NIST FORENSIC SCIENCES NEWS

Vol. 2 Issue 1

NIST Efforts in Forensic Science Takes Center Stage at International Meeting

by Linda Joy

Seattle, Wash. – Forensic scientists from around the world flocked here in mid-February for a professional association meeting that was as intriguing as a Sherlock Holmes mystery and as riveting as an episode of CSI – the American Academy of Forensic Sciences (AAFS). I tagged along with my colleagues from the National Institute of Standards and Technology to help spread the word about what NIST does in forensic science.

With more than 900 scientific presentations and thousands of attendees, one person can only experience small slices of the weeklong gathering. I focused my time on the exhibit hall, poster sessions and presentations by NIST scientists. Curious about what they said? Read on for my day-by-day summary.

Tuesday, Feb. 18: Today marked a milestone for the NIST Forensic Science Program. Six of the team members gave

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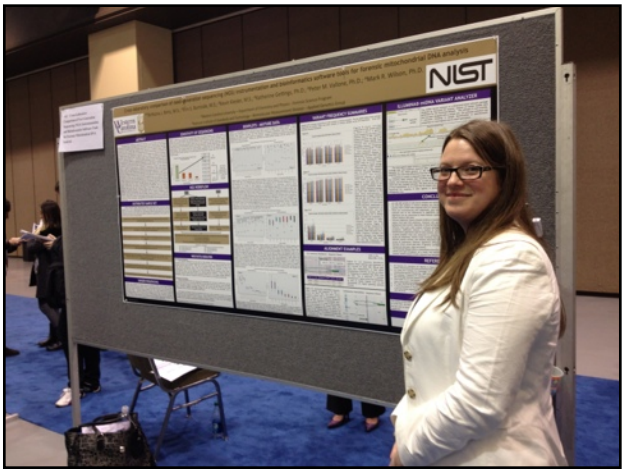

NIST collaborator Brittania Bintz of Western Carolina University at AAFS. Credit: NIST

NIST Science Supports Fingerprint Evidence in Courtrooms Every Day

by Brad Wing, NIST Image Group/Information Access Division

In 1892, Juan Vucetich in Argentina matched a bloody fingerprint at a murder scene with one from a potential perpetrator. Since then, the matching of latent prints to those of potential suspects has become a major tool for law enforcement. Searching fingerprints has traditionally involved an analyst sorting and classifying fingerprints by type to narrow the pool of potential candidates to examine. Then, using a variety of techniques, including location and pattern of ridges, incidences of bifurcations of ridges, ridge

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a panel presentation on how NIST will bring about 20 independent scientific working groups under a new NIST-administered organization. NIST is in the process of establishing the Organization for Scientific Area Committees or OSAC, a result of an agreement last year with the Department of Justice (DOJ). The DOJ recently held the first meeting of the National Commission on Forensic Science. Both the commission and OSAC will work to set standards, guidelines and best practices for forensic science. However the commission is expected to focus on policy issues while the OSAC is practice-focused. As a result, the criminal justice community and the broader public will be able to place greater confidence in crime lab analyses.

The NIST panel presentation at the AAFS meeting was the first large, public forum for forensic scientists to learn and ask questions about OSAC. With interest in the presentation running high, hundreds of meeting attendees made their way into a ballroom in the Washington State Convention Center.

NIST staff members Mark Stolorow, Rich Cavanagh, Susan Ballou, Barbara Guttman, John Butler and John Paul Jones II were ready with scores of PowerPoint slides on their vision for OSAC. The presentation was also webcast, though not without technical glitches. Fortunately, it was recorded and is available for viewing online at www.nist.gov/forensics/osac.cfm.

