Dear Colleagues,

This week’s President’s Message features a portion of our organization’s position on today’s announcement by Deputy Attorney General Rod Rosenstein and the appointment of Ted Hunt as Senior Advisor on Forensics. DAG Rosenstein’s announcement can be found at the following link:


ASCLD supports the process where subject area experts with the best interests of serving survivors and forensic science work together to develop policy and procedures that serve everyone.

ASCLD supports forensic scientist practitioner input into all initiatives that impact forensic science.


A direct quote from the ASCLD NOPA reads as follows:

ASCLD supports national initiatives to coordinate and sustain efforts to strengthen and advance the forensic science profession including:

- The development of scientific standards for the practice of forensic science.
- The accreditation of all Forensic Science Service Providers.
- Advocacy for resources to enable research and development, testing and evaluation, technology, information exchange, training and capacity building for the forensic infrastructure.
- A central, independent body within the Department of Justice that coordinates DOJ efforts related to forensic science with a mission that is solely forensic science focused.
- Leadership with practical forensic science experience, fundamental scientific education, and crime laboratory leadership.

ASCLD supports the development of an Office of Forensic Science within DOJ which supports forensic science, has direct input from forensic science leadership and forensic scientist practitioners, coordinates grants and moves forensic science forward. We are committed to working with newly appointed Senior Advisor on Forensics Ted Hunt to best serve the needs of forensic science and the many cases it serves with objective data driven evidence.

In service with you in Forensic Science.

Ray Wickenheiser
ASCLD President

Be sure to stay up-to-date with our 2017-18 National Priorities and Agenda!

Our NEW mailing address: 65 Glen Road, Suite 123, Garner, NC 27529
Deputy Attorney General Rod J. Rosenstein announced two new Department of Justice projects today at the International Association for Identification’s conference in Atlanta, Georgia. This reinforces the Justice Department’s commitment to sound forensic science practices and to increasing the capacity and effectiveness of forensic science providers by helping to improve the reliability of forensic analysis.

“The Department of Justice believes that when the adversarial American legal system functions as intended – including through the support of trained forensic examiners and legal practitioners educated on best forensics practices – justice is advanced,” said Deputy Attorney General Rosenstein. “The Department is fully committed to examining and strengthening forensic science despite efforts in the courtroom and elsewhere to reject reliable and admissible forensic evidence.”

The projects announced today are aimed at ensuring that the testimony of the Justice Department’s forensic examiners is consistent with sound scientific principles and just outcomes. The Department will develop Uniform Language for Testimony and Reports to give clear guidance to what the Department’s forensics examiners may discuss in a courtroom, and direct prosecutors to follow the same guidelines. The Department will also develop a new forensic examiner testimony-monitoring program to ensure compliance with the uniform language standards once they are adopted.

Deputy Attorney General Rosenstein also announced that Attorney General Jeff Sessions has tapped Ted Hunt, a former state prosecutor and member of the National Commission on Forensic Science (which sunset in April), to serve as the Department’s Senior Advisor on Forensics. In addition to Mr. Hunt’s decades of first-hand experience investigating and prosecuting cases with forensic evidence, he has long been involved with state, local, and federal efforts to improve forensic science through committees, commissions, and training programs.

“It speaks strongly of the Attorney General’s commitment to the interdisciplinary nature of forensic science that he has appointed Mr. Hunt to serve in this position,” said Deputy Attorney General Rosenstein. “I am directing him to coordinate closely with our federal, state, local, and tribal forensic science practitioners and to identify ways to best continue ongoing outreach to these stakeholders.”

[Press Release Number: 17-880]

Deputy Attorney General Rod Rosenstein Delivers Remarks at the International Association for Identification Annual Conference

Atlanta, GA
United States
~
Monday, August 7, 2017

Thank you, Governor Deal, for that kind introduction. I am grateful to the International Association for Identification for giving me the opportunity to participate in your Annual Conference.

It is an honor to address such a talented group of forensic examiners. I am excited to share with you what the Department of Justice is doing to advance the reliability of forensic science.

One of the keys to using forensic analysis appropriately is understanding the limitations of the evidence. You need to know what it means, and what it does not mean. Link below speech:

Communications Committee

ASCLD is looking for enthusiastic volunteers to assist with the following positions on the Communications Committee:

- Crime Lab Minute Design Specialist
- Public Relations Liaison to Industry Partners and University Programs

Please email Ascldpoc@gmail.com for more information or call 202-498-8105. Thank you for your interest.

