**Volume 3: Issue 2**
June 2022

*"Research means that you don't know, but are willing to find out"*

**-Charles F. Kettering**

# ASCLD
## FORENSIC RESEARCH COMMITTEE
# BULLETIN

## 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

## *FRC Hot Topics*

National Institute of Justice developed *a* Forensic Science Strategic Research Plan to communicate its research agenda. *See more at:* [Forensic Science Strategic Research Plan, 2022-2026](#)

International Forensic Strategic Alliance (IFSA) is a multilateral partnership between regional networks of operational forensic laboratories across the globe of which ASCLD is a member. The FRC is collaborating with the IFSA in its mission to promote research and innovation in areas with operational relevance that are critical to scientific service provision for the justice system.

The FRC Bulletin is designed to highlight developments within our core priorities. You are encouraged to submit comments and suggestions regarding the content to ASCLDFRC@gmail.com

## LIGHTNING TALKS

Lightning Talks are monthly talks given at lunchtime to provide the community with brief snapshots of new and emerging research.

Missed a Lightning Talk, watch the replay [here](here):

Episode 10: Algorithms and AI in Forensics

Episode 11: Drone Forensics

Episode 12: Forensic DNA Phenotyping

Episode 13: Oral Fluid Toxicology

Episode 14: Interlaboratory and Black Box Studies

Episode 15: Cocaine Analysis

Next Lighting Talks:  Isotope Ratio Mass Spectrometry
                      Microbial DNA
Sign up at https://www.ascld.org/forensic-research-committee/

## COLLABORATION HUB

If you are a researcher looking for practitioners to participate in your study, complete the project [form](form) to advertise your project to practitioners looking for research opportunities.  If you are a practitioner looking to become involved in research opportunities, [search](search) the Researcher/Practitioner Collaboration Directory for projects in need of participants.

Recent collaborations include:

- o *Blind Proficiency Testing from Robin Mejia of Carnegie MellonUnversity*
- o *Mobile App Evidence Analysis from Dr. Yong Guan of Iowa State University*
- o *Forensic Processing at Crime Labs from Dr. Brett Gardner of the University of Virginia*
- o *Characterization of Footwear in Local Populations from Dr. Susan Vanderplas of University of Nebraska, Lincoln*
- o *Handwriting Evaluation from Dr. Alicia Carriquiry of Iowa State University*
- o *Forensic Processing at Crime Labs from Dr. Brett Gardner of University of Virginia*

Check out this short video to learn more about LEAP.

**79 Universities ↔ 29 Laboratories**

<u>108 LEAP Partners</u> willing to collaborate on Forensic Science Research, Development, Test & Evaluation    *as of June 2022*



LEAP Partners in the US



Current World
LEAP Partners:

USA, Canada, Australia,
and Saudi Arabia

Help Us Add More!

## LABORATORIES & EDUCATORS ALLIANCE PROGRAM (LEAP)

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, and students to seek projects aligning with their mutual research capabilities.

Is your laboratory interested in partnering with a university to work on mutually beneficial research?  Are you interested in conducting research, assisting with evaluations/validations, or interested in internship opportunities for your students at a forensic science laboratory?

Sign up for the LEAP program today!

[Crime Lab Sign Up](#)  /  [University Sign Up](#)

## NEW LEAP PARTNERS:

**Please join me in welcoming our newest Research Partners!**

Dr. Torki Zughaibi – King Abdulaziz University, Saudi Arabia
[taalzughaibi@kau.edu.sa](mailto:taalzughaibi@kau.edu.sa)

Diana G. Johnson – Marian University, USA
[dgjohnson99@marianuniversity.edu](mailto:dgjohnson99@marianuniversity.edu)

## LABORATORY RESEARCH COLLABORATION SPOTLIGHT:

The Idaho State Police Forensic Services Laboratory is currently looking to support research forensic research projects.