The two-hour presentation included about 75 minutes of speaker presentations (PDF) with 45 minutes reserved for questions. During the

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Executive Editor: John M. Butler
NIST Fellow and Special Assistant to the Director for Forensic Science
john.butler@nist.gov

Editor: Linda Joy
Communications Manager
NIST Law Enforcement Standards Office
linda.joy@nist.gov

Please send updates and suggestions for articles to John Butler.

www.nist.gov/forensics

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question and answer session, concerns were expressed about the exclusion of digital evidence from OSAC. Overall, the audience expressed appreciation for the amount of thought that NIST has put into the OSAC plan. If you want to follow developments with OSAC, visit www.nist.gov/forensics/osac.cfm.

Wednesday, Feb. 19: Conversations about the NIST panel presentation on OSAC continued as the exhibit hall and poster sessions opened today. Meeting attendees who had questions and comments about the OSAC concept came to the NIST exhibit booth, where I spent most of the day. NIST Office of Special Programs Director Rich Cavanagh ably responded to many of these questions. Booth visitors could also watch short NIST videos, pick up information about NIST measurement standards and data, and get electronic copies of NIST forensic science publications.

Taking a break from booth duty, I walked over to the poster session where dozens of scientists were stationed along rows of bulletin boards, ready to explain various research projects. The variety of topics covered here is remarkable, ranging from the effects of weather on human remains to the ability to detect tiny amounts of hand lotion from a crime scene.

I spoke with Brittania Bintz, a forensic research scientist at Western Carolina University, about work she does in collaboration with NIST to establish a threshold of detection for next generation DNA sequencing instruments. Learn more on the Western Carolina University website.

Today also offered a proud moment for Mark Stolorow, Director of the NIST Law Enforcement Standards

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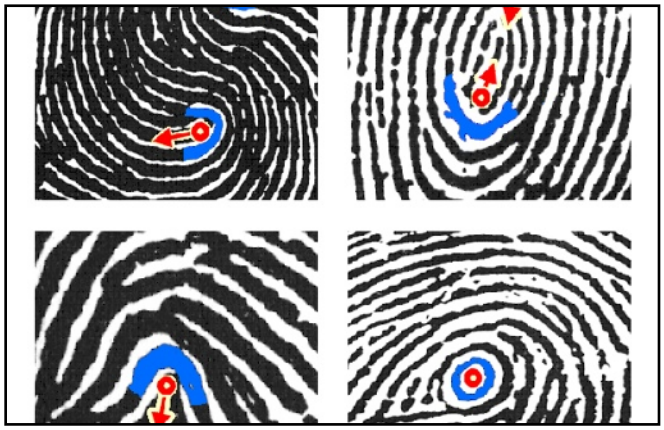
endings, small ridges/dots, and even pore locations, the potential set of candidates is further narrowed down. While this can be a powerful tool, it is extremely important to minimize the possibility of false matches, since that can lead to an incorrect association of an individual with a crime. Forensic fingerprint examiners are highly trained and undergo extensive testing to ensure that they establish a match between a suspect fingerprint and a potential candidate only upon the most reliable of factors.
NIST has been at the forefront of research and technology development in biometrics for over 50 years. The early work started with



Details that matter when matching a fingerprint to a suspect: examples of core locations for a double loop whorl, plain whorl, tented arch, and central pocket loop whorl. Credit: ANSI/NIST/ITL

