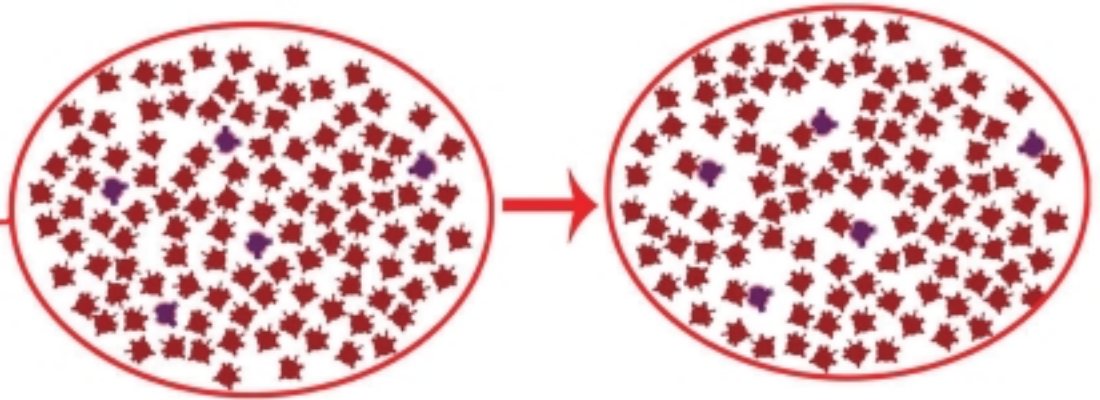
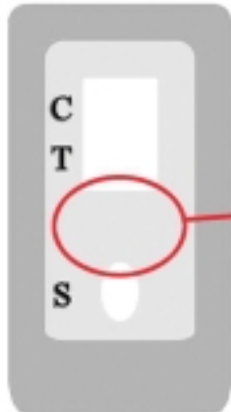


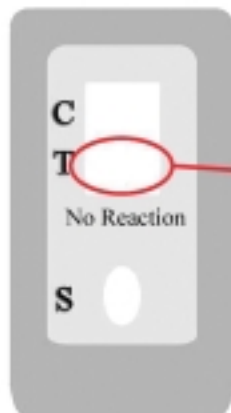
# The CACNews

*News of the California Association of Criminalists • 2nd Quarter 2004*

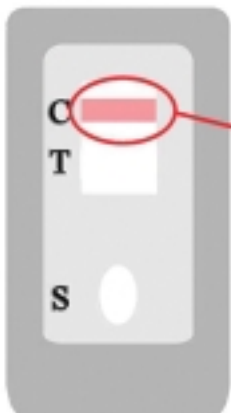
## Reaction Zone



## Test Line



## Control Line



Immunochromatographic p30

Membrane Test

for Sample Containing Excess p30:

HIGH DOSE HOOK EFFECT

# The President's Desk

## Endings and Beginnings

Those who are happy do not observe how time goes by.  
—Chinese proverb

I recently attended the retirement dinner for two senior Department of Justice criminalists, Bill Corazza and Fred Tulleners. Their combined service to DOJ totaled 63 years and with their departure a loss of experience difficult to replace. Their departure and those of others who have recently retired leaves a noticeable absence of knowledge and wisdom in the profession. As they were being honored by their friends, families and colleagues I could feel what they were going through because I too am at the end of my career and looking forward to the next one.

We gathered at Dante's Club in Sacramento on February 26<sup>th</sup> to celebrate the careers of these two criminalist managers who joined DOJ in the early '70's. Bill's wife Laurie, along with his two children and Fred's wife Faye Springer, and their three children basked in the glow of our appreciation of them and their contributions to our profession. I have attended many retirement dinners and have learned that they follow a tried and true pattern.

First, prepare a list of speakers; colleagues, attorneys, police detectives and family friends to stand up and speak for the person being honored. Their job at the podium is to regale the audience on past exploits, odd and weird things that have happened in their careers and most importantly to recall their achievements and contributions. Bill and Fred's retirement dinner was no different. Approximately 110 people turned out to hear 12 speakers share their experience of Bill and Fred over the span of their careers. A lot of wonderful stories were shared that evening to everyone's delight. I've included some photographs taken by Chip Pollock of the Sacramento County DA's Crime Lab.

It was a memorable evening topped off by their heartfelt appreciation for all who attended and spoke well of them. The evening began in earnest through the generosity of Fred and Bill who hosted the cocktail hour. They were grateful it only lasted an hour. Nothing like free drinks to perk up a party.

I recall two things stood out about each of the men being honored. John Yount, Criminalist Supervisor recalled a time when Bill was the Supervisor at the Santa Rosa lab and told him not to worry about the quality of the evidence coming through the front door. He was only to concern himself about the quality of the work leaving the laboratory. It was Bill's job as the supervisor to worry about the quality of the evidence coming into the lab. This was a great example of leadership and well told.

The other story was about Fred and how he hated certain rules and policies that affected doing the best possible analysis. One of Fred's greatest strengths is his no nonsense approach to casework. He has the confidence and ability to get the job done and done well. He believed it was the business of every criminalist to put out the best product possible. We ended the evening around 9:30 and many lingered long after to pay their personal respects before the honored guests left for the evening.

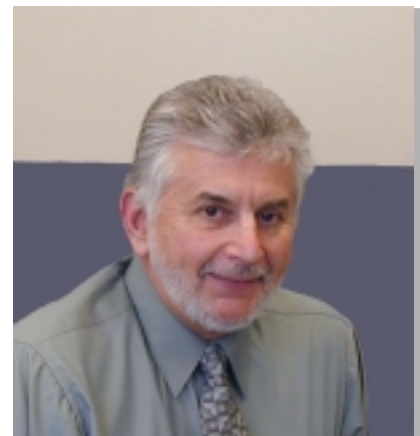
Well that was the end of their criminalistics career. So, what about their new beginning. One of Bill's favorite pastimes has been as a "gentlemen's farmer." He has an extraordinary green thumb and has about ½ an acre under cultivation on his property in Sonoma County. He loves being out in his garden and harvesting the crops when they're ready. One other thing he will be doing with more regularity is travel. He loves to travel and visit new and exotic places. Gardening and travel. It's a nice beginning to a new career as a retiree. Good luck my old friend.

