 10-15 min

Deliverable Anticipated: Peer-reviewed article, Oral Presentation

GOT COLLABORATION?

“Collaboration is key, it takes innovation and creativity to the next room.” ~Shawn Lukas

**HAVE A RESEARCH PROJECT
AND NEED PRACTITIONER SUPPORT?**

SUBMIT TO THE FRC COLLABORATION HUB TODAY!

LIGHTNING TALKS

The ASCLD FRC is proud to host the **Lightning Talk Series** which highlights new and emerging research across all areas of forensic science.

Each episode features 2-3 short (~7-10 min) talks on a themed topic given by practitioners, researchers, industry partners, and/or students. **Lightning Talks** typically air the third Thursday of each month.

TUNE INTO EPISODE 36...

Thursday, June 13th at 1:00pm EST

ASCLD FRC Innovation Award winner Catherine Grgicak and Validation/Evaluation Award Winner Tina Mattox will highlight their projects and contributions to advancing forensic science research.

Be sure to [register](#) to attend.

ASCLD LEAP Award Winners from NJSP Office of the Forensic Sciences and West Virginia University presented the research developed out of their partnership in Episode 33.

Missed a Talk? All episodes can be viewed on [YouTube](#).

Have an idea for a Lightning Talk, please email ASCLDFRC@gmail.com.

LIGHTNING TALKS

35 Lightning Talk Topics Include:

1. Emerging Approaches for Seized Drug Analysis
2. Strategies for OGSR and IGSR Analysis
3. Error Rates
4. The Future of Forensic Genealogy
5. Non-Targeted Forensic Toxicology
6. Novel Analysis of Latent Prints
7. Cognitive Bias
8. Vicarious Trauma, Stress, and Burnout
9. Fentanyl Signature Research
10. Algorithms and Artificial Intelligence
11. Drone Forensic
12. DNA Phenotyping
13. Oral Fluid Toxicology
14. Interlaboratory and Black Box Studies
15. Cocaine Analysis
16. Isotope Ratio Mass Spec
17. Microbial DNA
18. Fire Debris Analysis
19. The Future of Forensic Analysis, Interpretation, and Reporting
20. Forensic Anthropology
21. Forensic Toxicology
22. FRC Research Collaboration Initiatives
23. Rapid DNA Analysis and Implementation
24. Forensic Odor/Scent Analysis
25. Time Since Deposition for Trace DNA and Forensic Kintelligence Validation
26. Analysis of Alternative Seized Drug Matrices
27. Touch DNA in Activity Level Propositions
28. Data Driven Approaches to the Forensic Analysis of Auto Theft
29. Microbial Analysis for Biothreat Surveillance
30. Innovative approaches for the Analysis & Identification of Body Fluids
31. The Use of 3D Technology for Firearms Analysis
32. The Two Sides of the DEA STRL – Moving Forward with New Technology and Digging Deep for Intelligence
33. New Advances in GSR Analysis
34. Emerging Approaches for Seized Drug Analysis
35. A Road Map for VCM Implementation for Firearms Analysis

The goal of LEAP is to facilitate collaborative research between **academia, forensic science laboratories and/or industry partners**. This joint effort between the American Society of Crime Lab Directors (ASCLD) and the Council of Forensic Science Educators (COFSE) identifies forensic science needs and provides a platform for laboratories, researchers, students, and industry leaders to seek projects aligning with their mutual research capabilities.

LEAP Partnership Benefits:

Exchange Subject Matter Expert Information

Support for Testing, Evaluation & Validations

Statistical Support/Consulting

Internship Opportunities

Curriculum Assistance/Seminar Series Speaking Opportunities

Sign up for the [FRC LEAP](#) program today or share your collaborations so others can learn how to implement these partnerships.

How to start a LEAP Partnership?

- Check out the LEAP [Map](#)
- Find a Partner or Collaborator
- Share idea or desire to be a partner/collaborator
- Review Research Partnership Consideration [List](#)
- Review [Primer](#) on Data Sharing
- Start Collaboration or Partnership

Share your success!