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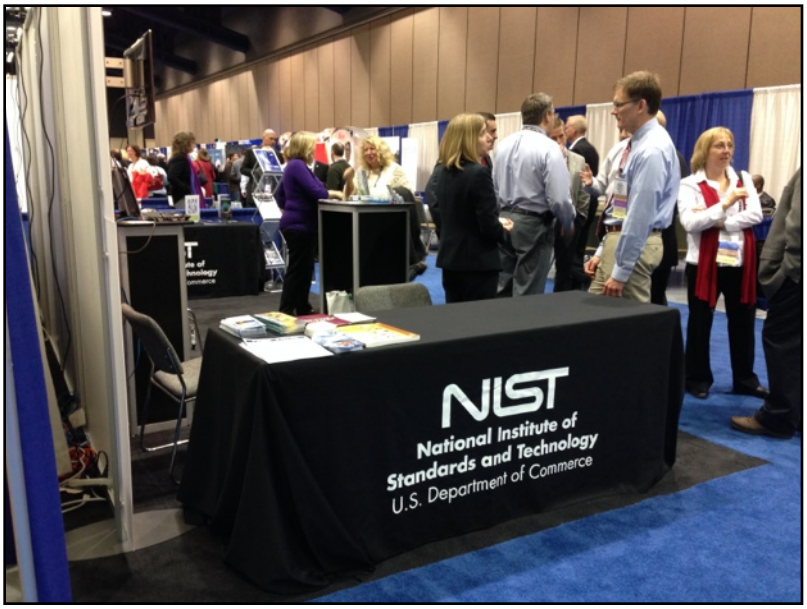
Office. During the Criminalistics Section business meeting, he was presented with the AAFS Mary E. Cowan Outstanding Service Award. This award was also acknowledged before the full AAFS membership at its annual business meeting.

Thursday, Feb 20 – I devoted today entirely to attending scientific talks. With a highlighted copy of my list of NIST presentations, I arrived early enough at the convention center to buy a coffee (yes, Seattle's reputation for coffee is well earned).



Top: (l-r, standing) John Paul Jones, Richard Cavanagh and Mark Stolorow; (l-r, seated) John Butler, Melissa Taylor and Barbara Guttman presented talks on OSAC at the AAFS meeting. **Bottom**: The NIST Booth in the AAFS exhibit hall. Credit: NIST

The first talk I attended was on new guidance for preserving biological evidence. The new guidance is the culmination of a working group that NIST convened in 2009. Stephanie Stoiloff, a working group member and Commander of the Forensic Services Bureau for the Miami-Dade Police Department, reviewed best practices and encouraged audience members to use the guidelines. You can learn more about the working group and the guidelines on our website at www.nist.gov/oles/forensics/bioev.cfm.

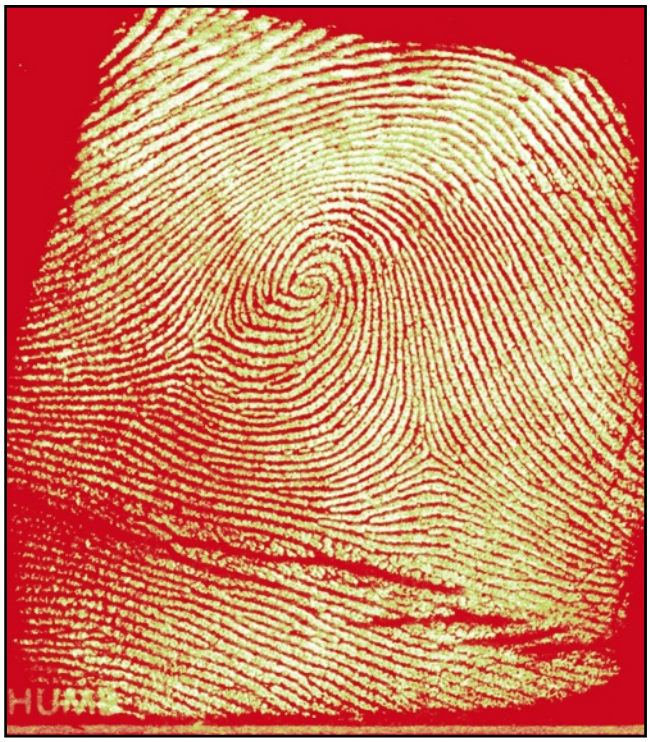
With four other NIST speakers giving talks in moderated sessions this morning, I kept an eye on the clock and caught bits of most of them. NIST's Melissa Taylor spoke about how juries perceive statistical information used to qualify evidence. She also gave an update on the Expert Working Group on Human Factors in Handwriting Analysis.

Photos, presentation slides and more about NIST at AAFS online.