Looking for a new opportunity?

- **Remote DNA Forensic Analyst**, 4814535341, Salt Lake City, Expires: August 31, 2017
- **Biologist**, Bode Cellmark Forensics, Quantico, VA, Expires: September 15, 2017
- **Physical Scientist-Trace**, Bode Cellmark Forensics, Quantico, VA, Expires: September 15, 2017
- **Forensic Analyst – Toxicology**, Houston Forensic Science Center, Houston, TX, Expires: October 13, 2017
- **Crime Lab DNA Analyst**, Charlotte Mecklenburg Police Department Crime Laboratory, Charlotte, NC, Expires: August 20, 2017
- **Quality Assurance Specialist (CSS)**, DC Government – Department of Forensic Sciences, Washington, DC, Expires: August 7, 2017
- **Forensic Scientist Technical Leader (Fingerprint)**, DC Government – Department of Forensic Sciences, Washington, DC, Expires: August 7, 2017
- **Controlled Substance Analyst**, State of Wisconsin-Department of Justice, Wausau, WI, Expires: August 21, 2017
- **Forensic Serologist**, Sorenson Forensics, Salt Lake City, Expires: September 29, 2017
- **Forensic DNA Technician**, Sorenson Forensics, Salt Lake City, Expires: September 29, 2017
- **Forensic DNA Analyst I / II**, Sorenson Forensics, Salt Lake City, Expires: September 29, 2017
- **Forensic DNA Analyst – Priority DNA**, Sorenson Forensics, Salt Lake City, Expires: August 31, 2017
- **Forensic Scientist – Division of Technical Services**, Virginia Dept. of Forensic Science, Richmond, VA, Expires: August 11, 2017
- **Quality Specialist**, Houston Forensic Science Center, Houston, TX, Expires: September 30, 2017
- **Forensic Analyst – Biology/DNA**, Houston Forensic Science Center, Houston, TX, Expires: September 30, 2017
- **Crime Scene Supervisor**, Houston Forensic Science Center, Houston, TX, Expires: September 30, 2017
- **Latent Print Examiner**, Houston Forensic Science Center, Houston, TX, Expires: September 30, 2017
ASCLD Crime Lab Minute August 7, 2017

- Property & Evidence Manager, NMS Labs, Grand Prairie, TX, Expires: October 18, 2017
- Forensic Biologist III or IV Trainer, NMS Labs, Willow Grove, PA, Expires: October 18, 2017
- Forensic Chemist III or IV, NMS Labs, Willow Grove/Warminster PA, Expires: October 18, 2017
- Non-Tenure Track Forensic Science Faculty Position, Pennsylvania State University, University Park, PA, Expires: October 13, 2017
- Forensic Science Lecturers (2), University at Albany, SUNY, Albany, NY, Expires: August 31, 2017
- Staff Chemist, ORAU (Oak Ridge Associated Universities), Charlottesville, VA and OCONUS, Expires: September 29, 2017
- Post doctoral scholar, The Pennsylvania State University, Forensic Science Program, Department of Biochemistry and Molecular Biology, University Park, PA, Expires: August 31, 2017
- Latent Print Laboratory Director, NYS Division of Criminal Justice Services, Albany, NY, Expires: September 15, 2017
- Bilingual Accreditation Manager, ANSI-ASQ National Accreditation Board, Cary, NC, Expires: September 14, 2017
- Audio/Video Forensic Analyst, Houston Forensic Science Center, Houston, TX, Expires: September 30, 2017
- Staff DNA Analyst (#01611), ORAU, Charlottesville, VA and OCONUS, Expires: October 2, 2017
- Senior DNA Analyst (#01607), ORAU, Charlottesville, VA and OCONUS, Expires: October 2, 2017
- Principal DNA Analyst (#01604), ORAU, Charlottesville, VA and OCONUS, Expires: October 2, 2017
- Associate DNA Analyst (#01593), ORAU, Charlottesville, VA and OCONUS, Expires: September 29, 2017

NIJ Forensic Technology Center of Excellence

Attendee Enrollment Open!
Rapid DNA Technology Forum
When: August 15th - 17th, 2017 from 8am - 5:30pm EST
Where: The Alexandrian in Old Town, Alexandria, VA

