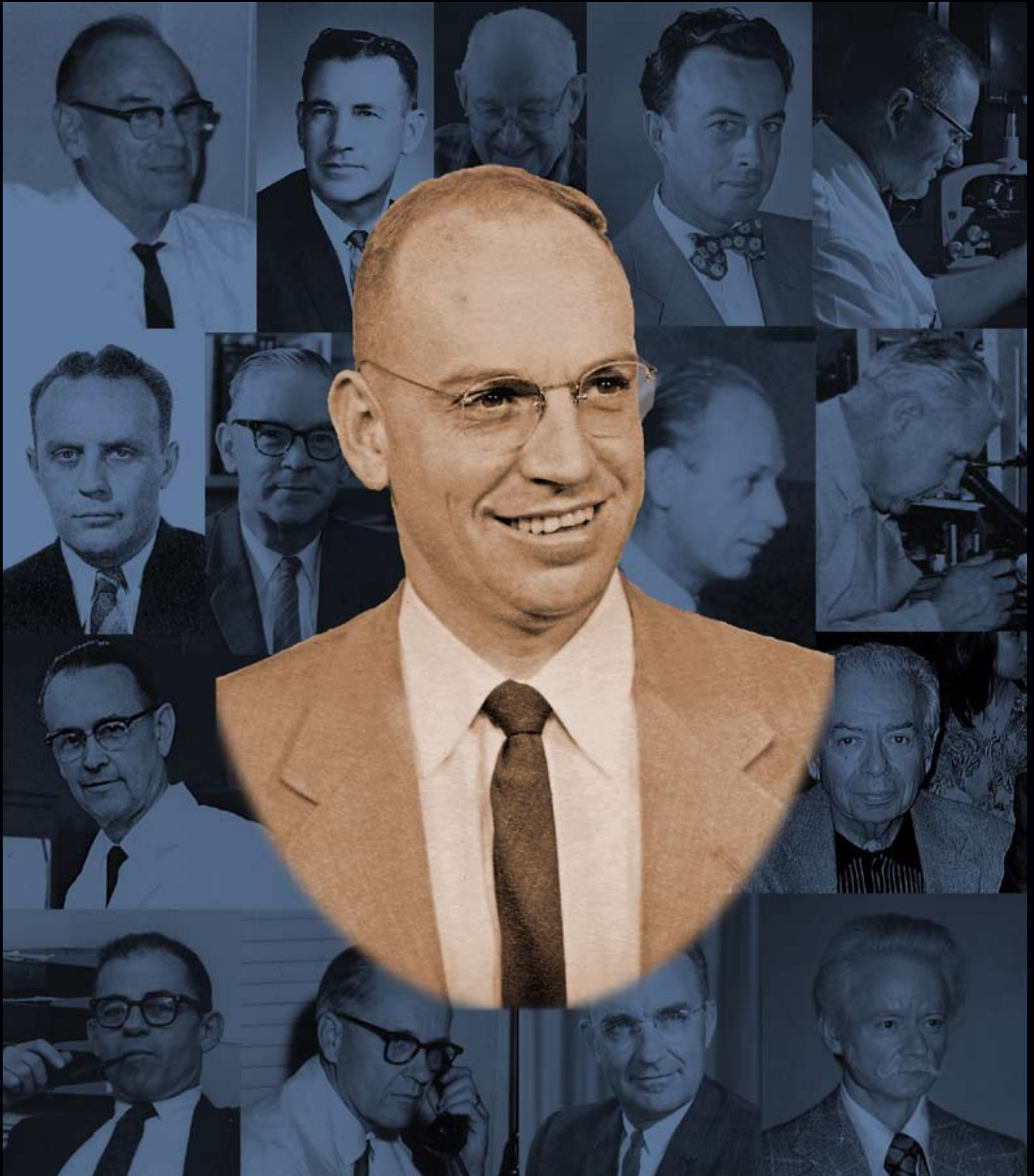


The CACNews

News of the California Association of Criminalists • First Quarter 2014



The President's Desk

Good Things to Come

As the year comes to a close and the United States turkey population is taking its annual dip, it occurs to me that I have reached the half-way point in my year as CAC President. Around this time, people tend to take stock and evaluate themselves, their work, their lives, and so forth. But I have decided that I am not going to do that. Those missives are tedious and obvious, and I imagine that readers seldom make it to the end of such articles. Instead, I am going to make one observation about our membership. Then I am going to take a brief look forward into next year. And finally, I am going to say a few words of thanks, because frankly, I just cannot help myself.

In my time as both a regular member of the CAC and as a member of the Board of Directors, I have observed that members do not often contact board members directly about issues of concern to them, or with routine questions about how the organization works, or about forensic science in general. There are, of course, exceptions to this. I have received many emails from very active members covering a broad range of topics. But the percentage of members that reach out to the board is very low and I wonder if that is indicative of a disconnect between the board and the membership or if there simply are not many questions or concerns that exist. I would like to think it is the latter, but I fear that it is the former. And, there is evidence to support that fear. For example, after the recent ethics hearing that was held in Modesto, several seminar attendees came to me and asked what happened at the hearing and if they could have come into the room. I explained to them that all members are welcome to attend as spectators and then asked them why they didn't inquire prior to the hearing. The responses I received were all variations of not wanting to ask the board members. I bring this up because I want to remind every CAC member that the Board of Directors exists exclusively to serve you. The only reason we elect a board is to provide our forensic community with a conduit to information and to help guide our members' efforts to maintain and improve the quality of criminalistics. So please, on behalf of myself and all current and future board members, feel free to contact us anytime about anything you feel is relevant to the CAC or with any questions you have regarding its operation. We are here for you!

My glance into next year will, as I said, be brief – principally because I cannot usually look beyond a few days from the present. But alas, I am going to do it anyway, as much for my benefit as for the CAC's. I think the spring seminar is going to be one to remember, for several reasons. First, it will be held in a great location. San Diego is my second favorite place in Southern California. This is not meant to put down any other cities in the South. I just have great experiences every time I visit San Diego and I know the Spring Seminar will be no exception. Also, the seminar will feature a Founder's Lecture by Life Member John Murdock and I always find it fascinating to hear the words of those who have contributed so much to the profession as we know it today. The autumn of the coming year will also bring with it a joint meeting in beautiful Sonoma County Wine Country between three regional forensic science organizations: the CAC, the Califor-

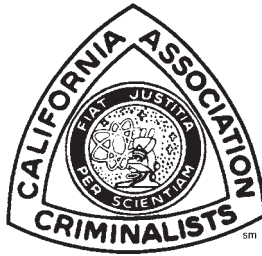
please turn to page 4

As a goal for myself in the New Year, I hope to submit to the membership a revision of our Code of Ethics Enforcement procedure that will incorporate several things we learned while conducting the recent investigation and hearing.



Eric Halsing
CAC President

FIRST QUARTER 2014



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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.



Robert M. Cooper
1924—2013

The life of our last founder
is celebrated.

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nia Association of Crime Laboratory Directors (CACLD), and the Northwest Association of Forensic Scientists (NWAFS). I am definitely looking forward to this collaboration between associations. As a goal for myself in the New Year, I hope to submit to the membership a revision of our Code of Ethics Enforcement procedure that will incorporate several things we learned while conducting the recent investigation and hearing. As always, we will hold outstanding gatherings of our study groups throughout the year. We will also continue to invest in the careers of our student members, we will make endowment grants to worthy projects, and we will elect a new Board that will build on everything that has been created before them. I see great things in the coming year and I hope you are all going to be a part of it.

Finally, I want to thank the amazing staff and leadership at the California Department of Justice, Bureau of Forensic Services Central Valley Laboratory for organizing and hosting an absolutely terrific fall seminar. No detail was overlooked in their preparation and execution. From the banquet entertainment, to the selection of talks and presentations, to the hotel accommodations and food, everything was outstanding. It is no easy task to host a seminar. Putting all unworthy jokes about Modesto aside, I will remember this past seminar as being among my favorites. So thank you to everyone involved for continuing the CAC's tradition of excellence!

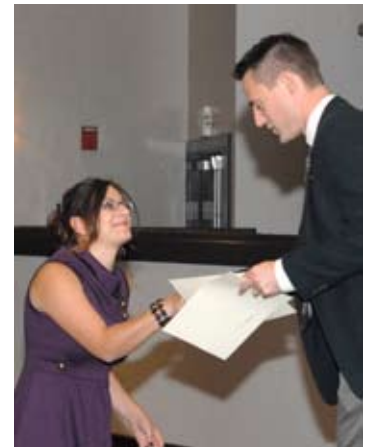
In closing, as I write this a few days after Thanksgiving, and at the risk of getting a bit sentimental, I want to thank all of you for making this profession what it is. Honestly, after having been a criminalist for over twelve years now, I could not imagine being happier in any other career. And being involved with the CAC just makes it even better. The great conversations in the hospitality suite at seminars, the thrill I get from handing out awards to our deserving members, the knowledge I gain from seminar talks and discussions at study group meetings, the friendships I've created with criminalists from all over the state, and the feeling of fulfillment I get from working hard for an organization in which I believe are just some of the reasons I choose to devote myself to the CAC. But none of it would be possible without you. So for that, I offer my sincerest thanks to you all. Happy New Year!



Awards Banquet

(right) Meagan Gallagher and CAC President Eric Halsing. She and Christian Schneider each received service awards as co-chairs of the Modesto meeting.

(below) Ron Nichols holds the crowd spellbound as he gives his acceptance speech for the Anthony Longhetti Distinguished Member Award.



The Editor's Desk

Bits & Pieces

Policies

To start off this editorial I am sending out a big thank you to the (unfortunately) very small handful of people who contributed to our president's request for member comments on NIST's call for input on the formation of national Guidance Groups and asking more of you to get involved in the future. The CAC has a strong history of taking a leadership role when it comes to issues affecting the bench level criminalist. Our response, created by your president with input from a couple of Board members and one regular member, was well reasoned and appropriate. If you have not yet read the response, it is posted on our website at www.cacnews.org/policies/current_policy_issues.shtml. At the same location you can also read ASCLD's response. If you don't already do so, the web page above should be on your web browser's favorite list and visited regularly. The web site staff does a great job of posting relevant and current information that could have an impact on your profession and how you do your job. We need more of the membership to participate in calls for input. Your board of directors needs to hear your input so we can draft documents that reflect the membership's ideas and concerns.

A feature of the CACNews is the Laboratory Directory. The Laboratory Directory, like so many features of CACNews.org, provides valuable information for our membership and the forensic science community. The Board of Directors recently approved and posted a Policy Statement regarding participation in the Laboratory Directory. The policy statement can be found at www.cacnews.org/resources/policydocs/13-001_012513.pdf.

Speaking of Policy Statements. CACNews.Org has a collection of Policy Statements intended to provide guidance for the operation of the association. Our By-Laws provide the framework for how the CAC operates, but there should not be too much detail in the By-Laws. The By-Laws are difficult to change and too much detail removes the Boards flexibility to modify its day-to-day operating procedures. In the past, the board has maintained board and committee duty notebooks that were supposed to delineate how these entities operate. Unfortunately, the notebooks were not updated regularly and the general membership was not privy to the information. By utilizing Policy Statements posted on the web site, the operation of the association becomes more transparent, a board member is responsible for reviewing and updating them and the board spends less time rehashing old issues. The Policy Statements can be found at www.cacnews.org/resources/policydocs/policydocs.shtml.

Ethics Hearing

During the beginning days of the last seminar in Modesto the CAC held the first full-fledged ethics hearing in over thirty years. Though it would be better if we never had to have another, I am glad I was on the Board of Directors at this time and had an opportunity to participate in the experience. I feel it was handled professionally and fairly and the outcome was appropriate for the issue at hand and the "evidence" presented during the hearing. The process showed the CAC is willing to review and investigate allegations of misconduct by one of its members and then fairly adjudicate the issue. All parties involved spent many hours reviewing the accusation, investigating the allegations, defending against the allegations and subsequently preparing for the hearing. Our president, Eric Halsing did an excellent job of organizing and running the hearing. He, and our previous past president, Todd Weller, spent many hours ensuring the process proceeded fairly and with minimal issues. The Ethics Committee members spent significant time investigating the issues and providing the Board of Directors with a complete and easily understood report. The accused also spent significant amounts of time preparing for the hearing. This is a very difficult and stressful process but the professionalism and hard work of all involved parties made it civil and productive.

cont'd on page 7

We need more of the membership to participate in calls for input. Your board of directors needs to hear your input so we can draft documents that reflect the membership's ideas and concerns.



Greg Matheson
CAC Editorial Secretary

More Awards

Robert Thompson (not in attendance) received the Alfred A. Biasotti Most Outstanding Presentation Award. Service Awards were also presented to Eucen Fu – Toxicology Study Group Chair (South), Meiling Robinson – Historical Committee (Archive Project) and Stephanie Williams – QA Study Group (North).

ALERT: Spring Seminar Lottery Now Open!

With the Fall 2013 seminar behind us, the Full Member Seminar Lottery for the Spring 2014 seminar in San Diego is officially open! If you need reminding, Full Members of the CAC can enter FOR FREE for a chance to win free registration, hotel, and travel to upcoming seminar. All you have to do is log into your CAC account, click the "Edit" button, scroll down to "Enter Spring 2014 Seminar Lottery," check the box, and then click "Save" at the bottom of the screen. If all 377 Full Members entered, that's still pretty good odds. *But only 132 Full Members entered for the last seminar.*

Inter/Micro 2014

Call for Papers: June 2-6 at McCrone Research Institute in Chicago. McCrone Research Institute cordially invites you to participate in Inter/Micro 2014 -- the premier international microscopy conference. Papers are being solicited in micro-analytical techniques and instrumentation, environmental and industrial microscopy, and chemical and forensic microscopy. The deadline to submit titles and abstracts is March 1, 2014. For more information, visit our website at: www.mcri.org. Contact us at (312) 842-7100 or by email at: intermicro@mcri.org

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.