(Fingerprints continued from page 3)

fingerprints, an area that has remained important ever since. In 1966, the Federal Bureau of Investigation approached NIST to evaluate whether automated processes can efficiently match fingerprints to images on file. With that, work began on automated fingerprint capture and matching.

The FBI and NIST worked cooperatively, resulting in several articles in professional journals, and in 1986, the first version of what eventually became the ANSI/NIST-ITL standard (PDF). This formalized data exchange and interoperability requirements for fingerprint minutiae among government agencies. In the following year, NIST developed a benchmark for testing the performance of Automated Fingerprint Identification Systems (AFIS). By 1993, with more widespread use of automated fingerprint systems, NIST revised the transmission standard to include images of fingerprints as well as minutiae. By 2000, the standard was revised again to provide special capabilities for the handling of latent friction ridge fingerprints, and palm prints were added to the transmission capabilities. In 2011, plantar-print (footprint) transmission specifications were added, to cover all possible friction ridge types on the human body.



Latent fingerprint image; Credit: NIST

The ANSI/NIST-ITL standard has become the standard used by law enforcement, military and other governmental organizations around the world for transmission of fingerprint images, extracted minutiae and other features. Its use is required when transmitting friction ridge data to the FBI, Royal Canadian Mounted Police, North Atlantic Treaty Organization, the Department of Defense, the Department of Homeland Security, International Criminal Police Organization and other organizations in more than 100 nations.

It is important to note that AFIS searches are designed for matching 'exemplar' prints – that is, prints taken directly from subjects (alive or deceased) under controlled capture conditions. Latent prints on the other hand are taken from surfaces, relying upon the deposition or displacement of some material upon that surface to yield a 'reverse' image of the friction ridge surface that created them. Thus, the quality and characteristics of latent prints can vary substantially depending on many factors, such as the amount of time since the deposition of the latent impression, the type of surface, the age of the person, and exposure of the print to sunlight or other elements. Latent prints are not typically as pristine as exemplars and often only cover a fraction of the surface area of the finger, palm or foot.

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In the first decade of this century, NIST has become more active in friction ridge forensics. In 2006, NIST hosted the first Latent Testing Workshop. This was followed by the NIST Evaluation of Latent Fingerprint Technologies testing program. In 2008, the FBI sponsored NIST to run the Evaluation of Latent Fingerprint Technologies: Extended Feature Sets, followed by a public challenge in 2009 designed to determine how human-assisted feature markup of a latent is most effective. Because human-assisted markup is an expensive process in terms of time, effort and expertise, investigators need to know when the additional effort of marking minutiae and extended features is appropriate. With an update to the ANSI/NIST-ITL standard in 2011, the Extended Feature Set was included as a capability in the data transmission of forensic friction ridge data. The EFS is a comprehensive, quantifiable, repeatable and clear method of characterizing the information content of a fingerprint, palm print or plantar print.

In order to take full advantage of the EFS specifications in the ANSI/NIST-ITL standard, NIST published an application profile called the Latent Interoperability Transmission Specification in 2013.

In 2012, NIST published the report *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach*, which addresses issues ranging from the acquisition of impressions of friction ridge skin to courtroom testimony and from laboratory design and equipment to research into emerging methods for associating latent prints with exemplars. It provides a comprehensive discussion of how human factors relate to all aspects of latent print examinations including communicating conclusions to all relevant parties through reports and testimony.

For more information about data interchange standards, fingerprints and friction ridge research at NIST, see www.nist.gov/itl/iad/ig/fingerprint.cfm.

Key Milestones in NIST Work on Fingerprint Capture and Matching

1966 FBI asks NBS to evaluate automated fingerprint capabilities

1968 NBS publishes “A Computer Oriented Single-Finger Identification System,” TN 443

1970 NBS publishes “Automated Fingerprint Identification,” TN 558

1974 NBS publishes “The Influence of Ink on the Quality of Fingerprint Impressions,” IR 74-627

1987 NBS develops a benchmark for testing the performance of Automated Fingerprint Identification Systems (AFIS)

2000 The ANSI/NIST-ITL standard is expanded to cover latent friction ridge print images and palm print images

2003 White House National Science and Technology Council charters a subcommittee on biometrics to coordinate biometric activities across the U.S. government with NIST as a founding agency.