The FTCoE will host the Rapid DNA Technology Forum on August 15-17, 2017 in Alexandria, VA. Rapid DNA technology has quickly advanced over the past several years with two commercially available systems being adapted to analyze the CODIS panel, and the introduction of the Rapid DNA Act of 2017 which may soon become law. This forum will provide the forensic DNA community an opportunity to be updated on commercially available Rapid DNA technologies, and hear lessons learned from several early adopters spanning local law enforcement and federal agencies. The evolution of Rapid DNA will be discussed along with technologies currently in development which have the potential to impact the future of forensic DNA analysis.
Episode 9 Podcast!!
Just Blood Spatter

In episode nine of Just Science, funded by the National Institute of Justice’s Forensic Technology Center of Excellence [Award 2016-MU-BX-K110], we spoke with Dr. Marc Smith, from the Georgia Institute of Technology. Dr. Smith’s NIJ funded research in blood spatter has connected computational fluid dynamics with empirical studies to improve the understanding of blood spatter onto solid, slanted surfaces. His work looks at many variables, including droplet size, speed, surface roughness and wettability. Listen and Subscribe HERE.

Subscribe to the channel at:
- Google Play
- iTunes
- Stitcher
- Soundcloud

DNA - Bode

16th Annual DNA & Investigators Conference – Bode East, September 11-14 in Philadelphia, PA

ASCLD/RTI Backlog Series

Archival versions of the ASCLD/RTI Backlog Series can be found at the following links:
- The Paradox of Backlog Reduction – How Doing Less Can Be Doing More
- Taking the First Steps Toward Backlog Reduction
- Managing Customer Expectations and Education
- How to Increase Your Staff without Increasing Budget
- Efficiency Improvements
- Developing a Statewide Approach to Backlog Management
- Case Acceptance Policies and Guidelines

ASCLD/RTI Rapid DNA Series

Archival versions of the ASCLD/RTI Rapid DNA Series can be found at the following links:
- Rapid DNA: The QAS and NDIS
- Rapid DNA: Arizona DPS and Richland County, SC
- Rapid DNA: Booking Stations and CODIS

ASCLD/RTI DNA Standards and Guidelines Webinar Series

SWGDAM Interpretational Guidelines

Proposed Quality Assurance Standards (QAS) changes

NFSTC News

NFSTC is now offering online proficiency testing in crime scene investigation to agencies across the globe. After the Fact has been used as the competency standard since 2011 and is a cost-effective training tool. Assessments are $250 and available at www.csi-skills.com.
NFSTC online training courses can be found on their website.

ANAB Training

- Introduction to ISO/IEC 17025

- Internal Auditing to ISO/IEC 17025
  August 21-23, 2017, Memphis, TN; October 3-5, 2017 Riyadh, KSA

Dear colleagues,
Please find a vacancy announcement below:

The School of Natural Sciences at Griffith University is currently advertising for an Associate Professor / Senior Lecturer in Forensic Science.

For further information, see: https://www.griffith.edu.au/future-staff (Job Search - ID 105777). The closing date for the position is the 25th August 2017.

Kind regards
Eva
Secretariat NIFS
OSAC Promotes Hundreds of Forensic Science Standards, Guidelines, and Other Documents During 2017

OSAC Public Status Reports & Open Discussions

The webcasts and PowerPoint presentations are available for public viewing on the NIST OSAC website.*

The OSAC Registry is a trusted repository of high-quality, science-based standards and guidelines for forensic sciences.

WK58027 - Standard Practice for Preserving Ignitable Liquids and Ignitable Liquid Residue Extracts from Fire Debris Samples (link is external) is a work item revision to existing standard E2451-13

WK58028 - Standard Guide for Forensic Examination of Non-Reactive Dyes in Textile Fibers by Thin-Layer Chromatography (link is external) is a work item revision to existing standard E2227-13

New Approved Standards

ASTM E2926 - 17 Standard Test Method for Forensic Comparison of Glass Using Micro X-ray Fluorescence (µ-XRF) Spectrometry (link is external)

ASTM E1588 - 17 Standard Practice for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry (link is external)

E30.12 Digital and Multimedia Evidence

The following work item is underway:

WK58084 - Standard Practice for Computer Forensics (link is external) is a work revision to existing standard ASTM E2763-10

Learn more about ASTM E30 (link is external).

