

# The CACNews

*News of the California Association of Criminalists • 1st Quarter 2006*



# The President's Desk

## Analysis of Evidence— How Far Should We Go?

This quarter I thought I would tackle a subject that has bothered me for some time. The question is: Should we analyze evidence that we know has little to no significance but can be misconstrued/overemphasized?

I truly do not know the right answer but I wanted other members of this association to think about this subject. The one example I consistently argue against is the analysis of the clothing or the car of a possible shooter for gunshot residue by scanning electron microscopy (SEM). I believe if I find gunshot primer residue on an item of clothing or even a car it means very little in the absence of the history of the clothing or vehicle and statements from the suspect. It cannot be related to any specific incident, it does not mean the person fired a gun, handled a gun, or was in close proximity to a gun in the last several hours. The gunshot residue could last on an item of clothing or a vehicle for several hours, days, months, or possibly years. I have heard that even a washed garment could give a positive test for gunshot residue.

The surge in popularity and visibility of criminalistics through the media has caused it to become an important if not a critical need in the successful prosecution of a case. The prosecutors and jurors expect forensic evidence to sort out the stories that have been presented. Gunshot residue is physical evidence. If an analyst states that Edward Smith, the defendant, had particles with barium, lead, and antimony (unique/highly characteristic of gunshot residue) on his shirt, most jurors will weigh this evidence heavily. If there is a lack of other evidence in sorting out the story of a case, the gunshot residue result may tip the scale. All the gunshot residue analysts I have ever talked with would emphatically state on the stand that they could not reach any conclusion to the significance of this result. Despite this, I see a prosecutor in closing argument emphasize the presence of GSR regardless of the significance the expert witness gave to the evidence during trial. The jurors are not going to remember that the analyst thought the significance of the presence of gunshot residue on Mr. Smith's shirt could not be determined and I am afraid they will place undue weight on the GSR results. I have had several discussions with members of the scientific community and outline below some of the pros and cons of analyzing and not analyzing this kind of evidence.

The reason for NOT analyzing this kind of evidence:

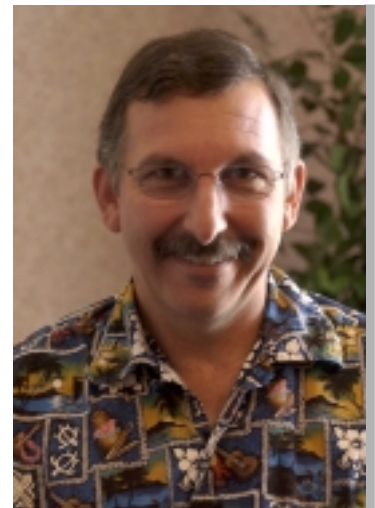
**1. Too much weight will be given to this analysis.** True story: I was arguing my case for why I generally refuse to do clothing for SEM determination of gunshot residue to a deputy district attorney. He then stated that I obviously didn't realize how important this evidence was. In one of his (the DDA) cases a juror was on the fence as to voting for conviction but the presence of the GSR on the shirt persuaded him the defendant was guilty. My response was shock and I said that I hoped there was more evidence than just the GSR. The DDA did not respond.

**2. The analysis of such evidence cannot be linked to a particular crime.** What makes GSR on hands relatively important is that it persists for no more than six hours and can be remotely linked to a recent shooting. Since the persistence of GSR on clothing or vehicles is unknown, we can't even begin to place it in context with a particular shooting incident.

My big fear is  
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longer in a support  
role in the  
prosecution  
of a case.

\* \* \*

As far as I am  
concerned nothing  
beats a good  
investigation.



**Jim Stam**  
CAC President

please turn to page 4



# First Quarter 2006



## ***On the cover...***

*Bob Blackledge sits for a demonstration of stereo fluorescence at the Fall CAC seminar hosted by LAPD lab. The display was offered by Daniel McGraw, PhD, of Light Diagnostics (standing). Lots more scenes from this event inside this issue.*

## C O N T E N T S

- 2 President's Desk**  
Jim Stam
- 4 CACBits / Announcements**
- 5 Editorial Secretary**  
Ron Nichols
- 6 Feedback**  
Letters to the Editor
- 8 Fall Seminar**  
Abstracts of Papers Presented
- 15 A Magnifying Experience in Chicago**  
Essay: Dianne Burns
- 16 The Proceedings of Lunch**  
The Shifty Paradigm, Part II
- 19 Fall Seminar Photo Album**  
Real to Reel was the theme
- 34 Call for Proposals**

## P U B L I C A T I O N   S T A F F

Art Director  
**John Houde/Calico Press, LLC**  
(206) 855-1903  
john@calicopress.com

Editorial Secretary  
**Ron Nichols**  
(925) 280-3623  
ronald.nichols@atf.gov

Technical  
**Jennifer Shen**  
(619) 531-2655  
jshen@pd.sandiego.gov

Webmaster  
**Mark Traughber**  
909-361-5000  
mark.traughber@doj.ca.gov

Advertising  
**Vincent Deitchman**  
(510) 238-3386  
vpdeitchman@oaklandnet.com

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# CACBits • Member / Section News

## President's Desk, *cont'd*

**3. We can use our staff time to focus on analyses that have more potential to be meaningful.** Many laboratories have extensive backlogs and time spent on these analyses wastes precious resources that could be spent on other casework.

The reason FOR analyzing this kind of evidence from a detective or prosecutor:

**1. We are here to provide any information/leads for investigators.** The results we obtain in our analyses may help investigators elicit a confession or get a search warrant. A positive or negative result gives the investigators more information. The results of our analyses may help in the reconstruction of a crime. The value for a GSR analysis, either on hands or clothing, would come from proving a suspect has lied when he/she states "I have never been around a firearm at any time" and then we obtain a positive result.

**2. If we do not analyze this evidence, particularly after a detective requested such analysis, the defense can argue that we were hiding something.** This kind of argument from the defense does play well with the jury. The reasons we state; that we did not analyze the clothing for GSR because we have a large backlog (see #3 above), or because we do not believe such analysis is probative (see #2 above), do not play well with a jury, many of whom believe we should analyze all evidence in a case; particularly when requested by a detective. This is unfortunately a prevailing attitude with many investigators and nearly all prosecutors as well.

**3. Who are we to say what is important and what is not.** A positive gunshot residue does mean something. We give our proper interpretation and the judicial system provides adequate checks and balances so that this evidence alone will not lead to a guilty or not guilty verdict.

I have wrestled with our ethical responsibility in performing our work. I used the GSR example only because I am so familiar with it. I am sure there are several other kinds of evidence that we analyze that are not only a waste of time but can easily be given much more weight than deserved, but the detective or prosecutor decides it is critical to his/her case.

My big fear is that forensics is no longer in a support role in the prosecution of a case. As far as I am concerned nothing beats a good investigation. Investigators must continue to investigate cases and interview and interrogate witnesses effectively. Lawyers must realize we do not have the resources to analyze everything and they must continue to "lawyer" their



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[www.cacnews.org](http://www.cacnews.org)

## Call for Proposals

The CAC Endowment Committee is accepting proposals for funding by the A. Reed and Virginia McLaughlin endowment. The Endowment Committee will accept three types of proposals (training, scholarships and technical development/research).

The deadline to submit proposals for **training** is January 27, 2006.

The deadline to submit proposals for **scholarships** or **technical development/research** is March 24, 2006.

For additional information see the "Call for Proposals" in this issue of the CACNews. You may also email the Endowment Committee chair, Marla Richardson: [marla.richardson@doj.ca.gov](mailto:marla.richardson@doj.ca.gov)

For an application for training funds, visit [www.cacnews.org](http://www.cacnews.org) and click on the link to "Endowment Forms."

Applications for funds are often received incomplete. Please remember to fill out all portions of the applications. Incomplete applications will generally not be considered for funding.

## Job Openings Posted on the Web

Looking for work? Please check [www.cacnews.org](http://www.cacnews.org) to see the latest postings, including one for Assistant Professor of forensic chemistry, San Jose State University.

**Your Name HERE!**



Please check your listing in the 2004 Member Directory and send corrections to the Membership Secretary  
[adutra@pd.sandiego.gov](mailto:adutra@pd.sandiego.gov)

# Mistake Mistakes

### A much better thought...

I liked what my wife was wishing all this past Thanksgiving, considering we all fill up on food. She would say, "Be filled with thanks-giving." I think that is a much better thought than turkey and stuffing hangovers.

### Non-responsive...

A recent encounter with a Marine recruiter seeking to add our son to his list provided us with plenty of opportunity to say, "Non-responsive" when he supposedly offered answers to our questions. Our unspoken words were, "Don't insult our intelligence." I wonder how many times jurors have felt that with some of the lame responses we have all lazily provided in court upon occasion?

### The unnecessary Giants update...

There is none! Not one thing of note. Time to look elsewhere..."I like Ike!" (Look towards basketball season and the Golden State Warriors.)

### Who's the headline writer?

"Why we cannot rely on firearm forensics." An article devoted to the challenges involved with gunshot residue on hands.

### Want more?

"Juvenile court to try shooting defendant."—When all else fails!

"Miners refuse to work after death." —Slave drivers!

"Panda mating fails; veterinarian takes over."—That's just wrong.

"Enraged cow injures farmer with ax." —Imagine that blood spatter interpretation.

"Queen Mary having bottom scraped." —Ouch!<sup>1</sup>

### Positively speaking...

There will always be challenges to what we do. I have recently learned that rather than responding to every little detail in every little challenge sometimes it is more beneficial and much less work to simply respond by concisely offering the scientific support and foundations upon which our disciplines are based. It not only is much more pleasant to read but also opens lines of communication rather than slamming doors and burning bridges.

### A proverb a day...

A fool gives full vent to his anger, but a wise man keeps himself under control.<sup>2</sup>

### Just thinking...

Recently, a reporter from the Boston *Phoenix* wrote an article on the plight of the firearms identification section of the Boston PD crime lab. In that article, he quotes an assistant crime laboratory director who I will leave unnamed because the name is not important. It is the implications of what was said that I will be discussing. The writer quoted this prominent manager as saying, "It's an unforgiving field. The lab does not want a person who has made a mistake to continue working in the lab." All I can say is, "So much for corrective action."

Let's look again at what was said. "It's an unforgiving field. The lab does not want a person who has made a mistake to continue working in the lab." It certainly sounds admirable. In fact, while I cannot prove this with statistics, if push came to shove, I suspect that many laboratory managers would line up with this position, if not privately then at least publicly. After all, if we lose our public perception of infallibility then all confidence is lost. Considering that our very lifeline as a laboratory rides on our reputation, it is critical that it be protected at all costs.

There has been much talk, especially from those on the defense side, about the prosecution bias that they contend is present in laboratories—the pressure to make that identification, the pressure to make that link, or that pressure to make the final connection necessary to put this guy away. The contention is that this pressure may cause the evidence to be interpreted with a pro-prosecution bias when the evidence really does not call for it.