2012 NIST publishes “Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach.”

Dental and Voice Data Standards Added to ANSI/NIST Biometrics Standard

Supplements Support Disaster Victim Identification and Voice Matching

As criminal investigation has evolved from old school gumshoe detective work to high tech sleuthing, the need for scientific standards to back new technologies has burgeoned.

While technology can make investigative work more efficient, if investigators don't agree on standards, they may not be able to share data easily or agree on analytical results. One of the first standards to solve data-sharing problems was the ANSI/NIST-ITL standard *Data Format for the Interchange of Fingerprint, Facial and Other Biometric Information* (link opens a PDF). This formalized data exchange and interoperability requirements for fingerprint minutiae among government agencies.

Two new supplements were recently approved and added to the ANSI/NIST-ITL standard to support voice and dental data interoperability. The voice supplement will apply to analyzing potential evidence from a cockpit recorder, a telephone call made asking for ransom in a kidnapping, or a recording of speakers plotting an attack.

Following a 2009 symposium on investigatory voice biometrics, the FBI's Biometric Center of Excellence initiated the Investigatory Voice Biometric Committee (IVBC) in collaboration with the NIST to define the technical requirements for voice data collection, transmission format and analysis.

The IVBC developed the first draft of the standard and turned over its work to an ANSI/NIST-ITL Voice Working Group to allow participation of a wider group in the development process. The supplement was produced through the combined work of several working groups. At present, the Federal Bureau of Investigation and other agencies have started implementation of the voice record in the ANSI/NIST-ITL standard.

The dental supplement applies to disaster victim identification and complements an earlier supplement added in 2011 to include the capability to transmit DNA data, as well as information about claimed or purported relatives that may assist in identification of the victim.

The dental supplement was approved in late 2013. It covers odontological data and also includes the capability to transmit other information useful in disaster victim identification, such as radiographs, sonograms, cone-beam 3D dental images, 3D plaster cast models (particularly from orthodontic offices), medical implant identifiers and more.

The Dental and Oral Supplement was prepared by a joint group comprised of the Forensic Dental Working Group of ANSI/NIST-ITL, co-chaired by the Argentine National Office of Information Technologies (which originally proposed the development of a forensics dental record for the standard); and by the American Dental Association Standards Committee on Dental Informatics Working Group 10.12 Forensic Odontology Informatics.

The Scientific Working Group on Disaster Victim Identification has prepared a document *Data Management: Guidelines for the Medicolegal Authority*, which stresses the importance of using the ANSI/NIST-ITL standard for data transmission.

NIST and Department of Justice Launch First-Ever National Commission on Forensic Science

by John Butler

The first meeting of the National Commission on Forensic Science (NCFS) was held in Washington, D.C., on Feb. 3-4, 2014. The NCFS is an impressive group of almost 40 individuals who have a wealth of knowledge and a wide range of expertise and experience. Much of the first meeting involved introductions and learning background information in order to lay the foundation for future meetings. This group has the energy and experience to hopefully make a difference. In coming meetings, the NCFS will recommend impactful policies to truly strengthen forensic science and how it is used by the law enforcement and legal communities.

The desire to create the NCFS was first announced Feb. 15, 2013, as part of a partnership between the U.S. Department of Justice (DOJ) and NIST. NCFS is a federal advisory committee for DOJ and as such follows prescribed rules that include public meetings and a balance of perspectives.