Forensic Science in the News

These bugs are the most gruesome clues in forensic science

Damien Charabidze, a forensic entomologist at the University of Lille in France, reviewed more than 170 scientific
articles and case reports about bugs and corpse relocation. He found that, although TV shows and textbooks imply that bugs can act as a corpse's six-legged return address, this rarely bears out in practice. “Only a few forensic cases have actually been solved using such a method,” he said. Those that were required “good timing, an accurate sampling, a little bit of luck” as well as “a huge background knowledge” in local biology.

It Might Be Impossible to Get Away With Crime Some Day
Somewhere in the 20,000 genes and 3.2 billion base pairs that make up the genome of Ted Kaczynski lie the genetic codes for madness. It wouldn't be easy, even today, to tease out those genes, and it was even less possible in 1996, when the man better known as the Unabomber for the 16 bombings he carried out over 17 years was at last apprehended.

Regional Forensic Science Lab gets DNA test centre
A DNA test centre was opened at the Regional Forensic Science Laboratory here, a move which will facilitate the police of five districts in Nashik division to get DNA tests conducted within the city.

Woman finds evidence bag full of marijuana at neighborhood park
The Houston Police Department said the 53 ounces of marijuana are from an open narcotics case from April 2016.

Remembering Devoted University Friend Margaret Lee
Margaret Soong Meow Lee, the wife of University of New Haven professor and renowned forensic scientist Dr. Henry C. Lee, died on August 1 after a brief illness.

2 men confessed to murder. Their DNA tells another story.
The Innocence Project, which has taken up Kelley's case, says false confessions are far more common than most people realize. Joined by the Princeton-based Centurion Ministries, which is representing Lee, they say new evidence -- including DNA testing -- shows the men never stepped foot in the store that day.

DPS agrees to reverse new policy of charging for crime lab testing
After outcry from local law enforcement and a request by Gov. Greg Abbott, the Texas Department of Public Safety announced Friday it would backtrack on its earlier plans to begin charging agencies for use of state crime labs.

The Only Full Service Crime Lab for Wildlife in the World
Founded by a crime scene investigator, the United States Fish and Wildlife Service Forensics Laboratory in Ashland, Oregon, uses state-of-the-art technology (as well as flesh-eating beetles). Meet some of the forensics experts at "the only full service crime lab for wildlife in the world."

Emails Raise Questions About DNA Witness in Holtzclaw Case
Law enforcement e-mails obtained through an Open Records request are raising questions about a key witness -- a retired DNA analyst -- in the trial and conviction of former Oklahoma City police officer Daniel Holtzclaw.

Dentures Bearing Rapist's Name, DNA Lead to Conviction After 16 Years
Thomas Maupin pleaded guilty before a Tennessee judge after a partial DNA profile retrieved from the dentures was found to be consistent with his profile, authorities announced last week.

Scientists Still Seek a Reliable DUI Test for Marijuana
This spring, 16 state patrol officers from Colorado and Wyoming took a couple days off their usual work schedule to do something special. They assembled in a hotel conference room in Denver. As instructed, they wore street clothes for their first assignment: going shopping at nearby marijuana dispensaries.
Next Professional Orientation Schools Scheduled

The next Professional Orientation Schools for New Crime Laboratory Scientists have been scheduled to begin on August 14 and October 9th. Laboratory directors and supervisors with new employees are encouraged to have them enroll as soon as possible. For more information or to enroll, please visit www.jmcollinsjr.com/pos.html. To reach the instructor, John Collins, please call (517) 803-4063 or email at forensicdirector@gmail.com.

FORESIGHT 20/20

The American Society of Crime Laboratory Directors (ASCLD) has received funding from the Laura and John Arnold Foundation to develop software that will transfer data from forensic Laboratory Information Management Systems (LIMS) to FORESIGHT, a business quantitative process tailored to forensic laboratories.

The goal of the project, called FORESIGHT 20/20, will be to allow laboratories to easily upload business-relevant information from their individual LIMS to the FORESIGHT project, hosted at West Virginia University.

Software development and installations for JusticeTrax Alpha labs is progressing. The software

Bode Cellmark Forensics provides advanced forensic solutions offering crime labs ways to reduce their workloads and budgets.

Bode’s newest offerings include:
- Sexual Assault Kit Backlog Reduction Program streamlines processes to eliminate backlogs of untested sexual assault kits.
- Bode Buccal 2™ is uniquely designed to improve DNA databanking collecting and automate processing. The Bode Buccal 2 is a DIRECT COLLECTION SYSTEM that requires minimal training. There is NO Transfer Step Required.