How about the pressure never to make a mistake? How about the implied, never spoken, attitude that one mistake and you are done—not only in that laboratory but in all others too? How does this affect that rather new forensic scientist with a family to support and school loans to pay off? How does this affect that rather seasoned forensic scientist who is looking towards retirement just a few years down the road?

Self-preservation is a very strong motivator. The questions I have pondered are how much do forensic scientists feel the pressure of self-preservation and how does this motivation affect ethical integrity? Unfortunately, for various reasons, these questions may very well be unanswerable.

In last quarter's issue, Sgt. Gerard Dutton mentioned a mistake he made with regard to a proficiency test. He offered ways in which his "error would have been disguised



**Ron Nichols**

*CAC Editorial Secretary*

Self-preservation is a very strong motivator.  
... how much do forensic scientists feel the  
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and no one would have known”<sup>3</sup> Yet, this was not an option for him. Such an option is pretty straightforward when one works in an environment in which there is some measure of grace in action.

Mistakes are going to be made—that is simply a fact of life. When I shared with a friend what this quarter’s message would entail he told me of a previous lab manager who advised him that what an individual does after making a mistake is the true measure of the person. I suggest that such an environment fosters a higher level of ethical integrity than does an environment in which an individual is afraid for their career of making a mistake.

Let’s look at it a different way. In one situation, the individuals in a laboratory are being positively motivated. They know that if a mistake is made, it will have a negative impact. Yet, the environment is such that there will be genuine attempts at restoration and, in the end, everyone will come out better. The individual will have an increased appreciation for diligence in casework. The laboratory will have increased respect for appropriately dealing with very difficult issues. Furthermore, it might be that through this constructive process the laboratory has identified a systemic problem that would otherwise have gone unnoticed. Public image may take a hit but, it will be restored as the public sees that the laboratory is willing and able to hold itself accountable for the work product. There is a positive motivation at work in this place.

In the other situation the individual is negatively motivated through fear. They are fearful of making a mistake because if one is made then the consequences will be job (and livelihood) threatening. This is the type of environment where the best solution for the laboratory is to save public face by identifying the source of the problem as the individual—take the individual out of the equation and we are all better. Yet, what they fail to realize is that this environment of fear-based responses is very much a systemic problem and will not go away when the individual is dispatched.

I am not trying to excuse unethical behavior. No matter the consequences, there really is no excuse for dishonesty. At the same time, the laboratory, and this profession, has an opportunity to be very proactive in this issue by removing a very real trigger for such dishonesty—and that is by removing fear from the workplace.

Until next time, my best to you and your families.

Row

<sup>1</sup> See [www.fun-with-words.com/ambiguous\\_headlines.html](http://www.fun-with-words.com/ambiguous_headlines.html) for more.

<sup>2</sup> Proverbs 29:11, NIV.

<sup>3</sup> Gerard Dutton, “Ethics in Forensic Firearms Examination,” *The CACNews*, 4th Quarter 2005, 27.

## FEEDBACK

The *CACNews* prints letters to the editor that are of interest to our readers. We reserve the right to edit letters for brevity and clarity. All submissions to this section become the property of the *CACNews*.

### New Deadline Announced

Starting in August 2006 the deadline for articles submitted to the *CACNews* will be moved up from Sept. 1 to Aug. 15. This will ensure the issue is in the hands of our members prior to the Fall seminar. The other deadlines are unchanged and can always be found in the tiny print on page 3.

*Ed.*

### More Than Technical

I just got the new issue of *CAC News* and I just wanted to let you know that I really enjoy your articles. The longer I’m in forensics, the more I realize how critical the non-technical aspects of forensics are to doing your job well. Thank you and keep it up!

*Jennifer Riedel*

### Teacher Resource

Below is an interesting website. It might be especially useful if you teach forensic science classes.

[www.deathonline.net/decomposition/index.htm](http://www.deathonline.net/decomposition/index.htm)

*Bob Blackledge*

### Pop Quiz

Q: What is unusual about one of the authors of the following journal article?:

“Postmortem Drug Redistribution”; F.E. Barnhart, H.J. Bonnell, and K.M. Rossum; *Forensic Science Review*, Vol. 13(2), July 2001, pages 101-129.

A: K.M. Rossum is a convicted murderer currently serving time in the California prison system. She was convicted of using fentanyl to poison her husband.

She had access to fentanyl because she was employed in a toxicology lab. The article must have been “accepted for publication” after she had murdered her husband but before she was brought to trial. I say this because in the “About the Authors” page at the end of the article it says: “She is a former staff member in the toxicology laboratory of the San Diego County Medical Examiner’s Office, presently employed as a oligonucleotide chemist with Trilink BioTechnologies (San Diego, CA).” Although her husband’s death was initially thought to have been a suicide, the finding of fentanyl traces raised a red flag and investigation revealed that Rossum was having an affair with her supervisor in the tox lab. Her supervisor was fired and she left for the position at Trilink.

At least a couple of books have been written about this case, but you can find a brief synopsis at:

<http://toogoodreports.com/column/general/shaw/20021118.htm>

*Bob Blackledge*



Announcing. . .

## Shooting Incident Reconstruction

Lucien C. Haag

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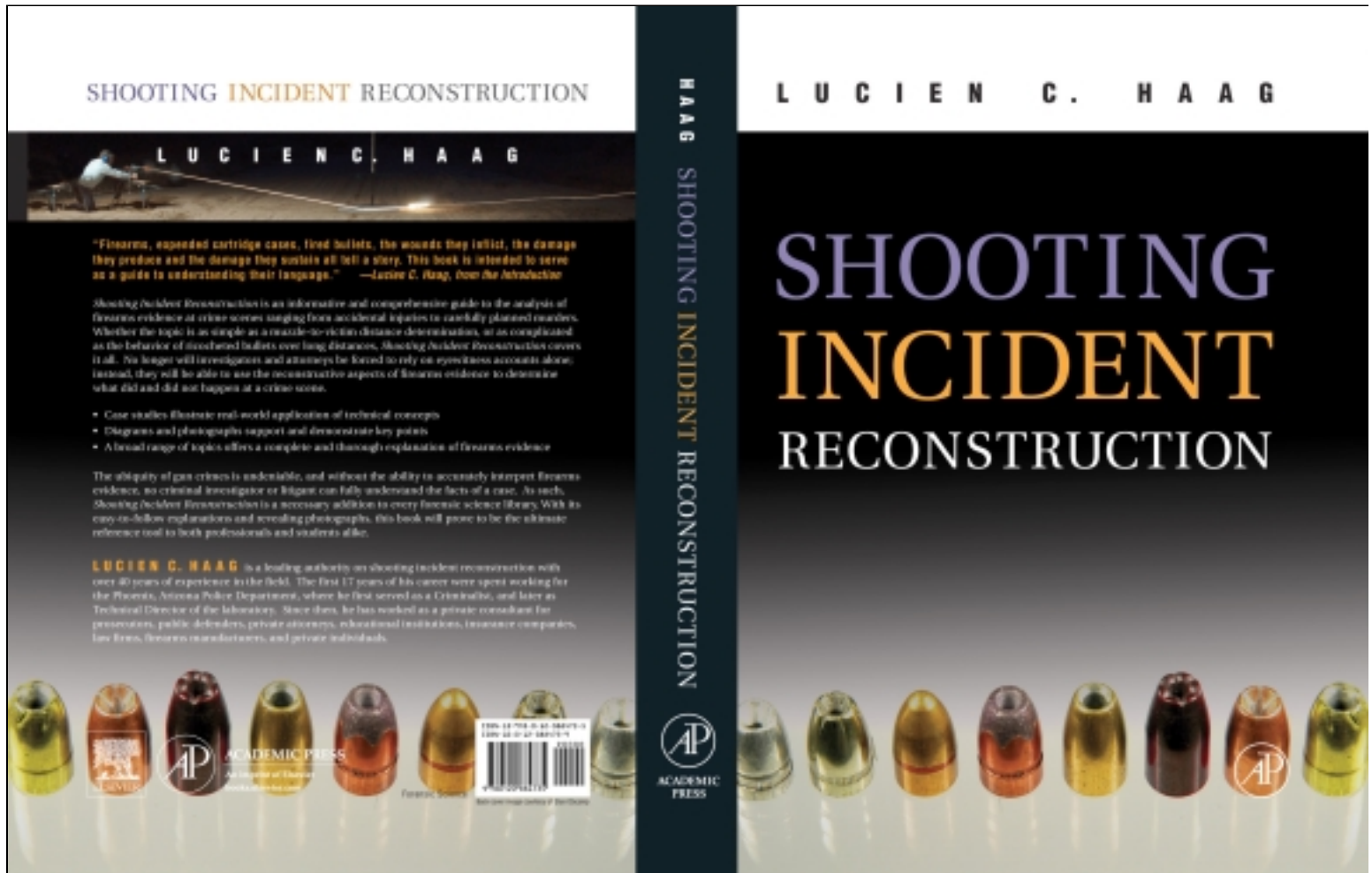
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# ABSTRACTS

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from the  
Fall 2005  
CAC Seminar  
Los Angeles

## **Proficiency Testing: The Unintended Consequences**

*Peter D. Barnett - Forensic Science Associates*

A recent trace evidence proficiency test resulted in a substantial number of the test takers failing, for one reason or another, to correctly identify one of the two questioned samples. The sample that was the same as the exemplar sample was correctly identified by essentially all participants, but the second sample, which was different than the exemplar sample, was either not identified or incorrectly identified by approximately 30% of the participants. One participant in this proficiency exercise commented in the response form that the fiber could not be identified because the laboratory did not have an appropriate reference sample. This response was considered by the laboratory director to be "significant discrepancy" that required a notice be sent to the local prosecuting authority characterizing the "discrepancy" as a "Brady Issue." The laboratory reviewers who approved the analyst's work were explicitly absolved of any responsibility by the laboratory director. As a consequence, the analyst was removed from casework, required to take further proficiency tests, subjected to having his reports co-signed by other analysts after being returned to duty, and, presumably, permanently placed on the prosecuting authority's "Brady list." Once a witness has been labeled with the "Brady" pejorative, prosecuting attorneys have a personal ethical obligation to advise defense counsel of that fact in all cases where that witness might be called to testify. Do the facts in this case require such a response from the laboratory director? Do the case reviewers bear any responsibility in this situation? What are the consequences of the "Brady" label? Given the same set of facts, would all analysts be subject to such disciplinary action?

