

The CACNews

News of the California Association of Criminalists • Second Quarter 2014



eric
HALSING



CAC President

I truly believe that we all have the power to influence the outcome. And that outcome will affect us all in a very direct way. These groups, commission, boards, and committees have enormous potential to improve the quality of forensic science in our communities...

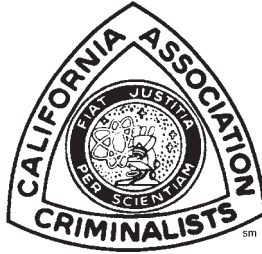
It's Been a Privilege to Fly With You...

As I write this, there are two months left in my term as your president. Serving the CAC in this capacity has been one of the great honors of my life to date. I suppose that whenever someone completes a term in any office, there is a tendency to look back and feel like more could have been accomplished. I certainly feel that way. I had several things that I had hoped to complete while filling this role. Some have been done, but many others remain. Perhaps that is why the CAC board of directors has an "Immediate Past President" position—to allow the previous president an opportunity to complete the goals they had as president without new, higher priority items constantly being added to the list.

Whatever the reason, I am glad that I will get to continue serving the CAC on the board for one more year. This is primarily because I love the CAC. However, coming in a close second is the fact that this particular collection of criminalists serving on the board is one of the finest, most dedicated groups with which I have ever worked. Honestly, if you're about to stop reading this article, PLEASE just try to hold out until after this paragraph because these people deserve your recognition. Unless one intentionally seeks it out, there is very little fanfare in devoting your time and energy to work on behalf of an organization. But these people do it because they love it and the chance to work specifically with them is, in large part, why I ran for president. In brief, here's what I want to say about each of them. Meghan Mannion Gray is one of the hardest-working people I have ever met. As your treasurer, she does just as much work as I do but gets much less notice for it. I feel very, very confident about our finances with her watching over everything. Greg Matheson does so much more for the CAC than the title of editorial secretary could possibly suggest. He is a constant source of logic, perspective, experience, and knowledge without which the board would be much less successful. As the membership secretary who brought our ranks online in 2010, Michelle Halsing continues to do an amazing job juggling the communications, membership applications/upgrades, and frequent questions of prospective members. In life, and in our roles with the CAC, she is an unflinching support to me. Mey Tann plans and executes really great study group meetings as regional director south. But apart from her tireless energy, I think her most valuable contribution to the group is the often overlooked, but completely necessary, component of levity while working hard. Speaking of levity, our recording secretary, Kirsten Fraser, doesn't suffer from a lack of deadpan deliveries that leave us in stitches. In addition to helping get all of our past board and business meeting minutes posted online, she has reminded us all that we can work very hard at something and still have a great time doing it. Following Todd Weller as president was never going to be an easy task for anyone. He brings the wisdom of experience, the helpful suggestions, and the continued dedication that a past president should. I was constantly seeking his advice and it was absolutely invaluable to me. He is a great leader, but he allowed me to take the reins from him with grace and without too much of a struggle. Alice Neumann Hilker stepped in as regional director north just last year when we needed someone to fill a vacancy, but it seemed like she had been doing it for years. She has done a terrific job organizing study groups and, to the group, she provides keen insight because her career experiences lend authority to her opinions. Plus, she has taught me to slow down at meal times. Greg Laskowski, our president-elect and the second of the board's "Retired

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SECOND QUARTER 2014



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Please direct editorial correspondence and requests for reprints to the editorial secretary.

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Submissions should be made in the form of Windows compatible files on CD or by e-mail. Alternatively, text files may be saved as plain ASCII files without formatting codes, e.g. bold, italic, etc. Graphics, sketches, photographs, etc. may also be placed into articles. Please contact the editorial secretary for details.

The deadlines for submissions are: December 1, March 1, June 1 and August 15.



FSTs

CAC seminars offer hands-on workshops. Here, CHP Officer E.M. Parsons checks Jennai's gaze nystagmus. (2013 Fall CAC, Modesto.)

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Gregs," is a member of several other associations and is always a source of information as to how other groups make decisions. Like several other members of the board, he has been a leader previously and I have great confidence that he will be an outstanding president. Every member of this board works incredibly hard to continue the legacy of the CAC and I wanted to let everyone know how humble, devoted, and awesome they all are. I cannot say enough about them and the above is just my feeble and completely inadequate attempt.

If you are me, there is always more to say. But I'll close my final article with a few words of advice, "if it do ya." It seems as though we are at a crossroads in forensic science. Since 2009, there have been issues coming up regularly in national conversation about laboratory accreditation, analyst certification, creation of Guidance Groups, a National Commission, a Forensic Science Standards Board and, most-recently, an Organization of Scientific Area Committees. If you're a working stiff like me, with kids' soccer practices, swimming lessons, etc. constantly consuming whatever free time you may have had, keeping abreast of all of the latest news and developments is not an easy task. However, I urge you to make the time, somehow, to at least peruse the information that is out there on these issues. At first, you might be tempted to think that the higher-ups in your particular organization's structure will sort it all out and that your views would not be of any concern to the powers-that-be anyway. But I truly believe that we all have the power to influence the outcome. And that outcome will affect us all in a very direct way. These groups, commission, boards, and committees have enormous potential to improve the quality of forensic science in our communities, our State, and our country as a whole. However, just as we are responsible for shaping the laws that govern the country in which we are so very lucky to abide, we should hold ourselves equally responsible for shaping the organizations that will be overseeing how we conduct our scientific analyses. I have long held the opinion that those who do not vote in elections should not complain about their elected leadership. Similarly, if each of us does not take an interest in how, and by whom, we are governed as criminalists, we have very little standing to then complain at some future point in time when we eventually hear about a rule or standard with which we disagree.

Therefore, to encourage and facilitate the acquisition of this knowledge, I have assembled the pertinent documents that have passed through my email inbox on the CAC's website on the Current Policy Issues page. I have even made a nice, short address so it will be easy to remember: **policies.cac-news.org**. I will continue to update this page with everything I am sent. So feel free to send me anything I may miss.

The CAC is not the largest or most influential professional organization in forensic science. But we have the proud distinction of being the oldest regional group of criminalistics in the world and our voice has been heard. As NIST (the National Institute of Standards and Technology) recently said in a presentation last month in Washington, "NIST seeks public input—and we listen." True to their word, they are indeed listening. It is up to all of us to give them something to hear.



**Raymond Davis,
Life Member**

As thanks for and recognition of his lifetime of dedication to criminalistics and forensic science, the Board of Directors approved the nomination of Raymond Davis to be elevated to the prestigious level of CAC Life Member. Congratulations Raymond!

US DOJ Forms Commission on Forensic Science

CAC's own Dean Gialamas was chosen from a pool of more than 300 candidates.

From a USDOJ press release:

The U.S. Department of Justice and the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) today announced appointments to a newly created National Commission on Forensic Science.

Members of the commission will work to improve the practice of forensic science by developing guidance concerning the intersections between forensic science and the criminal justice system. The commission also will work to develop policy recommendations for the U.S. Attorney General, including uniform codes for professional responsibility and requirements for formal training and certification.

The commission is co-chaired by Deputy Attorney General James M. Cole and Under Secretary of Commerce for Standards and Technology and NIST Director Patrick D. Gallagher. Nelson Santos, deputy assistant administrator for the Office of Forensic Sciences at the Drug Enforcement Administration, and John M. Butler, special assistant to the NIST director for forensic science, serve as vice-chairs.

"I appreciate the commitment each of the commissioners has made and look forward to working with them to strengthen the validity and reliability of the forensic sciences and enhance quality assurance and quality control," said Deputy Attorney General Cole. "Scientifically valid and accurate forensic analysis supports all aspects of our justice system."

The commission includes federal, state and local forensic science service providers; research scientists and academics; law enforcement officials; prosecutors, defense attorneys and judges; and other stakeholders from across the country. This breadth of experience and expertise reflects the many different entities that contribute to forensic science practice in the U.S. and will ensure these broad perspectives are represented on the commission and in its work.

"This new commission represents an extremely broad range of expertise and skills," said Under Secretary Gallagher. "It will help ensure that forensic science is supported by the

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Coming Around to Understanding

greg

MATHESON



CAC Editorial Secretary

I know many criminalists who have heard talks or read articles on bias who believe they are being told the black box concept of analysis is the only way to avoid bias.

Most of my early years as a criminalist were spent assigned to the Serology Unit. My progression of training followed the path of learning how to screen cases for biological fluids, to learning ABO typing, to learning multi-system enzyme testing. Almost all of my training came from shadowing other criminalists in the unit and reading journal articles. We didn't have formalized policy and procedure manuals. I started screening cases in 1980 and was fully trained to take any case from beginning to end by late 1981. During this time, the use of gloves while handling evidence in my laboratory was limited. Of course, you put on gloves when handling something very bloody, wet, decomposed or if nasty chemicals were involved. But in general gloves were not worn.

By the mid 1980's AIDS and its connection to the HIV virus was well established and other infection diseases such as hepatitis B were being discussed as possible concerns for criminalists handling biological evidence. However, the routine use of gloves while handling evidence was still being debated. I am embarrassed to say, I fell on the side of arguing the use of gloves should not be required because, among other things, the first step in searching for semen stains was handling a garment and feeling for a crusty spot. Obviously, the sensitivity of this test is diminished with the use of gloves. I and my fellow serologists at LAPD (I don't think it was limited to us) were supported in our lack of concern for not always wearing gloves when it was reported HIV did not remain viable once dried and our whole laboratory was tested for exposure to hepatitis B and no one tested positive.

I don't share this story to gross you out, though it should, but rather to illustrate that I am not what you would call an early adopter of many new concepts and ideas. I'm not closed to them, but sometimes it takes a while for me to absorb the information and decide how I want to proceed. Another example is the discussion of how much information to include in a report. I have debated both sides of the issue and at one time believed minimal information was the way to go. Eventually, my opinions changed and I stand firmly behind the importance of wearing gloves (and masks and protective clothing) and including as much information as possible in an analytical report. I feel it is important for you to know how your thought processes work, to keep an open mind to new (or old) ideas, and be willing to change your stand on an issue if the evidence and information supports the change.

The most recent American Academy of Forensic Sciences meeting in Seattle provided many opportunities to listen to a wide variety of opinions on a multitude of topics. On Monday, February 17, I attended the all day workshop: "Bias in Forensics – Examining the Sources and Impacts of Bias on Perceptual and Cognitive Judgments Made by Forensic Experts, Strategies for Excluding or Impeaching Expert Testimony Tainted by Bias, and Proposed Solutions for Minimizing or Inhibiting Biasing Influences." I guess the authors of the workshop thought if you are paying \$200 the title should be as long as possible. The long title aside, I found the day to be very much worth the time and money expended. The workshop had several presenters providing their take on the issues associated with the concept of bias in forensic science. This workshop provided me with one of those moments when I finally "got it." Like coming around to understanding the necessity of gloves and the importance of a complete report. Some times it takes me a while.

Speaking from personal experience as a long time employee of a government crime laboratory with extensive involvement in the profession and professional organizations, the concern about bias in forensic science is relatively new. I know the discussion has been out there for quite a while and much research has been performed, but the reality is most bench level criminalists, and crime lab supervisors and managers (myself included) have focused on other issues and concerns. Over the years there have even been several articles in the *CACNews*, particularly Proceedings of Lunch, which focused on the issues of bias. Studies were cited and the concept explained, but our level of concern for this topic still didn't rise to meet or exceed that of other issues.