Independent Validation Services are customized to meet your laboratory’s needs. Validation services provide completely unbiased analysis on your equipment, chemistries, or process.
provides a dashboard of the labs’ own stats and FORESIGHT stats, among other information. The information, formatting, and interface may vary somewhat by vendor.

Foresight 20/20

An opportunity to work at JusticeTrax doesn’t come around very often. We have a Software Tester position open! This one is going to go fast! Please read about the opening at https://justicetrax.com/employment/

The Software Tester basic function is to validate the quality of JusticeTrax products. The Software Tester finds weaknesses in the products in an efficient and timely manner so Software Developers can resolve them before customers experience a problem. Experience with JusticeTrax applications, especially LIMS-plus, may be substituted for experience as a software tester.

Following a number of requests from recipients for a direct link to the digest, I am in the process of creating a web-page on the ChemCentre web-site (www.chemcentre.wa.gov.au) for you to directly link to. I am hopeful that this will be active when the next issue of the digest is published and I will notify you accordingly. Please also continue providing me with feedback that enhances the value of this publication.
Technical Colloquium on the Weight of Evidence

How can we transition the reporting of forensic results from simple “match/no match” statements to statements that integrate error and uncertainty?

The first day will be about defining the weight of evidence - what it means and how to quantify it. The second day will cover collecting evidence and analyzing data with these quantification challenges in mind. The third day will focus on communicating and reporting findings of forensic examination.

Download the article here

The chemistry behind the opioid epidemic
Andy Brunning
C&EN; 95(24); p. 24; June 6, 2017

National Victimization Statistical Support Program
Federal Justice Statistics Analytical Support Program
BJS-2017-127000
The Bureau of Justice Statistics' (BJS) Federal Justice Statistics Program (FJSP) collects, standardizes, and publishes statistics about the federal response to crime and the operation of the federal criminal justice system. The FJSP produces annual standard analysis files (SAFs), which document the federal criminal case processing stages from arrest to prosecution, pretrial release, adjudication, sentencing, appeals, and corrections. The FJSP also produces linking files that permit analysis of defendants and cases across stages of the federal criminal justice system. With this solicitation, BJS seeks an agent to implement the Federal Justice Statistics Analytical Support Program (FJSASP) project. This project is designed to provide scientific and technical support to BJS for methodological research, statistical analysis, and the generation of statistical reports using data from the FJSP. In addition, the FJSASP will work with BJS to identify additional sources of data to further enhance the FJSP (e.g., immigration enforcement and court statistics, enforcement data from federal regulatory agencies, civil data from the federal courts, and staffing and budget statistics).

There are three priority areas for this project: (1) using the FJSP data to address pressing substantive questions about the federal justice system through the production of statistical reports, (2) assessing the strengths and shortcomings of the FJSP data for federal criminal justice statistical reporting purposes and proposing and implementing methodological solutions to address deficiencies, and (3) identifying and assisting to integrate outside data sources with FJSP data files.

Deadline: Applicants must register with
Forensic Science Assessments: A Quality and Gap Analysis - Fire Investigation
José Almirall, Hal Arkes et al
AAAS; 89 pages; July 11, 2017

NIJ Forensic Science R&D Reports for ASCLD
Crime Lab Minute Vol 10

These research reports have been submitted by the National Institute of Justice (NIJ) especially for their relevance to crime laboratory activities. ASCLD has not reviewed nor does it necessarily endorse the findings of this research.

Report: NIJ's DNA Analysis, Capacity Enhancement and other Forensic Activities
This report summarizes NIJ’s approach to improving forensic science includes long term strategic advances and necessary immediate relief to address the challenges of satisfying increasing demand for DNA analysis. From 2008 to 2014, the turnaround time for analysis has remained nearly constant, while testing capacity increased by over 60 percent. Average cost per case has decreased from $1,279 in 2007 to $607 in 2014. And since 2009, uploads of DNA profiles to the Combined DNA Index System (CODIS) have increased 143 percent. The need for this assistance has never been greater, through capacity building, technical assistance, research, development, evaluation and dissemination, NIJ is working to address the challenges experienced by forensic laboratories.