For Fred he will be the director of the new forensic science program at the University of California, Davis. He has 31 master of science candidates in

*please turn to page 22*

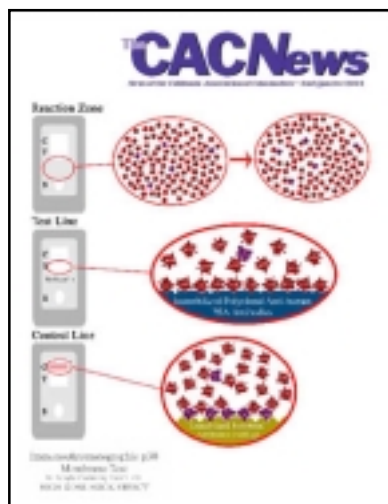
This article was written  
to acknowledge  
approximately 20-30  
criminalists who will be  
retiring within the next  
couple of years. I want  
to wish you all the very  
best in your next career.

*Raymond*



**Raymond J. Davis**  
CAC President

## Second Quarter 2004



**On the cover...**  
(Front and back) Detail from an illustration featured in the upcoming second edition of *Saferstein's Forensic Science Handbook, Vol. II*. The illustrations (by Kristen Scott) accompany a chapter on the topic of semen identification authored by CAC member Edwin L. Jones and F. Sam Baechtel.

Ed Jones explains:  
*The high dose hook effect*

*occurs because unbound p30 (without any mobile anti p30) binds with the test line leaving no room for the pink (or blue) labeled antigen antibody complex to bind on the test line. The simple solution to this problem is to dilute the sample. A normal sample containing P30 will give two visible lines and the high dose hook effect is the reason for the false negative reaction with samples that contain a very high concentration of p30.*

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## Recent Board of Directors decisions that may affect you!

Considering that the CAC no longer offers a certification program, it was asked whether or not an individual may claim CAC Certification on his or her *Curriculum Vitae*. The answer is a qualified yes. Yes, an individual may claim such on his or her *Curriculum Vitae* so long as the dates of certification are listed.

## Next CAC Board Meeting

The next board of directors meeting is set for May 3rd at the Crowne Plaza Hotel in Foster City, CA

## Forensic SEM Website Recommendation

One of the microscopy organizations I belong to is FAMS (Foundation for Advances in Medicine and Science) and they have an annual conference called SCANNING 2004 which will be held this year in Washington DC from April 27-29 at the Hotel Washington. They usually have a forensic session and this time there is a 3-day forensic program with a special GSR segment chaired by Frank Platek of the USFDA and a one-day short course on "Applications of SEM in Forensic Science" conducted by scientists from USFDA, FBI and NIST. I thought it might be worth including this as an update news item for anyone interested. Their website is [www.scanning.org](http://www.scanning.org) and e-mail is [scanning@fams.org](mailto:scanning@fams.org) to register online. I went to one of these conferences when it came to Monterey and the focus was GSR and food/pharmaceutical contamination/fraud and I found it very interesting.

—Linda Wraxall

## Assembly Bill Gives Green Light to Draw Blood

Here's a short legal update: AB 371 (La Seur. Blood tests) was signed into law Feb. 11, 2004, and will take effect immediately as an urgency statute. In summary: "This bill would permit a person who has been issued a certified phlebotomy technician certificate to withdraw blood in certain locations . . . at the direction and in the presence of a peace officer, for forensic purposes, regardless of whether the person is employed by a clinical laboratory."

Phlebotomists will have to obtain the new certificate and be under the general supervision of licensed personnel. The supervisor must review the phlebotomist's competency prior to doing draws and annually thereafter plus review their work at least once a month to insure compliance with policies, procedures, and regulations. The general supervisor must be accessible to the draw location to provide onsite, telephone, or electronic consultation within 30 minutes when needed.

Phlebotomists who do not have the new certificate will have to be employed by a clinical lab and follow the 5-minute rule.

This bill should result in a considerable time and cost savings to law enforcement throughout California. Well-trained, experienced phlebotomists will be able to perform blood draws for alcohol replacing the requirement for licensed personnel. Our legislators should be thanked for approving this bill in light of the high cost and critical shortage of nursing personnel.

—Patricia Lough

## Call For Papers, CAC Fall 2004

If you have a presentation in mind that will be ready for the fall meeting in Ventura, please contact Geoff Bruton, Ventura County Sheriff's Department, Forensic Sciences Laboratory, Firearms & Toolmarks Section, (805) 477-7266.



**After a year in translation,** CRIME LAB debuts in Chinese. Through an arrangement with Hainan House Publishing of Beijing, Calico Press, LLC (owned by CAC member John Houde) has released an all-Chinese version of his book, CRIME LAB: A Guide for Nonscientists.

## From the CAC Update

(Moderated by Adam Dutra)

The Justice Studies Department is proud to announce two new undergraduate programs in Forensic Science offering a BS with a Forensic Science Emphasis in Biology or Chemistry. Students are engaged in intensive, interdisciplinary programs combining courses in Justice Studies, Biology and Chemistry departments required to meet educational standards drafted by the Forensic Science Education Programs Accreditation Commission of the American Academy of Forensic Sciences (<http://www.aafs.org/pdf/TWGEDFinalDraft.pdf>) and the Technical Working Group on Education and Training of the National Institutes of Justice (TWGED). Furthermore, the programs have been designed to meet educational requirements for students interested in pursuing careers in forensic science.