CAC Life Members: Who & When?

The Life Members page of our website lists the names of the people who have received the honor of being elevated to CAC Life Member. But unfortunately, past records only go back so far. If you know of any missing names and/or dates, we would very much like to hear them!

Or, to nominate someone for Life Membership, contact the CAC President and be able to explain in adequate detail why you believe this person is deserving of this high honor. Any Full Member who has an exemplary record of service to the CAC and the Field of criminalistics can be elected a Life Member by the Board of Directors.

Phenomenon of "Priming" May Influence Experimental Outcomes

"The idea that the same experiments always get the same results, no matter who performs them, is one of the cornerstones of science's claim to objective truth. If a systematic

campaign of replication does not lead to the same results, then either the original research is flawed (as the replicators claim) or the replications are (as many of the original researchers on priming contend). Either way, something is awry..."

Read the article here:

www.economist.com/news/briefing/21588057-scientists-think-science-self-correcting-alarming-degree-it-not-trouble

—Hat tip, Bob Blackledge

Shoji Horikoshi 1926-2013



Shoji Horikoshi passed away July 16, 2013 after a valiant five-month battle with cancer.

In 1955 he got an entry level job with the San Francisco Police Crime Lab, and would rise through the ranks until he was appointed lab director. He stayed in that position through a dozen chiefs of police, working for 38 years for the police dept. Shoji was a renowned forensics expert who lectured at the FBI Academy in Virginia. Although technically a civilian employee, Shoji's position within the SFPD was equivalent to that of a police captain. The San Francisco Police Crime Lab at Hunter's Pt. was named "The Shoji Horikoshi Crime Laboratory." This lab was considered state of the art with the AFIS fingerprint computer, DNA testing capability, and electron microscopes.

At the Spring 1973 Seminar in San Diego, he was elected to the CAC board where he served as Regional Director North, from 1973 to 1974.

When Shoji retired from the SFPD, the main ballroom of the Hyatt Regency in San Francisco was packed with friends, colleagues, and dignitaries to honor his service to the SFPD, City and County of San Francisco, and for his ongoing work in the community.

Shoji served as a leader with the Northern California Asian Police Officers' Association, Nisei Voters League, California Association of Criminalists, and California Association of Crime Laboratory Directors.

Adapted from the published story in the *San Francisco Chronicle*, Aug 16, 2013. See more at: www.legacy.com/obituaries/sfgate/obituary.aspx?n=shoji-horikoshi&pid=166446236#fbLoggedOut



McCrone Research Institute 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.



Asbestos and Environmental Microscopy Courses
Forensic Microscopy Courses
Microscopical Methods Courses
Specialty Microscopy Courses

Featured 2014 Courses

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. more...

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

The Editor's Desk

Finally

I thank all the people who regularly contribute to the CACNews. It is your newsletter and thanks to member contributions it reflects the work, research, activities, and philosophies of our membership. If you have something to say or want to contribute a technical paper, don't be shy. We want to fill our pages with what you have to contribute. Content from non-members is also appreciated.

FEEDBACK

Excellent Meeting

I have attended many seminars in my career and the most recent one in Modesto deserves a place near the top. The staff at the DOJ Central Valley Laboratory provided an exemplary conference despite the lack of an exotic location. The eclectic technical program held me in rapt attention especially the one given by retired New York City Police Detective Sergeant Joseph Blozis, (*photo*) who spoke about "Forensic Recovery Following the 9/11 World Trade Center Attack." Riveting!

Also, an encounter with one of the vendors, an ethnic Armenian born in Iran provided an exciting tale of his journey to America after the overthrow of the Shah. The evening banquet "Murder Mystery" was so entertaining I can't recall the last time I had so much fun. What an evening. Thank you for all your hard work and dedication that made the time we spent with you so invaluable.

—Raymond Davis

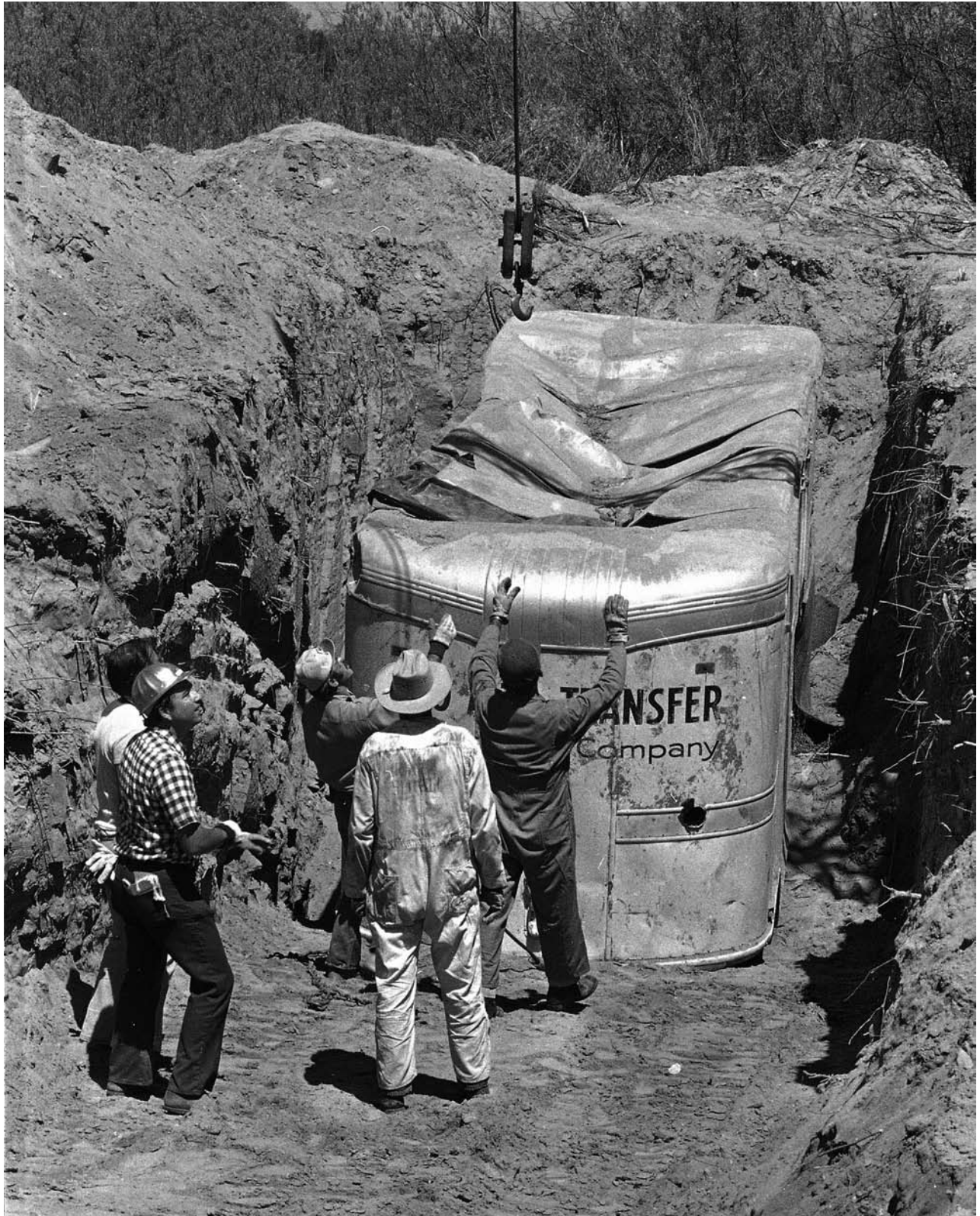


Impressive Hearing

I was one of four spectators who watched the recent ethics hearing from opening through verdict. I was also someone who should have known it was open to the members but learned that little fact ten minutes before the trial started. But I must say in all the hundreds of trials/depositions/deliberations I've either witnessed or been involved with, this one was as professional and procedurally competent as they come. It made me proud to see our elected members representing our interests so well.

—John Houde

Robert M. Cooper: Glimpses of a Fascinating Life



Robert Cooper (white overalls) investigates the scene on July 20, 1976. Workmen ready a van at a rock quarry in Livermore, Calif., in which 26 Chowchilla children and a bus driver were held captive. Photo: James Palmer, AP. Used by permission.

Robert Melvin Cooper died June 22, 2013, in Walnut Creek. He was 89.

There is a rite of passage that no one looks forward to very much: the passing of one's parents. If the CAC is a family, then on Saturday, June 22, we became orphans. "Bob" Cooper was the last living charter member of the CAC.

The first founder to pass away was Roger Greene, who died in 1963. One can't help but wonder if Roger could have imagined that his fellow CAC founder would live a half-century longer, participating in the revolutionary developments that would define criminalistics.

Bob Cooper was barely three years out of Berkeley's spanking new criminalistics program when the CAC was just being contemplated in 1953.

Bob was a true generalist with a distinct love for document examination. In 1952, at the very dawn of his career he joined the International Assoc. for Identification (IAI) and provided document examination services through his public and subsequent private careers.

Colleague Tony Sprague recalls that "Bob was a combat veteran, serving in WWII in the Army Air Corps' 5th Air Force in the Pacific, 1943.

"The much publicized Chowchilla school children kidnapping case of 1976 was one of the highlights of his forensic science career. He was literally "in the trenches" of physical evidence and CSI work—preserving and gathering massive numbers of evidence items, supervising teams of criminalists, conducting urgent examinations, all during one of the most complex and successful high-profile criminal investigations and prosecutions of that decade.

"He was a mentor to several criminalists many of whom progressed in their professional careers to become successful crime lab directors, supervisors, college professors and private consultants.

"His retirement in 1990 was the result of a terrible budget crisis in county government. He opted to retire rather than have two recently hired criminalists be terminated due to funding issues."

From 1952 through 1963 Bob was working as a criminalist at the crime lab in the Oakland Police Department. There he "examined, analyzed and evaluated a broad spectrum of physical evidence" and gained extensive experience in crime scene investigation. For the majority of that period of time performed all of the handwriting and document examination work for the Oakland PD.

In 1963, Bob left Oakland for the nearby Alameda County Sheriff's crime lab where he stayed until his retirement in 1990. As a crime lab director he could really get his teeth into into the nurturing and guiding of this new profession. He developed that lab into a full—service criminalistics laboratory providing services to the criminal justice system on a county-wide basis. He directed the professional activities of a staff of eleven professional criminalists, chemists and even a technical photographer. His staff included three document examiners, but he still held the title of "Chief Document Examiner" for the Sheriff's Department and other local law enforcement agencies, the District Attorney's Office, and the courts. In addition, he was able to practice his profession in civil cases outside the lab on a part-time basis.

Bob shared his knowledge in the classroom. He held a state credential and was an instructor at Merritt College where he taught courses in the Criminal Justice Program including

Not many could put "CAC Charter Member" on their resume.

Personal Identification, Crime Laboratory Procedures and Criminal Investigation. He also taught a course in Crime Laboratory Procedures (Scientific Crime Investigation) in the Law Enforcement Program at Chabot College. Not surprisingly, his courses often included lectures and demonstrations of questioned document and handwriting identification problems.

Not many could put "CAC—Charter Member" on their resume. [See *thumbnail biographies of all sixteen CAC founders in the CACNews*, 3rd Q. 2008.] He served as recording secretary and then president in 1965. In 1981, he resigned from the CAC, a member in good standing.

He was also a charter member of the Criminalistics Management Association, which would give rise to the California Association of Crime Laboratory Directors (CACLD). If that weren't enough, he found time to be a member of the American Society of Crime Laboratory Directors (ASCLD), National Rifle Association and the American Academy of Forensic Sciences.

Between all those memberships, employment duties public and private, Bob still was able to pursue research projects. He presented papers on a wide range of topics, collaborating with Paul Kirk, Joe Fabiny, Bob Hinkley, Pat Zajac and Tony Sprague to name a few.

Some of his published work can be found here:

"An Improved Technique for Sectioning Hairs," Robert M. Cooper and Paul L. Kirk, *The Journal of Criminal Law, Criminology and Police Science*, Vol. 44, No. 1, May-June, 1953.

"Notes on Type-X and Ko-Rec-Type Typing Correction Materials," Robert M. Cooper, CAC Seminar, Fall, 1961.

"Identification of Fiberfrax — A New Man-Jade Ceramic Fiber," Robert M. Cooper, CAC Seminar, May, 1964.

"Stretching a Limited Laboratory Budget," Robert M. Cooper, CAC Seminar, October 1964.

"Application of Blood Analysis in Law Enforcement," Robert M. Cooper, Proceedings of Conference on Application of Blood Identification Techniques To Law Enforcement, White Mountain Research Station, UC, Berkeley, May, 1976.

"Report on the Chowchilla Mass Kidnapping Case," Robert M. Cooper, American Academy of Forensic Sciences, Atlanta, Georgia, February 1979.

"Enhancement of the Detection of Gunshot Residues by SEM/EDX Through Application of the Robinson Backscatter Electron Detector," Robert M. Cooper and Anthony E. Sprague, American Academy of Forensic Sciences, New Orleans, Louisiana, February, 1980.

"Uniform County-wide Breath Alcohol Analysis Program," Alameda County Sheriff's Department, OCJP Project No. 1951, July 1, 1974—June 30, 1975.