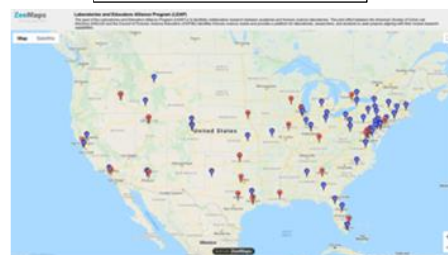
LEAP of faith... Make the jump!

~Unknown

LABORATORIES & EDUCATORS ALLIANCE PROGRAM



LEAP Partners in the US



146 LEAP Partners:

99 Universities

47 Forensic Labs

Current World

LEAP Partners (9):

USA, Canada, Australia, Brazil, Mexico, Italy, Belize, Armenia & Saudi Arabia



EVALUATION & VALIDATION REPOSITORY

The Evaluation/Validation Repository enables critical information sharing within the forensic science community!

The repository is a list of validations and evaluations conducted by forensic labs and universities.

Sharing this information helps foster communication and reduce unnecessary repetition of validations and evaluations.

With limited resources we need to maximize information sharing to help labs advance their capabilities and for the greater benefit of the forensic community.

Please share your recent Validations and Evaluations with the Repository to help speed innovation throughout the forensic community.

Recent Evaluations and Validations

Submitted to the Repository:

YFiler Plus PCR Amplification Kit, cat no. 4484678, 4482730

Keywords: YFiler Plus, 3500
Laboratory: Mississippi Forensics Laboratory
Discipline: Biology/Serology
Contact Name: Mary Jones Dukes
Email: mjdukes@mcl.ms.gov
File link: https://www.asclد.org/wp-content/uploads/formidable/43/MSFL_YFP_VALIDATION-SUMMARY.122923.pdf

Foster+Freeman RECOVER LFT Validation

Keywords: RECOVER LFT, cartridge cases, metal
Laboratory: Idaho State Police
Discipline: Latent Prints
Contact Name: Tina Walthall
Email: tina.walthall@isp.idaho.gov
File link:
Web link: <https://isp.idaho.gov/forensics/validation/>

Validation Report for Fire Debris Analysis by GC-MS

Keywords: Fire Debris, GCMS
Laboratory: Palm Beach County Sheriff's Office Crime Laboratory
Discipline: Trace Chemistry
Contact Name: Tate Yeatman
Email: yeatmand@pbso.org
File link: <https://www.asclد.org/wp-content/uploads/formidable/43/Validation-Report-for-Fire-Debris-Analysis-by-GC-MS.pdf>

Method Validation Report for the Identification and Quantitative Threshold Testing of Tetrahydrocannabinol (THC) in Cannabis

Keywords: THC, Cannabis, Hemp, Quantitative
Laboratory: Palm Beach County Sheriff's Office Crime Laboratory
Discipline: Seized Drugs
Contact Name: Tate Yeatman
Email: yeatmand@pbso.org
File link: <https://www.asclد.org/wp-content/uploads/formidable/43/Method-Validation-Report-for-the-Identification-and-Quantitative-Threshold-Testing-of-Tetrahydro.pdf>

FRC AWARDS

FRC Innovation Award

The award recognizes innovative research studies that have been submitted to the FRC Collaboration Hub within the last two years that have or will result in new technologies, protocols, or tools that impact the forensic science laboratory.

The 2024 Innovation Award winner is Catherine Grgicak from Rutgers University- Camden with Solving the DNA Mixture Conundrum with Single-Cell Analysis.

LEAP Partnership Award

The goal of the award is to recognize an outstanding partnership between collaborating LEAP partners.

The 2024 LEAP Partnership Award winners are West Virginia University & New Jersey State Police Office of Forensic Sciences with Strengthening Scientific Foundations for Advancing Best Practices in the Collection, Storage, Analysis, and Interpretation of Organic and Inorganic Gunshot Residues.

Outstanding Validation/Evaluation Award

The award will recognize an outstanding evaluation/validation study that has been submitted to the FRC Evaluation/Validation Repository within the last two years.

The 2024 Outstanding Validation/Evaluation Award winner is Tina Matto from the Idaho State Police Forensic Services with Screening of Suspected Overdose Samples with Randox MultiSTAT Analyzer.

