Dear Colleagues,

Happy Fourth of July, Independence Day. As Americans, we take great pride in independence. Independence makes us stronger, more objective, less biased as crime lab professionals.

Recommendation 4 from the National Research Council 2009 “Strengthening Forensic Science in the United States: A Path Forward” included the language “maximize independence from or autonomy within the law enforcement community”. We recognize that the vast majority of crime labs are within and serve law enforcement investigators. That service is strengthened by providing unbiased interpretation of data based on sound scientific method and principle.

The first of the Guiding Principles of Professional Responsibility for Forensic Service Providers and Forensic Personnel (ASCLD-LAB ANAB) states “Ethical and professionally responsible forensic personnel are independent, impartial, detached, and objective, approaching all examination with due diligence and an open mind.”

Independence is supported in our standards, both existing and proposed. In our current ISO 17025 standard, independence of scientific investigation is mandated to “have policies and procedures to avoid involvement in activities that would diminish confidence in its competence, impartiality, judgment or operational integrity”.

In the new proposed ISO forensic standard wording, impartiality is dictated in the requirement that “Laboratory activities shall be undertaken impartially and structured and managed so as to safeguard impartiality”.

Being independent and impartial makes our findings more valuable. We are neither for the prosecution nor the defense. Our findings just are what they are, based on sound science and interpretation, their meaning in the context of guilt or innocence is up to the finder of fact to determine, the jury.

Our independence has been hard fought and won in both the traditional Fourth of July sense and that of our mission as crime lab leaders. We must continue to maintain it by guarding against bias and staying objective, basing our findings on data and sound science. Have a Happy Fourth of July celebrating with your family and friends!

Ray

2017-2018 National Priorities and Agenda

Please make a note of the new mailing address:

ASCLD Office
5 Glen Road Suite 123
Garner, NC 27529

Thank you for your prompt attention.
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.

Click HERE to find out more and ENROLL!!
Enrollment Deadline is July 7th, 2017.

Identify Synthetic Opioids using Ambient Ionization TOF-MS
When: July 19th, 2017 at 1pm EST

This webinar will present the results of the evaluation of Direct Sample Analysis Time-of-Flight Mass Spectrometry to provide rapid identification of eighteen fentanyl analogues and related synthetic opiates.

This webinar series will bring a multifaceted perspective to how diverse criminal justice disciplines are addressing these challenges; sharing their knowledge; and advancing science, technology and law. Dealing with the impacts of the opioid crisis to the criminal justice system require better reporting, surveillance, research, technology and policy than are currently in use. The need to understand the epidemic and its effects goes beyond knowing your own profession — it takes a global perspective to fully act and make a difference.

Click HERE to find out more and Register!!

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 NIH 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

S. 2577 (114th): Justice for All Reauthorization Act of 2016
https://www.govtrack.us/congress/bills/114/s2577

2016 Justice for All Act: What You Need to Know - hosted by AZLA
July 11, 2017, Tuesday, 2:00pm to 3:00pm Eastern Daylight Time

Matthew Gamette, Laboratory Director of the Idaho State Police Forensic Science Services, will be joining to provide an informational overview of the Justice for All Act, signed in December 2016. Attendees can expect to leave with an understanding of its effects on forensic science services providers and practitioners. Gerry LaPorte, Director of the Office of Investigative and Forensic Sciences, NJ, will be joining to provide an informational overview of the Coverdell Grant Process and the role accreditation plays in this process. Attendees can expect to leave with a basic understanding of the accreditation process and how an organization’s accredited status will be considered as part of their application to the Coverdell Grant.

https://cc.readytalk.com/meeting/4drsfhnz7xbicampaign=4r576e37fwmh

NFS TC News

NFS TC 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.

michelle.chernicoff@nfstc.org
https://www.nfstc.org/

June 2017 Newsletter

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

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

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).

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.

Evidence Technology Magazine
http://www.evidencemagazine.com

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.

Featured Article:
His name was Wilmer Souder. A physicist at the National Bureau of Standards, now known as the National Institute of Standards and Technology (NIST), Souder played an important role in the early days of forensic science. He helped send countless murderers, bootleggers, gangsters and thieves to prison, and he kept such a low profile partly out of concern for his and his family’s safety. Perhaps as a result, he was not long remembered for his forensic work, and his influence on the developing field of forensic science was not as great as it might have been.

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 provides a dashboard of the labs' own stats and FORESIGHT stats, among other information. The information, formatting, and interface may vary somewhat by vendor.

NIST Library just finished scanning Souder's nine notebooks and has made them available for anyone to view via the NIST Digital Archives:

http://nistdigitalarchives.contentdm.oclc.org/cdm/landingpage/collection/p16009coll67

Bringing together experts from the forensic, research, legal, and law enforcement communities to strengthen forensic science and create a safer, more just society.

https://www.nist.gov/topics/forensic-science

Upcoming Events

International Forensic Science Error Management Symposium
July 24-28, 2017

Technical Colloquium: Quantifying the Weight of Forensic Evidence, June 27-29, 2017

Establishment of an Office of Forensic Sciences and a Forensic Science Board Within the Department of Justice

Revision 2/14/17


Formed in 2000, CFOSO is an association of six forensic science professional organizations: American Academy of Forensic Sciences; American Society of Crime Lab Directors; International Association for Identification; International Association of Forensic Nurses; National Association of Medical Examiners; and Society of Forensic Toxicologists - American Board of Forensic Toxicology.

These professional organizations together represent more than 21,000 forensic science professionals across the United States.