"SEM/EDX Micro Evidence Analysis Program," Alameda County Sheriff's Department, OCJP Project No. 2936-1, July 1977—December 1978.

"Intoxilyzer Expansion Program," Alameda Co. SD, California Office of Traffic Safety Grant, May 1960—Sept. 1980.

"A Neglected perspective of Crime Scene Evidence Acquisition," Robert M. Cooper and Anthony E. Sprague, Tenth Meeting of the International Association of Forensic Sciences, Oxford, England, 18—25 September 1984.

"SEM/EDX Characterization of Gunshot Residue Deposits—Addressing the Entire Problem," Anthony E. Sprague and Robert M. Cooper, Tenth Meeting of the International Association of Forensic Sciences, Oxford, England, 18–25 September 1984.

"An Improved Method For Increasing Efficiency in Recovery of Arson Accelerants by Steam Distillation," Robert M. Cooper and Joseph M. Fabiny, American Academy of Forensic Sciences, Los Angeles, CA, February, 1981.

"A Rapid Method For Constructing Sensitive Density Gradients For Glass and Soil Examinations," Robert M. Cooper and Joseph M. Fabiny, American Academy of Forensic Sciences, Los Angeles, CA, February, 1981.

"Development of a Practical System for Phenotyping Blood and Bloodstain Evidence in a California Crime Laboratory," Zajac, Patricia L. and Cooper, Robert M., Presented at 9th Meeting of the International Association of Forensic Sciences, Bergen, Norway, June, 1981; Abstracted, *The Journal of the Forensic Science Society*, Vol. 21, No. 2, April, 1981.

"Gunshot Residue Identification by Particle Analysis—An Overview of the Essential Elements of an Effective SEM/EDX Analysis Program," A. E. Sprague, R. L. Hinkley and R. N. Cooper; CAC, Semi-Annual Seminar, Palm Springs, California, October, 1986.

"Crime Laboratory Participation In a Countywide Multi-agency Narcotic Crime Task Force," Robert M. Cooper, *California Sheriff*, California State Sheriff's Association Official Publication, Vol. 3, No. 3, Fall 1987.

We can only glimpse into this fascinating life. But we can listen to what others had to say who worked closely with him. Robert L. Hinkley writes, "I worked for Bob Cooper in Alameda County from 1974 until he retired in 1990. He had a good scientific mind and he was knowledgeable in many areas. I remember one particular "crime scene" in 1988. Construction workers digging a trench had encountered some bones which looked human. Bob sent Joe Fabiny and me to the scene. We were criminalists—generalists, but not anthropologists. I had taken a short course in forensic anthropology, however, and, after a brief examination of the bones, I formed the opinion that they were in fact human bones, and that they were likely very old.

"Bob came to 'take a look' a little later. His examination of the bones and the surrounding area revealed much more than ours had. In a short time he noted that the bones were not of recent origin, the grinding surfaces of the teeth had been ground flat through wear, there were some old shell beads next to the skeletal remains, hematite ore was present in the dirt, and pieces of wood carbon from incompletely burned wood were present in the dirt. All of these observations supported his conclusion that this was an ancient native American burial site."

And from Tony Sprague, "He was a man of superior integrity, acknowledged by those of like-kind in the profession, in the law enforcement and criminal justice communities, by his family and friends."

With sincere thanks to Tony Sprague, Lorraine Cooper, Robert Hinkley for sharing materials used in preparing this article.

Mr. Cooper is survived by his wife of 57 years, Lorraine, and was preceded in death by Elizabeth Cooper Vogt and his brothers, George and Henry Cooper.

The "Case of a Career"

Chowchilla was launched into national headlines on July 15, 1976, when 26 children and an adult bus driver were kidnapped from their school bus. The kidnappers hid the bus in a drainage slough, and drove the children and bus driver around in two vans for 11 hours before forcing them to climb into a hole in the ground. After passing through the hole, the children and their driver found themselves trapped in the interior of a buried moving van. Although they did not know it, their place of confinement was in a quarry located in Livermore, California.

Local farmer and part-time bus driver Ed Ray, with help from some of the boys, stacked the 14 mattresses that were in the van. This enabled some of the older children to reach the opening at the top of the truck, which had been covered with a metal lid and weighed down with two 100-pound industrial batteries. They wedged the lid open with a stick, Ray moved the batteries, and then they removed the remainder of the debris blocking the entrance. After 16 hours underground, they emerged and walked to the guard shack at the entrance to the quarry. The guard alerted the authorities, all the victims were pronounced in good condition, and they returned home to find that the mass media had descended on the town.

Ray, who passed away in May, 2012, was able to remember the license plate number of one vehicle under hypnosis, which led to the capture of the kidnappers as they attempted to flee to Canada. A rough draft of a ransom note was found at the house of the owner of the quarry. The owner's son, Frederick Newhall Woods, IV, and two friends, Richard and James Schoenfeld, were found guilty and sentenced to life in prison.

Robert Cooper testified for several days in the subsequent kidnapping trial, having been the first person to go into the van after its discovery. He and Tony Sprague were only inside for about 20 minutes before they were "soaking wet" with sweat.

Illustrating his testimony with slides, Bob said there were 419 lbs. of steel and batteries piled upon the escape hole in the roof, and that the stench of human waste reminded him of the GI latrines in WWII.

Sources:
Oakland Tribune
Wikipedia.org

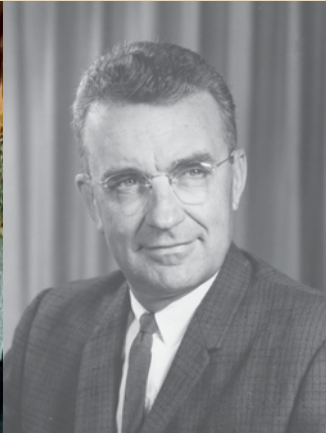
THE FOUNDERS OF THE CALIFORNIA ASSOCIATION OF CRIMINALISTS



Robert M. Cooper 1924 - 2013



Ronald J. Briglia 1928 - 2008



Lowell W. Bradford 1918 - 2007



James W. Brackett 1918 - 2007



Harry Johnson 1908 - 2007



Don M. Harding 1917 - 2005



Walter Jack Cadman 1918 - 2003



David Quentin Burd 1919-2003



George W. Lacey 1917 - 2001 ?



John E. Davis 1919 - 1989



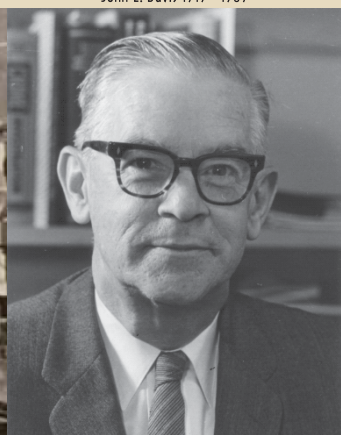
William W. Harper 1903 - 1983



Ray H. Pinker 1905 - 1979



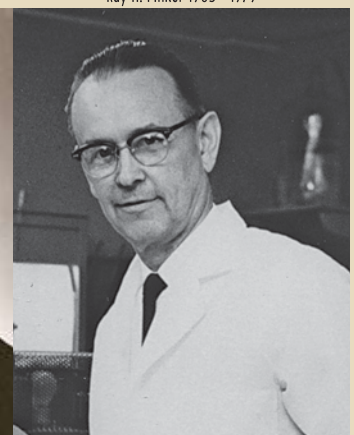
Leland V. Jones 1879 - 1971 ?



Paul Leland Kirk 1902 - 1970



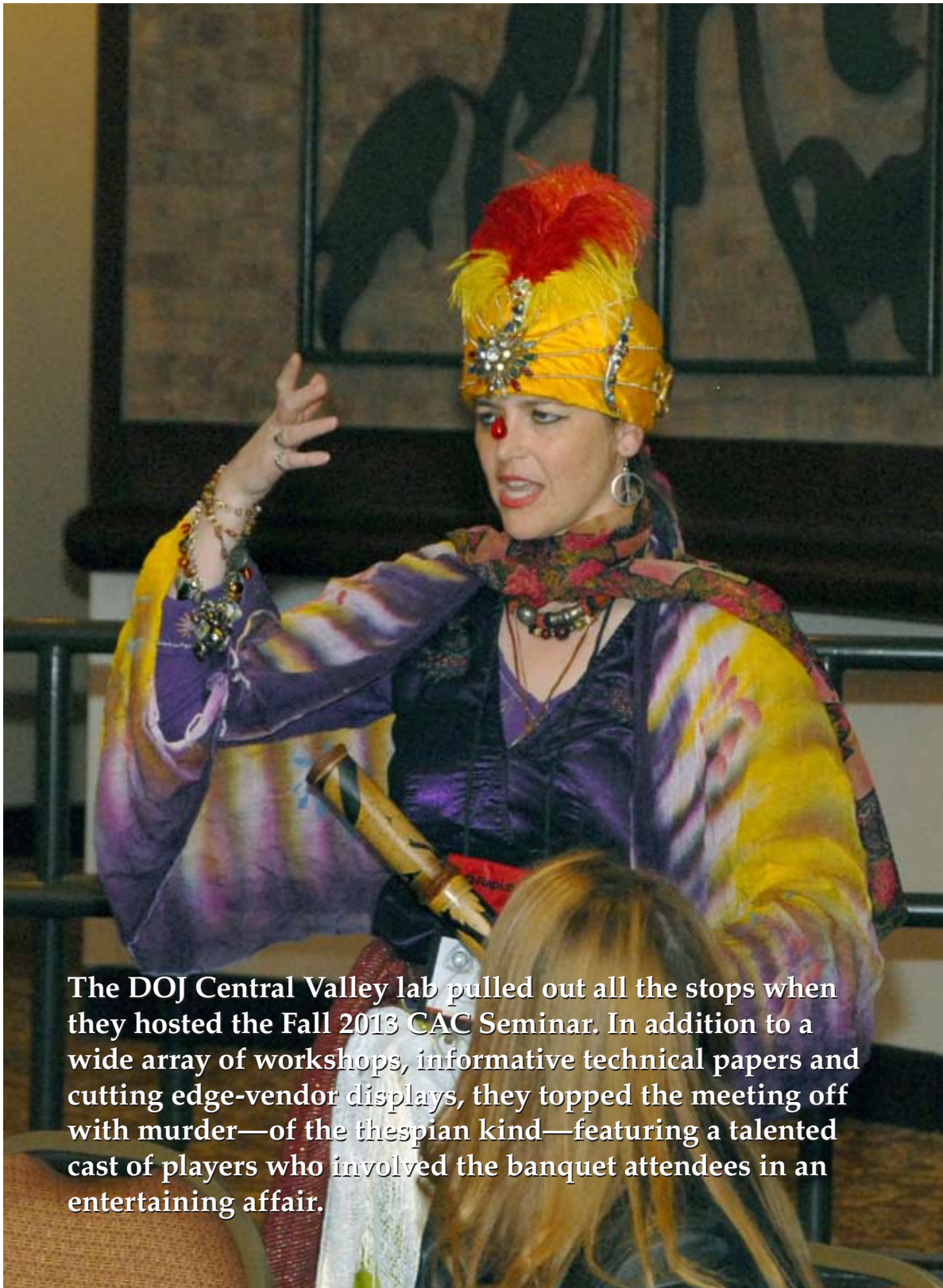
Hillard Reeves 1923 - 1968



Roger Sherman Greene, III 1908 - 1963

Fall Seminar 2013 banquet has a board-game flavor...

MODESTO “Clues” us in...



The DOJ Central Valley lab pulled out all the stops when they hosted the Fall 2013 CAC Seminar. In addition to a wide array of workshops, informative technical papers and cutting edge-vendor displays, they topped the meeting off with murder—of the thespian kind—featuring a talented cast of players who involved the banquet attendees in an entertaining affair.



Before the Meeting Even Began

CAC seminars are often hosted in locales with interesting nearby attractions. Modesto was no exception as the list of "Things To Do" included the Castle Air Museum in Atwater, CA. This 11-acre site is packed with 54 vintage aircraft from WWII, Korea, Vietnam and

the more recent cold war eras. Above left: Nose art on the B29a Superfortress, right: the B47e Stratojet. Below: Every meeting should begin with an alcohol study! CHP Officer E.M. Parsons makes sure no one gets out of "line."





Modesto Workshops

LEGAL PANEL



BLOODSPATTER





Your CAC Board of Directors pauses to say "good morning" before beginning work at the fall seminar. Clockwise from left: President Eric Halsing, Editorial Sec. Greg Matheson, Immed. Past-Pres. Todd Weller, Treasurer Meghan Mannion-Gray, (we saved a chair for) Membership Sec. Michelle Halsing, Recording Sec. Kirsten Fraser, Regional Dir, South, Mey Tann, Regional Dir. North, Alice Hilker, and President-Elect Greg Laskowski.