The National Commission on Forensic Science held its first meeting Feb. 3-4. NIST During the meeting, Mark Stolorow, Director of the NIST Law Enforcement Standards Office (far right), presented NIST's plan for a new Organization of Scientific Area Committees which will coordinate development of standards and guidelines to improve quality and consistency of work in the forensic science community. Also pictured are (from left) John Butler and Nelson Santos, vice chairs of the commission; Brette Steele of the Department of Justice; and NIST Director Pat Gallagher, co-chair of the commission.
Credit: DOJ

The other part of the DOJ-NIST partnership is the establishment of "guidance groups" to serve as next-generation versions of the Scientific Working Groups. At the first NCFS meeting, NIST announced the plan for the formation of the Organization of Scientific Area Committees (OSAC). While NCFS is a DOJ advisory group to enact policies, OSAC will be an on-going community effort to improve forensic

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practices through developing documentary standards.

To begin the initial NCFS membership selection process, DOJ encouraged submissions from applicants with diverse backgrounds, professions, ethnicities, gender and geography. From more than 300 applicants, 37 individuals were selected to achieve a diversity of experiences, including federal, state and local forensic science service providers; research scientists and academicians; federal, state, local prosecutors, defense attorneys and judges; law enforcement; and other relevant stakeholders. Members were appointed by the U.S. attorney general in consultation with the NIST director. The composition of the commission was announced Jan. 10 in a joint NIST/DOJ press release.

A review of the 21 pages of biographical information supplied with the first meeting materials finds an impressive set of experiences and credentials (http://conferences.csrincorporated.com/docs/CommissionerBios.pdf). Commissioners come from 21 states and represent:

- Professors of biochemistry, chemistry, pathology, physics, sociology, statistics, and law (including a Nobel laureate and National Medal of Science recipient)
- Crime laboratory directors (FBI, DEA, ATF, USPS, DoD and others)
- Judges, prosecutors, and defense attorneys
- Sheriffs, detectives, coroner, medical examiners, victims' advocates, and defendants' rights advocates

The wide-ranging stakeholder perspectives and extensive experience of commissioners will enable a careful look into forensic science and its appropriate use by law enforcement and the legal community. The commission plans to meet four times each year at approximately three-month intervals.

The commission is led by co-chairs James Cole, Deputy Attorney General, and Patrick Gallagher, NIST Director. Nelson Santos, Deputy Assistant Administrator for the Office of Forensic Sciences at the Drug Enforcement Administration, and John Butler, Ph.D., Special Assistant to the Director for Forensic Science, serve as the DOJ and NIST vice-chairs, respectively. A primary responsibility of the vice-chairs is to run the meetings. Subcommittees will be formed to work between regular NCFS meetings. Subcommittee work will then be vetted and discussed in the public NCFS meetings.

NIST Director Pat Gallagher expressed that the commission faces the challenge of wading into a moving stream. We do not want to reinvent the wheel. There has been a lot of previous activity to respond to the National Academy of Sciences February 2009 report entitled *Strengthening Forensic Science in the United States: A Path Forward.* In its first meeting, the NCFS heard from chairs of the Interagency Working Groups of the National Science and Technology Council Subcommittee on Forensic Science, which met from July 2009 to December 2012. Also in connection with the first NCFS meeting, the White House's Office of Science and Technology Policy released a 10-page report entitled *Strengthening Forensic Science: A Progress Report, February 2014*.

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Commissioner Jim Gates, who is a theoretical physicist and a member of President Barack Obama's Council of Advisors on Science and Technology, summed up what he considers as the ultimate goal of the NCFS — "Justice for all." For this goal to be achieved we must not only improve the rigor and quality of science conducted in forensic laboratories, we must also see forensic science results appropriately translated into use by the law enforcement and legal communities. The value and the limitations of forensic evidence must also be understood better by society as well as those who use these results in courtroom settings. The journey ahead will likely be challenging – but at least we have launched and are now on our way!

Find a list of the 37 commission members online in a NIST/DOJ news release.

NIST Forensic Science Links You Can Use

Mark Stolorow's overview of NIST forensic science activities. Link opens a PDF of his presentation slide at the American Academy of Forensic Sciences (AAFS) February meeting.

NIST scientists made 36 presentations at the AAFS meeting in Seattle, Feb. 18-22. See a list of them at www.nist.gov/forensics/aafstipsheet.cfm.