## **CSI Case Study: The Exploding Vending Machine**

*Bob Blackledge - Naval Criminal Investigative Service  
Regional Forensic Laboratory*

In January of this year I received a phone call from an NCIS Special Agent in Okinawa. At about 0900 (Okinawa time), a dry goods (snacks) vending machine exploded in an employee break area of a base garage. At the time of the explosion, an employee (who received minor injuries) was apparently inserting a dollar bill into the machine. The explosion had not been an insignificant little "pop." The machine's door had been hurled some 20 to 30 feet away, and machine parts and snacks were all over the floor in front of the machine. The agent was requesting guidance on how to process the scene. After some discussion I recommended that he treat it as he would a suspected arson scene, i.e. - all of the collected physical evidence

should be sealed in airtight containers. I also requested that he send me copies of all photographs taken at the scene. Later, a maintenance manual for that vending machine model was obtained. Several things in this case turned out to be "red herrings." 1) The machine had been serviced the previous day and the dollar bill inserted by the victim was the only one in the machine's cash box. 2) The victim claimed that he had inserted a dollar bill into the machine and successfully obtained a candy bar. He said he then decided to get another candy bar, but this time the machine rejected his dollar. He said he used his cigarette lighter to smooth the wrinkles in the bill, and that when he reinserted the bill the lighter was still in his hand and that's when the explosion occurred. 3) A label for a commercial insecticide was found amongst the machine debris. The island has a considerable insect problem. In a cabinet in the same room as the vending machine were numerous brands of commercial insecticides, including several whose contents were flammable or were in aerosol cans having an isobutane (or other flammable gas) propellant. A vending machine company representative told me that they had had previous cases where individuals had placed commercial insecticides inside the machines. 4) Among the snack products available were various types of chips, and numerous chip pieces were found in the product receptacle. 5) In an adjacent room was a portable oxy/acetylene torch. This presentation will show you the scene photographs and take you through the investigative/analytical process followed by me, and will conclude with the case's eventual resolution.

## **Evidentiary Foreplay**

*Janis Cavanaugh - La Puente Valley Regional Occupational Program, Public Safety Department / Forensic Science Academy*

Forensic evidence and its credibility: An examination of employee certification and crime lab accreditation. The field of forensic science has been on a voluntary basis when it comes to individual certification and lab accreditation. It is not mandatory for the individual to be certified or the facility to be accredited. With the increase courtroom dismissal of improperly handled evidence, important cases are in the hands of whether or not the individual collected the evidence properly and whether the lab processed the evidence in accordance to a set of accredited standards. Does the accreditation and certification process add to the conviction rate of cases? Do certified employees collect evidence more precisely? Does the accredited lab process evidence with additional effectiveness and efficiency? Standardized methods of training leading to credentialing can provide significant results if these measures are adhered to and regulated by an agency that has a stake in the outcome.

## **The Devil Made Me Do It**

*Nand Hart-Nibbrig - Los Angeles Police Department,  
Scientific Investigation Division  
Eucen Fu - Los Angeles County Coroner's Office*

Antron Singleton, a 25 year old, up and coming rap musician, sometimes called "Big Lurch", was in Los Angeles to record a new Rap Music album. While in L.A., he stayed at an



acquaintance's apartment where he smoked phencyclidine (PCP) with some acquaintances. Some time later he was observed by police officers walking naked down Figueroa Blvd covered with blood. The police detained him and learned that a homicide had just been committed. He was transported to a local hospital for evaluation due to his bizarre behavior and later pumped of his stomach contents for analysis. Investigation at the acquaintance's apartment revealed not only that a homicide had taken place, but that the female victim had been eviscerated and partially cannibalized. LA Coroner Criminalist, Eucen Fu and LAPD Criminalist, Nand Hart-Nibbrig, in a collaborative effort will present an expose on multiple aspects of this case from crime scene blood stain pattern analysis to toxicology and autopsy findings, and lastly, the trial leading to conviction. A brief televised news segment offers some insight into this unusual killer.

### **Murder and Molecules: Forensic Science in Mystery Fiction**

*Harold Goldwhite, PhD – Department of Chemistry and Biochemistry, Cal State, Los Angeles*

A brief illustrated history of mystery fiction in the past two centuries will focus on the role played by forensic science. In a number of instances in the past, mystery authors have anticipated the introduction of forensic methods by police departments. Initial interest in forensics on the part of authors during the period covered was followed by a period of relative neglect of forensics in mystery fiction. The past few decades have seen a rekindling of this interest not only in books but also in scripts for television. Mystery and other fiction may be a source of new directions for forensic science in the future.

### **Black Dahlia Investigation 1947-2005**

*Steve Hodel – Retired LAPD Homicide Detective / Author*

Presenter is the author of the international bestseller, *Black Dahlia Avenger: A Genius For Murder*. Published in 2003, the book presents the author's investigation and findings relating to the 1947 murder of Elizabeth Short, better known to the world as the Black Dahlia. The author will detail his investigation with special emphasis on the forensics of the case, followed by an opportunity for questions and answers. Steve Hodel was also a 24 year veteran of the LAPD. He retired as a Detective III in 1986 after serving 17 years in Hollywood Division Homicide.

### **Identification, Isolation and Examination of Tryptamines Family of Controlled Substances**

*Javed Khan – California Department of Justice Riverside*

Tryptamine comes in a natural and synthetic form. Some analogs of tryptamine are natural and some are synthetic. Natural tryptamine analogs like psilocyn and psilocybin are found in psychoactive mushrooms. Bufotenine is found in the skin glands of toads. Bufotenine has also been isolated from Amanita-a mushroom – commonly known as a toadstool. The drugs in this family are occasionally submitted to the forensic

laboratories. Abuse of the tryptamine is on the rise among college kids in the USA.

### **DNA for Dummies: An Introduction to Forensic DNA Analysis**

*Harry Klann, Jr. – Los Angeles Police Department, Criminalistics Laboratory*

I intend to present a brief introduction to forensic DNA typing using Short Tandem Repeats (STRs). The topics to be discussed will include the objectives of forensic DNA testing, the polymerase chain reaction (PCR), the *ABI PRISM 310 Genetic Analyzer*, STR data, and the calculation of the population statistic. I will also mention a few common STR artifacts such as "minus A", "stutter", and "pull-up". A typical DNA mixture profile will be displayed along with an electropherogram depicting the appearance of degraded or trace sample profiles. Two electropherograms, one from a murder case and one from a paternity case will be displayed and explained. CODIS, the *Combined DNA Index System* will be mentioned, and LAPD "cold hit" statistics will be presented. Specialized DNA typing techniques such as mitochondrial DNA, Y-STRs, and Single Nucleotide Polymorphisms (SNPs) will be given an honorable mention.

### **Forensics in Television**

*D.P. Lyle MD – Technical Consultant and Author, Matt Witten – Writer and Supervising Producer for Television*

How does Hollywood get it right – and how does Hollywood get it wrong? How does a writer reach out for the expert help he needs – and how does the expert manage to keep a straight face while answering silly questions? TV writer Matt Witten (*House*, *Law & Order*, and *CSI: Miami*) and forensic consultant Dr. Doug Lyle (author of *Forensics for Dummies*) will reveal how writers and consultants work together to craft a believable story.

### **CSI: Vegas/Miami/New York – Making Friends with the Enemy**

*David Miranda – Forensic Specialist/Crime Scene Instructor, Pasadena Police Department*

We already know the problems that these very popular TV shows have caused the forensic industry in terms of new and unrealistic levels of expectation. We've seen the negative effects at crime scenes (victims and witnesses), in the courtroom (juries and savvy defense attorneys), and even, at times, within our own departments. Despite all of this, there are positive aspects that we may be missing and, consequently, not using to the benefit of our industry and our situations. Since we cannot control what is produced in the entertainment world, we can learn to make friends with it. It is the intent of this presentation to provide some practical examples of this approach as well as stimulate thinking for other approaches to this thorny issue.

## **Medical Examiner: Dealing with High Profile Cases – Review of the Past and Valuable Lessons**

*Thomas T. Noguchi, MD – University of Southern California, Keck School of Medicine, Los Angeles*

### **Learning Objectives:**

1. Medical Examiner in a high profile case – Analyze multiple factors involved in success of the outcome, such as scientific aspect, evidence handling, scene investigation, timing of action, media relations, resources allocation, assignment of personnel, leadership in crisis management of unanticipated events.

2. Issues of development of new concepts such as the extension of suicide prevention program to looking into clues for “cry for help” as applied to the death investigation of Marilyn Monroe case.

3. There was a series of emotional and heated community pressures on police involved deaths in the Watts riots in 1965 and mid 1970’s, and in the case of the death in jail of a popular college football player, Ron Settle.

4. Issues on communication to the public through the media: Deaths of William Holden and Natalie Wood, the Media, Paparazzi and the Medical Examiner. In high profile cases, every step will be re-examined and challenged, and overall outcome may be affected, even though the scientific aspect has been handled properly and correctly. It is of importance for the administration to be in a position to support all phases of the operation. A knowledgeable and media skilled person should be assigned to handle public information. In high profile cases, every action will be magnified by the press, for getting an exclusive story or a scoop is the life of the news people. One cardinal rule is “no exclusive” dissemination of information. Information should be released in a timely fashion at a press conference open to all the press. Establishing a relationship of trust and cooperation with the media is essential.

5. Conspiracy buffs on legendary cases: There are groups of enthusiastic contrarians pursuing the story of Robert Kennedy and Marilyn Monroe. The talk will be complimented with some illustrative materials.

## **The Flaws and Ambiguities of the Instant Shooter Identification (ISID-1) Kit**

*Robby Sinick – Forensic Science Associates*

The “Instant Shooter Identification Kit” (ISID-1) is designed, according to the manufacturer’s promotional literature, to “[Help] law enforcement to quickly determine who has fired a weapon while in the field—yields result in about five minutes!” The ISID-1 kit is based on a combination of two techniques - a chemical test for nitrates and nitrites and an electron microscope examination for characteristic particles produced during the discharge of a firearm. The manufacturer’s literature extols the virtue of this approach as “Effective! Two Tests in One Kit” so that “Results obtained in field yield investigative data” and “When desired, positive test results can be delivered to Crime Lab for SEM [scanning electron microscopy] test, which can provide evidentiary data.”

The chemical test for gun shot residue that gives a “positive return” is based on the chemical reaction of diphenylamine with nitrates and nitrites (constituents of nitroglycerine and nitrocellulose which are components of gunpowder). When

combined with acid, diphenylamine reacts with nitrates or nitrites to produce a blue color. This test was first described over 70 years ago, and was traditionally referred to as the “dermal nitrate” or “paraffin” test. Despite concerns about the value of the test due to the possibility of false positive reactions (e.g., a positive test result from something other than gun shot residue) and false negative reactions (e.g., a negative result from the hands of a person who recently discharged a firearm), this test was used by law enforcement for many years, but by the mid 1960s the test was found to be so inherently unreliable that its use was abandoned. The ISID-1 kit provides nothing to remedy the unreliability of this procedure. A case example will be used to illustrate the danger of promoting and selling these kits to law enforcement agencies.

## **What the Plant?**

*Rima Soury – Investigative Assistant (Intern) & Master’s Degree Student*

Plants? Why plants? Because plants talk just like a “perp” does in the interrogation room! Believe it or not plants are evidentiary tools and sometimes they are used as weapons. It might be easy to see how a plant can be used as a weapon, especially in cases involving drugs & poisons. Why should we collect plant traces? What do they look like? Where do we find the evidence? More importantly what will plant traces reveal?

Learn how different traces of plant evidence can be used and tested in the laboratory.

Plants can help you “crack a case” from kidnapping to plane crashes. Find out how!