TOXICOLOGY



DNA



Our vendors, the *sine qua non* of the Modesto Seminar:





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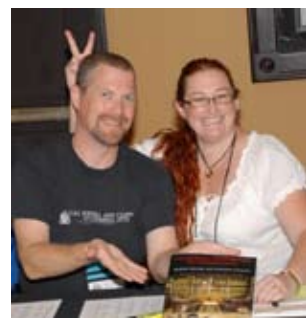
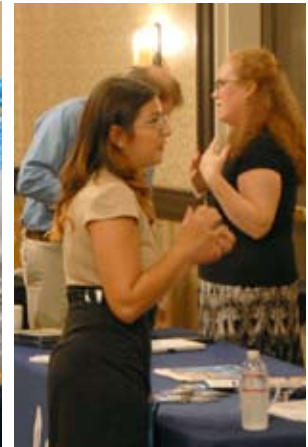
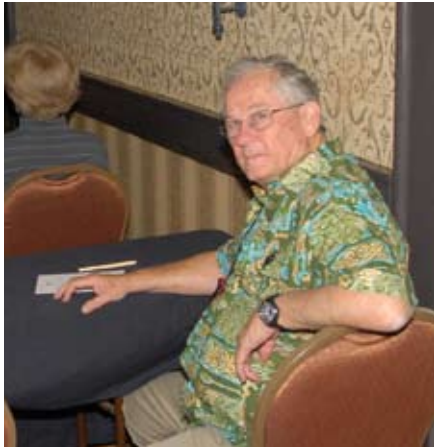
Bode Technology

APPLIED SPECTRA
A Laser Solutions Company

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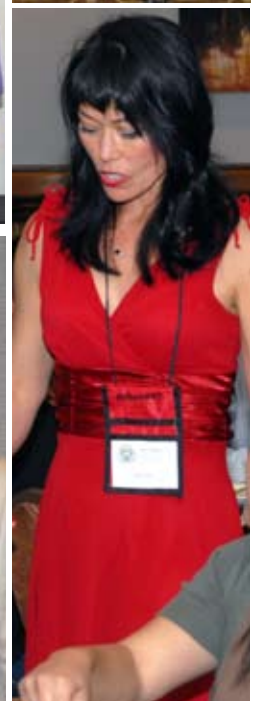
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CAC members decked out in costumes inspired by characters from the game "Clue" compare their outfits to the those worn by the acting troupe after the show.



The Cast of "Mysteries for Hire"



PROCEEDINGS

of the

Fall 2013 CAC Seminar

Modesto

Examination of Proposed Manufacturing Standards Using Low Template DNA

Sara Laber, Forensic Regional Account Manager, Promega

Forensic DNA laboratories rely on reagent and plastics manufacturers to supply high-quality products with minimal interference from contaminating DNA. With the increasing sensitivity of short tandem repeat (STR) amplification systems, levels of DNA that were previously undetected may now generate partial profiles. To address the concern of laboratories worldwide regarding the potential of low-level DNA contamination in consumables, accrediting bodies in the United Kingdom and Australia proposed guidelines PAS377 and ISO 18385, respectively, for minimizing the risk of human DNA contamination events during the manufacturing process.

The guidelines also propose both the acceptable limits for “contaminating DNA” as well as the methods for detecting the potential contaminant. The UK guideline recommends using only STR testing, while the Australian guideline allows both STR and quantitative polymerase chain reaction (qPCR) as suitable methods. This paper compares the sensitivity of qPCR to STR analysis and discusses the suitability of each method in the manufacturing process for the purpose of certifying a product as Forensic Grade. To determine the sensitivity of STR analysis, we analyzed the sensitivity of its two major components: the capillary electrophoresis (CE) instrument and the STR reagents. To determine the sensitivity of the CE instrument, we amplified a high amount of DNA (500pg) to eliminate the stochastic effect of amplification of low template DNA amount. This ensured that any dropouts at low input amount are due to CE limitation and not PCR variability. We tested instrument sensitivity using default and enhanced conditions as recommended by the UK guideline: longer injection and lower peak calling threshold.

Under enhanced conditions, the limit of detection (LOD) for the CE instrument is 0.5pg. The UK guideline also allows for replicate analysis as performed in low copy number (LCN) analysis. DNA input titration followed by analysis under LCN analysis (repeat injection followed by consensus allele calling), sensitivity down to 1pg can be achieved. With input DNA of 5-10pg, which is approximately equivalent to the amount of DNA in one cell, 30-60% of the alleles were called. This would not meet the criteria suggested by the proposed guidelines as being Forensic Grade.

In contrast to STR analysis, qPCR analysis is sensitive down to 0.25pg input DNA. In addition to increased sensitivity, qPCR analysis is more suitable for testing a higher number of samples: more cost effective and simpler data interpretation. Testing a large sample number is necessary for increased statistical confidence in a destructive test where a representa-

tive sample from each batch is tested and destroyed. Therefore, we propose that qPCR analysis is used for testing plastic consumables. For STR reagents, we propose using STR analysis as it will simultaneously test all components of the kit for presence of contaminating DNA. While this paper discusses the LOD for the test methods, the limit that is acceptable to the forensic laboratories still needs to be determined.

Stochastic Sampling in STR Analysis

Sonja Klein, Senior Criminalist, CADOJ, BFS – Richmond

Increased stochastic effects are known to occur with reduced template amounts in STR analysis. Although sources of these stochastic effects have been explained previously as occurring from the unequal sampling of allele copies at low template quantities, we suggest the influence of stochastic sampling on current STR analysis methods has been underappreciated. We present results that demonstrate the majority of the observed stochastic effects can be described by pre-PCR sampling statistics. Based on these results, we present a model that can be uniformly applied to predict the minimum heterozygote peak height ratios, sensitivities, and stochastic thresholds for different STR typing methods or detection platforms in use. We then discuss the implications and limitations of our results on such things as validation, enhanced detection methods, and the potential for standardization in SOPs across laboratories.

The Basics of Next Generation Sequencing

Mark Timken, Senior Criminalist, CADOJ, BFS – Richmond

Increasingly, DNA sequence information is being obtained by “Next Generation Sequencing” (NGS) methods. Compared to the Sanger-sequencing approach that has been used for the past several decades, NGS methods provide orders of magnitude increases in the amount of sequence information that can be obtained. This presentation will review the basics of NGS chemistry and detection methods, as well as briefly introduce potential applications for forensic DNA analysis.

FBI Plan for Rapid DNA Integration and Enhancement of CODIS

Dr. Thomas Callaghan, Senior Biometric Scientist, and L. Moreno, FBI Laboratory, Quantico, VA. B. O'Brien, K. Olson, R.E. Tontarski, M.J. Salyards, Defense Forensic Science Center, Fort Gillem, GA. C.A. Miles, Department of Homeland Security, Washington, DC. E.L.R. Butts, K.M. Kiesler, P.M. Vallone, National Institute of Standards and Technology, Biomolecular Measurement Division, Gaithersburg, MD.

The first generation of Rapid DNA (R-DNA) prototype instruments have been available for one year. These platforms were developed for automated typing and allele calling of the 13 CODIS core STR loci. Results are produced in approximately 90 minutes with minimal operator intervention. A high-level assessment of prototype performance will include STR profile accuracy, reproducibility, and generalized success rate. The presentation will discuss experimental design and data analysis for the first assessments of instrumentation conducted in collaboration by the United States National Institute of Standards and Technology, the Department of Homeland Security, the Defense Forensic Science Center, and the FBI. The FBI's initial plan for the integration of R-DNA as an enhancement to CODIS will also be presented. The final operational goal of the FBI R-DNA initiative are commercial

instruments capable of producing a CODIS-compatible profile in one hour with effective integration into existing CODIS structure to register and search reference samples during the booking process.

Developmental Validation of the RapidHITM 200 System

Stefanie Gangano, Senior Staff Scientist, IntegenX

As Rapid DNA technology is poised to become an effective investigative tool for the conclusive identification of individuals through DNA profiling, the efficacy and reliability of Rapid DNA systems must be validated before they can be adopted into routine usage. Validation of integrated, sample-to-answer systems, such as the RapidHIT 200 System, involves careful determination of the relevant validation studies to perform and the appropriate number of samples for each study in the context of the intended use of the system.

For end users in law enforcement, forensics and Government agencies, the RapidHIT 200 System is designed for easy and fast generation of DNA profiles for STR-based human identification. From swab-in to profile-out, processes occurring on the instrument can be broadly classified into cell lysis, DNA extraction and normalization, STR amplification, capillary electrophoresis (CE) and software processing of data to identify genotype. Using microscale fluid manipulations, the steps of cell lysis, extraction and amplification are integrated into disposable cartridge consumables, pre-loaded with assay reagents. Samples are transferred to a CE array for injection and separation, and software processes electrophoresis trace data to accurately size amplified fragments and identify the alleles present in the sample. Processed electrophoresis traces are reviewed by the expert user to confirm accurate genotype calls.

Paternity Calculations Where the Alleged Father is Unavailable for DNA typing: Two Examples

Brian Harmon, Criminalist Supervisor, CADOJ, BFS – Richmond

Investigations into familial relationships are increasingly common in forensic DNA casework. Questions of paternity may arise in a criminal investigation when a sexual assault results in pregnancy. Answers to these questions generally require DNA profiles for the victim (or known mother), the suspect (or alleged father), and any resulting child or products of conception. A likelihood ratio known as a paternity index is then calculated, which determines the probability of obtaining the DNA profiles under two mutually exclusive assumptions. The first assumption is that the suspect is the father; the second is typically that the suspect is not the father and is instead an unrelated individual. Standard formulae exist for these indices based on the genotypes of the alleged father, child, and known mother.

There are cases where the suspect is not available for DNA typing, yet the question of paternity still requires an answer. Without additional thought and analysis, the standard paternity index formulae will not provide a complete picture, but all is not lost. I will present a case where relatives of the suspect provided sufficient information to calculate an index.

Alternatively, evidence may exist that the suspect is not the father, but the true father is instead the suspect's full sibling. We will discuss how the "it wasn't me, but it was my brother" question can be handled by the avuncular index. Lastly, I will present a hypothetical example where multiple siblings in one family were all suspected fathers, including one sibling unavailable for DNA typing. We will evaluate how a kinship

index based upon the additional information provided by the other siblings measures up to the avuncular index.

Current DNA Legal Issues

Mike Chamberlain, Deputy AG, CADOJ – San Francisco

This presentation will discuss recent case law and other legal issues relating to DNA forensics.

Beyond a Reasonable Doubt

Shawn Kacer, Criminalist Supervisor, CADOJ, BFS – Sacramento

Recent DNA testing and good investigative work in a 2003 old and cold homicide led to the arrest and trial of a man who was not initially considered a suspect. During the first trial, several challenges to the significance of the DNA results were presented, including the role of secondary transfer and a critical difference of opinion regarding a mixture interpretation. The first trial ended with a hung jury, and the outcome of the second trial may surprise you.

The Sound of Shots

Nancy McCombs - California Department of Justice Fresno Lab

A request was made by the deputy DA assigned to a double homicide case to estimate, in a controlled laboratory study, how quickly a gun could be fired by one shooter then passed off to and fired by another shooter. Assistance with this case was provided in order to determine if an eye witness account of two shooters passing one gun was credible or if one shooter acting alone was more likely. This was accomplished by examining actual shots recorded during a 911 call.

Multiple variations replicating how the shooting may have occurred were both audio and video recorded using a Nikon® DS300s camera. The time lapse between these shots and shots from the 911 call were then calculated using Audacity® recording/editing software and compared.

Further research was performed to correlate the recording capabilities of common cellular phones, which could be used to witness a shooting, as well as readily available recording/editing software.

Development of a 3D-Topography System for Firearm Identification Using GelSight and Feature Based Case Matching

Todd Weller, Ryan Lilien, & Marcus Brubaker - Oakland PD

Despite the importance of toolmark analysis in the forensic sciences, the imaging and comparison of toolmarks remains a manual and time-consuming endeavor. The overall goal of our project is the development of an accurate and low-cost system for structural 3D imaging and comparison of cartridge cases. Our platform utilizes the recently developed GelSight surface topography imaging system and custom feature-based image comparison software. Our system's preliminary results from scanning and matching cartridge cases are extremely promising. In collaboration with computer science, engineering, and forensics experts, we are working to improve our hardware and software, and conduct several moderate scale experimental benchmarks.

Our novel 3D imaging technology and structural analysis algorithms show extremely promising early results. We examined test fires collected from forty-seven 9mm Luger caliber firearms, using three different types of ammunition and performed over 27,000 inter-comparisons. Our research provides objective support of firearms identification and shows the potential of incorporating cutting-edge computer science

algorithms into pattern matching analysis. Additionally, the data from our system provides further insights into firearm produced marks (such as the size of marks on breech faces and quantifiable differences between brands of ammunition).

These results demonstrate that our case matching algorithms are both fast and accurate. It is our hope to continue development of a general purpose case-matching system with a robust and statistically significant match score.

The Clackamas Town Center Shooting

Dan Alessio - Oregon State Police, Portland Metro Forensic Lab.

On December 11, 2012, a gunman entered the Clackamas Town Center Mall and opened fire. This presentation will cover events leading up to, during, and after the shooting incident.

Re-Working Cold Case Evidence:

One Criminalist's Approach

Dianne Burns - California Dept. of Justice Santa Barbara Lab

You are assigned an "unsolvable" thirty-plus year old case. It's been previously worked several times over by a variety of agencies. What's an effective game plan for reexamining the evidence once again? California Department of Justice Santa Barbara Lab criminalist Dianne Burns' approach and methodology for screening the evidence is presented within the context of a 1981 double homicide that occurred in a residence on a sleepy cul-de-sac in Goleta, CA.

Mendocino County Murder Solved After 25 Years

Meghan Mannion Gray - CADOJ, Richmond Lab

This case presentation will highlight the need for communication, patience, and creativity when working old and cold homicide cases.

Georgina Pacheco, 20, was last seen on September 1, 1988 leaving her shift at the Sea Pal Restaurant in Fort Bragg, CA. Her naked body was found in thick brush on a remote road on September 10. She had been raped and strangled. In the years since her death, many leads were followed and eliminated. Evidence was examined and consumed with no results and the case was eventually shelved with the hope that future technological advances might help to solve it.