The NIST Forensic Science Program panel presentation at the AAFS meeting to introduce the concept for the Organization of Scientific Area Committees (OSAC). About 800 people attended in person and nearly 1,600 people have viewed the webcast. Presentation slides (pdf) are online too.

Blog entry praising the new NIST OSAC plan. Justin McShane, a defense lawyer from Harrisburg, Pa.,wrote the blog post after the NIST panel presentation at AAFS. "Overall, I give this vision of the NIST OSAC structure an A+. Well, well done," he says. The direct link is www.thetruthaboutforensicscience.com/impressed-nist-osac-structure-taming-wild-wild-west/.

Presentation on the new National Commission on Forensic Science (NCFS) at AAFS. Vice chairs Nelson Santos and John Butler spoke at the first plenary session on Feb. 19. They covered the NCFS inaugural meeting and future plans. Direct link to the PDF slides is http://www.cstl.nist.gov/strbase/pub_pres/NCFS-AAFS-Feb2014.pdf.

NIST and FBI Collaborate on First Ever DNA Technical Leader Summit

by John Paul Jones II

Presenters from the DNA Technical Leader Summit (l to r): Douglas Hares (FBI), John Paul Jones II (NIST), Charlotte Word (consultant), John Butler (NIST), Robin Cotton (Boston University) and Mike Coble (NIST). Credit: NIST

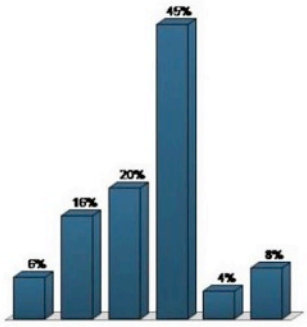
NIST and the Federal Bureau of Investigation CODIS (Combined DNA Index System) Unit collaborated on the first DNA Technical Leader Summit held in Norman, Okla., Nov. 20-21. DNA technical leaders from 95 percent of the U.S.-based public DNA laboratories participating in CODIS attended. The summit featured presentations on topics such as complex mixture fundamentals, probabilistic genotyping, court admissibility considerations, the DNA technical leader's role, managing validation, and a review of DNA interpretation and statistical approaches. In addition, NIST presenters shared preliminary results of the MIX13 Interlaboratory study, launched last summer, involving data from five mock cases sent to DNA laboratories for interpretation. This study highlighted some challenges for laboratories to address when interpreting DNA mixtures with three or more contributors to help improve consistency across the country.

While much of the event involved presentations on the interpretation of complex DNA mixtures and the appropriate statistical models to employ, 124 technical leaders also provided feedback on their biggest needs. The organizers were surprised that many of these challenges were not technical in nature, but included general management issues such as time management, conflict resolutions during technical reviews, implementing change, lack of resources, managing personnel in a laboratory setting, managing backlogs and working with upper management.

During the event, many of the presenters used electronic polling devices to seek feedback from the technical leaders on a variety of issues. They posed 69 questions to take the pulse of the technical leader community on hot topics. The results were shared with all the participants to help them better understand how their procedures and interpretations mesh with their peers. Recently, a U.S. attorney requested a copy of the results for a specific question (see graphic) related to variation in analytical thresholds employed by laboratories across the country.

30. What analytical threshold does your lab use? (Multiple Choice)

	Responses	
	Percent	Count
Greater than 100 rfu	6.47%	9
100 rfu	15.83%	22
75-99 rfu	20.14%	28
50-74 rfu	45.32%	63
Less than 50 rfu	4.32%	6
Varies with dye channel	7.91%	11
Totals	**100%**	**139**



Many of the DNA Technical Leader Summit participants indicated that having all the DNA technical leaders attend the same event to discuss the complex issues they are facing was extremely valuable and it equipped them with the latest technical information needed to evaluate the way their individual labs are addressing complex mixtures.