Tune in to the FTCoE Just Science Podcast!
NIJ’s Forensic Technology Center of Excellence has launched Just Science, a podcast for forensic science professional and others interested in learning how crime laboratories are working to produce more accurate results, become more efficient and solve more crimes. The podcast covers every forensic science discipline. Recent episodes discussed lab management, human factors, 3D optical topography, subjective probability, DNA mixture interpretations and economics and crime labs.

The Evidence for Very Small Particles
NIJ recently published an article in Forensics discussing the work of Stoney Forensic in developing an investigatory technique called “very small particle analysis.” This approach involves the careful examination of dust on an object to trace it back to its original location, or the comparison of two or more...
objects to determine if they have, at some point, been in the same place. The researchers have successfully used this analysis to support U.S. government agencies and local and international law enforcement investigations, for example to trace the origins of illegal shipments of elephant tusks.

Developing Reliable Methods for Microbial Fingerprinting of Soils
Soil evidence has the potential of being a valuable tool for linking a suspect, victim, or item to a crime scene. Currently, however, only class characteristics of soil are considered in traditional analysis. This NIJ-supported research project examined the utility of soil bacterial profiling via next-generation sequencing of the 16S rRNA gene to identify a soil’s origin. The researchers successfully differentiated soil samples from diverse and similar habitats back to their location of origin 100 percent of time in multidimensional space and 87.5 percent of time through supervised classification. Time and space within a habitat did not affect bacterial profiles enough to hinder location-of-origin assignment. Soil collected from evidentiary items remained clustered nearest its location of origin with 100 percent accuracy, even after a full year or long-term storage. The success in tracing soils back to a location of origin demonstrates the potential of next-generation sequencing of bacteria, in conjunction with a combination of robust statistical techniques, for the individualization of forensic soil samples.

Quantitative Algorithm for the Digital Comparison of Torn Duct Tape
Researchers from University of California, Davis sought to minimize human contextual bias in decisions about whether torn duct tape found at a crime scene matches a duct-tape roll found in a suspect’s possession by combining digital image analysis and an objective, quantitative algorithm in assessing the likelihood of a match. These NIJ-supported researchers performed edge detection and morphological smoothing operations on high-resolution images of torn duct tape edges to extract the torn-edge coordinates. In 97 percent of examined tears, the true match had the lowest observed sum of square residuals, with false positive rates ranging from 0.5 percent for some types of hand-torn duct tape to 62 percent for scissors-cut duct tape. This work provides a starting point for quantitative assessment of the likelihood of physical end matching of duct tape without human contextual bias.

Non-Medical Use of Prescription Drugs: Policy, Law Enforcement, and Diversion Tactics
The goal of this University of Central Florida study was to determine whether Florida law HB 7095 and related legislation reduced the number of pain clinics abusively dispensing opioid prescriptions in the State, as well as to assess the logistics of administering the law. The findings presented in this NIJ-supported report indicate that the Florida effort against rampant “pill mills” was largely successful, which is consistent with research that has documented reductions in opioid-related deaths in Florida. Further, the findings show the key role of interagency cooperation in the success of the legislation, which in conjunction with Florida’s legislation, should be considered a model for future efforts in reducing easy access to prescription opioids.

Differential Sampling of Footwear to Separate
Evidentiary Particles from Background Noise

This NIJ-supported project by Stoney Forensic tested the ability to separate particle signals on the footwear soles using differential analysis of loosely held, moderately held, and strongly held particle fractions. Prior research has used a generalized sampling of particles on footwear soles from both contact and recessed areas shows the retention of particles from earlier contacts. The current study determined that although particles on the contact surfaces of footwear were removed and replaced, particles on the more recessed areas of the sole were not. Three environmental exposure sites were chosen to have different characteristic particle types (soil minerals) and shoes of two types (work boots and tennis shoes) were tested. Some shoes were exposed to only one environment, and others were exposed to all three in one of six sequences. Sampling methods were developed to separate particles from the contact surface of the shoe based on how tightly they were held to the sole.

Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) and Laser Induced Breakdown Spectroscopy (LIBS) Analyses of Paper, Inks, and Soils

Florida International University researchers sought to demonstrate the utility of an analytical chemistry tool that is relatively new to forensic laboratories, Laser Induced Breakdown Spectroscopy (LIBS), in conducting elemental analysis of ink, paper, and soil evidence quickly and with little or no sample preparation. The commercial LIBS instrumental results were compared to previously optimized in-house LIBS systems and also to the alternative forensic tools, which offer good analytical performance but suffer from either very high costs and significant complexity (in the case of LS-ICP-MS) or analytical limitations in the form of sample requirement and relatively high detection limits (in the case of mXRF and SEM-EDS). Although less mature than LA-ICP-MS, LIBS also shares the benefits associated with laser ablation methods, with the added advantage of improved speed, versatility, ease of operation, affordability, and portability. This NIJ-supported project shows that both LA-ICP-MS and LIBS are useful analytical tools for the analysis of paper, inks, soil, and cotton.

Method Validation for a Statistically Based Comparison of Tool Marks using GelSight-Based Three Dimensional Imaging and Novel Comparison Algorithms for Firearm Forensics

TopMatch technology for structural 3D imaging and comparison of cartridge casings shows excellent and continually improving match accuracy; however, in order to fully establish the base credibility of the platform, it was necessary to establish best-scanning practices and to demonstrate that the method meets the quality-control criteria of other forensic instruments. This NIJ-supported project by Cadre Research Labs aimed to enhance TopMatch by establishing best practices and conducting a set of methodology studies. The project complements the previous studies on accuracy and evidence stability by addressing the remaining issues of precision, repeatability, reproducibility, contamination risk, and performance checks. In addition, researchers studied the effects of cleaning protocols, focus variation, and ambient lighting variation.

Measuring the Frequency Occurrence of Handwriting and Hand-Printing Characteristics

One of the basic axioms of handwriting comparison is that no two writers use the exact same set of handwriting characteristics. The database created by NIJ-supported researchers and the resulting frequency occurrence proportions provide the forensic and judicial communities with some empirical data with which to assess this axiom. The specific approach in collecting samples that match the U.S. demographics provides unique insight and substantive data on the quantitative relationship between the presence/absence of readily identifiable features and key demographic factors as noted by Huber and Headrick (age, gender, ethnicity, education, location of second/third grade schooling, and handedness) while controlling for other factors,
such as temporal state and geographic locations. The original set of specimens collected from a wide spectrum of participants provided an initial large collection that was eventually pared down to achieve what is considered a representative sample from the entire target population.

Gunshot Residue in a Non-Firearm Detainee Population

Studies have shown varying amounts of gunshot residue (GSR) in the police environment, with most being on surfaces within facilities occupied and operated by law enforcement. This NIJ-supported study by researchers at the Harris County Institute of Forensic Sciences examined whether GSR contamination could be found on the hands of detainees at the Harris County Jail (Texas) who were not charged with any offenses related to the discharge of a weapon. Of the 175 samples obtained and tested, not one characteristic GSR particle was found. Coupling the results of this study with one in which no GSR particles were on 100 persons answering bench warrants in Bexar County (Texas) gives an average of less than one GSR particle in 275 hand samples. Considering that a different study of random surfaces within the Chicago Police Department (n=201) found a total of 56 GSR particles, the current study concludes that GSR particles are not readily transferred to surfaces not in close proximity to a recently fired gun.

Comparison of Microspectrophotometry and Fluorescence Excitation-Emission Matrix (EEM) Spectroscopy for Non-Destructive Fiber Examination

When spectral information is used in the study of fiber evidence, variations within a fiber source lead to the recommendation that multiple spectra be collected from each fiber to properly characterize the sample. Although this methodology is sufficient for comparison of profiles with obvious differences, the chemometric methods used in this NIJ-supported study from researchers at the University of Central Florida show higher accuracies than the visual method commonly used in forensic laboratories. Current practices in forensic labs that involve fluorescence microscopy do not take advantage of the information content that exists in the spectral signature of textile fibers. The coupling of a microscope to a spectrofluorimeter allows for the acquisition of a complete training set of EEMs for fiber dye identification from an individual fiber. Accounting for the variance of the EEM spectra at different regions along the length of the fiber provides a useful training set that can be used as the basis for principal component cluster analysis.

Development of a Mobile, Automated Tool Mark Characterization/Comparison System

This NIJ-supported project developed a portable prototype instrument that provides forensic examiners with the ability to characterize a tool-marked surface, compare the data from that surface to data files obtained from any other surface, and assess the likelihood that the marks on the two surfaces were made by the same tool. To date, the system has been successfully tested on data sets consisting of fully striated marks created from 50 sequentially manufactured screwdrivers, quasi-striated markings produced by 50 sequentially manufactured shear-cut pliers, and impression marks produced by 50 sequentially manufactured cold chisels.