Starting at least 15 years ago, I began teaching new LAPD criminalists a course on ethics. At that time it was not required by accreditation or any other official standard. However, after reading about several examples of criminalists going

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astray, I felt it was important to give new scientist entering the field a heads up of how potentially easy it was to start slipping in the ethical continuum until you find yourself in a position where you damaged your career, and embarrassed your laboratory and the profession. I didn't want to see that happen to any of our criminalists. Also, speaking as a manager, I wanted to make sure our collective butts in the laboratory and department were covered if someone went astray. At least we could say we tried to educate them and tell them what was right.

When the issues of bias in the analysis of evidence, the interpretation of data and the reporting of results started appearing in literature and presentations, I took it to be an ethics issue. I felt if a criminalist was aware of the potential that their results could be biased by information provided by detectives, prosecutors, and defense attorneys, they could consciously block that information and provide sound, unbiased results. LAPD criminalists were taught to act ethically and that providing biased information was unethical.

To further support the interest in believing a criminalist could consciously avoid being biased is the long held belief that an analysis can not be adequately performed without having as much information as possible about how the crime occurred, the victim, and the suspect. Sample choices, analytical schemes and other casework analysis decisions required a criminalist to be in close contact with detectives and attorneys. Also, it can't be ignored that one of the appeals of our profession is getting to be involved in investigating and "solving" all kinds of sordid crimes. As criminalists, we don't need to watch all those crime solving shows; we live it. Having inside knowledge of what others only hear about in the news is, by human nature, just cool. I don't know anyone who chose criminalistics as a career to just sit in a laboratory, receive evidence slipped through a crack in the door, perform the tests on the analysis request and then prepare a report. I know many criminalists who have heard talks or read articles on bias who believe they are being told the black box concept of analysis is the only way to avoid bias. After all, they are ethical and would never consider allowing information to bias them and doing analysis in a black box doesn't serve the investigation because scientists are not making informed decisions and guiding which questions need to be answered by science.

Back to the AAFS meeting. Like I mentioned early in this editorial, it takes a while for things to sink into my head or for information from a variety of sources to click and make sense. I assume this is true for a lot of people. One big concept presented in the AAFS workshop that finally resonated with me was that the human mind is incapable of consciously ignoring biasing information. Solid studies were referenced which support this concept. Many of these studies I had heard about before, but it all came together in this workshop. If a person is not capable of consciously ignoring biasing information, then when biasing information negatively impacts an interpretation or report, it isn't a matter of ethics, but rather poor procedure. Once we grasp the concept that we can't stop certain types of information from resulting in biased interpretation or reporting and it is therefore not unethical, we can stop being defensive about the concept and work to adjust our procedures to account for our human limitations.

To create better procedures, we need to seriously consider:

- What information is important for us to know to help non-scientists, such as detectives and attorneys, identify the questions which need to be asked to provide information pertinent to an investigation.
- What information is important for us to know to make sound scientific decisions regarding case approach, and sample and procedure selection.
- What information provides no help in the first two bullet items and could bias our interpretation and reports.
- Who needs to know what information and when.

A simple example, and I hope obvious example, was given at the presentation.

As a DNA analyst you are asked to attempt to develop a profile from a stain collected at the scene from a purse. Important information might include the substrate, the size of the stain, possible contaminants, possibly where the purse was found and any other environmental impacts on the purse. Important information is anything that might assist you in interpreting your results. Information a detective might want to give you that doesn't help you in interpreting your data could include such things as an eyewitness saw the suspect handle the purse, a fingerprint expert determined the suspect's fingerprint was on the purse, and the suspects DNA profile.

In the example, the information regarding the suspect would most likely have zero impact on your data interpretation and reporting of results if the stain profile was clear, strong and unambiguous. However, if the profile exhibits the potential for a complex mixture, extraneous information has the potential to subconsciously push your interpretation of the profile in a direction it wouldn't if you didn't have that information. Again, this is not an ethical issue but rather a reality of the workings of the human brain.

I haven't presented any specific data that will change your opinion of the potential impact of biasing information. That isn't my intent. What I am hoping is by sharing my experiences I have illustrated there are many different ways to look at an issue, it is OK to change your opinion about an issue as time and more information is developed and to not be influenced by what you think or think you know about the person presenting the information but rather whether or not the information alone makes sense.



Bob Cooper Remembered

I read the article on Robert “Bob” Cooper with interest. [CACNews, 1st Q, 2014] Bob was one of the nicest criminalists I have known. He was always friendly and helpful to me when I was just starting in the field. Later I saw some things that impressed me how selfless he was in taking care of his employees and honor for the field.

I was the training coordinator for the new Bureau of Forensic Services for the CA Dept of Justice in late 1973. Apparently, the 1973 budget was not good for the Alameda County Crime Lab. Bob came to see Fred Wynbrandt and me at DOJ HQ in Sacramento. He told us he was having problems with his budget and would have to let some people go. He offered to let DOJ take over services for Alameda County. He would resign rather than have an administrative conflict. We could put in our own manager and supervisor. He just didn’t want the staff to lose their jobs. After discussing the concept for a while, Fred encouraged him to apply for funding. He gave him some ideas and pointed out that the monies coming in under the new Blood Alcohol assessments should benefit the laboratory. Bob apparently followed Fred’s advice because the lab continued operations.

Bob resigned from the CAC in 1985 not 1981. I was chair of the Ethics Committee. We had a complaint about a letter that Bob had written questioning the ethics and abilities of some of our members. During the questioning, we asked Bob about some of the material that was not correct. Bob was obviously embarrassed and said he would rather resign than to pursue the matter.

I was elected president-elect at the 1993 meeting in Berkeley. When the new business was called for, I nominated Robert Cooper for Life Membership. It was seconded by several of the “old timers” including the other founding members present. The vote was unanimous for him to be instated as a Life Member. He was one of the founding member guests at that evening’s banquet.

I hope the membership understands that Bob was a member in good standing for the last decade of his life.

—Jerry Chisum

Give Explosives the Finger

On more occasions than I can recall, I’ve wanted to give others the forensic finger! However, in the attached journal article, forensic finger has a totally different, non-pejorative meaning. My own initial impression is that this represents highly original research. However, I have certain reservations:

- 1) This would only be a presumptive test; so wouldn’t there then be less remaining GSR-related material for more definitive SEM/EDS and GC/MS (organic residues) tests?
- 2) Defense attorneys will likely raise the issue of possible prior contamination of the finger cots. Can the cots be first read prior to sampling and then again after sampling?
- 3) Could this technology be adapted for rapid, in the field specific detection of other substances? Example, use in post offices or by White House/Congressional police for testing suspicious powders for anthrax or ricin.

—Bob Blackledge

“Forensic Finger” ABSTRACT

Increasing security needs require field-deployable, on-the-spot detection tools for the rapid and reliable identification of gunshot residue (GSR) and nitroaromatic explosive compounds. This manuscript presents a simple, all-solid-state, wearable fingertip sensor for the rapid on-site voltammetric screening of GSR and explosive surface residues. To fabricate the new Forensic Fingers, we screen-print a three-electrode setup onto a nitrile finger cot, and coat another finger cot with an ionogel electrolyte layer. The new integrated sampling/detection methodology relies on ‘voltammetry of microparticles’ (VMP) and involves an initial mechanical transfer of trace amounts of surface-confined analytes directly onto the fingertip-based electrode contingent. Voltammetric measurements of the sample residues are carried out upon bringing the working electrode (printed on the index finger cot) in direct contact with a second finger cot coated with an ionogel electrolyte (worn on the thumb), thus completing the solid-state electrochemical cell. Sampling and screening are performed in less than four minutes and generate distinct voltammetric fingerprints which are specific to both GSR and explosives. The use of the solid, flexible ionogel electrolyte eliminates any liquid handling which can resolve problems associated with leakage, portability and contamination. A detailed study reveals that the *fingertip detection system can rapidly identify residues of GSR and nitroaromatic compounds with high specificity, without compromising its attractive behavior even after undergoing repeated mechanical stress. This new integrated sampling/detection fingertip strategy holds considerable promise as a rapid, effective and low-cost approach for on-site crime scene investigations in various forensic scenarios.*

Analyst, 2013, 138, 5288
(Royal Soc. of Chemistry)

CAC directors are elected at the spring meeting...members may vote in person or by proxy. See page 14.





CALIFORNIA STATE UNIVERSITY, LOS ANGELES

INSTITUTIONAL ADVANCEMENT

California Association of Criminalists
c/o Ms. Meghan Mannion Gray, Treasurer
1001 West Cutting Blvd., #110
Richmond, CA 94804-2004

November 18, 2013

Dear Ms. Mannion Gray:

On behalf of California State University, Los Angeles and the CSULA Foundation, I would like to extend our sincere gratitude for your gift. Your generosity helps further our mission of providing a high quality, accessible and rich learning community for all those we serve.

Your charitable support is vital for our ability to maintain the highest academic standards and to create an environment in which teaching and learning can flourish, and scholarly and creative activity is well supported and recognized. The financial foundation provided by those who know best the value of what it is we do, our alumni, faculty, staff and friends, enables us to build a prosperous future for the broad University community.



TOWER FOUNDATION

Dear Ms. Gray:

On behalf of San José State University, I am pleased to acknowledge California Association of Criminalists's generous donation of \$4,000.00 recorded on 10/29/2013 to support the CAC Forensic Science Scholarships Fund.

Your generous participation is a testament of your belief in the power of education. Your gift strengthens our ability to educate the next generation of leaders in our global community.

Thank you for being a part of this exceptional moment in the history of San José State University. Please know that your gift is deeply appreciated and will be carefully stewarded. If you have any questions, please don't hesitate to call 408-924-1799.

CAC Treasurer Meghan Mannion Gray shares these two "thankyous" she received acknowledging the CAC's gifts to CSULA and SJSU.

strongest possible science-based evidence gathering, analysis and measurement.

"This latest and most impressive collaboration between the Department of Justice and the National Institute of Standards and Technology will help ensure that the forensic sciences are supported by the most rigorous standards available—a foundational requirement in a nation built on the credo of 'justice for all,'" said John P. Holdren, Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy.

Suzanne Bell, Ph.D., Associate Professor, West Virginia University; Frederick Bieber, Ph.D., Medical Geneticist, Brigham and Women's Hospital and Associate Professor of Pathology, Harvard Medical School; Thomas Cech, Ph.D., Distinguished Professor, University of Colorado, Boulder; Cecelia Crouse, Ph.D., Director, Palm Beach County Sheriff's Office Crime Laboratory; Gregory Czarnopys, Deputy Assistant Director, Forensic Services, Bureau of Alcohol, Tobacco, Firearms, and Explosives; M. Bonner Denton, Ph.D., Professor, University of Arizona; Vincent Di Maio, M.D., Consultant in Forensic Pathology; Troy Duster, Ph.D., Chancellor's Professor and Senior Fellow, Warren Institute on Law and Social Policy, University of California, Berkeley; Jules Epstein, Associate Professor of Law, Widener University; Stephen Fienberg, Ph.D., Maurice Falk University Professor of Statistics and Social Science, Carnegie Mellon University; Andrea Ferreira-Gonzalez, Ph.D., Professor of Pathology and Director Molecular Diagnostics Laboratory, Virginia Commonwealth University; John Fudenberg, Assistant Coroner, Office of the Coroner/Medical Examiner, Clark County, Nevada; S. James Gates, Jr., Ph.D., University System Regents Professor and John S. Toll Professor of Physics, University of Maryland; **Dean Gialamas, Crime Laboratory Director, Los Angeles County Sheriff's Department, Scientific Services Bureau;** Paul Giannelli, Distinguished University Professor and Albert J. Weatherhead III and Richard W. Weatherhead Professor of Law, Case Western Reserve University; Hon. Barbara Hervey, Judge, Texas Court of Criminal Appeals; Susan Howley, Public Policy Director, National Center for Victims of Crime; Ted Hunt, Chief Trial Attorney, Jackson County Prosecuting Attorney's Office, Kansas City, Missouri; Linda Jackson, Director, Virginia Department of Forensic Science; John Kacavas, United States Attorney, District of New Hampshire; Pamela King, Assistant State Public Defender, Minnesota State Public Defender Office; Marc LeBeau, Ph.D., Senior Forensic Scientist, Scientific Analysis Section, Federal Bureau of Investigation; Julia Leighton, General Counsel, Public Defender Service, District of Columbia; Hon. Bridget Mary McCormack, Justice, Michigan Supreme Court; Peter Neufeld, Co-Director, Innocence Project, Benjamin Cardozo School of Law; Phil Pulaski, Chief of Detectives, New York City Police Department; Hon. Jed Rakoff, Senior United States District Judge, Southern District of New York; Matthew Redle, Sheridan County and Prosecuting Attorney, Sheridan, Wyoming; Michael "Jeff" Salyards, Ph.D., Executive Director, Defense Forensic Science Center, Department of the Army; and Ryant Washington, Sheriff, Fluvanna County Sheriff's Office, Fluvanna, Virginia.