The case was reopened and assigned to me in 2010. Many hours were spent discussing the remaining evidence available, what work had previously been performed, and the best path forward. This investigation was truly a collaborative effort, relying on open communication between the DNA laboratory, the screening laboratory, and the detective assigned to the case. After reopening the case, it took three years, nine case reports, multiple technologies, creative thinking, and perseverance to reach the resolution. In 2013, biological evidence linked the victim's deceased brother-in-law to the crime and the Mendocino County Sheriff's Office declared this old and cold case closed.

The unsolved murder of Georgina Pacheco haunted the small community of Fort Bragg for nearly 25 years. Although the resolution left the family of this young woman with new questions, it also brought a sense of closure to those who loved her and the community to which she belonged.

People v Jason Gilley

Robert Himelblau - San Joaquin County District Attorney's Office

On August 7, 2011, after a night out with friends, Dalene

Carlson, 23, was last seen leaving a local bar in Stockton. For 70 days, the Stockton Police Department looked for her with the help of the FBI and San Joaquin County Sheriff's Department. The question of whether she would be found alive was answered on October 15, when a local farmer found her decomposed body in a corn field.

A multitude of forensic science disciplines – odontology, pathology, crime scene reconstruction, firearms examination, and cell phone/tower analysis – came to bear on the prime suspect, Jason Gilley. This case study will recount the intersection of these disciplines and their introduction to a jury charged with deciding who murdered Dalene Carlson.

Establishing and Minimizing Uncertainty of Measurement in Weighing

Thomas Rohrer - Mettler Toledo

The presentation, offered by METTLER TOLEDO's weighing experts, will focus on the key factors that will help bring your laboratory's weighing and data collection processes into alignment with globally established Good Weighing Practices and ensure the accuracy (and thorough and efficient recording) of data. The key areas covered will be the four influences of uncertainty of measurement in weighing and the common influences of error in the weighing process.

The popular Good Weighing Practices (GWP) and LabX Balance Excellence from METTLER TOLEDO helps eliminate the risk associated with weight measurement uncertainty by providing all components required by ISO 17025, including the quality management support you need so your weight accuracy can't be questioned.

Outrageous!

Raymond Davis - CourtSkills

Have you ever had the opportunity to know what every person's role was going to be in a major case? What each prosecution and defense witness was going to testify to? Further, that you also knew the trial strategy of the prosecutor and defense attorney? Let's not forget about the physical evidence being introduced at trial. Were you aware of the types of evidence collected and analyzed? Are you that person? Have you been fortunate to have had that type of experience? Do you know anyone who has had that opportunity? If so, make them your friend.

I feel safe in saying that over 95% of the CAC membership has never been in a position to know every element in a major case trial. I am concerned about our role in the criminal justice system when we are never made aware of what transpires in most trials. Why?

That is the purpose of my presentation: to relate a homicide case I worked on many years ago, where I saw the collision between legal and forensic ethics first hand leading to a miscarriage of justice.

When Drugs Go Missing: A Crime Laboratory Study

John Yoshida - CADOJ, Bureau of Forensic Services

The talk will discuss steps taken in the investigation of found drugs, into missing drugs and addressing the need to get ahead of the public and the media. We will also discuss the preventive measures applied to the Bureau's laboratories in increasing the quality control of cases: weighing envelopes,

reanalyses, and instituting policies which cover additional documentation of analyses. We will also discuss the transparency of the process to the district attorney offices.

When Push Comes to Shove: The Ethics of Standing Your Ground

Jennai Lawson - California Depr. of Justice Central Valley Lab

A fairly straight forward recent homicide case not initially thought to involve much DNA evidence at all became a court battle between expert witnesses. The key arguments came down to interpretational issues (both of a mixture and of a single "peak") and quality issues. Some interesting defense tactics came to light during the trial that will hopefully spark a lively discussion on the ethics of how something is reported versus how it is portrayed on the stand.

DNA Recovery from Ammunition

Lawrence Blanton - Los Angeles Police Department

Analysis of ammunition, both fired and unfired, for touch DNA has been debated due to its low success rate. Research of 98 touch DNA samples from ammunition profiled by the LAPD Crime Lab over a seven year period will be presented.

Forensic Recovery Following the 9/11 World Trade Center Attack

Joseph Blozis - Retired, NYPD Forensic Investigations Division

A forensic perspective of the recovery efforts of the NYPD's Crime Scene Unit at Ground Zero involving a documentary titled "9/11 Crime Scene Investigators." The presentation will include the events from the morning of September 11, 2001 through present day including terror plots, analysis, and the transformation of the site as it is today.

Joseph Blozis is a retired New York City Police Detective Sergeant who served the city of New York for 28 years, including 22 years within the Forensic Investigations Division. He conducted forensic investigations in excess of 2,500 crime scenes including more than 1,000 homicide investigations including both terrorist attacks on the World Trade Center.

Fur-ensics: Animal DNA in Criminal Investigations

Christina Lindquist and Teri Kun - UC Davis Veterinary Genetics-Laboratory Forensic Unit

While committing a sexual assault in a residential backyard, Rufus Sito Nanez III rolled in some canine feces which later helped link him back to the victim's home resulting in his conviction. The Veterinary Genetics Laboratory Forensic Unit at the UC Davis School of Veterinary Medicine played a key role in the trial and conviction of this serial rapist.

As the only crime laboratory in the world accredited for analysis of DNA from domestic animals, VGL Forensics serves a large and diverse clientele. The laboratory receives a wide variety of cases from all over the world, with sample types and species unlike those encountered by its human counterparts. Cases range from human-on-human crimes, where dog or cat biological evidence links a suspect to the crime, to large-scale dog fighting; species identification; and animal cruelty cases. Recently, the laboratory worked with investigators in the United Kingdom on the first cat DNA case in that country.

Additional topics will include the challenges of and recent developments in non-human forensic DNA analysis and how those challenges presented opportunities to advance the

field through research, development, and publication pertaining to animal forensic genetics as well as the establishment of SWGWILD, where best practices standards and guidelines have been released for non-human forensic testing. Over the last 14 years, the lab has assisted in other high-profile and cold cases, examples of which will be presented.

The Prosecution of a Serial Killer

Dori Ahana - Marin County District Attorney's Office

This discussion will follow the investigation of Joseph Naso and the coordination of a multitude of agencies including the DOJ in conducting DNA and other testing crucial to the prosecution of this case. I will provide examples of testimony and issues raised during the examination of witnesses including criminalists. This talk will highlight some of the issues raised in cold case, multi-victim, murder investigations.

Early Injury Detection

Colleen Gleason - Contra Costa County District Attorney's Office, Raymond Davis - CourtSkills

The Contra Costa District Attorney's Office is spearheading the use of Early Injury Detection (EID) in the prosecution of misdemeanor violence cases, particularly those involving strangulation and other situations in which it may be helpful to detect injuries at an earlier stage than is currently possible. Due to the cycle of domestic violence, victims often become uncooperative within hours of the offense and refuse to allow follow-up photographs that are essential for prosecution. Furthermore in cases where they have been strangled, victims rarely agree to seek medical help despite the dangerous nature of the assault. More refined EID techniques will impact the forensic community by promoting detection of possible life-threatening injuries while they are in the process of forming or which may not be visible to the naked eye due to darker complexions.

The presentation will focus on the possible use of thermographic cameras to capture and document inflammation occurring beneath the surface of a victim's skin. These images may corroborate a victim's statement and may allow for better recognition of internal damage. Early detection of these injuries could result in better criminal investigations and help identify dangerous health conditions that have resulted from trauma that is otherwise invisible. To date, both UV and IR radiation have been used to detect and document domestic violence injuries. The EID group intends to implement a research program to assess the relative merits of these techniques. The DA's office is partnering with the Human Rights Center at UC Berkeley to advance EID investigative techniques.

Members of the EID group: Dr. Cristian Orrego, Forensic Program, HRC; Dr. Bill Green, CCFMTC; Dr. George Sensabaugh; Prof. Keith Inman, CSUEB; Butte Co. Investigator Ross Pack; Robert M. Thompson, NIST; Raymond Davis, CourtSkills; Colleen Gleason, attorney; and Aaron Laycook, attorney.

Real-Life "Rambo"

Deborah Enns - California Department of Justice Eureka Lab

In August of 2011, a homicide victim by gunshot was found in Mendocino County. No significant forensic evidence was collected or observed by the agency at the time, and the suspect was unknown. Subsequent to the agency processing the scene, representatives contacted the DOJ Eureka Laboratory and were advised to return to the scene in an attempt to locate possible DNA evidence that could be associated to a

suspect. The agency returned to the scene and collected a foil marijuana joint in a location they believed the suspect may have fired his weapon. A second homicide victim by gunshot was found in a different location in Mendocino County approximately two weeks later, and a representative of the Eureka Laboratory was called to assist in evidence collection. Amongst the evidence collected was a foil marijuana joint. A witness to the second homicide helped identify the suspect, and the agency had reason to believe that the suspect had committed both homicides; however, the suspect was not located or apprehended.

DNA analysis of swabs from the foil joints was performed by the DOJ Redding Laboratory, and the results confirmed the identity of the suspect and placed the suspect at both homicide scenes. Two homicides approximately two weeks apart with a suspect on the loose generated much public and media concern. Finding the suspect became the highest priority for the Mendocino County Sheriff's Office. A manhunt to locate the suspect was launched. The suspect was able to elude officers for approximately five weeks due to the suspect's apparent "survivalist" training and his familiarity with the terrain. The search for the suspect involved multiple agencies including Mendocino County SWAT, Humboldt County SWAT, Alameda County SWAT, U.S. Marshals, other agencies, and the use of search dogs.

The search for the suspect ended when he was killed by SWAT officers. His rifle was submitted to the Eureka Laboratory to use for comparison to cartridge cases collected at the second homicide scene and a cartridge case collected when the suspect fired upon a SWAT team during the manhunt.

The Speed Freak Killers

Part I: Case History and Calaveras Co. Victim Recovery Efforts

Ronald Welsh - California Dept. of Justice Central Valley Lab

From 1984 to 1998, serial killers Wesley Shermantine and Loren Herzog preyed on victims in California's San Joaquin County and beyond, likely claiming more than 20 victims. This presentation will discuss the history of their crimes and Shermantine's subsequent manipulation of his victims' families, the media, and the general public. Finally, the role of cadaver dogs and other resources will be discussed in the recovery of two victim's remains, thirteen and twenty six years after their murders.

The Speed Freak Killers

Part II: San Joaquin Co. Multi-Agency Victim Recovery Efforts

Michelle Terra - California Dept. of Justice Central Valley Lab

This presentation will discuss the San Joaquin County Victim Recovery Efforts from confined spaces. For two families, the recovery answered the twenty-six plus year question "Where is my daughter?" but left many other questions unanswered for those families and other families missing loved ones.

Development and Validation of the Yfiler Plus™ PCR Amplification Kit, a New Highly Discriminating Y-STR

Ellen Crone - Life Technologies

Y-chromosomal markers have proven useful in solving investigations where low levels of male DNA are present in a high female DNA background. An intrinsic limitation of Y-STRs compared with autosomal STRs is a reduced power of discrimination due to a lack of recombination throughout

most of the Y-chromosome. Thus, in an effort to increase the power of discrimination we have developed a new 6-dye, 27-plex Y-STR system that includes the 17 markers from the AmpFLSTR Yfiler kit plus 10 additional highly polymorphic Y-STR markers (DYS576, DYS627, DYS460, DYS518, DYS570, DYS449, DYS481, DYS387S1a/b and DYS533). These ten new loci include 7 rapidly mutating Y-STR loci which allow for improved discrimination of related individuals.

The new multiplex is a dual application assay designed to amplify DNA from extracted casework samples and database samples from storage cards and swab lysates via direct amplification. Compared to the previous Yfiler® Kit, the new multiplex shows improved performance in inhibited samples, faster time to results, admixed male and female samples at ratios >1:1000 and better differentiation in male:male mixture samples in high female DNA background. Additionally under optimized conditions, no reproducible cross-reactive products were obtained on bacteria and commonly encountered animal species. The haplotype diversity and discriminatory capacity calculations for several population groups will be presented, as well as father-son studies and validation studies demonstrating improved performance with challenging samples.

NIST Activities that Support Forensic Scientists: Commission, Standards, and Publications

John Jones - National Institute of Standards and Technology

The National Institute of Standards and Technology (NIST) has developed a large number of reference documents, tools and physical standards that support the forensic science community. The Forensic Science Program (FSP) within NIST conducts and coordinates research and provides technical services to address the needs of the forensic science community. NIST is currently engaged in many national forensic science activities that impact the forensic science community. This lecture will address the following activities:

- NIST/DOJ Collaboration on the National Commission on Forensic Science
- Development of NIST Sponsored Forensic Discipline Specific Groups
- Free Forensic Science Webcasts Sponsored by NIST
- Latest Forensic Science Publications & Research Projects

Forensic Technology Center of Excellence: Making it Real - Moving Technology from R&D to Your Lab

Jeri Roper-Miller - RTI International, Center for Forensic Sciences

RTI International (RTI) was first awarded the National Institute of Justice Forensic Science Technology Center of Excellence (FTCOE) in 2011 and was recently awarded a third option year that will continue through September 30, 2014. Through close collaboration with NIJ, the FTCOE partnership leverages its strengths, capabilities, and resources to contribute to improvements in the field by 1) serving as a partner for the criminal justice community and for NIJ, 2) raising the level of functioning of forensic science in the criminal justice community, 3) quickly identifying the changing needs and capabilities of the criminal justice community with respect to the forensic sciences, 4) bridging the disconnect between criminal justice practitioners and the available technology, and 5) preventing "unproven" technologies from being used in the field and presented in court.