## **Forensic Analysis of Automotive Light Bulbs**

*John C. Steiner – KEVA Engineering, LLC*

The forensic analysis of aviation and automotive crashes has provided a wealth of information and research into the response of incandescent filaments to impact. This research has been fueled by the need to understand the condition of warning lights, headlights, taillights, and brake/hazard lighting. Heated tungsten filaments respond differently to impact than cold filaments. This simple observation provides a wealth of knowledge to the forensic investigator.

Variables that must be accounted for in the analysis of filaments include lighting type, lighting location, flashing light frequency, impact severity and impact orientation.

This presentation will review the background, science and application of light filament analysis in an automotive impact environment. Investigative examination and testing will be discussed. Additionally, emerging technologies such as modern LED lighting will also be discussed.

## **DNA Testing Problems in Texas and Virginia**

*William C. Thompson – University of California, Irvine*

In 2002 a television news investigation exposed serious problems with the DNA testing procedures of the Houston Police Department Crime Laboratory. After an external audit confirmed deficiencies in the lab’s procedures, the police department shut down the serology and DNA sections of the lab

pending a sweeping management reorganization. Subsequent investigations have uncovered two cases in which innocent men were convicted based on botched work by the DNA/serology section. Retesting of nearly 400 cases has revealed many discrepancies between HPD's reported test results and subsequent STR tests on the same samples. An outside investigative team has recently reported instances of "dry-labbing" (i.e., falsification of lab results), incompetence and error in other units of the laboratory. The DNA/serology unit is still off-line while investigations continue.

In 2004, Forensic Science Associates produced STR test results in the high-profile Virginia case of Earl Washington, Jr. that contradicted previous STR test results of the Virginia Division of Forensic Sciences (DFS). After several independent experts and an ASCLD-LAB audit team concluded that the DFS results were incorrect, and that DFS analyst Jeffrey Ban had followed incorrect procedures, Virginia's governor ordered a more extensive review of the lab's DNA casework by an independent panel. The state legislature also approved an independent oversight committee. Meanwhile, journalistic investigations have uncovered apparently serious problems with the DNA evidence used to obtain convictions in several additional capital cases.

The author of this presentation was involved in the journalistic investigations of DNA testing problems in both Texas and Virginia. He will present examples of problematic DNA casework, will discuss underlying institutional and management problems that allowed bad work to occur, and will draw lessons from these scandals for improving forensic science practices.

## **Who Was Really Behind the Wheel?**

### **A Case Study in Accident Reconstruction**

*Michael S. Varat – KEVA Engineering, LLC*

The evaluation of an automotive crash requires a careful analysis of causal factors. These factors may include seat belt use, driver inattention, excessive speed and driver impairment from alcohol or drugs. Before beginning to evaluate these complex issues, the analyst must have other, more elementary facts determined. For example, the type of car, the date of the accident and the time of day are all generally assumed to be known. When there are multiple occupants in the car, it is also usually known who was driving and who was a passenger. But what happens when you don't know who was driving? What happens when there are no independent witnesses? What happens when two people claim to be the passenger because of a desire to escape legal liability? It is at this point that the forensic investigator must step in and perform a detailed analysis of the injuries, the vehicle dynamics (motions), the occupant dynamics and the entire accident sequence in order to determine occupant seating locations. The present research demonstrates a case study in the determination of driver identification through the use of forensic investigative techniques. Vehicle dynamics, vehicle damage, occupant kinematics, injury patterns are all utilized to arrive at the answer to the question: Who was driving?

## **Reinvestigation of the Shooting at Columbine HS**

*John San Agustin, Inspector, El Paso Co. SO, Colorado Springs, CO*

## **Overall Aspects in the Jon Benet Ramsey Murder Case**

*John San Agustin, Inspector, El Paso Co. SO, Colorado Springs, CO*

## **Bombing Crime Scene Concerns**

*Paul Robi, Det., LAPD, Los Angeles, CA 90065*

## **Evolution of Criminalistics: Fact vs Fiction**

*Peter R. Deforest, D.Crim., Professor of Criminalistics, John Jay College of Crim Just., CUNY*

## **A District Attorney's Perspective of the Andrew Luster Case**

*Anthony Wold, Dep Dist Atty., Ventura Co DA's Office*

## **ABC 2007: The New Look of Certification**

*Greg Matheson, LAPD*

## **Strategies for Overcoming PCR Inhibition**

*Brian Burritt and Adam Dutra, San Diego Police Department, 1401 Broadway, MS 725 San Diego, CA 92101, bburritt@pd.sandiego.gov*

In this presentation, we will present strategies used at the San Diego Police Department to minimize the effects of inhibition in DNA testing. These include techniques to prevent the occurrence of inhibition and to recognize it and respond to it when it does occur. Two cases with several samples that were inhibited, then rehabilitated, will be discussed. In addition, we will discuss a presentation from the previous CAC meeting in which the conclusion by the presenter that a partial DNA profile was the result of degradation, and not inhibition, led to the implication of negligence or wrongdoing on the part of the casework analyst. We believe, based on a large and growing body of data, that nothing improper took place.

## **DNA Extraction of Seminal Fluid from Oral Swabs**

*Jamie Daughetee, Los Angeles Sheriff's Department*

Biological evidence associated with criminal activity can be collected from various sources, subsequently identified, and genetically profiled. Thus, in sexual assault cases, sites on the body, such as the mouth, are sampled and examined for the presence of spermatozoa. The identification and individualization of spermatozoa in these samples can corroborate the victim's account of the crime and lead to the identification of the perpetrator.

The stability of biological samples is affected by the activities of the victim and environmental conditions. In addition, detection and recovery of spermatozoa from oral swabs can be problematic, particularly with a lengthy post-copulation time interval.

Until recently, controlled studies have not been performed on the recovery and quantification of spermatozoa from the oral cavity in living individuals. The present study was de-



signed to evaluate the recovery of spermatozoa (dependent variable) with respect to time of collection post-copulation and the recipient's oral activity (independent variables).

A total of 24 oral cavity swabbings, from 5 heterosexual couples were collected at three post-copulation intervals: initial (0), 6 hours, and 12 hours. The samples were categorized by post-copulation interval of collection: initial (0 hours), 6 hours, and 12 hours. The samples were first examined by bright field microscopy at 200X and 400X magnification as Christmas Tree stained preparations. A differential extraction was subsequently preformed on the samples with the BioRobot EZ1, and the samples were later quantified with RT-PCR and STR typed by capillary electrophoresis.

Spermatozoa were recovered and successfully profiled in 33.3% of the 24 oral swabs, and all of the sperm-positive samples were from the time zero collection period. None of the 6 or 12 hour samples yielded sperm or male STR profiles. However, Y-chromosome quantitation analysis did give positive results for two 12 hour samples, in addition to all of the time zero samples. Finally, the results of this study indicate that the post-copulation time interval and the oral activity of the sperm-recipient have significant effects on the recovery and STR typing.

## **Introduction to the Forensic Analysis of Human Abortion Products and Fecal Matter**

*Donald J. Johnson, California State University, Los Angeles, School of Criminal Justice and Criminalistics, 5151 State University Drive, Los Angeles, CA 90032, djohnso5@exchange.calstatela.edu*

The purpose of this presentation is to provide the participant with an overview on the forensic analysis of human abortion products and fecal matter.

Human abortion products and fecal matter have been encountered in criminal investigations over the decades. Until recently, however, the significance of this evidence was lessened because of the poor discrimination offered by available typing methods.

In the case of abortion products, current methods now allow for the relatively simple extraction, typing, and parentage testing of nuclear DNA from embryonic and fetal tissue. However, difficulties often arise in the ability to identify and recover maternal and prenatal tissue from the abortion products. To this end, a review of developmental anatomy and physiology will be presented as relevant to forensic casework. The evidentiary value of the afterbirth will also be discussed. Casework examples will be provided to reinforce basic concepts and principles.

Recent technological advances have also allowed for the relatively simple extraction and purification of nuclear DNA from human feces. In this part of the presentation, a review on the formation and composition of human fecal matter will be provided as relevant to forensic issues. The results of a validation study on the forensic use of the QIAGEN QIAamp® Stool Mini Kit will additionally be presented. Casework examples will be provided for illustration.

## **The Use of Autosomal and Y-Chromosome SNPs on Forensically Relevant Samples: Success with SNPs Where STRs have Failed**

*Esperanza Anguiano\*, Cynthia Smitherman, Phuong Nguyen, Robert Giles, and Jeanine Baisch, Orchid Cellmark Inc., 2600 Stemmons Freeway, Suite 133, Dallas, TX 75207, eanguiano@orchid.com*

Single Nucleotide Polymorphisms (SNPs) provide powerful genetic information for forensic identification applications, genealogical analyses, and medical diagnostics. With the increasing need in the scientific community to identify forensically relevant samples, for which standard STR testing is inconclusive, Orchid Cellmark Inc. has developed an assay that provides both Y chromosome and autosomal SNP testing for human identification. The assay utilizes multiplexed PCR in conjunction with SNP-IT™, Orchid's proprietary single base primer extension technology. This multiplex assay can be run either on an automated, ultra-high throughput system called SNPStream® UHT or using ABI's SNaPshot®™ assay format on capillary electrophoresis. Specifically, extensive validation assays have been performed on a robust panel of 144 autosomal SNP markers (including amelogenin) and 89 Y chromosome SNP markers (including amelogenin). A database has been generated with the autosomal SNP markers, and sensitivity studies indicate that these markers perform well with <80pg of input DNA. Thus, this hearty autosomal SNP panel would be extremely useful for identification of forensically relevant specimens. Furthermore, the Y chromosome SNP panel is also sensitive with <80pg input DNA; and a Y-SNP database has been generated establishing haplotype and haplogroup frequencies for the major U.S. population groups. In summary, the Y-SNP panel in conjunction with the autosomal SNP panel provides a powerful tool that will enable laboratories to associate a forensic sample with a unique population group and/or establish identity.

## **DNA Typing and the Families of the Asociación Pro-Búsqueda de Niñas y Niños Desaparecidos in El Salvador**

*Nicole Inacio\*, Cristian Orrego, Brian Harmon, & Lance Gima, CA Dept. of Justice Bureau of Forensic Services Jan Bashinski DNA Laboratory, 1001 West Cutting Blvd. Suite 110 Richmond, CA 94804, Nicole.Inacio@doj.ca.gov*

In the early 1980's, a violent twelve yearlong civil war surged throughout the country of El Salvador. As a result, many children were taken by the military and brought to orphanages or given to top military officials often with scarce documentation. Many of these children, now young adults, are still alive.

In 1994, the non-governmental human rights organization Asociación Pro-Búsqueda (Pro-Search Association) de Niñas y Niños Desaparecidos (of Disappeared Children) was established to assist the families in El Salvador looking for their children. In the fall of 2003, Lance Gima, Bureau Chief, Bureau of Forensic Services, California Department of Justice (CAL DOJ) and Criminalist Cristián Orrego established a collaboration with the Human Rights Center (HRC) at the University of California, Berkeley and the Boston-based group, Physicians for Human Rights (PHR) to assist Pro-Búsqueda, founded by Father Jon de Cortina, to develop and implement procedures for collecting DNA samples (buccal) from the registered families.