Ex-Officio Members:

David Honey, Ph.D., Assistant Deputy Director of National Intelligence for Science and Technology and Director



of Science and Technology, Office of the Director of National Intelligence; Marilyn Huestis, Ph.D., Chief, Chemistry and Drug Metabolism Section, National Institute on Drug Abuse, National Institutes of Health; Gerald LaPorte, Acting Director, Office of Investigative and Forensic Sciences, National Institute of Justice; Patricia Manzollilo, Laboratory Director, Forensic Laboratory Services, U.S. Postal Inspection Service; Frances Schrotter, Senior Vice President and Chief Operation Officer, American National Standards Institute; Kathryn Turman, Assistant Director, Office for Victim Assistance, Federal Bureau of Investigation; and Mark Weiss, Ph.D., Division Director, Behavioral and Cognitive Sciences, National Science Foundation.

The first meeting of the Commission will be held February 3-4, 2014, at 810 7th Street, N.W., Washington, DC.

Register for McCrone Research Institute's 2014 Microscopy Courses

Since 1960, McCrone Research Institute in Chicago has offered intensive courses in microscopy that emphasize the proper use of the microscope and more specialized microscopy, focusing on a particular technique, material or field of application. All courses are hands-on, featuring lectures, demonstrations and laboratory practice.

Featured 2014 Courses include:

Advanced Indoor Air Quality:

Identification of Fungal Cultures

Culturing fungi is essential in order to identify fungi to the species level. The course will cover media, culture methods, spore identification and viable sampling methods. Emphasis is on the fungi that relate to indoor air quality and human health.

Digital Imaging and Photomicrography

This course covers the most important aspects of digital imaging microscopy: camera and microscope hardware, system set-up, user settings, collection of quality images, introductory image processing, storage and printing.

Forensic Paint Microscopy

This course is an introduction to the analysis of dust traces for trace evidence analysts. Beginning with the history of dust analysis and the work of Locard, Popp, Schneider, Heinrich, Frei-Sulzer and others, this course will explore the techniques for collecting, separating, analyzing and interpreting dust evidence.

Microscopy of Extraneous and Foreign Matter in Food

This course is geared towards scientists who encounter contaminants in manufactured products such as food, beverages, and pharmaceuticals.

Modern Pollen Identification

Students engage in an intensive study of pollen, fern and fungal spores. Methods for identification, classification and morphological description are covered in detail. Students are

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Tetrachromats

by Bob Blackledge

First, a bit of doggerel:

*Roses are red, violets are blue;
without a microspectrophotometer,
you're Mr. Magoo!*

A recent item in the San Diego *Union-Tribune** caught my interest. I had not been previously aware of the existence of human functional tetrachromats. Humans having normal color vision have in their eyes three different types of color vision detectors, with each type sensitive to light in a particular range of the visible spectrum. Within its area of wavelength sensitivity, each detector type can discriminate between approximately 100 different wavelengths. Combining the wavelength differentiation ability of the three detectors, a human with normal color vision can discriminate between approximately one million wavelengths across the visible spectrum. A human functional tetrachromat would have an additional fourth color detector covering a given range in the visual spectrum. Assuming the product rule holds (big assumption), a functional tetrachromat should be able to differentiate between approximately one hundred million different wavelengths, or 99 million more different wavelengths than a person with normal color vision!

Intrigued by this, I sent out to numerous colleagues the following email:

Let me get your reaction to a hypothetical forensic science scenario:

In a criminal trial, some fibers are crucial evidence in trying to show an association between a kidnapping/sexual assault/homicide victim and the crime scene and the defendant. The victim had been wearing a solid color sweater that during the attack had been ripped off her and left at the scene. At that point the victim had apparently briefly broken free and had run roughly 100 yards before again being caught by the attacker and killed.

The sweater was made in a foreign country and was for sale in just a few small boutique shops in the USA. The sweater is wool and is an uncommon shade of orange. The government fiber expert witness passed *voire dire* (normal color vision, attended and passed numerous courses in forensic microscopy and fiber comparison from McCrone in Chicago, certified in fiber comparisons by ABC, etc.). In all tests run on the fibers recovered from the different sources (sweater, victim, defendant's clothing) by the government's expert, no differences seen between the various recovered fibers.

When it's time for the defense to present their case, they call their own fiber expert. The defense expert is equally well-qualified and also easily passes *voire dire*. However, the defense expert differs in one important respect from the government's expert. Tests have verified that the defense expert is a functional tetrachromat and can distinguish over 100 million colors (99 million more than someone with normal color vision). The defense expert testifies that although the fibers from all three sources are very close, the fibers from the sweater and the fibers recovered from the victim match, while the color of the fibers from the defendant are slightly off and could not have originated from the same dye lot as the fibers from the victim and the fibers from the sweater.

*www.utsandiego.com/news/2013/dec/10/concetta-antico-tetrachromat/

Okay, questions:

1) Would any machine (measure chromaticity coordinates) have sufficient accuracy that it could substantiate the findings of the defense expert?

2) How would the government show that the slight color change was caused by differences in the environment (example – outdoor exposure to UV light)?

3) If fibers from each of the three sources could not be distinguished when examined by pyrolysis combustion stable isotope ratio mass spectrometry (Py-C-GC/MS), what would this prove?

Usually, I'm lucky to get even a couple responses to such an email. "Why the @#\$% does Blackledge keep sending me such %\$#@!?" But so far with this one I've received several replies and they are all interesting. I'll paste in a few below, but preserve the responders' anonymity.

Interesting article. I looked it up on Wikipedia and it states that while 2% may have a fourth cone, they are considered non-functional tetrachromats as they cannot distinguish any more colors than normal trichromats. As for the forensic scenario, the defense expert would have to be one of the rare functional tetrachromats. And if the lab testing the fibers used the spectra from a microspectrophotometer for color differentiation, the differences of the two experts would not be relevant. But if they tried to extract the color coordinates from the spectra, we have to remember that those are modeled upon ideal case trichromats. The differences that might occur would only become apparent if the defense and prosecution analysts were directly imaging the fibers under a microscope and that only if the defense expert is a functional tetrachromat.

This is the first time I have heard this condition in humans. Wikipedia has a pretty good description of tetrachromacy. If I understand what one of the studies they reference is saying about the biology it appears only 2-3 percent of women may have the genetic abnormality leading to the development as a full tetrachromat (still a significant number). The other interesting aspect is that the science is not yet clear on how much of the additional light wavelengths actually reach the fourth receptor (after being filtered by the cornea and eye fluid), and once received how much is passed through and processed by the rest of the human eye/brain circuitry. It sounds like it may be quite a stretch to say these people can distinguish 99 million more colors than someone with normal vision. I'm thinking that in a court of law this lack of data to quantify exactly how much better these individual are at distinguishing colors could possibly lead to their expert testimony being disputed and possibly tossed out (at least until this condition is better understood). In any event this is interesting stuff. Thanks for forwarding.

That's pretty interesting - but it sounds like the high level of occurrence includes "non functional" examples - where the subject in question can't actually see more colors even though they have cones for it. There's got to be a good forensic novel that involves tetrachromaticity in there somewhere.

Now for the hypothetical you've laid out:

1) Would any machine (measure chromaticity coordinates) have sufficient accuracy ...

As I understand it, the tetrachromat would have cones somewhere between red and green (say, particular sensitivity to orange or yellow as in your example). Regardless of the level of color perception, humans only have about 1 part in 2⁸ sensitivity to intensity.

A good spectrometer could have considerably better sensitivity than that, and cover far more colors than even a tetrachromat could see. It should be possible for an instrument to establish the difference as well or better than a tetrachromat.

2) How would the government show that the slight color change was caused...

This might be more a question for XXXXXXXX, but here's how it could be approached. Photochemistry due to UV exposure doesn't destroy the molecules, but it does chemically change them. The dyes could be extracted and HPLC performed XXXXXXXX, but instead of looking just for the dye, one could also look for its photo decomposition products. Mass spec might be an even better way to do that, since the molecular mass of the decomposition product is probably pretty close to that of the parent dye, while the color naturally would be different.

3) If fibers from each of the three sources could not be distinguished...

I don't know this would prove a darned thing. I'd have to be convinced, but good evidence would convince me. I'm not very familiar with the method you're discussing. If you're talking about wool, then I guess I'd expect it to have a typical C12/C13 ratio. Dyes and additives made from petroleum stocks would have a different ratio. But there could be several ways to make a dyed wool that would probably wind up with identical stable isotopes. Has there been any work to establish that the stable isotope ratio is so characteristic that having identical (within error) ratios would be so definite?

Interesting scenario. See my comments below.

1) Would any machine (measure chromaticity coordinates) have sufficient accuracy ...

No machine would be able to support the findings of the defense expert. The trichromatic software functions are based on the "normal" observer. It would be possible to create a tetrachromatic observer function for this particular individual and then present measurements that would substantiate the defense expert's perception of colors. However, this would not help the defense at all. Since this person's color vision is abnormal. The definitive test for the prosecution is not the visual color of the fiber. I would argue that color is not a primary attribute in the physical world. It is a secondary quality which does not exist in the physical world. I would base my case on how well the spectral profiles of the suspect fibers match. I developed a spectral matching index (SMI) for this purpose. A spectrophotometer measures the spectral profile of a specimen under a standardized condition we call equal energy. In color work this is often called illuminant E (with chromaticity coordinates of $s_y = 0.3333$ and $s_x = 0.3333$). It is a fictitious white. At this stage in the color analysis we are dealing with the physics of light. To convert this data to color the spectral profiles are integrated under a chosen illuminant and trichromatic observer function (2 or 10 degree observer). We now have the tristimulus weighting functions which can be converted to chromaticity coordinates. We have transcended from the realm of the physics of light to the psychophysics of light. We are now dealing with the world of color.

At the subjective level is the observer's perception of the color as orange. This observation has to do with the psychology of color vision. An observer's visual evaluation of the color of two different specimens should never be accepted as definitive evidence of a color match. This is the reason why the defense expert's testimony is inadmissible.

2) How would the government show that the slight color change was caused...

I would do accelerated light exposure test such as the Weather-

erOmeter or Q-Panel UV test on unexposed fibers to show that post-test spectral profiles follow the slight change in color of the exposed wool found on the victim's sweater.

3) If fibers from each of the three sources could not be distinguished...

That the fibers have the same composition increasing the probability that the material is from the same source. The question I can't answer; is this data stronger than the color data?