The mission of the CFOSO is to speak with a single forensic science voice in matters of mutual interest to its member organizations, to influence public policy at the national level and to make a compelling case for greater federal funding for public crime laboratories and medical examiner offices. The primary focus of the CFOSO is local, state and national policymakers, as well as the United States Congress.

http://www.thecfso.org/newsletter/CFSO_Newsletter_201705.pdf
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 professionals 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 NJ-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

Grant Assistance for DNA

1. Please contact information for your State Management Agency (SMA)
   Office: www.forensicgrant.gov/organization-grant-guide

2. To request the value of your State DNA
   Funds: https://www.nij.gov/justice-training-and-education/other-funding-grants.html

3. Request a contact at the state office for grants.

4. Other DNA-based fields: field-to-field links with grant applications in your state. Key offices
   include: Administration, Police, Finance.

5. Identifies and budget

6. Identifies appropriate grants:
   - Apply under applicable grants.
   - Compare with Open Cross-Bias.

7. Contact your local FBI.

8. Contact your local FBI.

9. Contact your local FBI.

10. Contact your local FBI.

Contact the Rapid DNA centers for assistance:

- www.rapid dna.org
- www.rapid dna.org
- www.rapid dna.org
ALAB Crime Lab Minute July 3, 2017

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.

Forensic Science Research Digest

NEWS STORIES

The Forensic Community Can Educate Lawyers, Judges
It is in the interest of all forensic scientists who take their profession seriously to step up and educate the lawyers and judges as to the standards that should be met. Presumably, the forensic scientist taking on this task will meet the standards.

Former state police tech accused of stealing more than $10,000 from evidence lockers
A former Oregon State Police evidence technician is accused of stealing more than $10,000 from evidence lockers over seven years.

How to maintain the chain of custody for mobile forensic evidence
Increasingly, investigators are reliant on evidence collected from a suspect’s cell phone or other mobile device, creating a specialty area within the investigatory universe called mobile data forensics.

Piece of evidence goes missing in Lyon sisters’ case
Missouri man cleared in 1997 sex case by DNA evidence
A Missouri man who spent nearly two decades in mental hospitals after entering a disputed plea in the 1997 sexual assault of a teenager has been cleared of the crime after genetic evidence was re-tested and excluded him as a suspect.

MAN KNOWN AS ‘AK-47 BANDIT’ HAD CAR FULL OF EVIDENCE, POLICE SAY
Located inside the residence were items that we believe matched items seen on surveillance video from the series of bank robberies. Those items have all been seized and are in custody by the FBI's evidence

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.

Felicity

Forensic Science Research Digest

Volume 1, Issue 4, May 2017

Dr John Coumbaros
Manager – Strategy, Research & Development
Forensic Science Laboratory
Postal: PO Box 1250, Bentley DC WA 6983
Location: Corner Manning Road and Townsing Drive, Bentley WA 6102
T +61 8 9422 9819 F +61 8 9422 9831
jcoumbaros@chemcentre.wa.gov.au

Townsing Drive, Bentley WA 6102
Postal: PO Box 1250, Bentley DC WA 6983

T +61 8 9422 9819 F +61 8 9422 9831
jcoumbaros@chemcentre.wa.gov.au
Method Validation for a Statistically Based Comparison of Tool Marks using GelSight-Based Algorithms for Fingerprint 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 spectrophotometer

$200K bail set for accused evidence tech

A former Oregon State Police evidence technician accused of stealing more than $10,000 in seized cash has been ordered held on $200,000 bail after appearing in court Monday on 75 criminal counts.

Georgia, Pooler officials break ground on new GBI crime lab

State and local officials brought out the gold shovels Monday to celebrate the forthcoming construction of a new Georgia Bureau of Investigation regional crime laboratory in Pooler.

OSP budget gives crime lab a new home

The Oregon House of Representatives passed the budget for the Oregon State Police yesterday. The spending plan restores funding for the Eastern Oregon Forensic Laboratory in Pendleton, which Gov. Kate Brown slated for elimination in her proposed budget.

GBI Crime Lab Identifies Two New Fentanyl Analogues

Cleveland, GA – The Georgia Bureau of Investigation’s Crime Lab in Cleveland, GA has identified two new fentanyl analogues, acrylfentanyl and tetrahydrofuran fentanyl. Both of these synthetic opioids had not previously been identified by the GBI Crime Lab. They both can be absorbed through the skin and are considered highly dangerous.

BGSU is Leader of Forensic Science Education in Ohio

Innovative research, new undergraduate and graduate academic programs, and a partnership with the Ohio Attorney General’s Office and the Bureau of Criminal Investigation (BCI) provide the foundation for Bowling Green State University being at the forefront in forensic science education in the state of Ohio.

South Carolina man charged in Belltown double homicide

DNA linked suspect in South Carolina to homicides in Seattle, WA.

Remote Forensics Of Windows 10 Mobile Devices

Forensic analysis of Windows 10 Mobile devices can be complicated due to the exotic status of such devices. Due to the full-disk encryption, on-device access may not be an option. However, Microsoft collects enormous amounts of information from its users. This information is then stored in the user’s Microsoft Account. Some bits of data are fully accessible to the user, while access to some other bits (such as mobile backups) is restricted.

Teen YouTuber Shoots and Kills Boyfriend in Video Stunt, Police Say

Norman County Sheriff Jeremy Thornton said in a statement that Monalisa Perez of Minnesota was arrested after she shot her boyfriend Pedro Ruiz III, 22, in the chest. According to court documents, she shot him with a gold Desert Eagle .50 caliber handgun — considered one of the most powerful pistols in the world — in the grass outside their home while he held up a hardcover encyclopedia to block the bullet.

Gun expert revises testimony that helped convict Rockford man of murder

Daniel Gunnell, now an assistant director of the Illinois State Police Jollett Forensic Science Laboratory, worked as a state crime lab firearms and toolmark scientist at the

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 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.
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.