In April 2004, a team of volunteers from the BFS, CAL DOJ and from PHR, traveled to El Salvador to assist Pro-Búsqueda with this task.

The team was composed of Bureau Chief Lance Gima, Criminalists Lara el Khazen (Santa Barbara Laboratory), Nicole Inacio and Brian Harmon (both from the Jan Bashinski DNA Lab), and forensic anthropologist Ms. Henriette Stratmann, along with computer scientist Mr. Lorenz Kenter (both based in the Netherlands and affiliated with the Forensic Program of PHR).

The team provided Pro-Búsqueda with training on procedures for collecting DNA samples and on the implementation of software specifically designed with Pro-Búsqueda to store the information obtained from the family interviews. The team collectively developed a process from sample collection and eventual kinship analysis consisting of four phases.

Phase One is the interview and sample collection of approximately 1,300 family members, from 721 requests (496 registered families), and entry of the information from the interviews into the database. This phase is to be completed by the end of 2005, with 694 samples collected to date.

Phase Two is DNA analysis of the samples, conducted by qualified volunteers at the CAL DOJ Jan Bashinski DNA Lab with the permission of the Office of the Attorney General Bill Lockyer and with materials and reagents costs funded from grants received from HRC and PHR (152 samples typed to date).

Phase Three is the construction of a DNA database, which will be the exclusive property of Pro-Búsqueda. This phase includes the training of a scientist affiliated with Pro-Búsqueda on computational kinship analysis using DNA-VIEW, the software package designed by Forensic Mathematician Dr. Charles Brenner. In the meantime, in late August of 2004, volunteers from the Jan Bashinski DNA Laboratory received training on DNA-VIEW from Dr. Brenner, with particular emphasis on running kinship simulations to determine the best choice of relatives, of those available to collect from, who would be the most informative to analyze. This training has allowed the CAL DOJ team to provide Pro-Búsqueda with ongoing decisions on collection strategy given a certain family composition, which eventually could best match a child to a family, should that child become available for DNA typing.

Phase Four is the Missing Children Sample Analysis, which includes searching for and reporting kinship matches using the database of family profiles. Should a match be recorded, the Pro-Búsqueda scientist will evaluate the match and write a report.

The goal of this collaboration is to work directly with the relatives of the victims and human rights organizations in their efforts to reunite families. This collaboration may provide a guide for volunteer work from the forensic science community to assist families searching for their loved ones torn apart from war, and still in fear or distrust of their government.

### **Mitochondrial DNA Typing of the HVI/HVII Region Using LINEAR ARRAYS**

*Katherine A. Roberts, California State University, Los Angeles (School of Criminal Justice and Criminalistics), King Hall D1049 5151 State University Drive, Los Angeles, CA 90032, krobert2@exchange.calstatela.edu*

This presentation will discuss the forensic applications of mitochondrial DNA typing using the LINEAR ARRAY

mtDNA HVI/HVII Region-Sequence Typing Kit. Sample amplification and quantitation procedures will be addressed, followed by an overview of the LINEAR ARRAY typing process. The interpretation of the typing results will be reviewed, including potential sources of multiple sequences (contamination, heteroplasmy, and cross-hybridization). The presentation will conclude with a discussion on troubleshooting issues.

### **Validation of the 7500 Real-Time PCR System and 3130 Series System Upgrades for use in Forensic Laboratories**

*Yurah Yen\*, Michael J. Cassel, Eric M. Tam, Laura C. Post, Erica B. Currie-Fraser, Ariana M. Wheaton, Beth Ladin, Lisa M. Calandro, Applied Biosystems, Inc., 850 Lincoln Centre Drive, Foster City, CA 94404, Yurah.Yen@appliedbiosystems.com*

The goal of this presentation is to summarize the experiments conducted by Applied Biosystems documenting the validations of the 7500 Real-Time PCR System with v1.2.3 software using the Quantifiler™ Human DNA Quantification kit and the Quantifiler™ Y Human Male DNA Quantification kit and the 3130 Series System Upgrades for use in human identity laboratories. Validation of the 7500 Real-Time PCR System was carried out according to the Scientific Working Group on DNA Analysis Methods (SWGDM) guidelines and focused on instrument performance parameters relevant to the intended use of the Quantifiler Human Kit and Quantifiler Human Y kit assays. The validation studies assessed precision and accuracy, reproducibility and sensitivity, and background. The data generated in the validation studies demonstrates that the 7500 Real-Time PCR System provides accurate results when used in conjunction with the Quantifiler™ kits for the analysis of genomic DNA samples and produces results which are statistically similar to the results produced on the previously validated ABI PRISM® 7000 Sequence Detection System. The 3130 and 3130xl instruments incorporate an automated polymer delivery system that eliminates the need for syringe filling, maintenance, and clean up, facilitating faster turn around times. Additional features of the 3130 instrument series include Windows XP® support providing improved operating system security and reliability and enhanced data collection software with helpful wizards streamlining setup and maintenance. The 3130 Series System Upgrades allow users to add the hardware and software features of the 3130 series to their existing 3100-Avant or 3100 instruments. Additionally, users may upgrade the 4-capillary 3130 instrument to a 16-capillary 3130xl instrument allowing increased throughput. Validation studies utilizing the AmpFLSTR® Profiler Plus™ (4-dye) and the AmpFLSTR Identifiler® (5-dye) PCR Amplification Kits on the upgraded instruments are presented here. These validation studies included comparisons of sizing precision, peak resolution, sensitivity, and male:female mixtures before and after performing the upgrades. Data will be shown that demonstrate the ability of the 3130 series system upgrades to produce reliable and reproducible results with the types of samples routinely encountered in the human identification laboratory.

### **Promega's Integrated Solutions for Automation in Forensic Laboratories**

*Matt Seliga\*, Benjamin E. Krenke, Michael Bjerke, Kimberly*

Huston, Curtis Knox, Promega Corporation, 2800 Woods Hollow Road, Madison, WI 53711,  
[matt.seliga@promega.com](mailto:matt.seliga@promega.com)

After attending this presentation, the participant will have an understanding about several new approaches to automation in a forensic laboratory.

Automated workstations have proven their utility for processing sample backlogs for offender databases. These systems can be optimized for many sample types. The varied sample quality and amount encountered in casework presents additional challenges in automated sample processing. Additionally, contamination concerns restrict the flexibility of robotic systems and require extensive validation. This presentation will discuss advances in developing an automated DNA Isolation and PCR setup system. In addition, improvements for automated DNA extraction, quantitation and data analysis using the Beckman Coulter Biomek® 3000 Workstation, the MAXWELL™ 16 System, the Slicprep™ 96 Device, Plexor™ qPCR System and the FSS-i3™ Expert Systems Software will be described.



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## **U P C O M I N G M E E T I N G S**

**2006** *Spring: Contra Costa Sheriff*  
*Fall: DOJ Riverside*

*(North-South Host Swap Occurs)*

**2007** *Spring: Orange Co. Sheriff*  
*Fall: Jan Bashinski Lab*

**2008** *Spring: San Diego PD*  
*Fall: Sacramento DA*

**2009** *Spring: San Bernardino*  
*Fall: Santa Clara Co.*

### **Can't Find It?**

To reduce the costs of publication, the CACNews may place calls for nominations and other items that were previously found in the newsletter mailing as inserts or ON THE WEB. Visit [www.cacnews.org](http://www.cacnews.org) to see what is offered. Content changes periodically, so visit often!





## A MAGNIFYING EXPERIENCE IN CHICAGO

by Dianne Burns

Polarized Light Microscopy (PLM) may provide important information during a forensic investigation. Unfortunately, the opportunities to acquire microscopy skills for today's forensic scientist are limited. Undergraduate education has essentially ignored beginning microscopy and advanced courses have disappeared. For years, I kicked around the idea of going to Chicago for an intensive forensic microscopy course at the McCrone Research Institute (McRI). I finally took the plunge and discovered that the McRI course is a microscopical tour de force.

The venerable South Side academy is a spacious, almost homey feeling, one-story building founded by Walter McCrone and his wife Lucy. Walter died in 2002, but Lucy, who knows a thing or two about the microscope, remains a daily fixture at the Institute. Walter, we were told, could instantly identify some 30,000 different specimens by PLM and, aside from his remarkable memory, there is really no mystery why. The McCrones

never had children and never owned a television, enabling them for five decades to devote fourteen-hour days, seven-days-a-week (including holidays) to the virtues of microscopy. Walter would begin work at four in the morning. This dedication attracted top-notch talent. According to John Houde, "some of the world's leading microscopists work at the McCrone Research Institute."<sup>1</sup>

Proficiency in polarizing microscopy begins with an understanding of light, and the course kicks off with a foundational lecture on light's physical properties. Our instructor, Sebastian Sparenga, is a research microscopist at McRI and holds a master's degree in forensic science from the University of Illinois at Chicago. From the beginning, our group of eleven gravitated toward his unmistakable expertise and friendly disposition. Together, we explored the magnificence of this multi-faceted instrument. Topics covered included micrometry, morphology of hairs and fibers, sample preparation and then, by manipulating polarized light, we progressed onto dispersion staining, birefringence, sign of elongation, extinction angle, and Becke lines. We then applied this knowledge to the identification of unknowns. By day three, I was hooked on microscopy and, it turns out, the city itself.

At night, Chicago sizzles. Classmates become colleagues due, in part, to the McRI tradition of a cordial beer-drinking mixer in the kitchen after the first day of class. In the evenings, we roamed world-class museums, late night blues clubs, and wailing jazz-joints. When hunger struck, we ate Chicago style pizza, Greek cuisine, and slabs of barbecued ribs. An unexpected bonus was the city-wide extravaganza that unfolded as the White Sox captured the hearts of Chicagoans on their way to their first World Series victory in eighty-eight years. We all became Sox fans for the week.

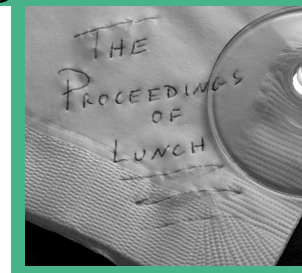
One of the most important lessons of the McRI experience is that students return to their labs with a much better appreciation for the wide variety of evidence the world has to offer. Our diplomas initiate an ongoing relationship with the Institute because McRI graduates become lifelong learning partners with the facility. Support for anything microscopical is only a phone call away. Best of all, we were taught techniques that are repeatable, reproducible and do not destroy the evidence. This is the type of science I want to practice.

Information about courses at McCrone Research Institute is available on line at [www.mcric.org](http://www.mcric.org).

<sup>1</sup>Houde, J., CRIME LAB: A Guide for Nonscientists, 1999, Calico Press, p97.

## **The Shifty Paradigm, Part II**

Errors and Lies and Fraud, Oh My!



### **Getting Breakfast**

We concluded our previous column with the realization that we had bitten off too much to chew for one article. Speaking of chewing, Jack (there must be a Jack behind Jack's Bistro) is beginning to feel like an old friend. Unable to schedule a midday meeting, we opt for the early morning and find that, indeed, Jack's breakfast offerings reward our efforts. If he only knew.