Okay, all interesting, but I especially like the last response. Notice that several said the defense expert's testimony would be inadmissible. Yes, at least on appeal that's probably correct. But in real life things don't always go the way they should. Remember, we (criminalists) don't make decisions on the admissibility of expert witness testimony. If disclosure rules were followed the defense would have included the name of their fiber expert and CV to the prosecution, but would the CV state that this expert was a tetrachromat, and even if so would it mean anything to the prosecution team? The government has the burden of proof and presents their evidence first. It's quite likely that in both direct and cross the subject of tetrachromats never even came up. The government's fiber expert has testified and since neither side objected, has been released by the judge. Just for fun let's make the government's fiber expert from the FBI, ala the movie, *My Cousin Vinny*. Having testified in LA, the esteemed government fiber expert is now squashed between two obese individuals while on a direct flight back to Foggy Bottom. [Why don't they show this reality on shows like *NCIS* or *Bones*?] When the defense fiber expert is called to the stand, the government's team is clueless regarding tetrachromats and can offer nothing to assist the judge in making an admissibility decision.

Just as I was thinking about all this, I received from the American Chemical Society (ACS) a notice of a contest to see who could come up with the best answer to the question, What Is Color?

Go to: www.centerforcommunicatingscience.org/the-flame-challenge-2/what-is-color/ After perusing that page, click on The Flame Challenge. Notice that entries must be submitted no later than March 1st, 2014. The second quarter issue of *CACNews* may come out too late for this, but there's no reason the CAC couldn't hold their own contest with the entries being judged by the Endowment Committee, and the one judged best printed in the program booklet for the Spring 2014 CAC Seminar.

CAC members should be able to do well in this contest. As criminalists testifying in court we are challenged to explain complex scientific subjects and methodology in a concise manner understandable to individuals who may have no more than a high school degree and yet in a way that in no way seems condescending to any jury members with higher degrees.



Conservation Corps

Sixty years and it was finally time enough to place stock in this sense that we had all felt but refused to see, that our living organization had and will continue to become "old." That it was finally time to preserve our past for those members who will never hear our founders' voices, except by our archives, resounding into the future, compelling generations of criminalists yet to come.

by Meiling Robinson

The CAC Historical Committee archival project began as a mere intention to collect and reconcile all Presidents' binders, Board of Director's meeting minutes, past seminar abstracts, and other miscellaneous "old" documents under one custodian, one location, under one committee. As with all good intentions, an idea without life breathed into it, is consigned to oblivion. We watched as our association's golden anniversary passed and awaited still the 60th anniversary before attention was once more paid to preserving our history. Sixty years and it was finally time enough to place stock in this sense that we had all felt but refused to see, that our living organization had and will continue to become "old." That it was finally time to preserve our past for those members who will never hear our founders' voices, except by our archives, resounding into the future, compelling generations of criminalists yet to come.

The logistics of this archive project began to develop in early 2011. The CAC had found and acquired a physical location to house the archives at the Forensic Science Center at the CSULA campus. This is also when my involvement in the committee further developed. My working for LAPD gave me the advantage of working at the same location as the CAC archive materials, and therefore, I became the main point of contact regarding the intake of archival materials. At that time historical committee members were tasked with first locating materials that were considered "historical". Materials had been passed on from criminalist to criminalist and spread across the membership, located in garages, offices, and other storage. After amassing a great deal of material, the hunt for finding a company to help us organize the materials began. I had identified an individual who was a private consultant and historian who was willing to help out with this project. An initial project proposal was submitted but alas the funding was not there. Then the promise of funding was finally secured and the allocation was granted in 2012. By that

time, the original vendor had moved onto to other archiving projects and no longer had time to assist us with our own. I had also assumed chair responsibilities during this interim, and once again I underwent the search for a suitable archival company. I found History Associates Incorporated (HAI) and started communications with Gabriele Carey, Vice President and Senior Archivist. The proposal for the project was drafted in the fall of 2012 and after seeking the CAC Board's approval, I initiated a contract agreement with Ms. Carey. By January 2013, the CAC entered into agreement with HAI who was now officially hired to start the Historical Committee's archive project.

At that time that intention which had fallen to neglect due to lack of funding, finally breathed new life. On April 1, 2013 the Historical Committee received the Processing Plan and Historical Records Inventory that was developed for us by Gabriele Carey and her associate Sara Seltzer. The Historical Committee began holding meetings and together with the archivists and volunteers, we were learning the processing workflow and how to physically process the archival materials. At this point the good intention had fully developed into a much larger, more confusing web of detail which unbeknownst to me would consume much of the year to see to fruition. We became novice archivists grouping series together using the processing plan. Sorting through each container and parsing the materials into folders, each labeled with series titles, folder titles, and inclusive dates. This process, phase one, was being recorded into a container list spreadsheet which, we hoped, would one day become a complete snapshot of all of our materials. A living record of what we as an organization was and is—members, business meetings, seminar abstracts, newsletters, etc. Accumulations over time, each odd and end connecting our first President to our next, members past to members present, a history of our sixty years which beckoned to be re-discovered and preserved.

As the months toiled on a core group of individuals would emerge, mostly volunteers recruited from student affiliate members located at the CSULA campus. These volunteers were Master's students in the CSULA Criminalistics program and/ or interns working in my laboratory. Their involvement was driven by their interest in participating in the CAC as well as their enthusiasm and reverence for the profession of criminalistics.

It has been a long journey to finally be where we are today. Our project is not quite complete, but we're closing out phase one and starting phase two of the processing workflow. Phase two consists mostly of determining the final arrangement for the folders. Once the folders are in final order, we can begin relocating them into the appropriate drawer, cabinet, shelf or box. I am grateful to all those who have assisted in this project and although we have work yet to do, I see the finish line is upon us. I cannot wait for that long-awaited day when the Historical Committee can announce to the CAC the official completion of this archive project. Hopefully, that happy announcement will be made at the 123rd CAC Seminar. Perhaps even still, when I see your smiling face at the next seminar, I can tell you the happy news in person.



bottom: Linda French (Full Member) and Dante Webb, (Affiliate Member) CSULA Criminalistics grad student.

middle (l) Kathe Canlas, (Affiliate Member) CSULA Criminalistics grad student.

middle (r) Demetrius Cummings (Affiliate Member), LAPD Intern.

top: Paul Kirk Papers before and after,

facing page: processed material in folders in filing cabinet, project start.



For President Elect: Chris Coleman

I am a deputy sheriff forensic supervisor with the Contra Costa Office of the Sheriff, Forensic Services Division. I supervise the Comparative Evidence (Firearms) Section in our Laboratory. I am also a lead firearms instructor and force option instructor with our department and I am a POST certified Instructor at our Law Enforcement Academy. I have been with Contra Costa County for 13 years. Prior to that I worked in the Santa Clara County District Attorney's Office Crime Laboratory for five and a half years and spent one and a half years with the Los Angeles Police Department, Scientific Investigation Division Crime Laboratory before that.



I joined the California Association of Criminalists in 1992 as a student at the University of California Sacramento while taking a class with Jerry Chisum, who sponsored me. I graduated with my degree in Forensic Science in 1993. I Co-chaired the Resources and Training Committee for several years and have been the Chair of the Northern California Firearms Study Group off and on, going back eight years (currently the Chair again). I am also a regular member of the American Academy of Forensic Science (AAFS) and the Association of Firearms and Toolmark Examiners (AFTE). I am certified by the American Board of Criminalistics (ABC) and certified in Firearms, Toolmarks, and Distance Determination by AFTE. I have presented fairly regularly at CAC and AFTE meetings for many years. I was the workshop chair for the 2005 CAC Spring meeting that we hosted in Contra Costa. I am also an assessor for ASCLD/LAB. I, along with my partners Bruce Moran and Mike Giusto, teach Shooting Incident Reconstruction for the California Criminalistics Institute.

In my nearly 20 years in the forensic science field I have witnessed many changes. Recently it seems there have been numerous challenges to several of our disciplines and additional scrutiny at the Federal level. I believe more changes are coming in the future. I would be honored to serve as your next president-elect as we navigate our way into the future of forensic science and seek to establish more resources and a unified structure for our field.

For Recording Secretary: Kirsten Fraser

I have been a criminalist with the Los Angeles County Sheriff's Department Scientific Services Bureau since September 2007 and a member of the CAC since May 2008. I have been fortunate enough to attend several study groups, seminars and workshops held by the CAC and consider them all invaluable experiences.



I was elected to the Board of Directors two years ago and have enjoyed holding the position of recording secretary for my first term. I sincerely look forward to a second term and the various learning experiences the next two years may bring. I would like to encourage

any member that has an interest in collaboration with their peers and learning the inner workings of an organization like the CAC to become more involved and consider joining the Board of Directors. My experience thus far has taught me a lot, given me great networking opportunities and allowed me to gain experience as a leader for one of the premiere professional associations in California. I would like to thank the Nominating Committee for asking me to stay on for a second term and the other board members for their hard work. I look forward to working with this group of accomplished individuals over the next two years.

For Membership Secretary: Michelle Halsing

I am a senior criminalist with the California DOJ's Missing Persons DNA Program. I have been with DOJ since I entered this field in 2001 working in the offender Data Bank program. I joined the CAC in 2003 and, since that time, I have attended many seminars, Study Group meetings, and have been on the Board of Directors since 2010 when I became membership secretary. In this role, we have made the transition from paper membership records to digital ones, including the implementation of the Member Services website. Being on the Board of Directors has been a great experience and I would be very honored to continue to serve the CAC in that capacity!



For Regional Director North: Alice Neumann Hilker

I would appreciate the opportunity to continue to serve as the CAC regional director north.

I am currently a supervising criminalist at the San Mateo County Sheriff's Office Forensic Laboratory and have been a member of the CAC since moving back to California in 2001. I served as the Northern DNA Study Group chair from 2005 until 2012 and in 2013 I served as the regional director north.

I strongly believe that professional involvement and the exchange of ideas between the laboratories throughout our state promotes us all to become better criminalists, and I hope that I have helped to facilitate that in some way by putting on many DNA study groups, presenting a CAC-sponsored north and south DNA workshop in December of 2010 with Jeanette Wallin, and the three northern study group sessions of 2013. I assisted in the creation of the Northern DNA Technical Leaders Study group in order to allow the DNA technical leaders of the northern region to share their successes as well as the challenges that may come with that position. I also oversaw the recent return of the Northern Region CSI Study group and hope for its continued success as a resource to those of us who, like myself, have the additional challenge of crime scene response.

I would appreciate your support and your vote for another term as the regional director north.



Renewing Vows

Dave Stockwell

As I again approach another wedding anniversary, I take note that not all anniversaries are celebrated equally. In fact, some are rather special. We give names like silver, golden, and diamond to milestone years 25, 50, and 60. Special gifts are given which recognize these milestones. Often, those who stood by us to witness our pledge will call us, or travel great distances to help us celebrate these significant moments. And some celebrants, honoring years of struggle and triumph, will recite their original vows.