The objectives of the FTCOE put forward by NIJ include: 1) determining technology needs, 2) developing tech-

nology program plans to address those needs, 3) developing solutions, 4) demonstrating, testing, evaluating, and adopting potential solutions into practice, 5) developing and updating technology guidelines, and 6) building capacity and conducting outreach. To fulfill these tasks the FTCOE facilitates the operations of TWG meetings, conducts gap analyses to identify technology needs, improves dissemination and support mechanisms to help the end user, and provides effective in-person technology-transition workshop content that will be accessible to individuals online. The FTCOE also leverages the experience and infrastructure of RTI's web-based training program as a foundation for training and outreach proven to reach tens of thousands of stakeholders, both domestically and internationally.

This presentation will highlight activities in the areas of Technology Transfer and Research and Development over the last two years that support criminalistics.

To Catch a Tweeter: The Use of Social Media in Court

Janet Smith - San Joaquin County District Attorney's Office

How social media is used during the course of criminal investigations to identify suspects, collect evidence and prove elements of gang enhancements.

Forensic Entomology: Utility, Limitations and Evidence Collection

Bob Kimsey - UC Davis Dept. of Entomology and Nematology

Have you ever found yourself in this situation: you are at a crime scene and observe insect activity on and around the victim. You know that the insects could provide some useful information, but you are not well versed on how to preserve them nor what that useful information might be. So you throw a few token bugs into a vial and book them into property, or worse yet, you don't collect them at all because you are not aware of the resources available to even examine them.

Insect evidence often goes largely ignored in the forensic arena simply because it is a rare forensic specialty that many agencies don't know is available to them. Entomological evidence can often provide valuable information that should not be overlooked. I will discuss what forensic entomology is, the kinds of information entomological evidence can provide, as well as its limitations. But most importantly, I will describe the collection techniques that assure optimal preservation of entomological evidence.

Development of a Targeted Next Generation Sequencing Solution for Forensic Genomics

Anne Jäger - Illumina

Sequencing (NGS) by Synthesis (SBS) enables the entire human genome to be sequenced in one day. Whole genome sequencing (WGS) provides access to all genetic differences between individuals and is valuable in studying disease and biological systems. While WGS delivers the broadest genomic coverage, it also requires the largest sequencing and interpretation effort. As a simpler alternative, forensic scientists can choose to perform targeted sequencing of PCR products. By sequencing a dense set of forensic loci, casework and database efforts are directed toward the genomic regions that best answer forensic questions, relieving privacy concerns and simplifying analysis. Because it does not depend on allele separation by size, the number of targets interrogated is not limited, allowing a more comprehensive result to be generated.

We describe the development of a targeted amplicon panel for forensic genomics that combines a core of global short tandem repeat markers used routinely today, along with additional forensic loci that can provide information when standard markers would fail to sufficiently resolve a case. Maximizing the number and types of markers that are analyzed for each sample provides more comprehensive and discriminating information for standard samples, as well as challenging samples that contain low quantities of DNA, degraded and/or inhibited DNA, and complex mixtures. The targeted amplicon panel will enable more complex kinship analysis to be performed, and can also reveal phenotypic and biogeographical ancestry information about a perpetrator to assist with criminal investigations. This capability is expected to dramatically improve the ability to investigate dead end cases, where a suspect reference sample or database hit are not available. We will describe the workflow, and present data from early developmental studies with both standard and challenging forensic samples, along with concordance with standard capillary electrophoresis methods.

Development of a New Biochip Array for the Simultaneous Detection of "Date-Rape" Drugs and Metabolites in Urine Samples

Donald Chung - Randox Toxicology Limited

Drug facilitated sexual assault (DFSA) is a subset of drug-facilitated crime and involves the administration of drugs and/or other intoxicating substances or alcohol which render an individual incapacitated or incapable of giving or withholding consent. There is a growing arsenal of drugs, which are exploited for DFSA, causing symptoms such as unconsciousness, conscious paralysis, and amnesia. The effects of these drugs are often potentiated by alcohol. The aim of this study was to develop a biochip array applicable to the simultaneous detection of compounds implicated in DFSA: chloral hydrate metabolite, ethyl glucuronide, fentanyl, flunitrazepam, meperidine, meprobamate, 'Z-drugs,' and their major metabolites in urine samples. Detection of metabolites as well as parent drugs extends the window of detection, which is relevant because some DFSA drugs have amnesic effects and the crime may not be reported for days or even weeks.

Qualitative Analysis of Inhalants in Blood by HS-GC and GC-MS

Vincent Keokot - California Dept. of Justice Central Valley Lab

A 36 year-old female was involved in a traffic collision. There were five to six cans of compressed air, including one which was on the driver's seat that was frosty and cold to the touch indicating that it had been recently used. She admitted to the investigating officer that she had been sucking air from aerosol cans.

1,1-difluoroethane (Freon 152a) and 1,1,1,2-tetrafluoroethane (R-134a) are newly introduced propellant and refrigerant found in a variety of commercial products including aerosols. Because of its euphoric effect, availability, and low cost, these compounds have become a substance of abuse. Numerous cases are reported each year to the American Association of Poison Control Centers related to 1,1-difluoroethane. A routine forensic alcohol analysis revealed an unknown volatile compound in her blood specimen, providing an opportunity for qualitative analysis of 1,1-difluoroethane and 1,1,1,2-tetrafluoroethane by headspace-GC and GC/MS.



Over ^ There and Back Again

My Trip to the Forensic Science Society Autumn Conference

By Todd Weller

A year ago Brian Rankin, the Immediate Past-President of the Forensic Science Society (FSS) contacted me and asked if I would be willing to attend their November 2013 conference and give a plenary presentation. Specifically, he asked if I could provide a California/United States perspective on research and development trends in light of the publication of the 2009 National Academy of Sciences (NAS) report. How could I turn down such an invitation? I gladly accepted Brian's offer and I began to make travel plans for Manchester, England in order to continue the tradition of joint California Association of Criminalists and Forensic Science Society meetings.

I looked forward to learning about the influence of the NAS report on international forensic science. I was also interested to learn how the closing of the Forensic Science Service has affected UK forensic science (for detailed summaries of the Forensic Science Service, see References 1 & 2). The Forensic Science Service has been shuttered for approximately 18 months. I've heard rumors and speculation about the privatization of forensic science, but I was eager to gather some primary, testimonial evidence.

After a few months and dozens of Oakland firearms cases, the invitation to attend the FSS meeting had migrated to the back of my brain. It remained there until August when I started to receive requests for my abstract and power point slides. I checked the conference schedule and saw my time

slot: opening speaker for the conference! I'll be honest: I broke out into a bit of a cold sweat. It was already an honor to be an invited speaker, but now I was to open the conference. I took a deep breath, hunkered down and began to outline my talk in hope of providing a meaningful presentation. I wanted to stimulate thought and dialog for the remainder of the week.

My presentation covered several topics. First, I briefly summarized the NAS report and its main conclusions: forensic science in the United States is badly fragmented, underfunded and more research is needed in many of the disciplines. I think we can agree with the first point: our forensic science is a system of patchwork coverage that is significantly underfunded. I drove home this point by showing a map of California and our "system" of overlapping city, county and state laboratories. I also shared 2012 City of Oakland crime statistics. There was an audible gasp from the audience when I showed there were 126 murders in Oakland last year but we only have a staff of ~20 criminalists. The second NAS conclusion has been controversial, but I believe the end result has been positive. Since the NAS report, there has been a significant amount of new firearms and tool mark identification research. This research has provided strong, objective, statistical support for the science of firearms identification (3). In the long run the NAS report will result in strengthened pattern identification disciplines.

For the second part of my talk, I looked towards the future of our profession. The Executive branch of the federal government is committed to the implementation of the recommendations of the NAS report. A partnership between the National Institute of Standards and Technology (NIST) and the Department of Justice (DOJ) has begun the formation of a National Commission on Forensic Science (4). Additionally, it appears the Scientific Working Groups (SWGs) are being moved under the organizational umbrella of NIST "Guidance Groups" (5). The consolidation of policy and procedure decision making under one federal agency is something new to our profession. I think this provides us with a tremendous opportunity to improve our profession, but there is also potential to do great harm. I thought it would only be appropriate to carry a theme close to the CAC's heart. I drew upon the many lectures and articles from Peter Deforest and shared the

concern of the continued "specification" of our profession. I see a continued drift towards a more clinical testing facility model where we receive a sample, are told what test to run and we then report the result without providing the justice system the meaning of the result. Our profession is better served with a diagnostic model where we decide what test(s) to run in order to answer the question(s) being asked. I worry with new oversight, we will continue to drift away from our old diagnostic model of practice because this type of forensic science is harder to regulate.



My view from the speaker's podium

In closing, I quoted Paul Kirk:

"It is this question of practical versus absolute identity that is the basis for much of the quibbling of attorneys with expert witnesses....The expert witness will be well advised to admit without argument that no two objects are ever completely identical, but he should at the same time be very certain of his ground as to what constitutes a sufficient identity for practical use (6)"

I take heart that in 1953, Paul Kirk and his contemporaries were debating the very same issues that trouble us today. We will find what works for our profession, in our generation with our current understanding of the natural world.

With my talk over, it was my turn to conduct research. From the speaker's podium, I took an informal poll and asked the attendees how many had heard of the NAS report. I was surprised to see ~90% of those in attendance was aware of the report. I then asked how many had read the report and most of those with their hands up left their hands in the air. It was quite clear that the NAS report had reached an international audience. We should keep this in mind: any nationally derived policy or standards may have international reach and consequences.

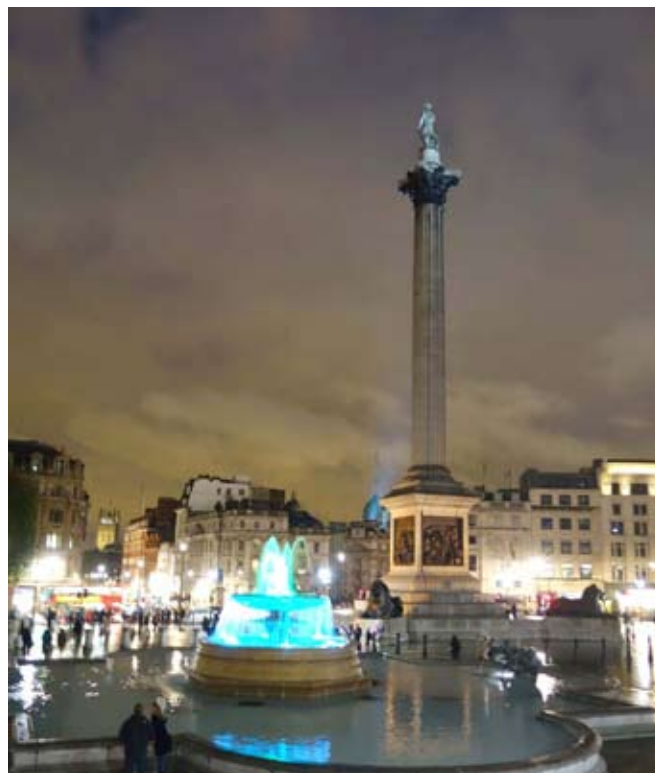
During the remainder of the three days, whenever I got an opportunity, I asked individuals their opinion of the Forensic Science Service's demise. Sadly, the answers I received were universal. Words such as "tragedy", "shame", and "chaotic" were used to describe the current climate of forensic sci-

ence in the UK. Interestingly as a result of Forensic Science Service's end, many local police agencies have started their own laboratories. There are now numerous unaccredited police laboratories and then a host of private accredited forensic science providers. The result is landscape that consists of a fragmented, confused system. Sounds just like our system, the one the NAS would like to move away from! It will be interesting to see how the UK system finally settles, but right now things are still very fluid. If there is one lesson to be learned from all this: don't copy this system. Privatization is not always the answer and does not necessarily provide it "efficiently."

I would like to close by thanking the Forensic Science Society. President Ann Priston, Past-President Brian Rankin and Event Organizer Keshia McGuire were all amazing hosts and made me feel welcome. I look forward to our next joint meeting, coming to California sometime soon!

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top left: The American contingent at the FSS meeting: (left to right) Todd Weller (CAC), Mark Stolorow (NIST), Lesley Hammer (IAI). Not pictured is Mark Weiss (NSF). above: Trafalgar square at night. left: Conducting some "firearms research" at the Imperial War Museum.



Given the power of DNA evidence, it is hard to believe that it is not in the best interest of the criminal justice system to do all it can to preserve this evidence using the best method available.

Strengthening Forensic Science?

The National Institute of Standards and Technology (NIST) and the National Institute of Justice (NIJ) have recently released "The Biological Evidence Preservation Handbook: *Best Practices* for Evidence Handlers" [Handbook] to provide guidance on the handling and preservation of biological evidence. Due to the wide variety of this form of evidence, it is difficult to provide "one size fits all" guidance for the handling, packaging and storage of biological evidence and the Handbook does a reasonable job in most of these areas. However, one of the key recommendations made in this publication is that biological evidence stains should be stored **long term** under "temperature controlled conditions" [see Table III-2, page 19 of the Handbook, reproduced below]. In the Handbook, "temperature controlled conditions" have been defined to mean biological evidence should be stored between 60-75 degrees F and below 60% humidity. Since **short term** storage conditions are defined to mean storage for less than 72 hours, the recommendation for long term "temperature controlled conditions" will be the prevailing recommendation. It is my concern that these storage conditions are not adequate to preserve the more marginal categories of dried biological evidence which includes trace or degraded biological samples.