Please contact Matthew Gamette, Laboratory System Director, for more information.

Email: [matthew.gamette@isp.idaho.gov](mailto:matthew.gamette@isp.idaho.gov)

## RECENT ADDITIONS TO THE EVALUATION AND VALIDATION REPOSITORY

**STRmix Validation with GlobalFiler and 3500 CE**
Laboratory: Colorado Bureau of Investigation
Contact Name: Jennifer Malone, DNA Technical Leader
Email: jennifer.malone@state.co.us
File Link: https://www.ascld.org/wp-content/uploads/formidable/13/2018-STRmix-Validation_FINAL-38656-1.pdf

**A Quantum Leap in the Development of Quadratic External Calibration Models by EZSTATSG2, an Innovative Tool for ANSI/ASB Standard 036 Method Validation Using Microsoft Excel**
Laboratory: Cuyahoga County Regional Forensic Science Laboratory at the Medical Examiner's Office, Toxicology Department
Contact Name: Szabolcs Sofalvi
Email: ssofalvi@cuyahogacounty.us
File Link: https://www.ascld.org/wp-content/uploads/formidable/13/Preprint-AOV-EZSTATSG2-v20.pdf

**Lumicyano Validation for Latent Prints**
Laboratory: San Bernardino County Sheriff's Scientific Investigations Division
Contact Name: Kirk Garrison
Email: kgarrison@sbcsd.org
File Link: https://www.ascld.org/wp-content/uploads/formidable/13/Scanned-Full-Study.pdf

**Implementing Hematoxylin into Casework at the North Carolina State Crime Laboratory**
Laboratory: North Carolina State Crime Laboratory
Contact Name: Vanessa Martinucci
Email: vmartinucci@ncdoj.gov
File Link: https://www.ascld.org/wp-content/uploads/formidable/13/Hematoxylin-North-Carolina.pdf

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## EVALUATION AND VALIDATION REPOSITORY

The goal is to compile a list of unique validations and evaluations conducted by forensic labs and universities. The repository will catalog these efforts and provide the contact information of the people responsible for the work.

It is ASCLD's hope that this listing will foster communication and reduce unnecessary repetition of validations and evaluations to benefit the forensic community.

Check the website to search for a validation or evaluation study or provide study information to be included.

# FRC AWARDS

The awards are open to scientists from all disciplines (bio/DNA, drug chemistry, toxicology, fingerprints, questioned documents, trace/microscopy, firearms/toolmarks, and digital/multimedia sciences) in operational forensic labs, academic or research laboratories.

The LEAP Collaboration Award recognizes an outstanding partnership between LEAP participating academic and operational forensic laboratories. The winners of 2022 LEAP Collaboration Award are the University of Illinois at Chicago's Department of Biopharmaceutical Science and the New York State Police Crime Laboratory System for their work on "Wild and Domesticated Touch DNA".

The Outstanding Evaluation/Validation Award recognizes an outstanding evaluation/validation study submitted to the FRC repository. The 2022 Outstanding Evaluation/Validation Award winner is Szabolcs Sofalvi with the Cuyahoga County Medical Examiner's Office with "A Quantum Leap in the Development of Quadratic External Calibration Models by EZSTATSG2, an Innovative Tool for ANSI/ASB Standard 036 Method Validation Using Microsoft Excel.

## FRC Committee Members

Henry Maynard – Chair/LEAP

Kathleen Carrado – LEAP

Ed Sisco – Lightning Talks

Lisa Yoshida, Brooke Ehlers – Evaluation/Validation Repository

Ashley Hall, Tracey Dawson Green – Awards

Mandy Tinkey, Laura Tramontin – Outreach/Bulletin

Jose Almirall – Future Forensics

Ashraf Mozayani, Henry Swofford, David Love

# American Society of Crime Laboratory Directors
# Research Priorities 2022-2024

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|---|---|
| **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

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|---|---|
| **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 |

Updated November 2021