So why do I muse on wedding anniversaries in the pages of the *CACNews*? Well, if you replace 'wedding' with 'professional', the CAC has a significant anniversary approaching. On May 17, 1989 the CAC Certification Examination was offered for the first time. It is time to celebrate our silver anniversary. On this auspicious occasion, we can raise a glass to toast our association on its accomplishment. We can congratulate those who have met the challenge of certification. Or, we can take note of General George Patton's wry comment about the Roman conqueror returning from war laden with treasures, to listen to the slave holding high the

Legend values in parentheses reflect the five-year change in certified individuals

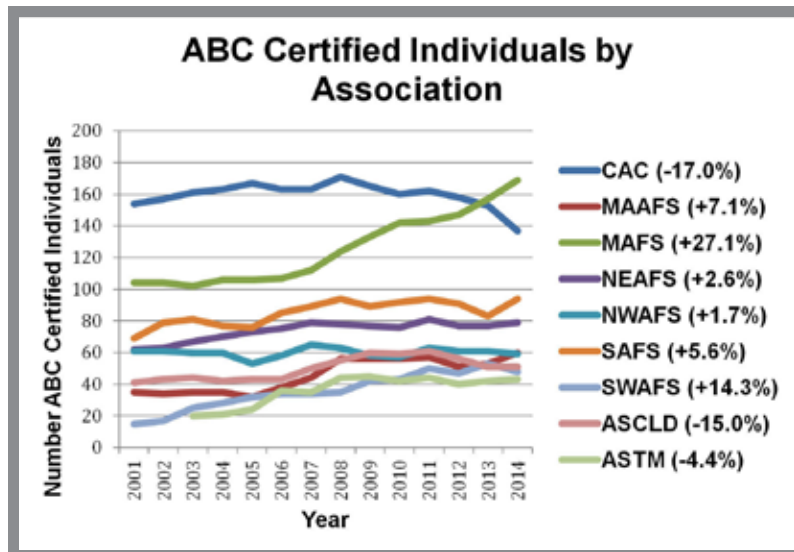
golden crown all the while whispering in the conqueror's ear, "All glory is fleeting."

If I appear equivocal by that last statement, let me be clear: I am, in fact, advocating for certification across the profession. My question is, *will you?* Twenty-five years ago this association committed itself to furthering our professional standing through the vehicle of certification. The CAC leadership still strongly endorses the efforts of certification through representation on the American Board of Criminalistics, the successor to the Certification Examination. Yet the membership seems to be voting by abstention. (See chart.)

The CAC is robust. The *CACNews* website (in my opinion, the best website among the forensic organizations) says we have grown to 818 members. Impressive! Yet only 137 currently hold ABC Certification. (My apologies to those who hold certification outside ABC—I don't have those numbers.) Most other regional organizations are growing their ABC Certified members. We, unfortunately, appear to be winnowing away.

I invite you to read two editorials that appeared in the April 1989 CAC Newsletter on the eve of our first certification examination. Both articles are premised on professionalism—what it is, and perhaps more importantly, what it takes to

be recognized as a profession by others. Jan Bashinski lays out the foundations of the multifaceted road to professionalism. Ed Rhodes, ever the rebel, challenges both lab management and the CAC to work towards the common goal that enshrines professionalism. Both dwell on certification as a necessary part of that process. Although 25 years have passed, I find their prose quite fitting. It is, in a sense, their stated vows.



CRIMINALISTICS: An Emerging Profession

Jan S. Bashinski
Oakland Police Department



Jan Bashinski
1942-2004

Despite its relative youth as a profession, criminalistics has made great progress in recent years toward developing a professional consciousness. The purpose of this paper is to examine the current status of the profession of criminalistics and to see how we are meeting the challenges of professional responsibility as a group.

The word "profession" and its derivatives "professional," "professionalism," etc. are often bandied about. Likewise, "criminalistics" is often applied somewhat loosely. Any discussion of the subject should begin with a clear definition of what one is talking about. Consider the following quote from the American Heritage Dictionary:

"Profession: (1) occupation or vocation requiring training in the liberal arts or sciences and *advanced study in a specialized field* (2) the body of *qualified persons* of one specific occupation or field (emphasis added)".

It is a truism that profession defines itself. Criminalistics is no exception. The following CAC definition of criminalistics has been widely adopted:

Originally published in the April 1989 CAC Newsletter.

But from the definition above, a profession requires the study of a specialized field. What is it about criminalistics that unifies it and sets it apart as a profession from other related scientific fields?

"Criminalistics is that professional occupation concerned with the scientific analysis and examination of physical evidence, its *interpretation* (emphasis added), and its presentation in court".

The genesis of this definition and much of the concept of criminalistics as a separate professional entity stemmed from the criminalistics program at U.C. Berkeley, started in the 1940's in the School of Criminology by Dr. Paul Kirk and shepherded today by George Sensabaugh and John Thornton in the School of Public Health. Many of the founders of crime laboratories and of graduate academic programs around the country had their roots in Berkeley and have spread Dr. Kirk's vision nationwide.

Criminalists, of course, includes many sub-disciplines, such as controlled substance analysis, trace evidence examination, physiological fluid analysis, which are themselves grounded in the fundamental sciences, primarily chemistry and biology. A solid academic foundation in the sciences is a necessary prerequisite to the professional practice of criminalistics. But from the definition above, a profession requires the study of a *specialized field*. What is it about criminalistics that unifies it and sets it apart as a profession from other related scientific fields?

First is the nature of the scientific problems the criminalist must solve. A major task of the criminalist is to examine the scene of a crime or an object of evidence using scientific methods to try to reconstruct the event or answer an important question. A common problem in the forensic sciences is the search for evidence of a connection or common source between items. This process of "individualization" requires not only the ability to analyze and identify something based on its composition, but also demands an appreciation of how unusual or unique its proper ties may be. The analytical samples themselves are uncontrolled and unpredictable, often minute in quantity and contaminated or degraded by the environment.

Second is the forensic arena in which the criminalist is expected to communicate the results of the scientific examination. Many other fields produce information which may ultimately find its way into a courtroom. However, in criminalistics the *primary purpose* of the laboratory examination is to produce a legally significant result, and every examination has likelihood of ultimately reaching the courts. The criminalist must not only be capable of conducting a competent analysis and writing a report but must also understand and be able to explain the scientific basis and significance of that analysis in court.

Criminalistics is a practical, applied field. This is not to say that fundamental academic research has no place nor to

imply that the work does not require scientific rigor. However, most often the profession modifies and evaluates methods developed in other fields to meet the demands of the types of samples encountered in evidence. Furthermore, the laboratory analysis, no matter how accurate, has no value if it is not directed toward significant investigative question. The criminalist must exercise scientific discretion as to which tests are appropriate for a given case circumstance. The criminalist must also have the ability to synthesize a number of observations and bits of data into a scientifically sound *interpretation*. In this regard the practice of criminalistics is quite analogous to the practice of medicine.

Recall the importance that the CAC definition of criminalistics attaches to the interpretation of physical evidence and compare that concept with the following definitions from the American Board of Industrial Hygiene:

"**Professional experience** involves having technical independence, responsibility and accountability. It includes evaluating and interpreting data, developing recommendations, preparing reports, and taking actions involving independent technical judgment."

"**Technician technologist experience** generally is limited to routine activities under technical supervision without technical independence."

The same terms apply equally well to describe professional level work in criminalistics. Although a few crime laboratories utilize the services of technicians for some restricted routine tasks, most practitioners are directly responsible for both the analytical work and the interpretation, reporting and testimony derived from that work. This is in stark contrast to the model in most clinical laboratories where the laboratory director, supervisor or physician interprets and assumes accountability for the analytical work done by technicians.

One reason for this may be the legal requirement that a defendant have the right to confront all witnesses against him. It is rare that a laboratory director or supervisor will be allowed to testify to data developed by another individual. However, the major reason that the criminalist must function at the professional levels that sound scientific judgment and interpretation must be applied throughout the entire analysis process, beginning with the initial examination and evaluation of the evidence. Since the samples and case circumstances are not controllable, no amount of preordained standardization of approach can eliminate the need for scientific discretion in the particular case.

Given, then, that criminalistics is a profession, what are the responsibilities of its professionals, the criminalists, toward that profession? Those responsibilities are implied in the definition of a profession quoted at the beginning of this paper. They are *to define the body of specialized knowledge which constitutes "criminalistics" and to establish a means of identifying the "body of Qualified persons" who meet minimum standards of practice*. In other words, if we are to be considered a profession, we must establish and adhere to professional standards.

What is the appropriate arena for establishing professional standards? Obviously, the standards in a particular field are most appropriately set by the practitioners of that field, that is by the professional community that understands the needs and special requirements of its practice. In the case of criminalistics, the professional community is best represented by the professional societies into which it is organized. The regional and national forensic science organizations must provide the forum and the leadership for the process.

We can learn from the experience of the other professions who have gone through this process before us. However, we should remember that approaches which work well in a profession organized differently than ours (e.g. clinical pathology) may not be the most appropriate in the crime laboratory context. Further, we should recognize that until we have clearly defined what the proper model is for our own profession, there will be a tendency to try to fill the void by imposing existing models from other professions whether or not they really fit.

The most visible manifestations of the maturation of a profession are its formal mechanisms for self evaluation and regulation. These can be divided between those which deal directly with the qualifications and competence of the individual practitioner and those which focus on the facilities and procedures of the institution in which the individual practices.

The regulatory mechanisms which deal with the individual practitioner fall into two categories: Those which focus principally on ethical behavior and those which address primarily issues of technical competence. The ethical values of a profession are typically delineated in codified form and incorporate moral standards, such as honesty and trustworthiness.

Often the line between unethical behavior and technical incompetence is blurred. For example, at what point does a physician's failure to maintain his ability to provide the current standard of care become gross negligence which could qualify as a betrayal of trust? For this reason the "codes of ethics" of many professions incorporate technical standards as well as moral ones and may more properly be termed "codes of professional conduct."

Those standards which cover the technical competence of the individual practitioner fall within the purview of *certification*, which has been defined in criminalistics by the Criminalistics Certification Study Committee as:

"a voluntary process of peer review whereby a practitioner is recognized as having attained the minimum qualifications necessary to practice in one or more particular discipline of criminalistics."

Those standards which cover the institution are part of the process of accreditation, which for crime laboratories has been defined by the American Society of Crime Laboratory Directors as:

"a voluntary process of external organizational review by which a laboratory may demonstrate that its management, operations, personnel, procedures and instruments, physical plant and security and safety procedures meet minimum standards."

Both certification and accreditation differ from *licensure*, which is a mandatory governmentally administered program which may cover either individuals or institutions. Licensure often builds on a voluntary profession based program, drawing on the standards developed by the profession. For example, licensure of physicians or lawyers by the state is based on written examinations and minimum qualifications which have been established by their professional peers in the Medical and Bar Associations. Accreditation of hospitals and clinical laboratories is based on standards developed by the medical profession and inspections conducted by peer professionals. To the extent that a profession creates a viable and credible mechanism for self-regulation, it has reasonable prospects for retaining some measure of control over its own fate when the public becomes interested in imposing governmental regulation.

The regulatory mechanisms which deal with the individual practitioner fall into two categories: Those which focus principally on ethical behavior and those which address primarily issues of technical competence.

Of the mechanisms that our relatively young profession has developed for self-evaluation and review, crime laboratory proficiency testing is the most well established. Begun experimentally in 1975, the proficiency testing program has been administered since 1979 by Collaborative Testing Services under the auspices of the Forensic Science Foundation with the advice of a committee of the American Society of Crime Laboratory Directors (ASCLD). At present, more than half of the crime laboratories in the nation subscribe to one or more portions of this voluntary program. Participation in this external proficiency test program provides a crime laboratory an opportunity to monitor the technical performance of its employees and to compare its results with other laboratories.

The American Society of Crime Laboratory Directors (ASCLD) created a program of crime laboratory accreditation which was implemented in 1981. The ASCLD accreditation standards and inspection process have many elements in common with programs for accrediting hospitals, schools, and clinical labs. The process begins with a self-evaluation against the accreditation standards by the applicant laboratory. This critical self-assessment is, in many ways, the most valuable part of the process. Even if a laboratory proceeded no further, it would have gained significant insight into areas of its operation which may need improvement. The heart of the process is an onsite inspection during which a team of trained inspectors examines the laboratory's facilities, equipment, and written technical and operating procedures, as well as interviewing the technical staff and reviewing case records. The applicant laboratory has up to a year to remedy any deficiencies before the final decision of the Board.