The new SJSU programs provide a foundation of core scientific knowledge that promote an understanding of key criminal and legal issues and respect for cultural, ethnic, racial, and gender diversity. This multidisciplinary approach provides three important benefits for the student. First, students develop knowledge and appreciation of the connections among the various criminal justice agencies involved in crime prevention, law enforcement, adjudication, and punishment. Secondly, students develop a sound scientific foundation coupled with effective analytical and problem-solving skills that prepare them with the intellectual capacity necessary for the rigorous work in a variety of positions in criminal justice. Thirdly, students have opportunities to conduct internships that will provide them practical hands-on experience, engaging them in public service and providing them with direct connections into the forensic science community.

The new director of the Forensic Science JS program, Dr. Steven Lee, can be reached at [steven.lee@sjsu.edu](mailto:steven.lee@sjsu.edu) or 408-924-4948 for more information about the programs.

Several other associations will be having meetings in the next few months. Among them are:

- Northwest Association of Forensic Science: Missoula, MT, April 19-23 [www.nwafs.org](http://www.nwafs.org)
- Scanning 2004: Washington DC, April 27-29 [www.scanning.org](http://www.scanning.org)
- Midwestern Association of Forensic Scientists spring workshops: various dates [www.mafs.net](http://www.mafs.net)
- Second Latin American Congress on Forensic Anthropology: Guatemala City, Guatemala, July 27-29 see link at [www.cacnews.org](http://www.cacnews.org)
- Southwestern Association of Forensic Scientists fall conference: Oklahoma City, OK, October 11-15 [www.swafs.us](http://www.swafs.us)

# Jobs • Meetings • Courses

## SWAFS Fall Meeting Is OK

Southwestern Association of Forensic Scientists announces their Fall Conference, in Oklahoma City, Oklahoma, October 11-15, 2004.

Hosted by the Oklahoma State Bureau of Investigation with several scheduled workshops, including: Digital Imaging: Basics and Beyond; Toxicology of Marijuana; Pressure Sensitive Tape Analysis; Booby Traps; Population Statistics; Glock Armorer School; From the Crime Scene to the Lab; Crime Scene Analysis; Weapons of Mass Destruction; Forensic Anthropology; Optimizing GCMS Analyses; Facial Reconstruction and Forensic Art; Shooting Scene Analysis; Ecstasy and Club Drugs; DNA SWGDAM update; Ethics and Objective Testimony; Chemical Microscopy.

More information coming soon to the SWAFS website at [www.swafs.us](http://www.swafs.us).



### Hot Off the Press,

is the 2004 edition of "The Forensic Calendar," published by Shunderson Communications, Inc., with funding from Fitzco, Inc. The calendars are free, and feature highlights from a wide variety

of forensic science sources both historic and current. Visit [www.quincy.ca](http://www.quincy.ca) or [www.fitzcoinc.com](http://www.fitzcoinc.com)

## UPCOMING MEETINGS

### 2004

**Spring:** San Mateo Sheriff  
**Fall:** Ventura Co Sheriff

### 2005

**Spring:** Oakland PD  
**Fall:** Los Angeles PD

### 2006

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

### 2007

**Spring:** DOJ Richmond DNA  
**Fall:** Orange Co. Sheriff

### 2008

**Spring:** Sacramento DA  
**Fall:** TBA

### 2009

**Spring:** Santa Clara Co.

## Deadline for registration is April 20, 2004



Department of Chemistry and Biochemistry and International Forensic Research Institute @ FIU announces the following **summer workshops** as Special Topics in Analytical Chemistry:

1. Forensic Textile Fiber Examination and Comparison offered on **May 10-13, 2004**. Instructor: **Max Houck**, Director of Forensic Science Initiative, West Virginia Univ.

2. Paint Examination and Comparison offered on **May 17-20, 2004**. Instructor: **Scott Ryland**, Senior Microanalyst, Florida Dept. of Law Enforcement

3. Glass Examination and Comparison with a Focus on Refractive Index Measurements Elemental Analysis and Interpretation of Data offered on **May 24-27, 2004**. Instructor: **Jose R. Almirall**, Asst. Prof. of Chemistry, FIU.

**Note:** Students must register for each workshop separately.

These courses are designed as workshops for graduate students in forensic science and for practicing forensic scientists. The workshops will meet for 8 hours/day for 4 days (2 semester credit hours will be awarded with a letter grade option).

The aim of the workshops is to give students an introduction to the principles and practice of materials analyses in three disciplines: fibers, glass and paint.

The workshops will cover the theory of the analysis of each of these materials, including the theory and operation of the analytical techniques used.

The format for each workshop will include lectures and hands-on demonstrations and exercises, including unknown determinations. The demonstrations and exercises will cover the analytical methodology using a variety of techniques and simulated case examinations.

For course content information, please click on <http://www.ifri.fiu.edu/TraceCourseAnnoucements.htm> to download a .pdf file with a detailed course outline for each course or contact: Jose Almirall @ 305.348.3917 or [almirall@fiu.edu](mailto:almirall@fiu.edu)

Cost of Workshop is: **\$750**. (Price includes a proficiency test to be completed at participant's convenience)

Participants **MUST** also register with FIU's College of Continuing and Professional Studies. Please contact Tallulah Brown for registration information or to pay for workshop: [brownt@fiu.edu](mailto:brownt@fiu.edu)



Time to ponder the great scientific questions of the not so modern era...After making a strong point that coconuts do not migrate and that the European swallow cannot handle a coconut on its own due to the improper weight ratios, and finally, dismissing the hypothesis that the coconut could have been carried by an African swallow because the African swallow is non-migratory, the following hypothesis was offered but never resolved. Could a coconut be transported from a tropical zone to a temperate zone by two swallows by placing the coconut on a strand of creeper held under the dorsal guiding feathers? (Hint – you need to be a Monty Python fan to get it.)