As we indulge in our omelets, we review both the article that prompted these two columns, *The Coming Paradigm Shift in Forensic Identification Science* (Saks and Koehler, 2005), and our initial response in last quarter's *The CACNews*. (Rudin and Inman, 2005) We realize that many of Saks and Koehler's assertions are based on a chart of relative error rates that they include as Figure 1 of their paper. We reproduce the figures resulting from their data analysis in Figure 1 of this commentary. The chart is reportedly based on analysis by Saks and Koehler of case data provided by the Innocence Project. Because there was a press release associated with the publication of the Science paper, these figures have now been propagated through the media as fact. And because they also form the core of the assertions made by the authors, it is worth looking at the underlying assumptions and data analysis methods. Data analysis methods you say? What data analysis methods? We'll get to that. In typical Keith and Norah fashion, we first examine the ever-important ASSUMPTIONS.

### **The Hidden Stuff**

The overwhelming in-your-face assumption here is that both the total and relative proportion of "factors" associated with DNA exoneration cases are 1) factual and unassailable and 2) representative of all criminal cases. Tackling the latter assumption first, we note that cases selected for review by the Innocence Project have already undergone a highly selective screening process. According to the Innocence Project web site (FAQ, 2005):

*"The Innocence Project provides legal assistance to inmates in cases where DNA testing of evidence can yield conclusive proof of innocence. Cases must involve biological evidence, e.g. spermatozoa, blood, saliva, skin, hair. All cases for consideration should be mailed with the following information: a brief factual summary of the case, and a list of the evidence used against the defendant. Do not send any documents until you receive a written request to do so. We do not accept cases where DNA testing has already been performed with conclusive results, nor can we provide general legal advice or research"*

The most obvious point is that this case set does not even include cases for which biological evidence was never collected or is not relevant. That excludes all cases where non-biological

evidence was at issue and also all cases where physical evidence played no part in the case. Second, cases for which conclusive DNA testing has already been performed are not included. We don't attempt to determine here exactly how the selection criteria might skew the data, but at the very least, an entire class of data is missing in which physical evidence played no part. Therefore all errors in that set of data are also not represented. While interesting from the point of view of the Innocence Project, this data set clearly does not fairly or adequately represent all cases involving forensic science. The problem is that the reader is left to implicitly assume that it does.

### **Analyzing the Analysis**

In reacting to the comments based on the chart, it is easy to forget that the conclusions in the chart are not factual, but represent only Saks and Koehler's interpretation of some data. Where is the materials and methods section, we wonder? What parameters have they chosen for their analysis? What are the confidence limits on their calculations? For example, 6 of the 9 categories span percentages from 17% to 28%. Are these really different or within statistical error based on the sample size? Has the analysis been peer-reviewed to see if other qualified individuals agree that the data support the conclusions? Like all data, conclusions from it depend on interpretation parameters and judgment calls. Because it was submitted as a review, this paper was not peer-reviewed for publication, so no independent verification exists for Saks and Koehler's methods. Said another way, no one else has confirmed that the data supports their conclusions.

However, we do have at least one other analysis of the same data to which we can compare it. A similar chart is found on the Innocence Project web site itself (Causes, 2005). Similar, but not the same. We find the differences interesting (Figure 1). The chart on the Innocence Project web site reflects 70 cases and the chart in the Saks and Koehler paper reflects 86 cases. However, that does not account for the different characterization of "factors." The Innocence Project appropriately separates serology inclusions that were, in all likelihood, correct, but insufficiently discriminating, as well as hair comparison, which suffers from a combination of poor discrimination and lack of objective standards. Significantly, blatantly defective or fraudulent science merits a separate category. It appears that Saks and Koehler have combined some or all forensic testing results that resulted in apparent false convictions into one category, forensic science testing errors. They do not do themselves or their cause any favors by this heavy-handed rearrangement of the data. DNA typing is better at discriminating between individuals than was conventional serology. No one disputes that, nor its utility in obtaining post-conviction relief for the wrongly convicted. However to include a properly conducted test with

certain inherent limits in the same group as blatant errors or fraud would appear to deliberately misrepresent the data. We have to stop and ask ourselves—could this be an error?

We also can't help but note that Saks and Koehler misquote their own chart: "What was unexpected is that erroneous forensic science expert testimony is the second most common contributing factor to wrongful convictions." (Saks and Koehler, 2005; pg. 893, 1<sup>st</sup> column) According to their own chart, testimony should be only the 5<sup>th</sup> most common factor. Would they categorize their own performance as an error? Why was it not caught and corrected during what must have been numerous edits and reviews? We were also intrigued by their quote: "All [forensic science] experts are tempted, many times in their careers, to report positive results when their inquiries come up inconclusive, or indeed, to report a negative result as positive." This quote is attributed to an article by Andre Moenssens (Moenssens, 1993). A quick check with Dr. Moenssens revealed that the author of the quote was actually the late Fred Zain. (Moenssens, 2005) To include such a quote out of context, without revealing its infamous author, seems to us, at best, disingenuous.

### **To err is human, to forgive is... apparently not an option**

A main point in the paper is that "forensic science testing errors" and "false/misleading testimony by forensic scientists" comprise a major proportion of wrongful convictions. We must ask ourselves, how many forensic science "errors" (agreeing, for the purpose of this discussion to define error as an apparent wrongful conviction) have been exposed precisely because definitive tests *can* be performed to expose the errors. The remaining causes of wrongful convictions all relate to human frailties that are much less amenable to formal and definitive testing. How can we quantify prosecutorial misconduct, defense counsel incompetence, or police misconduct? What test reliably distinguishes dishonest informants, false confessions, and false testimony by lay witnesses from truthful ones? Or, to make a direct analogy, how do we QC an eyewitness, a jail-house snitch, or a confession? The determination of human "errors" depends on the believability and credibility of other humans. While an overwhelming amount of contrary information might convince most of us that an informant lied, no definitive test exists. So, even defining an "error" as an apparently wrongful conviction, the proportion estimates for causes that do not relate to physical evidence must have wider confidence limits, however difficult they may be to measure. Saks and Koehler treat all the data as if it had equal reliability.

Although we have no easy answers, we feel compelled to at least address the contentious subject of error rates. We continue to argue that there is no such animal as an error "rate." Inclusion of this wording in a controlling legal decision by a federal judge does not automatically legitimize it as a relevant quantifier of forensic science. A rate implies a constant for a defined procedure or process, both of which are totally inapplicable to forensic work taken as a whole. And, at the risk of beating a hole in the drum, we feel compelled to note that, like

How do we QC an eyewitness, a jail-house snitch, or a confession? The determination of human "errors" depends on the believability and credibility of other humans.

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other observers who like to harp on error rates, Saks and Koehler completely sidestep the issue of actually defining an error. While we can deduce an implicit legal definition of a wrongful conviction, this is ultimately not helpful on a scientific level. The disconnect seems to be that the legal profession has attempted to commandeer a perfectly reasonable quantifier of error for a single controlled scientific process, for example fidelity in PCR amplification, and apply it wholesale to a complex human endeavor that includes many different scientific as well as human processes. Even if the oft-suggested solution of blind proficiency testing could be implemented wholesale, trying to predict the rate of *undetected* errors (however those might be defined) from analysis of such data seems to us tenuous at best.

The concept of detected versus undetected errors may be a useful and important distinction that could clarify the discussion. If an error, of whatever type, is detected, by whatever means, then the probability of that error occurring in this particular case is one (100%). There is no need to apply any rate,

we know the answer. It is the undetected errors that concern us. This is actually a much thornier problem and one to which no easy answer exists. It forces all of us, the forensic profession, the legal profession, the judicial system, and the public, to acknowledge that undetected errors can, do, and will exist. Such errors are likely sporadic, unpredictable, and sometimes undetectable as well as undetected. What society must understand is that, with or without forensic analyses, the risk of convicting an innocent person will never be zero. Most people appreciate, at some basic level, that human endeavors are fallible. But they have the unrealistic expectation that scientific endeavors carried out by human beings are infallible; the label of science confers the patina of certainty. In reality, what science does is measure uncertainty. Any answer we provide must, by definition, be probabilistic in nature, and be conditioned on various assumptions. If science is involved, the possibility of error always exists. Because our judicial system is predicated on the presumption of innocence, this realization appropriately makes people uncomfortable. But what is the alternative? Clearly, the non-scientific evidence is also at risk for error, the difference being that it is much more difficult to both detect and quantify.

### **Time to stop whining (and dining)**

Although we have spent all of the last, and much of this, article dissecting the Saks and Koehler article, ultimately that solves nothing. And while we disagree with many of their proposed solutions, they also raise a number of valid points. While the many observers of forensic science comment vociferously and frequently, the forensic community is comparatively silent. We must understand that we invite reinvention by leaving a vacuum; if we do not take positive action, the consumers of forensic science will fill the void and define our profession for us. Although input from both the consumers of forensic science and from the academic disciplines from which it is derived should be welcomed, we cannot let others define our practice and our profession. While those on the front and back ends



have much to offer in terms of information and assistance, a failure to understand the issues too often results in asking (and answering) the wrong questions.

One reason, in our opinion, that the observers feel justified in commenting, is that the field is not sufficiently self-critical. Historically, we tend to justify, explain, and rationalize before we agree to make substantive changes. Why is this? Much of the problem lies in the very fact that our job is to defend our work on a daily basis. It is easy to confuse defending our work with defending ourselves. There exists an underlying fear that human fallibility is not an option. This very real fear is fueled in large part by the vociferous and condescending attacks of legal observers, often through the public channel of the media. Sometimes, this unfortunately has been the only way to force a wayward lab to open itself to independent review, providing a justification on which the critics can hang their hats. However, as a general approach, it is not an effective tool to promote openness, transparency, and positive change. An additional factor is that our adversarial system, at least in the US, lends itself to personal attacks. Often it is much easier for an attorney to try to discredit the testifying expert than the evidence itself. It is a sad commentary on both professions when much of the discussion is focused on either perpetrating or defending oneself from attacks, rather than attempting to understand what the evidence is telling us.

We are invited participants in the judicial process; without the lawyers, none of us would have a job. Yet, to best assist the judicial system in analyzing, interpreting, and understanding physical evidence, we must maintain our objectivity, autonomy, and identity; we cannot become simply a pawn of either side of the system. We must insist on defining the questions. However, we must also accept that practicing criminalists are not going to single-handedly solve many of the challenges

facing the forensic profession today. We simply do not have the time, monetary resources, academic resources, or, in many cases, adequate education and training. We must actively solicit assistance from and seek partnerships with our clients, those in the legal profession, and from our roots, the academic “feeder” disciplines that form the basis of our applied science. Furthermore, forensic science needs to be an ongoing and formalized academic endeavor, supported with concomitant funding, human resources, and competent direction. If we cannot develop and support our opinions based on science, rather than policy, then those who like to refer to working criminalists as technicians will be entirely justified.

The forensic science paradigm has already shifted. Both the profession and the practice have changed significantly over the last decade, for more reasons than merely the introduction of DNA typing into the forensic lexicon. The question is, will we, as a profession, actively determine the direction of shift as it continues, or will we sit passively while others make those decisions for us.