The ASCLD began developing its accreditation program shortly after the organization was formed in 1974. The ASCLD Laboratory Accreditation Board has been in existence since 1981. In the ensuing seven years, sixty-three laboratories representing seventeen federal, state and local agencies have been accredited. This total represents approximately 20% of the nation's crime laboratories and is growing at a steady rate each year.

Progress in developing a program for certification of individuals has been more sporadic. A proposal for national certification was made in 1980 by the national Criminalistics Certification Study Committee (CCSC), based on a three-year study of the issues conducted under the auspices of the Law Enforcement Assistance Administration (LEAA). This proposal did not receive support of the majority of the profession at that time, and the profession has yet to adopt a national certification program, although the concept has recently resurfaced with some prospect of success.

The lag between acceptance of accreditation and of certification is a reflection of a number of factors. First, laboratory managers who form the peer group for the accreditation process are represented by one national organization, the ASCLD. Individual practitioners, on the other hand, are represented by seven regional organizations, in addition to a number of national groups. Coordination of these various entities remains a problem.

Secondly, the diversity of the field presents a problem in designing an appropriate testing process. By definition, certification requires the establishment of a peer-based consensus as to the scope of knowledge and nature of educational background which should be required of a "qualified person". Achieving that consensus will require considerable effort and leadership.

Several other forensic science professional associations have addressed the issue of professional standards in a variety of ways. The American Academy of Forensic Sciences sponsors certification in the fields of toxicology, forensic odontology, and anthropology. Document Examiners are certified by the American Society of Questioned Document Examiners and Latent Fingerprint Examiners by the International Association for Identification. The Northwest Association of Forensic Scientists operates a proficiency testing program. Serology training standards have been adopted by the Southern Association of Forensic Scientists and a firearms training program has been published by the Association of Firearm and Toolmark Examiners.

More close to home, the California Association of Criminalists has also taken several significant steps toward defining professional standards. The first was the adoption early in the organization's history (1957) of a comprehensive Code of Ethics. The CAC Code contains many sections related to moral values. For example, the criminalist must not intentionally mislead the trier of fact and must not distort his interpretations to favor the side that employs him. However, most of the provisions of the code deal in one way or another with technical competence. The expert is expected to keep abreast of new developments in the field, to use reliable procedures, proper controls and representative reference materials and to be aware of the limitations of his expertise. Thus, the CAC Code is truly a code of professional conduct.

In practice, application of those portions of the CAC Code of Ethics dealing with technical issues has been difficult. This has been due in part to the absence of well defined profession-wide standards against which to measure the performance or qualifications of individual practitioners.

In recognition of the need for minimum qualification standards within the profession, the pivotal decision was made in 1986 to pursue the certification of individuals in general criminalistics and to create the CAC Certification Committee and Board of Examiners. The goal of this process is to define those basic core areas which are foundational to the practice of the profession of criminalistics and to produce a written test by mid 1989. Certification in specialty areas may follow as time and resources permit. In accomplishing this goal, the CAC will have established a model which could be followed by any other regional or national group desiring to develop a testing program.

Another pioneering event was the participation of the CAC in the 1987 Symposium on the Practice of Forensic Serology. This symposium brought together 92 practitioners to deliberate over working drafts of position statements prepared

by five peer group committees on (1) quality assurance, (2) standards of training, (3) recording collection and preservation of evidence, (4) method validation, and (5) reporting and interpretation of results. After the symposium, the revised drafts were circulated to the profession for feedback. The result was the publication in early 1988 of a 100 page document which articulated the professional consensus on the current practice of forensic serology within the state. The serology symposium is an excellent example of a dynamic peer-based consensus building process which could serve as model for establishing and articulating professional standards in any of the sub-disciplines of criminalistics.

The most recent critical step was the decision by the CAC Board to send its representative to join with other regional associations as members of the American Board of Criminalistics, a national criminalistics certification board to be incorporated in the near future. As a result of this action, the CAC and the other regional organizations which support this national effort will be in a position to exercise leadership and control over the direction their profession will take in the future.

The growing interest and support for accreditation and certification demonstrates that our emerging profession is going through the natural course of evolution that others have followed before. We may differ among ourselves about the pace or the details of implementation, but we are moving as group in the right direction. By establishing and adhering to professional standards of practice we are, in essence, coming of age.

The CAC's Role in Encouraging Professionalism and Professionalized Management; Past, Present and Future

Edward F. Rhodes

Although there are numerous books and discourses which define and describe professionalism and a profession, there is fairly strong consensus about some of the elements that surround these terms. One of the main elements that characterizes a profession is the requirement of advanced

education, or expertise, usually acquired through in-depth study of abstract knowledge. This usually means a highly technical skill with a significant amount of specialization. Another major element of a profession is the acceptance of collegial standards of performance rather than the hierarchical standards of the bureaucratic institution. This is generally because the working knowledge required to police a technical specialty is not held by the traditional bureaucratic managers, but by

the professionals themselves. A strong sense of ethics in the providing of service is also a hallmark of a profession. Part of that ethical concern is a commitment to be "true" to the profession and the client even over the institution if necessary.



*Ed Rhodes
1950-1995*

A traditional bureaucratic approach to the solution might be to restrict decision making at the worker level and eliminate particular methods as acceptable choices. Clearly, this solution does not encourage a more professional approach by the workers involved and serves to frustrate the efforts of workers who do not share their limitations.

Another very important element to the professional is a high degree of autonomy in determining what work is done and how it is performed. The making of these decisions by those with the skill and knowledge to do so, rather than by those with only the hierarchical status to do so, is a critical part of this process.

As a result of the elements described above, those who consider themselves professionals find they have a strong commitment to their field and their careers, often over their commitment to their employing organizations. They identify more strongly with fellow professionals than with their fellow (non-professional) workers or managers. Professionals tend to have their own personal motivation outside the needs of the company. They are often driven by their own sense of professional accomplishment and desire for achievement.

Criminalistics has the potential for all of the elements above, both those supplied by management which define the professional laboratory and those provided by the individual which create the professional worker. Many criminalistics laboratories do not possess any or all of the elements of a professional workplace and do not encourage professional behavior on the part of their employees. Many Criminalists do not display the elements of a professional and do not encourage professional management. It is certainly in the best interest of both groups and the "Profession" to look for solutions to this condition.

The California Association of Criminalists was first established, in large part, to address some of these very elements of professionalism. The CAC's By-Laws start out with a description of the purpose of the organization. The list includes an exchange of information, encouragement of developmental work, and other activities which add to the advanced education required by the field. It also encourages the establishment of standards for and by the practitioners, and Code of Ethics. And it seeks to enhance the recognition of the Association as a body which can help determine how work should be performed. Most if not all of the founders of the CAC were bench workers as well as lab managers (often because they were the only laboratory employee). So as they sought increased professionalism for themselves, they were doing so for the laboratory in general. As the field, the Association and the laboratories grew, this sense of professionalism

was held together by the close working relationships of the still small number of laboratory personnel. These criminalists worked together to convince their parent organizations of the value and necessity of the elements required by their fledgling profession.

With the vast growth of Criminalistics in California in the 1970's, the job of Laboratory Director became a full time management position. No longer able to keep up with the expanding technology of a rapidly diversifying field and increasingly occupied with personnel and budget matters, many laboratory managers have lost the close association they once had with the profession itself. The directors of many laboratories, by choice or acquiescence, have conformed their management to traditional bureaucratic styles. These styles do not promote professionalism. They call for strong company loyalty and hierarchical authority and decision-making. Under these situations the true professional succeeds despite management NOT because of it.

An example of how more traditional bureaucratic management styles might frustrate professionalism can be demonstrated in the following hypothetical: Management is challenged if some of the workers in an organization demonstrate inability to decide which work methods to employ and demonstrate poor performance with some methods. A traditional bureaucratic approach to the solution might be to restrict decision making at the worker level and eliminate particular methods as acceptable choices. Clearly, this solution does not encourage a more professional approach by the workers involved and serves to frustrate the efforts of workers who do not share their limitations. A more professional approach might include education and training in both decision making and in performance of the specific methods. It might also require more ongoing creative supervision in the handling of quality assurance for these workers. This in turn may require some additional training for supervisors. While the first approach is probably faster and more cost effective in the short term, the latter approach is much more effective toward the long term goal of ensuring quality work by capable individuals, and avoids the pitfalls of crisis management.

As the effects of more traditional management styles have been increasingly felt by the workers in criminalistics laboratories, the CAC has made little formal effort to examine or alter these conditions. The CAC's recent contributions to professionalism have been in the areas of training, standards and ethics. Study groups in various sub-specialties have been formed in an effort to promote training and education. In doing so, these groups have also provided some collegial standards (although often informally). Training sessions sponsored and/or coordinated by the CAC have also helped provide opportunity for increased expertise. And the discussions of ethical issues both hypothetical and real have helped to strengthen the CAC's commitment to itself and to the clients its members serve (i.e. the criminal justice system). But the issues of management, decision making and autonomy have been largely left to managers and their organizations (e.g., CACLD)

To accomplish the goal of professionalism, the CAC must continue and expand its efforts in establishing the elements critical to this process. Training, in the form of study groups, conferences, congresses, seminars, lecture series, etc. must continue and proliferate. Collegial standards must be more formally established and promoted. A giant step in this direction is the current effort in certification. Ethics and ser-

Renewing Vows, *cont'd*

vice to the justice system must remain vigorously defended goals. Perhaps most critically, the CAC must explore ways to encourage professional management styles that will promote professionalism among workers. Without the support of management, training will be difficult, certification will not be promoted, ethics and service may be ignored and professionalism will wane.

The CAC must focus management's attention on the benefit of maintaining a professional laboratory staff. One way to do this can be discovered by examining what would be the antithesis of a professional as defined by the elements already presented. Does any manager really feel his organization will be better served by a worker who does not have or is not concerned about advanced education and training; a worker who accepts the organization's standards of performance without regard for what is being done industry wide; a worker who does not feel a strong sense of ethical responsibility and sense of service to the criminal justice system; or a worker who does not want to make decisions, but must be told what to do and exactly how to do it? Is any organization going to provide better service with a staff that refuses to think for itself and fails to look for opportunities for improvement, a technician-like staff that can faithfully follow recipes but cannot handle a problem that does not have a predefined solution?

The CAC must also focus workers' attention on the values of pursuing their own professional development, and the associated responsibilities. The benefits of a more interesting, challenging, and rewarding occupation must be coupled with a reasonable expectation of self motivation, dedication and sacrifice. Professionalism and its benefits must be considered rewards of their sincere pursuit not favors bestowed as a condition of employment.

Management and workers must realize that attainment of true professionalism is a joint achievement. It is a symbiotic relationship whereby the employing organization, the manager and the worker all benefit, and thus the criminal justice system benefits. Some ways in which the CAC and management organizations might cooperate to achieve this goal could include joint consideration of minimum professional operating standards. Such standards might include a minimum percentage of a budget that must be allocated to ongoing education, a minimum amount of time allotted by the organization and donated by the worker in the pursuit of training or other professional endeavors or the maximum amount of time a worker should be given to become certified and what the organization must do to help him prepare for it. In general, standards which help define what is reasonable to give and to expect from professionals. Perhaps some of these standards might become required for laboratory accreditation. Other ways the CAC might support professionalism is by supporting and/or coordinating training in professional management along with some of the management organizations.

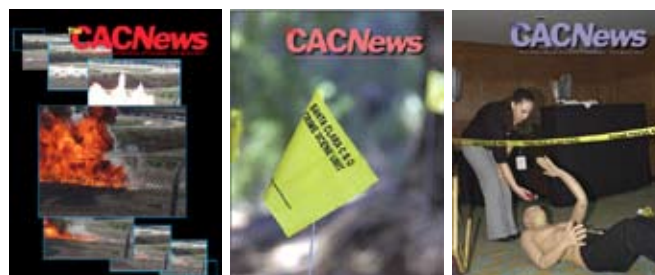
Without some kind of cooperation and commitment on the part of both workers and managers, professionalism will not become full fledged. And the alternative could be laboratories full of technicians, automated instruments and robots, all of which are provided with operating programs, cannot think, cannot handle anything outside of the routine and which do not require technical or professional managers.