This recommendation was discussed on the forens-DNA list and I responded to the inquiry because I had performed a study of the impact of time and storage conditions on old biological samples [I posted a summary of this study on forens-DNA]. Two of the conclusions I reached as a result of this study were: (1) "... **frozen storage preserved biological samples better than a combination of storage conditions** (frozen, refrigeration & room temperature) **or holding a dry biological sample at room temperature**" and (2) "The majority of the stains in this study yielded very informative DNA typing profiles when amplified by the Profiler Plus reagent kit. Most of the samples analyzed in this study had been stored for at least some time period in the freezer. It was clear that samples did not have to be stored frozen in order to obtain a DNA result. [Given, that a full profile was obtained on a bloodstain held at room temperature for more than 25 years.] **However, there was also some information to indicate that samples benefited from frozen storage since the only samples that did not display a decrease in the DNA at the larger loci were the samples that had been held frozen.**"

I was able to obtain the scientific papers referenced in the Handbook to support the "controlled temperature" recommendation for long term storage and found that these articles are: (1) typically relying on relatively large biological samples [e.g. 50ul of blood], (2) that placed on clean substrates and (3) stored for a comparatively short time frames [usually less than 2 years]. Considering the time frame of some high profile "cold cases" in California, a 2 year period does not appear to be what could be considered a worst case scenario for evidence storage. In short, the samples and conditions described in the references supporting the Handbook's recommendation do not come close to reflecting the reality of most evidence samples encountered as biological evidence in "cold cases." Thus, although these recommendations might be appropriate for relatively large, uncontaminated blood, semen or saliva stains, they are **likely not** appropriate for the type of biological evidence that is frequently encountered in criminal cases. Ironically, several of the articles cited in the Handbook to support the recommendation for long term storage conditions for stains also **make it clear that DNA does degrade over time and that biological samples benefited from being stored at cold temperatures** [e.g. Aggarwal et al. 1992; Koblinsky, 1992; Sjöholm et al. 2007; and McCabe et al. 1987]. Further, these studies often only focused on ability to obtain a DNA profile in samples that contain a relatively large amount of DNA and ignored: (1) how degraded the DNA might be after storage, (2) how MUCH DNA was preserved, and (3) the possible need to preserve other markers in these stains [e.g. proteins or RNA]. While protein or RNA markers may not be frequently pivotal in a case, evolving technology could make them significant and it is likely that these markers would also survive better in a frozen state than at "controlled temperature" conditions.

Strengthening, cont'd

While it is clear that DNA is a stable genetic marker, it is also true that it decays over time. It has been my experience in California crime laboratories that [when possible] evidence is held frozen. It is also been my experiences that in academic laboratories I have been associated with that biological samples are held frozen. The study I performed approximately 10 years ago indicated that consistent frozen storage preserved the amount and quality of DNA better than any other type of storage. Although I would be the first person to acknowledge that the storage conditions for the samples I analyzed were varied and not well controlled, it did appear that the samples identified as consistently held frozen provided better quality test results and comparatively more DNA than samples held at room temperature or samples moved between different storage environments. The 1992 Kobilinsky article [referenced in the Handbook] nicely sums up the situation thus: "... Successful analysis of physical evidence . . . rely upon the ability to isolate relatively intact molecules in sufficient quantity for analysis. Although DNA is among the most stable of biomolecules (in vitro), certain factors exist that can limit the ability to recover useful amounts of DNA. These factors include age, nature of substrate, environmental factors, contamination. . . As the technology becomes commonplace in forensic laboratories and DNA analysis becomes more routine, juries will rely more upon the results of scientific analysis is helping them to decide a suspect's guilt or innocence. The potential impact of DNA analysis on the criminal justice system in general and on forensic science cannot be over stated" [page 79-80].

It could be argued that the DNA typing techniques used today are more sensitive than the ones available ten years ago and the need to preserve as much DNA as possible is not as critical as it was in the past. However, it is clear that crime laboratories are being asked to analyze smaller and more marginal samples today than in the past. If these trace samples are not preserved in the best possible manner, labs across the country may be spending a significant amount of resources analyzing noise and not signal because the signal has not been adequately preserved. Further, given that the defense has a right to re-analyze biological evidence, it is clearly important to preserve **the greatest amount of DNA possible** and this goal is more likely to be accomplished by storing biological evidence frozen.

It might be interesting to consider that the Handbook could create a problem for crime laboratories if the recommended method for storing biological evidence is "controlled temperature" conditions and the lab stores its evidence in a freezer. Since freezing evidence **does not even show up as an accepted method of storage in the Handbook**, this could put a crime lab in conflict with established national policy.

Probably the biggest problem with the recommendation to store biological evidence stains under "temperature controlled" conditions is that it has been represented as "Best Practice." I am not naïve enough to believe that most law enforcement agencies throughout the country are able to store their evidence frozen but if "Best Practice" for **all** biological evidence is viewed [as it will likely be] as equivalent to room temperature, you can imagine what the storage conditions biological evidence will likely experience after this policy fully goes into effect. Although it may not be possible to store all evidence collected in a case in the freezer, there is no reason that the criminalist assigned the case could not make an informed decisions about what stains should be selected for frozen storage.

Given the power of DNA evidence, it is hard to believe that it is not in the best interest of the criminal justice system to do all it can to preserve this evidence using the best method available. Law enforcement agencies rely upon the scientists in the crime laboratories to advise them on how to handle their biological evidence and the question could be asked: Would your crime laboratory staff feel it is "Best Practice" to store critical biological samples under "temperature controlled" conditions? Remember, we are NOT talking about 50ul of freshly drawn blood placed on clean substrates designed to protect the sample and then stored at "temperature controlled" conditions. If the academic community was polled on the issue of preservation of biological samples, is it likely that a majority of scientists would agree to transfer their valuable research samples to "temperature controlled conditions" based upon a handful of research articles that did not reflect the nature of the samples they were interested in safeguarding?

—Theresa Spear

Table III-2: Long-Term Storage Conditions Matrix¹

Type of Evidence ²	Frozen	Refrigerated	Temperature Controlled	Room Temperature
Liquid Blood	Never	Best		
Urine	Best			
Dry Biological Stained Items			Best	
Bones			Best	
Hair			Best	Acceptable
Swabs with Biological Material			Best (dried)	
Vaginal Smears			Best	
Feces	Best			
Buccal Swabs			Best	
DNA Extracts	Best (liquid)	Acceptable (liquid)	Acceptable (dried)	

Reproduced from pg. 19 of NIST publication, "The Biological Evidence Preservation Handbook"



Ethical Dilemmas

DISCUSSION CORNER WITH CAROLYN GANNETT

Some agencies have policies that address off-duty conduct.

PARTY TIME!

The Scenario:

Biff is a criminalist who loves to party on weekends. His buddies consider him the life of the party. They have told him that sometimes he engages in hilariously outrageous behavior, but Biff never remembers it. However, he takes care never to put others in harm's way: he never drives when alcohol is in his system. He only drinks on weekends, giving himself time to recover before going back to work on Monday. Biff always get excellent reviews from his supervisor.

Is there anything unethical about Biff's conduct?

Discussion

It may appear that nothing in this scenario is in violation of forensic science ethics. Biff takes care to ensure that inebriation and its after-effects do not overlap with his work. He's a happy drunk—not a belligerent or unsafe one—his alcohol-induced antics only serve to entertain. The supervisor's glowing evaluations prove that Biff successfully separates work from his personal time.

Even so, anyone who drinks to the point of not remembering would do well to be aware of certain concepts found in some ethics documents. Those concepts are paraphrased below, and can be found in documents from the listed associations (a key to the acronyms can be found below; quotes from each association can be found on the CAC website's ethics page www.cacnews.org/ethics/quotes.pdf).

- Exhibit exemplary personal conduct. ABFT, AFTE, ASQDE, CAC, CSDIAI, KBI, MAAFS, MAFS, NWAFS, SWAFDE
- Be professional. ABFT, ABFDE, ANZFSS, CSFS, KBI, MAAFS, MAFS, RMABPA, SMANZFL, SOFT, TIAFT
- Conduct yourself in a manner that will not violate the public trust. ABC, ASCLD, ASQDE, CIS, CSDIAI, CSFS, FSS-UK, IAAI, IABPA, IAI, SCAFO

- Do not exhibit conduct that is detrimental to the association. AAFS, ABFDE, ABFT, ACSR, ASCLD, CSDIAI, FSS-UK, IABPA, NAME, NEAFS, NJAFS, SAFS, SOFT, SWAFDE, SWAFS, SWFS

Of direct relevance to CAC members, the CAC Code of Ethics Preamble states, "The motives, methods and actions of the criminalist shall *at all times* be above reproach, in good taste and consistent with proper moral conduct" (emphasis added). There is plenty of room for interpretation, here. Still, the argument could be made that spending one's personal time becoming drunk to the point of oblivion may not always be above reproach or in good taste.

Of more direct relevance and clarity may be work-place policies. Some agencies have policies that address off-duty conduct. Biff would be wise to know whether his crime lab has such policies and whether his conduct would be in violation of them.

Regardless of whether ethics or policies apply, this scenario presents a red flag: drinking to the point of not remembering. This raises the question of addiction, which can, and has, played a major factor in some cases of unethical conduct in forensic science. One would hope that Biff could pull out of his back pocket all that scientific training in discerning objective facts and apply it to his personal life. He may still be able to discern the cold hard facts: that he could have a drinking problem, and that such problems need to be addressed right away before they affect work, or before they lead to a violation of forensic science ethics.

Acronyms

AAFS American Academy of Forensic Sciences
 ABC American Board of Criminalistics
 ABFDE American Board of Forensic Document Examiners
 ABFT American Board of Forensic Toxicology
 ACSR Association for Crime Scene Reconstruction
 AFTE Association of Firearm and Tool Mark Examiners
 ANZFSS Australian and New Zealand Forensic Science Society
 ASCLD American Society of Crime Laboratory Directors
 ASQDE American Society of Questioned Document Examiners
 CAC California Association of Criminalists
 CIS Canadian Identification Society
 CSDIAI California State Division of the IAI
 CSFS Canadian Society of Forensic Sciences
 FSS-UK Forensic Science Society (United Kingdom)
 IAAI Int'l Assoc. of Arson Investigators
 IABPA Int'l Assoc. of Bloodstain Pattern Analysts
 IAI Int'l Association for Identification
 KBI Kansas Bureau of Investigation
 MAAFS Mid-Atlantic Association of Forensic Scientists
 MAFS Midwestern Association of Forensic Scientists
 NAME National Assoc. of Medical Examiners
 NEAFS Northeastern Association of Forensic Scientists
 NJAFS New Jersey Association of Forensic Scientists
 NWAFS Northwest Association of Forensic Scientists
 RMABPA Rocky Mountain Assoc. of Bloodstain Pattern Analysts
 SAFS Southern Association of Forensic Scientists
 SCAFO Southern California Assoc. of Fingerprint Officers
 SMANZFL Sr. Managers of Australian and New Zealand For. Sci. Laboratories
 SOFT Society of Forensic Toxicologist's
 SWAFDE Southwest Association of Forensic Document Examiners
 SWAFS Southwestern Association of Forensic Scientists
 SWFS Society for Wildlife Forensic Science
 TIAFT The Int'l Assoc. of Forensic Toxicologists

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

Causes of Wrongful Convictions *(don't believe everything you think)*



A press of commitments has kept us busy and apart; lunch was not on the agenda this quarter. And so we find ourselves in the unusual position of penning our contribution with only a virtual wine and cheese platter over which to ruminate. So while we do promise that food and drink were consumed, it was in different places at different times. And as this has become an all too frequent situation for us, and as we find ourselves repeating topics and screeds, it seems appropriate to signal that this Proceedings of Lunch may become more episodic than constant.

Our attention this quarter focuses on a frequent topic in conversations amongst forensic science practitioners: exonerations of the wrongfully convicted. A common perception is that the advent of forensic DNA typing brought with it the explosion of post-conviction exonerations. The most comprehensive and current data shows, however, that this is not the case. Further, collateral investigation into the causes of these wrongful convictions has been primarily in the form of summary statistics, mostly based on the dataset collected by the original Yeshiva University-based Innocence Project. The schizophrenic role of forensic science, as both hero and villain in the on-going phenomenon of wrongful convictions, has engendered accusations and diatribes, and led the various factions to retreat into camps worthy of the middle-East conflict. We have, over the years, contributed to the fray via various Proceedings. (Inman and Rudin, 1997, 2008, 2009, 2011)

In the almost two decades since wrongful convictions obtruded themselves into the consciousness of the mainstream media, both the scientific and legal communities committed – with great enthusiasm – the same error; they conflated correlation with causation. The scientists, at least, should feel slightly embarrassed by this most common trap, usually ascribed to the unwashed masses. We highlight two bodies of work that, in combination, bring a little more clarity (and sanity) to the condition of wrongful convictions.

The first is the on-going National Registry of Exonerations, a joint project of the University of Michigan Law School and the Center on Wrongful Convictions at Northwestern University School of Law. The report derived from this registry, *Exonerations in the United States, 1989 – 2012*, documents 1250 known exonerations, the first of which occurred in 1989. The earliest conviction in the dataset dates from 1959. This is the most comprehensive list of wrongful convictions currently in existence, and provides detailed information on each case, as well as a set of summary statistics, demographic data, and a means of sorting the information in a variety of useful ways.