The Interpretation of Patterned Injuries in Medicolegal Death Investigation

In this report, NIJ-supported researchers describe the results of their survey evaluating the effect of image processing and image quality on the ability of forensic pathologists to accurately interpret images of patterned injury of the skin. The study consisted of three surveys: the first, a collection of “classic” images that most pathologists would diagnose with high consensus (baseline survey); the second, degraded images with lesser resolution poorer composition to determine how degradation affected diagnostic consensus; and the third, images treated with various enhancement techniques to determine whether any benefit was gained. Surprisingly, the first survey produced a median of only 74 percent consensus. An analysis of the second and third surveys
demonstrated the importance of context and history in forensic pathologic diagnosis. When provided with history, consensus rose to approximately 98 percent per question (median value) for the matching subset of the first survey.

**Prediction of Drug Interactions with Methadone, Buprenorphine and Oxycodone**

The impact of drug interactions spreads beyond the field of forensic toxicology to encompass general medicine, pharmacy and other areas involved in drug use and dispensing. These can all directly and indirectly impact the criminal justice systems, as many in these professions are called upon as consultants and expert witnesses for cases. Information on potential drug interactions with methadone, buprenorphine, and oxycodone can benefit these fields. A NIJ-supported project by researchers at the University of Utah hypothesized that the inhibition of the metabolism of opioids may contribute to their toxic effects and set out to measure the in vitro inhibition of metabolism of three opioids: methadone, buprenorphine, and oxycodone. This report outlines the progress made optimizing incubation conditions, establishing positive controls and screening inhibitory potential of the three drug classes.

**Evaluation of a Novel Fluorescent Dye to Detect Ano-genital Injury in Women of Color**

NIJ-supported researchers at the University of Virginia tested fluorescent dyes to detect sexual assault injuries on different skin colors and tones. Trials were conducted to identify non-toxic suitable dyes that can be easily visualized using equipment already in common use among forensic examiners and will not interfere with subsequent forensic DNA testing. Findings suggest that fluorescein is both safe and feasible to use in detecting genital injury across all skin tones. However, additional research on alternative dyes across all skin tones is recommended.

**Development of an Analytical System for Comparison and Identification of Fiber Dyes**

In order to overcome challenges to generalized fiber dye characterizations, this NIJ-supported research explored a significant range of dyestuffs that span numerous major dye application classes, chemistries, chromophores, and fiber types, using techniques and methodologies currently available in most forensic laboratories. Numerous aspects of dye analysis, from extraction through micro analytical characterization, classification, and identification were examined for a set of 300 commercially prevalent dyestuffs. The results show that dye identification can be conducted using techniques available in many labs. It is anticipated that this research will provide a basis from which laboratories can expand their approach from a generalized comparison of color between questioned and known materials to a specific identification of the colorants present in a sample. This has the potential to increase the significance of results in the prosecution or defense of a case and improve the value of investigative leads in cases for which a comparison sample does not exist by constraining or identifying specific dyes.

**Trace Metal Analysis by Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry and X-Ray K-Edge Densitometry**

This NIJ-supported dissertation by an Iowa State University researcher describes studies on determining trace elements in samples with forensic importance, including trace analysis in lipstick, copper wire, fly larvae and porcine skin tissue for gunshot residue and bullet residue in bones, as well as, soil from decomposed pig carcasses.

**Pre-Feedback Eyewitness Statements: Proposed Safeguard against Feedback Effects on Evaluations of Eyewitness Testimony**

This NIJ-supported study from an Iowa State University researcher tested pre-feedback statements as a safeguard for protecting against, and correcting for, the effects of confirming feedback on evaluations of eyewitness testimony. Results suggest that confirming feedback did not appear to have any influence on witnesses in the no pre-feedback
statements condition. Additionally, confirming feedback did not impair evaluators’ abilities to discriminate between accurate and mistaken eyewitnesses in the conditions in which witnesses provided pre-feedback statements. Witnesses’ pre-feedback statements to evaluators did not improve evaluators’ abilities to discriminate between accurate and mistaken eyewitnesses who received feedback. Finally, evaluators tended to judge witnesses who gave no pre-feedback statements more favorably than they judged witnesses who gave pre-feedback statements.