### On a side note...

CAC President Raymond Davis is mounting a program called “Save the Coconut.” Apparently he is concerned about the Presidential Coconut being used in a third and long situation. Care to offer ideas? Write to Ray at savethe-nut@cacnews.org. (no hyphen)

### Thinking to a logical conclusion...

One time, I had to attend a seminar on “Dealing with the Difficult Employee.” Despite not wanting to attend, I did go with an open mind believing that there is always something that can be gleaned. The cause was noble—to help the difficult and subpar performing employee. But, when the common method was through coercion and threatening him or her with the loss of employment I began to really wonder. So I posed this question. “Suppose you have an employee who has always excelled. However, for some reason you observe that there has been a fall-off. Obviously something is wrong and help is needed. Yet, the work performance, while not as excellent as it had been, still exceeds the average for the department and the minimum levels of acceptable performance. Assuming the goal is to help the person, what do you do?”

After several evasive responses that communicated, “I really do not know,” the instructor finally said, “It is just like dealing with children. Simply threaten him or her with the loss of employment.”

My response, “My children do not belong to a labor union.”

Well, so much for being able to glean *something* out of every situation.

### Out of nowhere...

Please, no agency bashing, but really! Recently reviewing awards for personnel in a law enforcement agency, I came across the James E. Little Concern for People Award. I have no doubts that Agent Little is well deserving of having an award named after him, but I think something has to be done about the title or at least the order of the words!

### The ever so unnecessary Giants update...

There was little to be excited about over the winter with no starting pitcher brought in to bolster the staff and still no one to protect Bonds in the lineup. Of course all that pales to the news that the brand new Giants’ catcher, A.J. Pierzynski would rather have a filet than a bone-in steak. A catcher preferring filet? I think this is going to be a long season!

### Advancement through the years...

The move was slow. At first we were asked to make presentation proposals by typing the abstract into a box of a pre-defined size on a piece of paper. Then we were asked to submit these on diskette – remember those 5-1/4 inch floppies? Then there came the opportunity to submit abstracts on-line. Things were moving along smoothly. And then came Paypal!

While there have been some very vocal detractors complaining about the move of supplementing the current payment options for Association dues with Paypal, I am pleased that the overall response was very encouraging. I am pleased because the CAC is not only the oldest, but also the largest regional forensic association in the United States with a membership of around 750 scientists. Anything that will make life easier for the Treasurer and the Membership Secretary works for me. I am not taking away from any of the other Board positions, but those two positions are the most directly affected by membership size. Considering they also have job responsibilities and families, I am glad that this transition can streamline things a bit better.

### On a more serious, but related note...

Have you ever had those times when there is just something you have to do before you can move on? You would like to avoid it, but every time you try to move forward, this one thing keeps coming back in the forefront of your mind? Well friends, it is one of those times.

I was recently sorting through previous editions of *The CACNews* in part to clean and organize, but also in part to try to develop some thoughts on

The instructor finally said, “It’s just like dealing with children. Simply threaten him or her with the loss of employment.” My response, “My children don’t belong to a labor union.”

Row



**Ron Nichols**

CAC Editorial Secretary



where to go next. In that quest I came across a President's message I had written. In fact it was my last message as CAC president. And it was scathing. I reflect back and I remember that time pretty well. I had gone on record saying that if I could get 25 commitments from potential mentors and 25 commitments from potential apprentices, I would develop a mentoring program for the CAC and commit five years to developing and establishing it. I figured that a 10% response would and should have been easy. I also remember that the total number of responses amounted to what I could count on a single hand. (As a point of reference, we had seven times as many people complaining about the move to Paypal.) Out of my frustration with what I felt to be complete and utter apathy I let it fly with all the words of the English language that I could muster. I was ticked and did not care who knew.

As I sit listening to the relaxing sounds of Dave Thrush on his saxophone I realize how wrong I was. I was wrong because rather than ripping the great majority who did not seem to care, I should have focused my attention on those few that did. I certainly do think that my ego got in the way and for that I apologize. As I reflect back, my attitude was one of righteous indignation and for that there is no excuse. I do apologize because the attitude I displayed was wrong. I also apologize spe-

cifically to those individuals who did express an interest in serving as mentors and those individuals who were willing and eager to learn under the guidance of those more experienced.

Reflecting back over the issues of *The CACNews* for which I have served as Editorial Secretary the inside back covers have gone from having cartoons and testimony funnies to having obituaries and memorials of our esteemed members and colleagues. Looking at our website, there are numerous announcements for retirement dinners and we all know of many others not on the website. In a recent address, Ray Davis indicated that there would be a tremendous amount of experienced individuals moving on within the next couple of years. Such a situation can be quite sobering.

I guess we could take all of our time and lament and then take shots at the complacency and apathy of the majority or we could do something completely and totally revolutionary. We could care even if nobody else seems to. We could persevere even if there seems to be little to no interest. We could do the right thing simply because it is the right thing to do and not for some reward that may or may not happen. We could push forward when those around us say, "Why bother?" I should have done all those and I did not. Fortunately, things do not have to stay that way. After all, the only true failure is

*please turn to page 22*

## FEEDBACK

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

### Helpful Hint for PowerPoint Users

When I presented on a Saturday morning at the Fall 2003 CAC Seminar in San Diego, I got about 1/3 of the way through when the laptop computer that was provided for use by all of the presenters locked up and refused to respond to any commands. When all attempts to rectify the problem failed, I had no recourse but to sum up without any further use of visual aids.

Hoping to learn from that catastrophe, I queried a good friend, Paul Jensen, who had recently retired from the computer field (he was with SAIC in San Diego), and who was also an avid photographer. Below is the response that he sent to me. Perhaps the readers of the *CACNews* could also profit from his suggestions.