If anyone is interested in joining the discussion, we’re buying ...

## References

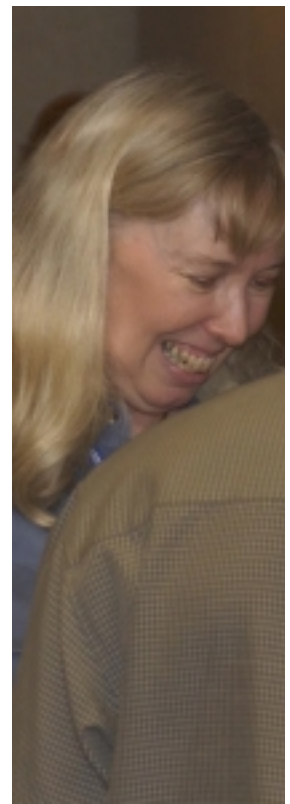
- Saks, M.J. and Koehler, J.J., The coming paradigm shift in forensic identification science, *Science*, 309, pg. 892, 2005.
- Rudin, N. and Inman, K., The shifty paradigm, part I, who gets to define the practice of forensic science, *The CACNews*, 4<sup>th</sup> Quarter, 2005.
- <http://www.innocenceproject.org/about/faq.php>
- <http://www.innocenceproject.org/causes/>
- Moenssens, A. A., *J. Crim. Law Criminol.* 84, 1, 1993.
- Dr. Andre Moenssens, personal communication

**Figure 1**

<u>Saks and Koehler</u>	<u>%</u>	<u>Innocence Project</u>	<u>%</u>
Eyewitness errors	71	Mistaken ID	61
Forensic science testing errors	63	Serology inclusion	40
Police misconduct	44	Police misconduct	38
Prosecutorial misconduct	28	Prosecutorial misconduct	34
False/misleading testimony by forensic scientists	27	Defective or fraudulent science	26
Dishonest informants	19	Informants / snitches	16
Incompetent defense representation	19	Bad lawyering	23
		Microscopic hair comparison	21
False testimony by lay witnesses	17	False witness testimony	17
False confessions	17	False confessions	15
		Other forensic inclusions	6
		DNA inclusions at time of trial	2

*Real-to-Reel* was the  
theme, and “reely”  
good was the show!



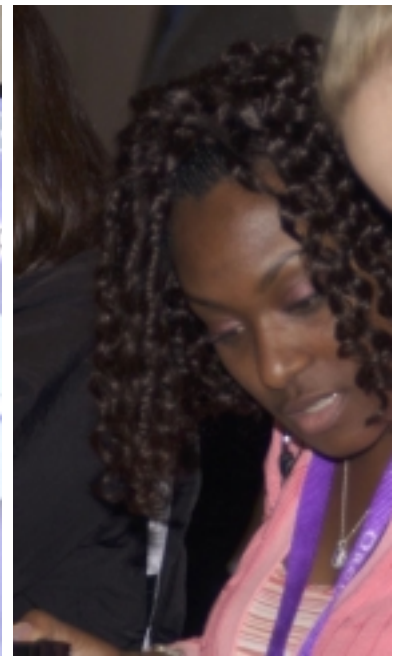


*The ingredients: workshops, famous authors, great presentations, vendors, a chief of police and a chance to try out a Segway all combined to make the fall 2005 CAC seminar a great success. Henry Tuazon, Buffy Miller and the tireless seminar support staff created an atmosphere of collegiality, networking and just plain fun.*

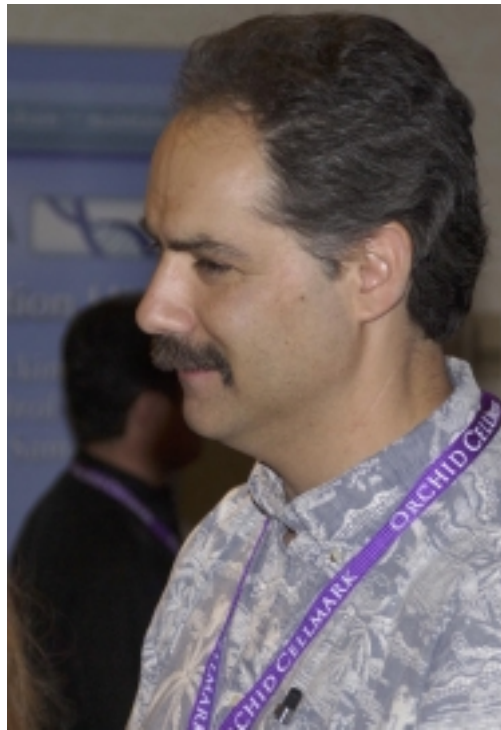
*See the abstracts in this issue to get a taste of the diverse selection of topics presented. In the next few pages we show a few scenes of the seminar where you might see yourself, your friends or perhaps what you missed. Make plans now to go to the Spring 2006 seminar in Concord!*

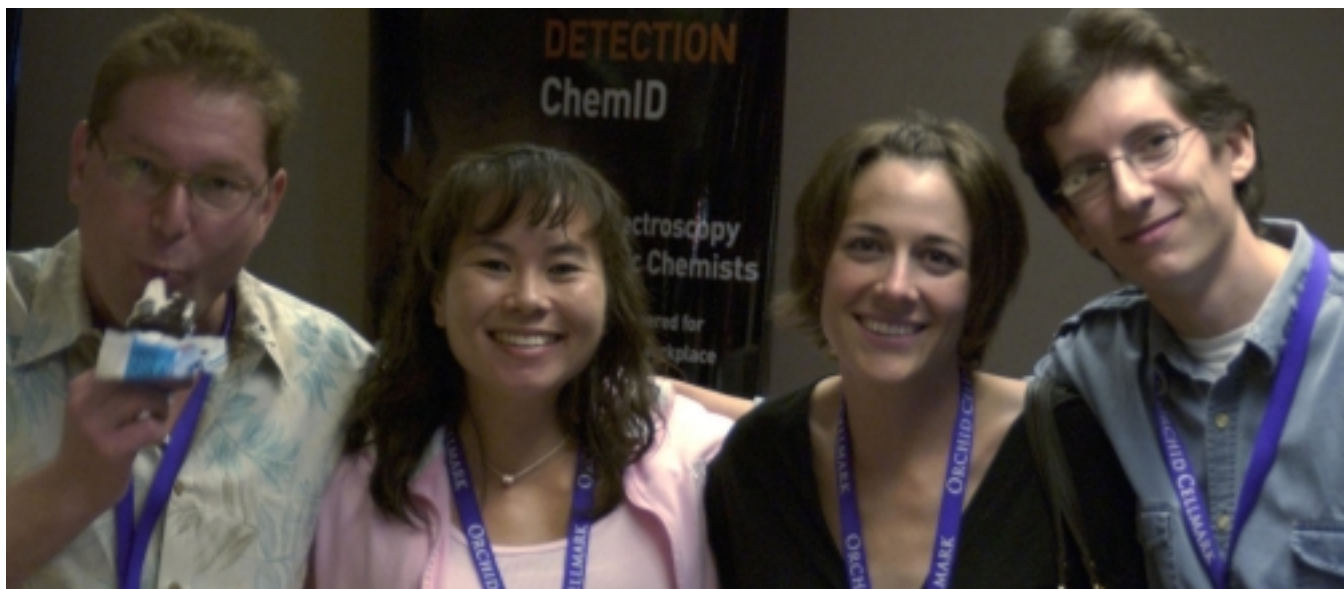




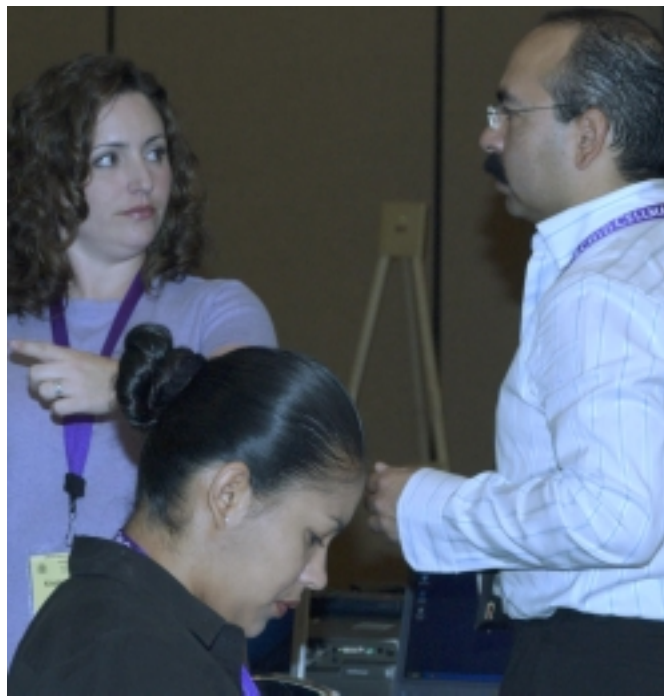




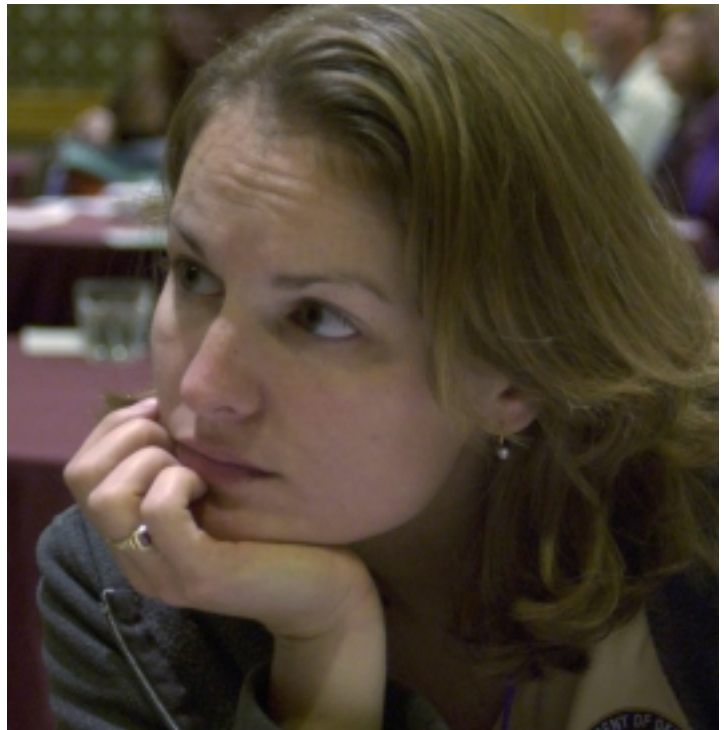




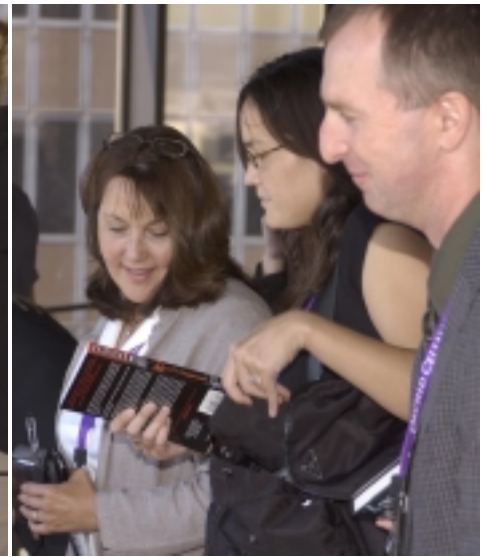








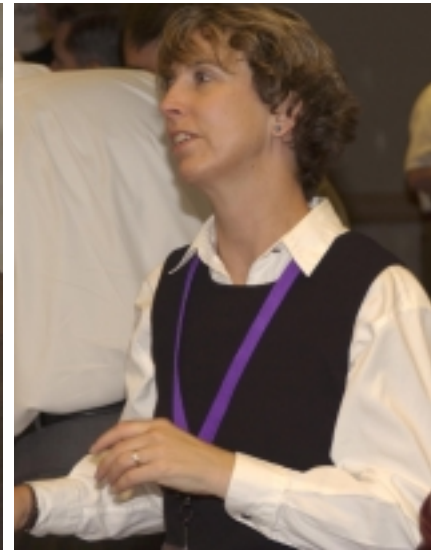




*As a special luncheon treat, three authors were on hand to sign their books. (l-r) Steve Hodel, "Black Dahlia Avenger," Dr. Douglas Lyle "Forensics for Dummies," and Matt Witten, "Grand Delusion."*