What might surprise many forensic scientists is that, of the 1250 documented exonerations, 888 (71%) do NOT involve DNA. The report explains:

The number of known exonerations per year increased rapidly from 1989 through 1999, from 11 to 40 – a pattern we also observed, with smaller numbers, in the 2003 Report. Since 2000 the rate of exonerations has stabilized, with considerable year-to-year variation, in the range from 45 to 66. Throughout this period, exonerations that include DNA evidence have been outnumbered by those that do not. From 2000 through 2010 (the last year with reasonably complete data), DNA exonerations constitute 40% of the total (226/572), an average of 21 DNA exonerations and 31 non-DNA exonerations a year since the beginning of the 21st century.

As with previous accounts, the report spills a considerable amount of ink recounting the many factors associated with wrongful convictions. These include eyewitness misidentification, false confession, perjury, false or misleading forensic evidence, and official misconduct. But merely recounting those elements of a wrongful conviction does nothing more than hint at the causes; deep and careful study, experimentation, and analysis are required to begin to understand why wrongful convictions occur and how they might be curtailed.

The failure to differentiate correlation from causation has been corrected by, not surprisingly, a formal social science approach. The first important work to address that failure constitutes the other important report that we'd like to highlight, an NIJ sponsored study entitled *Predicting Erroneous Convictions: A Social Science Approach to Miscarriages of Justice*. This is the first analysis of wrongful convictions that attempts to not merely categorize apparent commonalities amongst wrongful convictions, but to ascribe causality that could lead to effective policy changes.

In order to understand what characteristics of wrongful convictions might be causal, it is necessary to compare cases of wrongful conviction to a control group – a set of cases that are similar, but that did not result in wrongful conviction.



Interestingly, although technology over the last couple of decades has increased at a rapid pace, our ability to interpret and ascribe meaning to the results produced by that technology have lagged.

tion. This turns out to be a classic social science investigative approach, comparing “hits” to “near misses.” In order to collect the “near miss” cases, the researchers looked for cases in which an indictment was issued, but in which the case was dismissed prior to trial. The researchers also used formal statistical analysis, including bivariate analysis and logistic regression, to parse their data. This provides an evidence-based approach to the problem, in contrast to the previous attempts, all of which relied on simple observation and categorization.

The results reported by this group challenge much of the conventional wisdom that has accumulated in recent years, and also has roots in much earlier work. We learned from this treatise that the approach of identifying shared factors among cases, and identifying them as causes, was initiated by Edward Borchard’s 1932 monograph, *Convicting the Innocent*. Borchard’s documentation of 65 cases of wrongful conviction in the US was amongst the first to draw attention to the problem.

The researchers summarize the current body of modern work, and identify seven factors cited as correlating closely with wrongful conviction:

1. Mistaken eyewitness identification
2. False confessions
3. Tunnel vision
4. Perjured informant (snitch) testimony
5. Prosecutorial error
6. Inadequate defense representation (bad lawyering)
7. Forensic error

It is, of course, the last, that has generated so much bad blood between factions in the innocence and forensic science communities. The current NIJ publication provides interesting commentary on the role of forensic science in wrongful convictions. But before we get to that, we’d like to bring to your attention some of the other remarkable results generated by this study.

Of particular note are several characteristics typically believed to cause wrongful conviction, but are refuted by the current work; these factors have become so readily accepted that they have attained conventional wisdom status. They include: the race of the defendant, snitch testimony, false confessions, police error, and various elements of eyewitness testimony. This study reveals that, while these characteristics occur in a relatively large proportion of both false convictions and near misses, they are similarly represented in both, and thus appear to lead to indictment, wrongful or otherwise, but not necessarily to erroneous convictions.

One of the most interesting results from the study related to the relative strength of the case. The researchers modified a tool originally developed by the Police Foundation as a way to probe “ground truth,” e.g. the actual guilt or innocence of a suspect. For the purpose of the study, they used their modified version of the tool to rate the strength of various categories of information and evidence in a case. (See pg. 51 of the study) What they found is something that few would have predicted: a weak prosecution case was more likely to lead to a wrongful conviction than a near miss. This is certainly counter to our desire as a society: we would like weak cases to

result in fewer convictions, rather than wrongful convictions.

So why do weaker cases carry a higher risk of wrongful conviction? Further investigation into the case set revealed that when the facts of the case were weak, prosecutors tended to engage in behaviors that bolstered the strength of their case. Examples included failure to turn over Brady evidence or enlisting snitch testimony. As prosecutors, despite weak evidence, become increasingly invested in their case, they fall prey to classic confirmation bias – ignoring or discounting contrary evidence and seeing only confirmatory information. This plays into the systemic tendency toward tunnel vision that we discuss later.

The authors took a similarly academic approach to forensic error. They emphasize something that the forensic community has always known – that forensic error occurs much more often in interpretation or testimony than during analysis. Historically, this included issues such as failing to clarify that the victim blood type was the same as the detected type, which was also coincidentally the same as the suspect. Statistical errors in both biological and non-biological evidence were common, either overstating the statistical strength, or providing a statistic when no foundation existed upon which to base one. Interestingly, although technology over the last couple of decades has increased at a rapid pace, our ability to interpret and ascribe meaning to the results produced by that technology have lagged. This is a reoccurring theme in our writings (Rudin and Inman 2010, 2012) and we see the effects on a daily basis in our work. Thus forensic error in the interpretation of physical evidence and in testimony remains a factor that bears scrutiny in current convictions. The suggestion that “... *previous policy recommendations that have focused on improving the quality of forensic laboratory procedures should be revisited to emphasize quality control at the interpretation and testimony stages ...*” will, or at least should, stimulate discussion in the forensic community.

In summary, the researchers offer an updated set of 10 statistically significant variables that appear *causal*, not merely *correlated*, to erroneous convictions:

1. State Death Penalty Culture (Executions per Population)
2. Age of Defendant •
3. Criminal History of Defendant •
4. Strength of Prosecution’s Case
5. Intentional Misidentification •
6. Forensic Evidence Error •
7. Prosecution Withheld Evidence
8. Lying by Non-Eyewitness
9. Strength of Defense •
10. Defendant Offered Family Witness

They submit that their model based on these variables “... *can be used to accurately predict an erroneous conviction versus a near miss nearly 91% of the time.*” That is powerful and useful stuff.

Finally, they offer a qualitative conclusion that grew from discussions with a multi-disciplinary expert panel they had convened as part of the project. This conclusion was not surprising to us, as we have made the same observation. (Ru-

din and Inman 2004) They conclude that tunnel vision, more formally labeled 'escalation of commitment,' explains how a cascade of errors can lead to an erroneous conviction. Rather than requiring each piece of the system to act as an independent check on each of the others, systemic breakdown engenders classical confirmation bias that in turn leads to ignoring contrary evidence and information. The researchers suggest that a process that fails to detect or correct initial errors, and facilitates tunnel vision, is ultimately much more critical than any one of the individual factors in leading to a wrongful conviction. *"Indeed, if there is but one conclusion from our research it is that, overall, the erroneously convicted are truly cases of systemic failure."* However, this also suggests a way forward in terms of policy recommendations. Although improvement can and should be sought in each of the individual categories of aggravating causes, a sea change in approach to investigating change at the systemic level should ultimately prove more effective at minimizing wrongful convictions.

Obviously this is only a short summary of some points that resonated with us. We recommend to you the entirety of both the NIJ study and the Registry of Exonerations.

While we fully intend to continue eating, drinking, and discouraging for a long time to come, we will not be recording the proceedings of those sessions as regularly as we have for almost a decade and a half. When we have something important to say, you'll hear from us.

References

Registry of Exonerations: www.law.umich.edu/special/exoneration/Pages/browse.aspx

NIJ study: www.nij.gov/topics/justice-system/wrongful-convictions/Pages/predicting-preventing.aspx.

Yeshiva University Innocence Project; Causes of Wrongful convictions: www.innocenceproject.org/understand

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Rudin, N., and Inman K., Who speaks for forensic science, *CACNews*, 4th Quarter, 2008, pg. 10

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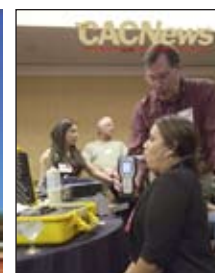
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California Association of Criminalists

CALL FOR PROPOSALS

2014-15 McLaughlin Endowment Funding

The A. Reed and Virginia McLaughlin Endowment of the California Association of Criminalists is beginning its annual cycle of grant funding. During 2013-2014, grants for training, scholarships and research totaled over \$26,000. Applications and requests are now being accepted for 2014-2015 funding.

The Training and Resources (T&R) Committee Chair must receive applications for *training funds* by **Friday, February 21, 2014**. (See Section I below for specific application information).

The Endowment Committee Chair must receive requests for all *scholarships or research* funds by **Friday, March 21, 2014** for consideration. (See Sections II & III below for specific information).

Specific Requirements for Proposals

I. Training

A. General

Requests to sponsor training must be submitted earlier than other requests so that the Training and Resources Committee can review them and coordinate with other CAC training efforts. The T&R Committee shall prioritize these requests where necessary and shall consider how the requested training fits into the overall training needs/desires of CAC members. The T&R Committee shall forward ALL requests to sponsor training together with their recommendations to the Endowment Committee for their consideration.

B. Request Format

The two-page Application for Training Funding should be completed. This application is available on the CAC website (www.cacnews.org) and requests the following:

1. Class title, outline and description of ownership (public or privately owned).
2. Information (curriculum vitae) on instructors.
3. Class logistics: minimum and maximum size, limitations and location.
4. Class coordinator/contact person.
5. Student interest/demand supported by T&R Survey and/or the number of applications on file.
6. Course budget including supplies, texts or handouts, instructor fees, travel/per diem, and site costs. Amortize material fees for # of CAC member/class.
7. Student fees.

Send completed Application for Training Funding forms to the T&R Committee Chair by Friday, February 21, 2014.

II. Scholarships

A. General

The A. Reed and Virginia McLaughlin Endowment offers scholarships through academic institutions rather than directly to students. Proposals from academic institutions shall set forth their general criteria for student scholarship selection. The academic institution shall be responsible for selection of student recipients of such scholarships and shall report awardees and amounts to the Endowment. Students receiving funds must be members of, or applicants to, the CAC. Students who are interested should request application information directly from their academic program coordinator.

B. Request Format

Proposals for scholarships must contain both a summary and detail section containing a general description of the academic program, its goals, and information on how the proposed funds would be used. For example, will funds be used for tuition and fee relief, stipendiary support, to underwrite student research, etc? The detailed description should include information on recipient selection criteria and who will perform the selection. Scholarship fund administrators must be named, including who will be responsible for submitting the mandatory annual report of activities to the CAC.

C. Reporting of Distributions

The Academic Program Coordinator must provide a full accounting of the recipients and how they meet the minimum criteria.

D. Refund of Unused Endowment Funds

Any remaining unused portion of the endowment funding shall be returned to the Endowment fund via the CAC Treasurer.

III. Technical Development and Research

A. General

The implementation of new and more efficient technical procedures related to forensic science requires the investment of time, ingenuity, and resources by those working in the field. The development of new techniques and technology can benefit the profession by one or more of the following:

1. Permitting the development of new or additional information from the analysis of certain types of evidence.
2. Implementing a mechanism for the analysis of new forms of evidence.
3. Improving the reliability of methods already in use.
4. Increasing sample throughput by improving efficiency.

Resources permitting, the CAC encourages technical development or research for the benefit of the profession. The A. Reed and Virginia McLaughlin Endowment does not generally fund professional level salary for researchers. Incidental funds for students assisting in research projects will be considered. However, neither the CAC nor the Endowment shall act as an employer.

B. Request Format

Requests for funding for technical development or research should contain the following:

1. Project name and purpose.
2. Name(s) and curriculum vitae for each researcher.
3. A brief description or outline of the project.
4. Information on the project facilities, equipment and supplies needed.
5. Information on the project site, including permission to use the site for this purpose where applicable.
6. Information on the adequacy of available space, safety planning, equipment and supplies.
7. Agreement for responsibility for disposal of products of research, including but not limited to chemicals, biochemicals, biologicals, and hazardous waste.
8. Project budget.
9. Time line and projected completion date of project.

C. Progress Reports

Progress reports will be required in writing, the frequency to be determined by the Endowment Committee. The recipient must prepare a final project report, including a summary of results and conclusions. As a condition of funding, products of research must be submitted to:

1. CAC Seminar Technical Program Chairperson with intent to present research at a CAC seminar; *or*
2. CAC Editorial Secretary for publication in a journal or newsletter as appropriate.

When problems occur or results are not as expected, funding recipients are expected to use good judgement in re-evaluating the course and goals of the project, and in modifying the project approach as necessary to maximize the project results. The project should be terminated when it is determined that the value of the project is minimal. In addition, funding may be terminated by the Endowment Committee if progress is inadequate.

The T&R Chair must receive all proposals for *training* by **Friday, February 21, 2014**.

Send proposals to:
Joseph Cavaleri
Los Angeles County Sheriff's Crime Lab
1800 Paseo Rancho Castilla
Los Angeles, CA 90032
Tel: (323) 267-6178; Fax: (323) 276-1965
jccavale@lasd.org

The Endowment Committee Chair must receive all proposals for *scholarships or research* by **Friday, March 21, 2014**.

Send proposals to:
Nessa Rosenbaum
San Bernardino County Sheriff's Dept.,
Scientific Investigations Division
200 South Lena Road
San Bernardino, CA 92415-0056
Tel: (909) 387-2200; Fax: (909) 387-2688
nrosenbaum@sbcscd.org

PLEASE NOTE:

Preference will be given to CAC members and California Universities/Colleges

Applications that miss the deadline dates will not qualify for consideration.

If you submit a proposal and do not receive confirmation from the Endowment Committee that it has been received, call the chairperson before March 21, 2014.

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connie.milton@sdsheriff.org