"I've done some research on the PowerPoint problem you described the other night. I also did some testing and was able to alter a slide show I produced recently from almost 100MB down to about 6.5MB with almost no loss of image quality.

Please forgive me if you already did it this way and still found it to be too big... however, the way you described it, you must have done the same thing I originally did.

I found that three serious errors to make when including images in a presentation are: to either drag them into the powerpoint slide or to paste them into the slide or to insert pictures from BMP or TIFF files. All will produce much larger versions of the presentation than using the Insert/Picture/From File menu option on a JPG file. I'll discuss this in detail.

1. Create a file with only that image in it and save it as a compressed JPG. Use the compression setting somewhere around the mid point. NOTE: On my program (IrfanView), a setting of 35 to 50 out of 100 was about the point where maximum reduction in size occurred with the least loss of image quality... If you know the image will only occupy a small portion of the slide, make sure the image is cropped to the right size, and only enough pixels at 72dpi to cover the space needed. Again, this is easy with IrfanView, as it is with most good graphics programs.

2. Select the slide that is to receive the image, and select Insert/Picture/From File menu option in PowerPoint. Select the jpg image you just created. The image will show up in the slide, on the top layer. Right click the image object and select Order/Send to Back to make the rest of the slide appear. If resizing is still needed to get it where you want it, just move it around as needed or grab the sizing tabs on the object and alter it.

3. Once done with all the corrections, create a new copy of the presentation by using File/Save As. This is necessary since PP saves a lot of the old stuff in the file if you just do a Save, and will not really get rid of stuff you just removed until you do a Save As operation.

4. Compare the size of the old and the new files and you should see a dramatic difference. If not, let me know and I'll try something else. As said at first, I did this with some of my pictures and saw no degradation until I selected 25 on the scale, at which point the image was still very usable, but I could see some difference. I think I'll try and take it down even more and see if I can get it even smaller without affecting the quality of the show. I'll let you know.

P.S. If you used the above procedure but had TIFF or BMP or the like uncompressed image files for step one and did the rest of the procedure, you'd end up with a very large file again. Make sure you are using only JPG compressed files. If you don't have IrfanView, you can get it free at [www.irfanview.com](http://www.irfanview.com)"

—Bob Blackledge

**S**o, you're considering the opportunity to promote someone? Due to the seeming mass exodus of retirees you have a position or two available for supervisory staff? Or, maybe you are looking at going after that supervisory position yourself? Maybe you see it as the next logical rung up the ladder and your motivation is for upward career mobility. Want to identify some key factors in the selection process so whether you are in the position of the selector or the individual being considered for selection, you have some insights that might help? Then I invite you to read on.

First and foremost, just because an individual excels on the bench does not mean that he or she will excel in a supervisory role. Let's face it. Those are two completely different jobs. In fact, they are so significantly different that we should probably get away from referring to them as promotions or upward career tracks. They are so different that if we were to examine the undergraduate curriculum for the majors offered in forensic science and management, I suspect that the only connection might be in the P.E. requirement! Is my point clear? Fortunately, that does not mean that there are not currently people on the bench who would not do well in a supervisory role. All I am trying to get across is that the skill set that makes one an excellent bench scientist is not the same skill set necessary for a supervisor to excel.

So what should we look for? Well, while it is important to have adequate knowledge, skills, and abilities in the disciplines for which the supervisor will be responsible it is as important to have good to very good people skills. Communication is one. It is important for a supervisor to have very good communication skills. This not only includes having good written and oral skills and a sound grasp of the English language, but, also the ability and desire to keep others regularly informed. Just because an individual excels on the bench does not mean that they will have good communication skills. However, a supervisor cannot excel without them.

A second people skill is accessibility. How accessible is an individual to others? This can be easily gauged for the bench scientist. Is he or she a good teacher, a good mentor? Or, when someone goes to them for help does the individual role his or her eyes and make ridiculing comments? Maybe the response is a bit subtler. They agree to make the time available to another but then never do. An important skill to excel as a supervisor is the ability to develop other individuals. One cannot develop others without being accessible to them. Yet, it is possible to be a very good bench scientist without being accessible, especially if the goal of the laboratory is simply to get the casework done.

I also believe it is necessary to have compassion and empathy for others to excel as a supervisor, and anything else gives the appearance of standoffishness and aloofness. One certainly does not need compassion and empathy to succeed on the bench. Indeed, it is suggested that one has to detach to excel on the bench. Unfortunately detachment is not a characteristic many would espouse for excellence in supervisory roles.

A fourth is balance—balance in one's professional and personal life. Depending on the goals of the laboratory system, one does not have to achieve such balance to excel on the bench. Indeed, in a system motivated by sheer numbers alone, it sometimes pays to be unbalanced in approach. Yet, in order to excel as a supervisor it is essential that one has balance. It is important to be good at a number of things rather than great at a select few and ignorant of the rest. Further-

more, if one's personal life is rather chaotic then it is unlikely he or she would make a good supervisor let alone an excellent one.

These are just a few of the people skills necessary for one to excel as a supervisor that one does not necessarily have to have to excel on the bench. For those seeking out others for this job-change it is important to have some way to measure these various people skills. Sadly, if those who are doing the seeking do not have them it is highly unlikely that they will know what to look for. For those seeking such a career change, these skills can be developed right where you are, or, alternatively, through other organizations such as those that may be present in your community.

Is it self-confidence or ego? Individuals who excel on the bench generally have good self-confidence but this is not necessarily always the case. It is not all that difficult to mask a lack of self-confidence if one's ego is large enough.