USEFUL FORENSIC RESEARCH LINKS

[Center for Statistics and Applications in Forensic Evidence \(CSAFE\)](#)

[RTI Forensic Technology Center of Excellence](#)

[National Institute of Justice Office of Forensic Sciences](#)

[International Forensic Strategic Alliance \(IFSA\)](#)

[IFSA Research and Innovation Position Statement](#)

[OSAC Research and Development Needs](#)

[NIST Forensic Data sets](#)

[FIU Research Forensic Library](#)

[CFSRE Publications](#)



FRC Committee

Henry Maynard – Chair/LEAP

Kathleen Carrado – LEAP

Tracey Dawson Green – Lightning Talks

Lisa Yoshida – Evaluation/Validation Repository

Ashley Hall, Tracey Dawson Green – Awards

Mandy Tinkey, Laura Tramontin – Outreach/Bulletin

Ed Sisco, Ashraf Mozayani, Henry Swofford, Richard Meyers



FRC STRATEGIC GOALS:

- ▶ **ADVANCE** FORENSIC SCIENCE RESEARCH
- ▶ **SUPPORT** THE DEVELOPMENT OF FUTURE FORENSIC CAPABILITIES
- ▶ **FURTHER** CULTIVATE FORENSIC SCIENCE RESEARCH PARTNERSHIPS
- ▶ **PROMOTE** INFORMATION SHARING THROUGHOUT THE FORENSIC SCIENCE RESEARCH COMMUNITY
- ▶ **IDENTIFY AND PRIORITIZE** THE RESEARCH, DEVELOPMENT, TECHNOLOGY, AND EVALUATION (RDT&E) NEEDS FOR THE FORENSIC COMMUNITY



American Society of Crime Laboratory Directors

Research Priorities 2022-2024

General Forensics	Development and validation of standardized forensic methods and conclusions in impressions, patterns, and trace evidence disciplines
	Development, evaluation, and validation of massively parallel sequencing techniques for whole genome sequences, partial genome sequencing, and other forensic casework applications such as proteomics
	Development, evaluation, and validation of statistical or other computational methods to augment interpretation and quantitatively assess the value and strength of forensic evidence
	Evaluation of accuracy and reliability of forensic examinations as a function of evidence quantity, quality, or complexity
	Exploring the best ways to communicate results generated through statistical or other computational methods to non-technical audiences, such as investigators, litigators, and factfinders
	Research to support the application of evaluative reporting (likelihood ratios/expanded conclusion scales) and testimony for forensic evidence other than DNA (e.g., trace materials)
	Development of local, National, and International ground truth data sets across a range of evidence types for source and activity inferences
	Understanding the impact of various types of biases (beyond confirmation and contextual bias) on practical decision making across all practitioner types from the scene to the courtroom within the criminal justice system by exploring risk in decision-making and harnessing knowledge in other fields such as medicine, engineering and across the social sciences
Controlled Substances	Development of a standardized drying procedure for plant material to ensure consistent quantitative analysis of THC
	Error rate studies on qualitative analysis (single tests and schemes) in controlled substances
	Differentiation between THC-rich and CBD-rich cannabis plants in the field (more sensitive tests) and in the laboratory (more specific tests)
	Alternative methods beyond GC-MS to distinguish fentanyl-related substances (e.g., positional isomers, analogs) including FTIR, derivatization, color test, or other widely used forensic techniques
	Applications for DNA analysis of marijuana to identify cultivar for sourcing and linkage applications



American Society of Crime Laboratory Directors

Research Priorities 2022-2024



DNA/Biology	The ability to detect and locate sufficient biological material (e.g., epithelial cells, extracellular DNA) associated with touched or worn objects, that is not visible to the eye or with alternate light sources, for downstream DNA analysis
	Explore the use of Rapid DNA instruments for crime scene samples (e.g., touch DNA, sexual assault kits) with comparisons to traditional STR-typing methods
Questioned Documents	Validation of conclusion scale in forensic document examination
Pattern and Impression Evidence	Assessment of examiners' toolmark categorization accuracy
	Development, evaluation, and validation of methods to quantitatively assess the aptitude of candidates in pattern evidence disciplines
Trace Evidence	Development of an integrated and multidisciplinary approach for the advancement of data collection, data management and data analysis to aid interpretation of trace evidence
	Comprehensive GSR persistence study
	Specific identification of shooters via GSR
	Modelling the transfer and persistence of different trace evidence materials between a range of substrates