Read



All



About it.



www.cacnews.org

Seminar Info!



California Association of Criminalists
2014 Spring Seminar

hosted by the
San Diego Sheriff's Department
Regional Crime Laboratory

San Diego, California ~ May 6 - 9, 2014
Westgate Hotel, 1055 2nd Ave, San Diego, CA 92101

Workshop Information

All Workshops will be held at the Westgate Hotel on Tues., May 6th

DNA Workshop

(Full Day Workshop 8 AM - 5 PM)

Various Presenters

Preliminary Program includes Norah Rudin and Keith Inman on their Laboratory Retriever Program, Cherie Anderson with an interesting case presentation, Shelley Webster and Brian Burritt with a Local CODIS update, Shawn Montpetit with a DNA on cartridge casings study, Illumina will be giving a presentation on Next Generation Sequencing, and more.

Trace analysis with Micro-spot XRF

(Half Day Workshop 8 AM - 12 PM)

Matt Chipman; EDAX Corp.

This half-day workshop will be focused on the application of micro X-ray fluorescence (micro-XRF) for analyzing criminal forensic samples. Micro-XRF is a non-destructive, elemental technique which utilizes a focused X-ray source to generate characteristic energy lines from the sample. On the EDAX Orbis spectrometer, the X-ray spot size can range anywhere from 30um to 2mm. The lowest detectable element with this technique is sodium (Na), and provides particularly high sensitivity in the part-per-million (ppm) levels as the atomic number of the element increases. This makes it very effective in applications where analysis of inorganic elements is needed, whether it be characterizing glass fragments, trace elements in metals, or paint-chip/ink analyses. In addition, the chamber has a stage which is navigable in the X, Y, and Z directions, allowing for scanning and mapping capabilities. Sample preparation is very minimal, and does not require destructive methods such as polishing, coating, or digesting. Micro-XRF has gained favor for this reason, as it minimizes the preparation time, keeps the sample intact, all while still at-

taining high-sensitivity elemental data. In the field of criminal forensics where elemental data is necessary, this has proven to be an efficient and useful tool in characterizing evidence.

The workshop will utilize presentation materials to explain the basic theory behind micro-XRF, along with the technique's attributes in the field of criminal forensics. The EDAX Orbis will be setup and running at the workshop as well, so "hands-on" time with the instrument will also be dedicated. Attendees are encouraged to bring one or two relevant samples with them, such that the instrument can be best demonstrated and discussed within the context of this application.

Particle Combination Analysis: Very Small Particles on the Surfaces of Carpet Fibers Acting as Multiple-Transfer Evidence

(Half Day Workshop 1-5 PM)

David A. Stoney, PhD, MPH* and Paul L. Stoney, MBA

Particle Combination Analysis is a new approach that uses co-occurring particles to test alternative attribution hypotheses. Simply put, Particle Combination Analysis exploits the particles in dusts, which are ubiquitous and in infinitely varying combinations, to solve a wide range of problems with varying case specifics. This approach can provide a game-changing capability to forensic investigators, working alongside existing investigative methods and using portions of evidence that are typically discarded or ignored.

One application of Particle Combination Analysis is the exploitation of the thousands of very small particles (VSP) that are found in and on items of evidence, using these particles to test associations and enhance probative value. The combinations of VSP are so complex that until recently there was no practical method to identify and interpret these combinations.

This workshop will present the current state of our NIJ-funded research in a forum designed to facilitate a full discussion and considered response from forensic science practitioners. We will be presenting the capabilities, limitations, and potential of this fundamentally new approach in four short segments, each followed by a discussion period. The segments are: 1) Sample collection, small particle extractions and SEM/EDS analysis; 2) Target particle types and small particle profiles; 3) Correspondence measurements; 4) Probative value measurements.

The report of the first stage of our work is available from the NIJ at the following web address: www.ncjrs.gov/pdffiles1/nij/grants/239051.pdf

The goals of the current research are to (1) refine the process for exploiting (VSP) to associate residential carpet fibers with their source carpet, (2) apply this process under realistic casework conditions, and (3) deliver working prototype methods for collection, analysis and interpretation of this evidence.

FTIR Analysis of Controlled Substances

(Half Day Workshop 8 AM - 12 PM)

Dr. Brian C. Smith, Perkin Elmer

This workshop is designed to introduce or reacquaint criminalists with the benefits of FTIR as an identification tool for seized drug casework. Discover how to maximize spectral quality and minimize sample preparation time to obtain

Seminar Info! *cont'd*

the best results. The workshop will conclude with how to use FTIR to distinguish between cocaine and cocaine base, MDA vs. MDEA, and time permitting, a discussion of the FTIR analysis of a few "spice" and "bath salt" compounds.

Emerging Drug Trends

(Half Day Workshop 1-5 PM)

DEA Southwest Laboratory Personnel

Topics to be covered in this workshop include: Butane Honey Oil labs and associated dangers; Synthetic cannabinoids and cathinones and their scheduling at the federal/state level; Instrumental techniques and analysis associated with most the recent cathinones; Current update to SWGDRUG and how it will impact our laboratories; and more.

Practical Applications of UV, Visible, and IR lighting at the Crime Scene and in the Lab

(Half Day Workshop 8 AM -12 PM)

Owen Lang, Foster & Freeman USA Inc.

This workshop aims to further the understanding and techniques used to examine crime scenes and evidence recovered to the lab. The workshop will focus on the use of UV, Visible, and IR LED based light sources for the search and recovery of body fluids and blood as well as latent prints, fibers, GSR particles, and foot wear marks.

Forensic Pathology Concepts - Injuries, Cause of Death, and Blood Loss

(Half Day Workshop 1-5 PM)

Jonathan Lucas, MD; San Diego County ME's Office

The purpose of this workshop is to describe basic concepts in forensic pathology including injury recognition and classification, cause of death determination, and general jurisdictional concepts. There will be special attention paid to human anatomy as it relates to types of injuries and the potential for blood at death scenes. Attendees will have an appreciation for many of the factors considered in the evaluation of how rapidly certain injuries may cause death and how the volume and speed of blood loss combined with the injury type and location can affect the volume of blood at a scene and the findings at the autopsy.



shown the methodology for the extraction and isolation of pollen and spores from air samples, soils, and forensic materials.

Pharmaceutical Microscopy

This course focuses on two major problems in the pharmaceutical industry: identification of particle contamination and characterization of the solid state. Students learn to recognize common contaminants and to effectively characterize unknown materials.

Polymer Microscopy

After an introduction to the microscope as used by polymer microscopists, the optical "crystallography" of fibers and films is thoroughly covered.

Visit www.mcricri.org for full descriptions of all courses, secure online registration, hotel information and more.

Does Locard's Exchange Principle Apply to Digital Forensics?

If you are involved in teaching forensic science this is an article that you would want to share with and discuss with your students.

See the article at: www.dfinews.com/articles/2012/02/digital-forensics-cyber-exchange-principle#.UtCZNbSnsQw

"In this article we present a challenging question for today's digital forensic experts, cyber scientists, and cyber analysts. Does Locard's Exchange Principle apply in digital forensics? The dramatic increase in cyber crime and the repeated cyber intrusions into critical infrastructure demonstrate the need for improved security. The Executive Office of the President noted on May 12, 2011, "cyber threat is one of the most serious economic and national security challenges we face as a nation." We believe addressing whether or not Locard's Exchange Principle applies to digital forensics is a fundamental question that can guide or limit the scientific search for digital evidence."

—Bob Blackledge

Inter/Micro 2014

Save June 2-6 at McCrone Research Institute in Chicago, Illinois for Inter/Micro 2014, "the premier international microscopy conference."

For more information, visit our website at: www.mcricri.org

More Reasons to Visit San Diego

Seminar organizer Connie Milton says, "As for a theme, we don't exactly have a theme. The Keeping it Classy in San Diego Flyer I sent last time is as close as we are going to come to a theme. The hotel is super nice and fancy, but I can't say as there is a theme because we're going to hold the "banquet" at the Padres game on Thursday night and instead of a traditional "wine & cheese" reception we're going to have a "Happy Hour Reception" in the Gaslamp on Wednesday evening."

Connie requests abstracts and poster sessions be sent to her at Connie.Milton@sdsheriff.org

In addition to all that there will be a Founder's Lecture by John Murdock. Connie says, "So far we are planning on some interesting case presentations, both older and more recent (like the Hannah Anderson case from last summer), there will also be some presentations highlighting drugs, alcohol, trace, and impression evidence. I just got confirmation that we will definitely be having a case presentation on the John Gardner - Chelsea King/Amber Dubois cases."

ABC Exam Award

Brian Kim of the Los Angeles Police Department Laboratory has been awarded the American Board of Criminalistics (ABC) Exam Award which entitles him to take an ABC exam of his choice without a sitting fee. Just one more perk of being a CAC member! Congrats, Brian!

Edward F. Rhodes Memorial Award

Scott Becker of the Orange County Crime Lab was selected as this year's recipient of the Ed Rhodes award. He has up to \$1000 to spend towards attending any training meeting or conference of his choice. Enjoy your trip, Scott!

California Criminalistics Institute (CCI) Classes

If you don't already know, the California Criminalistics Institute (CCI) is a unit of the California Department of Justice, Bureau of Forensic Services, which provides specialized forensic science training to personnel who are practitioners in the field.

They are constantly holding excellent classes in both Northern and Southern California. Check out the course listings here: oag.ca.gov/cci/course-schedule

CAC Online Security - How Safe Is It?

All of the routine forms you submit on our regular website are protected by secure socket layer (SSL). But the payments you make on our Member Services Site go through a different company that takes privacy and security EXTREMELY seriously.