In addition, if one is not careful an excessive ego can result as a result of one's success on the bench. Always the go-to person? Always the one with the answer? Always the one sought out? It does not take much for

**"If we were to examine the undergraduate curriculum for the majors offered in forensic science and management, I suspect that the only connection might be in the P.E. requirement!"**



# Leadership 101

## Making the Change

Fourth in a series. By Ron Nichols

*please turn to page 21*



# DNA and International Human Rights Project:

## *A Request for Financial Support*

Following a request by the Human Rights Center at UC Berkeley and Physicians for Human Rights in Boston, a group of forensic scientists from the Jan Bashinski DNA Laboratory in Richmond finds itself in the privileged position to apply DNA profiling for human identification to an extraordinarily worthy endeavor. The text below explains the project and at the end offers an avenue to contribute towards the acquisition of kits for collection of buccal samples from families looking for their missing children in El Salvador.

You may know that during the civil war in El Salvador the counter insurgency campaigns carried out by the military forces during the early 80's resulted in many civilian deaths and the destruction of countless villages. Often, children that survived were taken by the military and subsequently turned over to the Salvadoran Red Cross, which arranged for their adoption or placed them in orphanages. Following the signing of the Peace Accords in 1992 parents have begun to search for their missing children. Many of them have still not been found by their families and have now become adolescent and adults. In some cases, children were placed in orphanages by their own parents when they joined the insurgency movement. Their biological families lost track of these children when their parents met an untimely death during the internal war.

The non-governmental, human rights organization Pro-Busqueda (Pro-Search) in El Salvador was established soon after the Peace Accord, to assist the 496 families in El Salvador looking for their missing children. So far 160 of them have been found and at least 30 have been confirmed by DNA evidence. The DNA analysis has been done with the support and coordination of the human rights organization Physicians for Human Rights (PHR) jointly with the Human Rights Center (HRC) at UC Berkeley.

In the fall of 2003, at a meeting convened by HRC and PHR, a group of volunteers from the Richmond DOJ DNA Lab met in the Bay Area with the head of Pro-Busqueda, Father (Jesuit) Jon de Cortina to explore how to implement procedures for the collection of samples from the relatives of the children. Following that, these samples would undergo DNA typing at the Richmond DNA Lab. The DNA profiles would become part of a database that Pro-Busqueda will have for posterity as children, adolescents and adults appear in the future who could have been among the missing children from the war period. As their DNA profiles are obtained they will be compared to the panel of possible relatives.

We are most hopeful about this project. It is, to our understanding, the first collaboration of its kind between human rights organizations where genetics for human identification is important to their mission, and a group of professional DNA analysts from a public forensic laboratory. As a result of his leading participation in the project, Bureau Chief Lance Gima, Bureau of Forensic Services, The California Department of Justice has approved this effort with the understanding that the group of volunteers pursues this work outside of state time and with the use of instrumentation during periods that would not conflict with the mission of the Jan Bashinski DNA lab. Accordingly, reagents, supplies and some computer hardware need to be purchased separately. The HRC has established a

"Human Rights and DNA" fund that has been receiving private donations. Additionally, the HRC donated \$10,000 out of its own program funds toward the El Salvador project. With this latter addition to the fund we have acquired almost 1/3 of the necessary budget to complete the project.

It is most encouraging to us that the board of the CAC has allowed us to post this request at its website in our efforts to complete raising funds for the project, and specifically, to purchase 750 buccal cell collection kits at a cost of \$1850. The collection of reference samples in El Salvador is scheduled for late April.

Volunteers from PHR and from the Richmond Lab will provide technical assistance in the collection of these samples. DNA typing at the Jan Bashinski DNA Lab in Richmond will likely occur in July and August by volunteers working evenings and weekends. The database will become the exclusive property of Pro-Busqueda. In addition, our plans include the training of someone in El Salvador to perform queries against the database as individuals in the future are typed in their search to know about their heritage.

Donations by check should be written to: "UC Regents", memo line "For DNA and Human Rights Fund", and mailed to: Human Rights Center, 460 Stephens Hall, University of California, Berkeley, CA 94720-2300. Please allow three weeks for the check to be cashed. The donation is tax deductible and the donor should receive acknowledgment of the donation within 3 months. We will post bi-weekly at the CAC website, a tally of what has been received towards the above sum (\$1850). Once completed or by the end of August 2004, whichever comes first, this announcement will be removed. For further questions please contact Cristian Orrego: [cristian.orrego@doj.ca.gov](mailto:cristian.orrego@doj.ca.gov). To learn more please go to:

Asociacion Pro-Busqueda: [www.probusqueda.org.sv/](http://www.probusqueda.org.sv/)

Human Rights Center / UC Berkeley: [www.hrcberkeley.org](http://www.hrcberkeley.org)

Physicians for Human Rights: [www.phrusa.org](http://www.phrusa.org)



The San Mateo Sheriff's Lab is hosting the spring seminar in Foster City, May 3-7, 2004. Additional meeting and hotel information as well as registration forms are available at

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

# Farewell to Enrico Togneri

*"His dedication to the profession was manifest..."*

**By Jan Bashinski**

Enrico Natale Togneri (known as Rico to his many friends), former Director of the Washoe County Crime Lab and well known forensic scientist, passed away December 19, 2003 in Reno of a heart attack at the age of 56. Rico is survived by his wife, Amy, son Marcello, father Alberto, brother Mauro, and sister Annamaria Williams.

Born in Lucca, Italy, Rico came to the United States at the age of 12, growing up in Occidental, CA and attending Sonoma State University and the University of California at Berkeley. He began his career in criminalistics at the Contra Costa County Sheriff's crime lab, and then became director of the Washoe County crime lab in 1978, where he was instrumental in the design and organization of a new laboratory facility. He was also a faculty member of the National Judicial College in Reno, taught at Truckee Meadows Community College, and served for several years on the Board of Directors of the Committee to Aid Abused Women. Rico retired from the Washoe County crime lab in 1994. He then worked as a forensic consultant at the law office of David Houston, until his death.