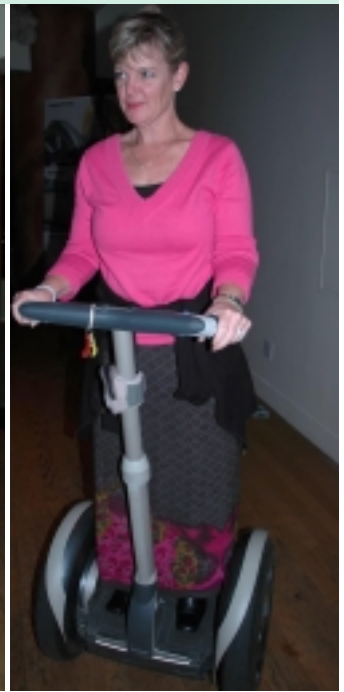
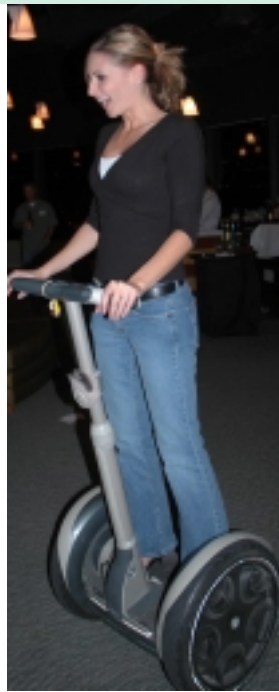




*The photos on this page and following were generously provided by Jose Gonzales.*

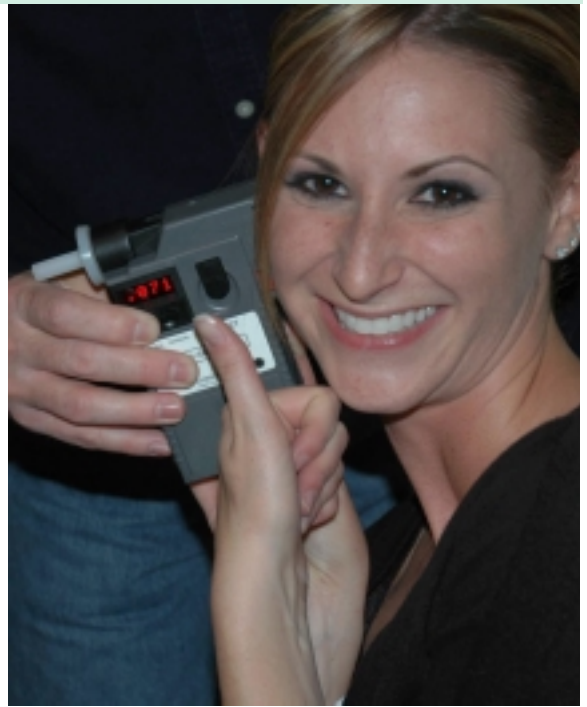
















# CALL FOR PROPOSALS

## 2006 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 2004-2005, grants for training, scholarships, special projects and research totaled over \$30,000. Applications and requests are now being accepted for 2006-2007 funding.

The Training and Resources (T&R) Committee Chair must receive applications for 2006-2007 training funds by Friday, January 27, 2006. (See Section I below for specific application information).

The Endowment Committee Chair must receive requests for all scholarships or research funds by Friday, March 24, 2006 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 (enclosed with the CAC news or available in PDF on the CAC website ([www.cacnews.org](http://www.cacnews.org))) should be completed. This application 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 Endowment Committee by Friday, January 27, 2006.

#### 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; and

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 reevaluating 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. Also, funding may be terminated by the Endowment Committee if progress is inadequate.

#### D. Funds for Equipment

If funds are awarded for the purchase of equipment, the CAC retains right of repossession of the equipment unless otherwise stipulated in the grant. All proposals for scholarships or research must be received by Friday, March 24, 2006.

#### E. Refund of Unused Endowment Funds

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

Send proposals to:

Marla Richardson  
California Department of Justice  
Riverside Crime Laboratory  
7425 Mission Boulevard  
Riverside, CA 92509  
Tel: (951) 361-5000  
Fax: (951) 361-5010  
Email: marla.richardson@doj.ca.gov

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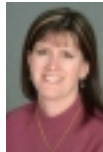
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1401 Broadway MS725  
San Diego, CA 92101  
(619) 531-2605  
jstam@pd.sandiego.gov

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1401 Broadway MS 725  
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(619) 531-2577  
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Orange County Sheriff-Coroner  
320 N. Flower St.  
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mmh@fss.co.orange.ca.us

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1001 W. Cutting Blvd. Suite 110  
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angel.moore@doj.ca.gov

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Forensic Analytical  
3777 Depot Road Suite 409  
Hayward, CA 94545  
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Orange County Sheriff-Coroner  
320 N. Flower St.  
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San Diego Police Dept. Crime Lab  
1401 Broadway MS725  
San Diego, CA 92101  
(619) 531-2577  
adutra@pd.sandiego.gov

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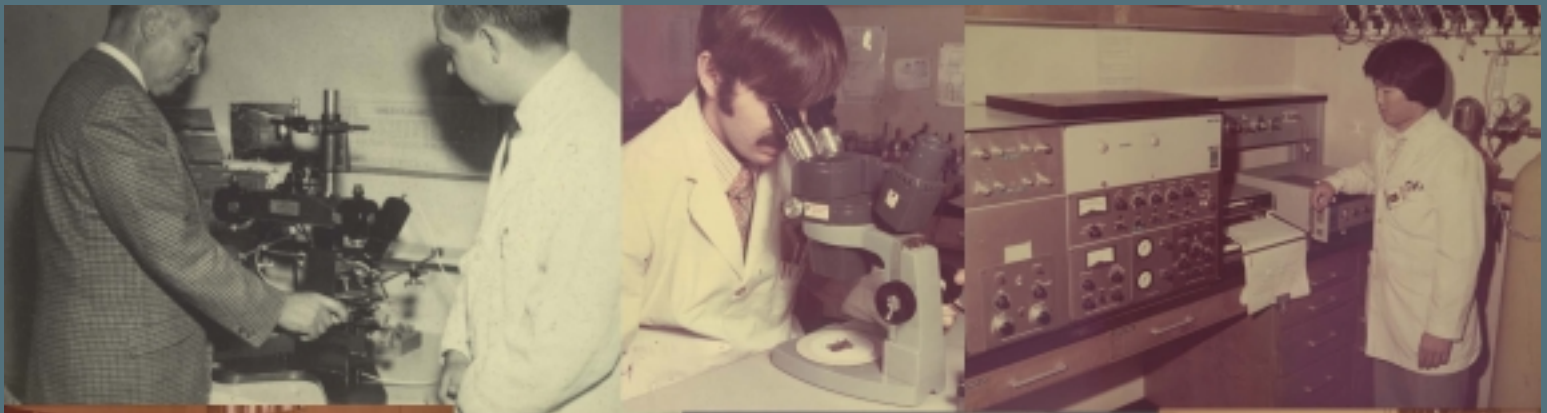
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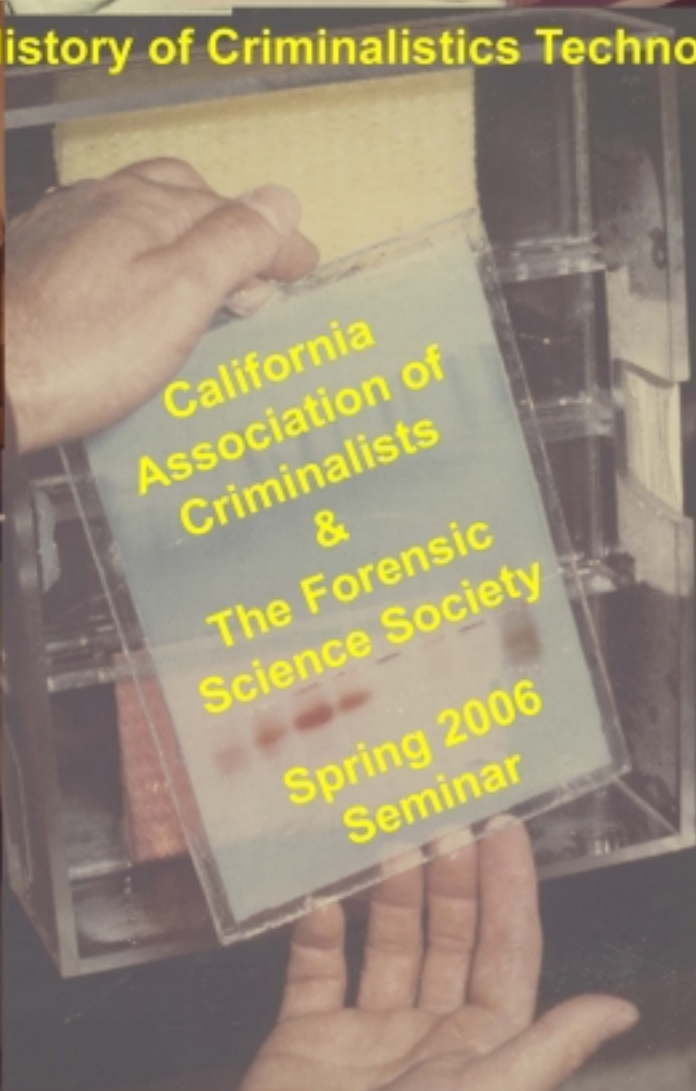
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## The History of Criminalistics Technology



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925.335.1600  
phole@so.cccounty.us