CALIFORNIA ASSOCIATION of CRIMINALISTS

Spring 2014 Seminar

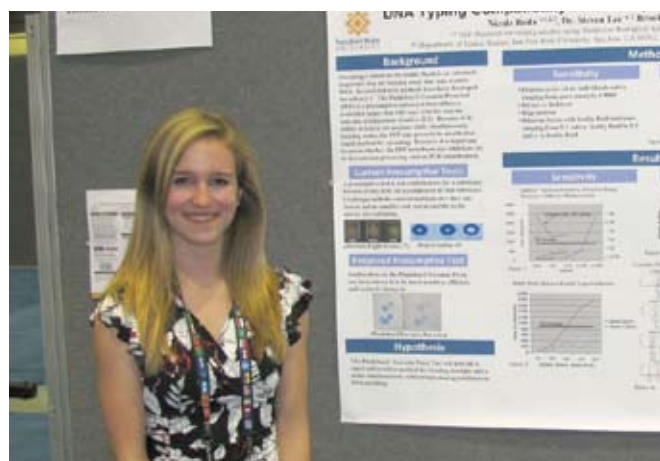
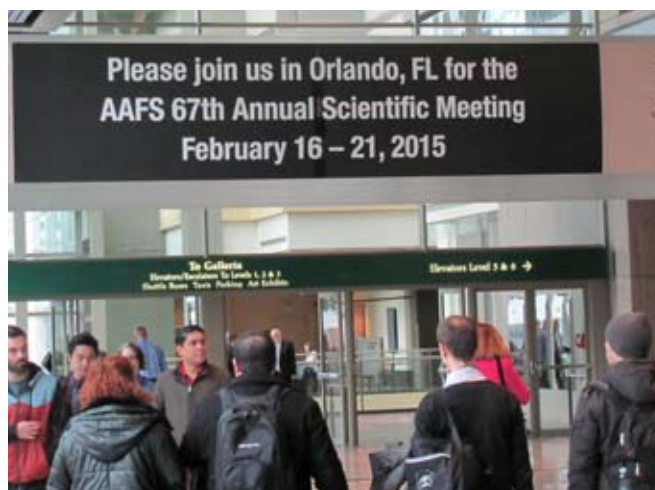
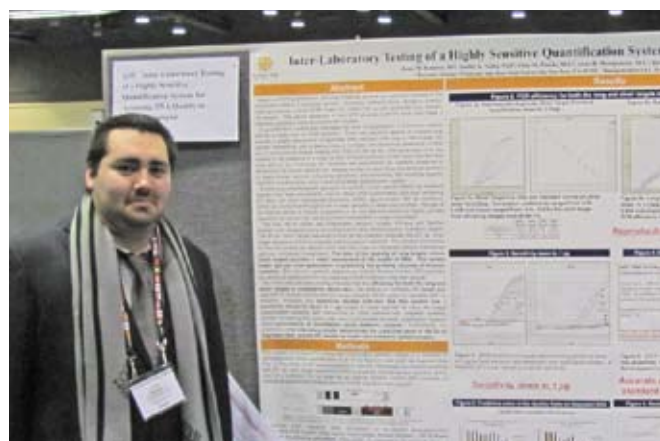
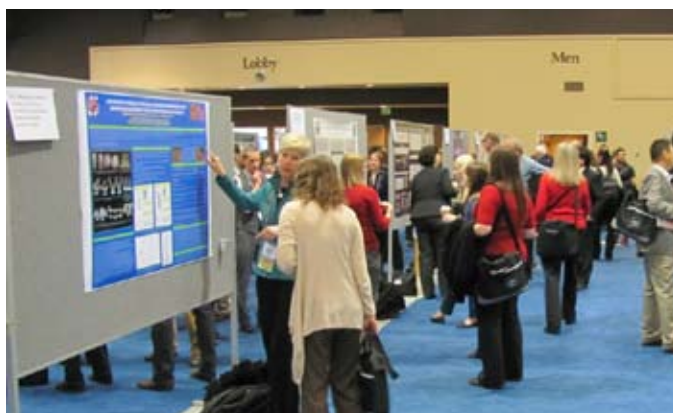
Keeping it classy in San Diego

May 5-9, 2014

Hosted by the San Diego Sheriff's Department
Regional Crime Laboratory
At the Westgate Hotel
1055 2nd Avenue, San Diego, California 92101

For more information or to submit presentation or poster abstracts, contact Connie Milton at connie.milton@sdsheriff.org

In Seattle for the 66th AAFS



Seattle in February was the frozen, er, chosen venue for an impromptu CAC seminar. Oh, wait, that was the American Academy meeting, but there were plenty of CAC members in attendance. Dozens of interesting poster sessions went on each day, two fine examples of which included Jesse Ramirez (*middle, l*) with "Inter-Laboratory Testing of a Highly Sensitive Quantification System for Accessing DNA Quality in Forensic Samples," and Nicole Roda's (*left*) "DNA Typing Compatibility With a Rapid, One Step Saliva Screening Test." Author Ann Rule (*top, r*) signed her latest book. Topping it all off, our own Meiling Robinson (*middle, r*) received the AAFS Regional Award. When it was all over, attendees were tempted with a promise of warmer climes next year.



Ethical Dilemmas

DISCUSSION CORNER WITH CAROLYN GANNETT

QUALITY vs. EFFICIENCY

THE SCENARIO

Joe is a DNA analyst. He examined a jacket obtained from a suspect in a homicide case and found many groupings of red stains. Joe analyzed samples from a majority of the groupings. All came back to the suspect rather than the victim. After Joe's report was released, the detective called and asked that the remainder of the groupings be analyzed. Joe's lab is a high-volume lab with a large DNA-case backlog. How should Joe respond?

DISCUSSION

It is not clear why Joe did not analyze all the groupings. He could have wanted to save time, knowing that there is a huge backlog. It could even be that supervision or management supports the idea of analyzing a majority in the interests of saving time. Or, he could have had a scientific justification for not analyzing them. For example, perhaps the unanalyzed groupings were a continuation of a single pattern that was already represented by the analysis of one of the groupings.

Some labs may feel the heavy weight of a sizeable backlog, stressing management's responsibility for the efficient use of resources, as promoted by some ethics documents. Efficiency is typically not served by allowing DNA analysts to analyze every single last red stain on every single last item of evidence that comes through the DNA unit's doors. On the other hand, some ethics document promulgate the responsibility to thoroughly examine evidence. Where does efficiency end and the thorough examination of evidence begin?

Joe is a lone DNA analyst working inside the lab. First, the "groupings" on Joe's evidence need to be correctly identified as patterns or stains. If Joe is also a BPA, he would be able to do this himself. He would be able to realize whether several groupings are actually one pattern that appears as several because the jacket had several folds in it when the blood was deposited, and only one sample would be needed from all those groupings. He would realize the need to understand the context of the item within the scene to determine the pro-

While employees have been made aware of ASCLD/LAB's Guiding Principles, they are not being made aware of ASCLD's Guidelines.

This begs the question: how can a document be "implemented and followed" when employees are unaware of its existence?

bative value of each pattern, and which ones warrant DNA analysis. These factors can provide scientific justifications for not analyzing all of the groupings. Joe could then explain to the investigator in the scenario why further analyses are unwarranted.

But, often DNA analysts are not BPAs. When this is the case, one option may be for management to allow DNA analysts to call on a coworker who is a BPA. It is left to the lab management's judgment as to whether this is an efficient use of resources given the particulars of their lab.

When neither of these options is available, the non-BPA DNA analyst is left alone to make decisions about which groupings to sample and analyze. Because bloodstain patterns may not be competently identified, a thorough yet efficient analysis might best be attempted by analyzing one sample from each grouping. However, probative stains may still be overlooked if a grouping is comprised of more than one pattern. Without BPA expertise, more samples than necessary may be analyzed, and a probative sample may still be overlooked.

EFFICIENCY

If Joe chooses not to analyze some of the groupings solely in the interests of getting the case out the door, this is not a scientific justification and, as such, may not be an ethical one. Furthermore, in the long run, this decision may actually impede efficiency for the reasons listed below.

- Dealing with the investigators request takes time away from casework. If the decision about further analysis of the item must be determined by a supervisor, that process takes the supervisor away from other responsibilities.
- Completing a second analysis of the remainder of

Share your thoughts & dilemmas at
www.ethicsforum.cacnews.org

the groupings requires a second round of testing, doubling the burden of handling the evidence by both the property unit and Joe, and doubling the burden of report-writing, review, and processing.

- Not doing a thorough analysis on an item may result in a guilty party remaining on the street, available to commit more crimes, thus adding to the backlog.

Little is found in ethics documents regarding efficiency. Although nothing explicit is found in ASCLD/LAB's *Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists* ("Guiding Principles"), paragraph three of its Preamble refers to another document that does speak to efficiency. That paragraph states (my emphasis):

ASCLD/LAB has adopted the ASCLD Guidelines for Forensic Laboratory Management Practices ["Guidelines"], many of which have been incorporated into the ASCLD/LAB accreditation standards. Those practices [meaning ASCLD's Guidelines, not ASCLD/LAB's Guiding Principles] provide for management support of the guiding principles set forth below and are intended to create a culture of ethical behavior and professional responsibility within the laboratory. The ASCLD practices [meaning ASCLD's *Guidelines*, not ASCLD/LAB's *Guiding Principles*] **should be implemented and followed** to give practical meaning to the Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists.

In short, ASCLD/LAB has adopted the ASCLD document, *Guidelines* which, according to ASCLD/LAB, should be implemented and followed.

Did you know this? My experience has been that, while employees have been made aware of ASCLD/LAB's *Guiding Principles*, they are not being made aware of ASCLD's *Guidelines*. This begs the question: how can a document be "implemented and followed" when employees are unaware of its existence? A copy may be found at asclcd-lab.org/documents/labmgtguide.pdf. Perhaps employees should be required to review that document annually alongside ASCLD/LAB's *Guiding Principles*.

Here is all that ASCLD's *Guidelines* directly state about efficiency.

- **Page 2: RESPONSIBILITY TO THE EMPLOYER**
 - "Employers rarely have the ability to judge the quality and productivity of their forensic laboratory. Therefore, the employer relies upon the forensic manager to develop and maintain an efficient, high quality, forensic laboratory."
 - EFFICIENCY
 - "Laboratory managers should ensure that laboratory services are provided in a manner which maximizes organizational efficiency and ensures an economical expenditure of resources and personnel."
- **Page 3: RESPONSIBILITY TO THE EMPLOYEE**
 - FISCAL
 - "Laboratory managers should strive to provide adequate budgetary support. Laboratory managers should provide employees with appropriate, safe, well maintained and calibrated equipment to permit them to perform their job functions at maximum efficiency."

One other ethics document has been found to directly address efficiency. The Code of Ethics of the International Association of Bloodstain Pattern Analysts, section 4.3.2 is a virtual cut-and-paste of ASCLD's Guidelines page 2, the paragraph under "Efficiency."

As quoted above, page 2 of ASCLD's Guidelines states that the forensic manager is relied upon to "develop and maintain an efficient, high quality, forensic laboratory." Note that "efficient" and "high quality" are listed next to each other. Both are required. Quality cannot be short-changed in the interests of efficiency. This supports that Joe's initial analysis should have been directed by quality of results, not speed of getting the case out the door. And, in my experience, the best quality is produced by involving a competent BPA in the selection of stains for analysis.

QUALITY

Ethics documents revolve around the quality of the work product. Perhaps the primary reason they exist is to ensure the public and the justice system of that quality.

If Joe neglected to analyze some of the groupings solely because it would take more time, and had no scientific justification for ruling out the analysis of some groupings, then he violates several ethics concepts. The most egregious are paraphrased below, with a list of associations that express that concept in their ethics documents.

- Thoroughly examine facts. AFTE, ASQDE, CAC, IABPA, MAAFS, NWAFFS, SWAFDE, SWAFS
 - A thorough examination would have resulted in analyzing samples from all of the patterns of probative value. This requires the competent identification of patterns and determination of their context.
- Use the principles of science when doing an analysis or examination. ABFDE, ASQDE, CAC, IABPA, IAI, KBI, NWAFFS, SOFT, SWAFDE
 - Taking short-cuts in the interest of saving time is not a principle of science. The principles of science should have been used to justify not analyzing particular groupings.
- Serve justice. AFTE, ASQDE, CAC, ENFSI, FSReg, IABPA, KBI, NWAFFS, SCAFO
 - It seems that Joe may be serving the backlog more than he is serving justice.
- Conduct yourself in a manner that will not violate the public trust. ABC, ASCLD Guidelines, ASQDE, CIS, CS-DIAI, CSFS, FSS-UK, IAAI, IABPA, IAI, SCAFO
 - If Joe is taking short-cuts, this could ultimately violate the public trust. The public's trust in other laboratory results could suffer over time if these practices were to continue.

SUMMARY

Ethics documents offer considerable support for the idea that analysts owe the justice system and the public thorough analyses and scientific, or other ethically sound, justification for work not done. Only a couple ethics documents are found to directly address efficiency. Those that do indicate that management is responsible for ensuring the efficient use of resources. No ethics document content is found that justifies sacrificing quality of the work product for efficiency. Quality first, efficiency second.

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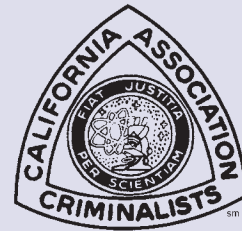


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