An alumnus of the criminalistics program at U. C. Berkeley, Rico was known and beloved by many colleagues in the CAC and across the country. His dedication to the profession was manifest, and he played an important role in many ways. He could always be counted on to "do the right thing" and for the right reasons. In the early years, Rico served as Chair of the CAC Certification Committee and helped lay the groundwork for what ultimately become the CAC, and then the ABC, certification program. He also served as President of the CACLD. In 1983, as President of ASCLD, he made pivotal decisions that launched the ASCLD/LAB as an independent accreditation program. In 1994, as President of the AAFS, Rico continued to be a strong advocate for the profession of criminalistics.

Above all, Rico was a man who loved life and lived it with gusto. He was an accomplished alpine skier and tennis player, a soccer coach and a certified referee. A night out with Rico—who was capable of enlisting an entire restaurant in a "spoon hanging" contest—was guaranteed to be a night to remember! His charm, wit, and joie de vivre will be greatly missed by all who knew him. *Arrivederci, Rico.*

## CAC Board of Directors *Candidate's Statements*

### For President-Elect



Jim Stam

My name is Jim Stam. I have worked for the San Diego Police Crime Laboratory for 25 years. Prior to that I worked for the Alameda County Sheriff's Department. I joined the CAC in 1975 and have been fairly active in the association since. I served as Southern Regional Director twice in the early 1980s and in 2000-2001. I have served on several committees, Training and Resources, Ethics, and I am on the Endowment Committee until May. I have always considered the prospect of

running for the President's position. It is important to be active in your organization and the opportunity to give back to the organization and possibly help new criminalists in the field helped convince me to run. I will be an active president and will represent the CAC well. Thank you for your vote.

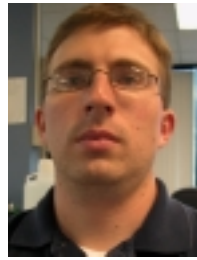
### For Regional Director, North



Linda Abuan

I have been a criminalist at Forensic Analytical since 2000 and a CAC member for several years. I have enjoyed working on the Board of Directors as Regional Director North for the past two years and I would look forward to serving another term. I would also like to thank all of the individuals and laboratories that have volunteered to host meetings in the past two years. I truly appreciate all of the time and effort you have put into coordinating these events.

### For Membership Secretary



Adam Dutra

I have been a member of the CAC for several years and have been interested in increasing my involvement. I believe that I have benefited from the information exchange CAC has provided through its seminars and study groups. I am currently a member of the Training and Resources committee and have helped coordinate two successful study group meetings, but I would like an additional way to give back to the organization. I feel that Membership Secretary is a perfect opportunity to accomplish this. I know that it is a demanding position, but I am ready for the assignment. Thank you for supporting me in the upcoming election.

### For Recording Secretary

I have been a Forensic Scientist with the Orange County Sheriff's Crime Laboratory for the past 18 years, and have been



Mary M. Hong

a member of the CAC since 1986. I have previously served on the Board of Directors as Membership Secretary from 1988-1992, and as Southern Section DNA study group chair. The information and professional contacts I have gained through participation in CAC activities, including study groups, section meetings, and seminars, have been extremely valuable to my career. I feel it is time for me to step forward to help maintain the commitment the CAC has made to its members to provide a forum for training, information exchange and promotion of professionalism in criminalistics. I would appreciate the opportunity to serve the CAC as Recording Secretary.

# CAC SEMI-ANNUAL SEMINAR ABSTRACTS

OCTOBER 2003—SAN DIEGO

## **The Investigation of the Kidnapping of Danielle Van Dam: The Physical Evidence Perspective**

*Tanya Dulaney and Jennifer Shen, San Diego Police Dept. Crime Laboratory, 1401 Broadway MS 725, San Diego, CA 92101*

In the morning hours of February 2, 2002, a little girl was discovered missing from her bed. Thus began a massive search and a herculean effort by law enforcement agencies and citizens all over San Diego to find Danielle and bring her home. When her neighbor, David Westerfield, was identified as a suspect and her body was found, a series of events began to unfold, involving the San Diego Police Department and its crime laboratory in an investigation with time constraints and scrutiny unlike anything it had ever experienced. Crime laboratory personnel responded to scenes at the van Dam home, David Westerfield's home, his motor home, his SUV, and the body recovery site. Westerfield was interviewed and polygraphed. Hundreds of pieces of evidence were collected, itemized, and analyzed. Suspicious behaviors, an unreasonable alibi, child pornography, and a failed polygraph, combined with Danielle's blood on Westerfield's jacket and in his motor home, gave the police sufficient cause to arrest him for the kidnapping and murder of Danielle van Dam.

As the preliminary hearing approached, laboratory personnel worked feverishly to find more evidence. Latent prints located in the motor home above the bed were identified as Danielle's. The blood and fingerprint evidence were presented at the preliminary hearing and Westerfield was bound over for trial. As the DA decided to seek the death penalty, the Westerfield defense insisted on a speedy trial, giving the crime lab only a few months to search through mountains of evidence. Danielle's hair, her dog's hair, carpet fibers, and clothing fibers began to emerge from the analyses. It then became necessary to prove that the evidence portrayed a recency of contact between the victim and suspect, and that the evidence was not transferred in an innocent fashion.

In the end, after thousands of man-hours, involvement by nearly every laboratory section, and a grueling time schedule, David Westerfield was convicted of kidnapping and murdering Danielle and was sentenced to death.

## **Emergency Response and Counter-Terrorism—Operations in the San Diego Area**

*Special Agent John A. Sylvester, F.B.I. San Diego Division, Counter-Terrorism Squad*

The unclassified Counter-terrorism, WMD Operations and Emergency Response training includes discussion of the following topics:

1. The Counter-terrorism and WMD threat from both domestic and international terrorist groups,
2. Nuclear, biological and chemical weapons,
3. Federal Response Plan operational response,
4. San Diego Operational Area Anti-Terrorism Team response,
5. The Standardized Emergency Management System — Incident Command System (SEMS-ICS),
6. Coordination

tion of a response to a critical incident or mass casualty event in the San Diego area.