Progress Report on NIST 2012 Forensics Measurement Challenge Projects

by John Butler

NIST scientists reported updates on five projects funded through a NIST Forensics Measurement Challenge competition in an internal NIST briefing on Dec. 9, 2013. More than $3 million has been put into these projects over the past two years to develop new capabilities that have the potential to aid forensic science. Links to publicly-available presentations on these projects are included at the end of this article.

A laboratory technician pipettes dirt dissolved in a buffer solution from which DNA will be recovered using a novel NIST/Applied Research Associates microfluidic extraction technique. This work was funded through the NIST 2012 Forensics Measurement Challenge. See a NIST news release on this project. Credit: NIST

David Ross from the Material Measurement Laboratory (MML) spoke on DRAGEN (direct rapid analysis generating extracted nucleotides), which is a NIST-developed technique that enables DNA to be extracted from complex backgrounds like dirt. Humic acid in soil is a potent inhibitor of DNA processing steps. The DRAGEN technique, which was developed with collaborators Alyssa Henry and Chris Konek from Applied Research Associates, is also funded by the U.S. Army Criminal Investigation Laboratory. DRAGEN involves gradient elution moving boundary electrophoresis where electrical pull on DNA molecules is counterbalanced with pressure flow in the opposite direction to purify the DNA away from co-extracted materials. For more on DRAGEN, see an article published in the journal *Electrophoresis* in August 2013 (online at http://onlinelibrary.wiley.com/doi/10.1002/elps.201300133/abstract).

John Song from the Physical Measurement Laboratory (PML) discussed his team's work with ballistics measurements using three-dimensional topography measurements and a congruent matching cells algorithm to correlate marks on evidence and reference bullets. For more on the NIST ballistics efforts, see their published work in *Forensic Science International* (http://www.fsijournal.org/article/S0379-0738(13)00248-X/abstract fee applies) and the *AFTE Journal* (Volumes 45.2 and 45.4 2013, AFTE members only can view online at http://www.afte.org/Journal/jsearch.html).

Jacqueline Mann from PML has been leading an effort to set up a laboratory to

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create nuclear forensic reference materials. She shared many of the struggles their group has had in trying to purchase an instrument and prepare a laboratory space for conducting their proposed work.

Mary Theofanos from the Information Technology Laboratory addressed efforts to develop metrics for enhancement of latent fingerprint images. After a latent print image is taken from a crime scene it is enhanced with Adobe Photoshop or other image processing tools in order to clean it up for a search using AFIS (Automated Fingerprint Identification System).

Jennifer Verkouteren and Karen Phinney from MML covered their initiative to produce cost-effective, easy-to-use seized drug reference materials. Inkjet printing is used to dispense a small amount of the pure drug material onto an inert substrate. These reference materials, which can be prepared in large quantities with a high degree of precision, can then be used by laboratories to help calibrate the liquid chromatograph-mass spectrometry (LC-MS) or gas chromatography-mass spectrometry (GC-MS) instruments.

Public presentations on these topics were given at the Forensics@NIST 2012 symposium in November 2012. These links open PDFs of the presentation slides:

- DRAGEN
- Ballistics
- Nuclear Forensics
- Latent Fingerprint Enhancement
- Drug Standards by Inkjet

Where is The List?

Regular readers of NIST Forensic Science News will notice that our usual list of scientific accomplishments (papers, presentations, committee assignments, and honors) does not appear in this issue. We (editors John Butler and Linda Joy) are developing a web page to serve as a repository for quarterly NIST forensic science accomplishment updates.

This will allow us to run more news stories and still continue to capture and archive forensic science accomplishments. The accomplishments are proving to be very useful in demonstrating the value of NIST research to the forensic science community and policy makers. For example, the White House Office of Science and Technology Policy recently released a progress report (pdf) of forensic science and featured it in a blog. NIST accomplishments are mentioned throughout the report. Read the blog at http://www.whitehouse.gov/blog/2014/02/03/national-commission-begins-work-strengthen-forensic-science.