## **Forensic Scientist or Space Cadet: Lessons Learned In An Interdisciplinary Collaborative Effort**

*Lynne D. Herold, Ph.D., Senior Criminalist, Los Angeles County Sheriffs Department, Scientific Services Bureau, 2020 W. Beverly Blvd., Los Angeles, CA 90057, LDHerold@LASD.org.*

This presentation will summarize the results of a six-month collaborative investigation between the LASD/SSB and the NASA/Jet Propulsion Laboratory. The project was jointly funded by NIJ and NASA. The stated goal was the identification of technologies, techniques and/or instrumentation used in space science (or related JPL research projects) that could be successfully transferred into the non-DNA forensic science arena, and thus enable forensic science to either perform some analytical work of which it is currently incapable, or improve performance by doing something "better, faster, or cheaper". More than 60 different technological areas at JPL were evaluated. Generally such collaborative efforts have not been overwhelmingly successful because of factors such as the lack of reality-based understandings of each science discipline, cost factors, institutional policies, and business practice perspectives.

## **Bugs and Bodies: Insect Collection at Death Scenes**

*Marie Durina, Forensic Evidence Technician, San Diego County Sheriffs Department Crime Laboratory, 5255 Mt. Etna Dr., San Diego, CA 92117.*

This presentation will provide a brief overview of Forensic Entomology for death investigators and scene responders. Methods of collection will be demonstrated and there will be a PowerPoint presentation regarding the importance of proper collection of specimen samples and field data.

## **Forensic Entomology Applications: The Rest of the Story**

*David K. Faulkner, M.S., Forensic Entomology Services, 5434 Redland Place, San Diego, CA 92115-2217, Dkfaulkner41@aol.com*

Now that you know the basics, this is how Entomology can be used by the Criminal Justice System in investigations of abuse, neglect, or death. Recent cases will be presented that show how the recognition, collection, preservation, identification, and interpretation of insect specimens have assisted in criminal investigations.

## **Detecting the Catalytic Components of Self-Cleaning Glass on Trace Particles of Glass**

*Corrie Maggay, MFS\*, and Robert D. Blackledge, MS, Naval Criminal Investigative Service Regional Forensic Laboratory 3405 Welles Street, Suite 3, San Diego, CA 92136-5018, [cdmaggay@hotmail.com](mailto:cdmaggay@hotmail.com) and Faye Springer, BS, Sacramento County District Attorney Crime Laboratory, 4800 Broadway, Suite 200, Sacramento, CA 95820*



In many break and enter cases entry is gained through the breaking of a window. Many of the cases involve a perpetrator who is devious and well equipped. The perpetrator will wear gloves, a mask and other gear to keep from leaving a piece of themselves behind at the scene. What many of these perpetrators do not realize is that even if they do not leave a piece of themselves behind at a scene they may unintentionally take a piece of the scene with them. Glass from a window is one of these items.

Studies in the past have focused on the way glass breaks. The motion of glass when it breaks, the percentage of glass found on a perpetrator, which section (front, middle, back) of the glass ends up on the perpetrator, and how long the glass stays on the perpetrator have all been considered. Although many tests on glass have been conducted, some criminalists have been reluctant to use glass as evidence due to its omnipresence in the community.

With the use of self-cleaning glass, a study was done to find if a suspect who gained entry into a house through a window made of self-cleaning glass could later be linked to the scene. With the help of the Naval Criminal Investigative Service Regional Forensic Lab San Diego, the Yuma Army Proving Ground, and the use of high-speed cameras and microscopic analysis, an experiment was put together to test and prove this hypothesis.

### **JEOL 6360 and the INCA-Feature System**

*Mel Kong\* and Steven Cordes, San Diego Police Department Crime Lab, 1401 Broadway MS# 725, San Diego, California 92101, mkong97378@msn.com*

This presentation will discuss the new SEM (scanning electron microscope) system including testing, validation and implementation. The use of calibration standards and philosophy of gunshot residue (primer) will be explored.

### **Fired Cartridge Case Comparisons: 9mm and 40 Caliber Glock vs. Smith and Wesson Sigma Series Pistols**

*Nancy D. McCombs, California State Department of Justice, 5311 N. Woodrow, Fresno, CA 93740, nancy.mccombs@doj.ca.gov*

With the introduction of Smith and Wesson's Sigma Series pistols, Model SW40F in 1994 and the Model SW9F pistol in 1995, the firearm examiner can no longer list the Glock pistol as the sole suspect firearm when considering the class characteristics of fired cartridge cases.

Due to the infrequent number of Sigma Series pistols in circulation, earlier comparisons of fired cartridge cases from the two types of pistols were limited. In this study, similarities and differences in class characteristics were compared between cartridge cases fired from a considerable number of 9mm and 40 caliber Glock and Smith and Wesson Sigma Series pistols.

### **Mitochondrial DNA Analysis of Crime Scene Samples Using Prototypes of the 'Linear Array Mitochondrial DNA HVI/HVII Region-Sequence Typing Kit'**

*Mehul B. Anjaria, B.S., San Bernardino County Sheriffs Department-Scientific Investigations Division, 200 South Lena Road*

San Bernardino, CA 92415, manjaria@sbcisd.org and Cassandra Calloway,<sup>2</sup> M.S.; Rebecca Reynolds,<sup>2</sup> Ph.D.; Michael Grow,<sup>2</sup> B.S.; and Daniel J. Gregonis<sup>1</sup>, M.S.

<sup>1</sup>San Bernardino County Sheriff's Department-Scientific Investigations Division, San Bernardino, CA

<sup>2</sup>Roche Molecular Systems, Inc., Alameda, CA

Roche Applied Science, Inc. (Indianapolis, IN) is preparing to release the 'LINEAR ARRAY Mitochondrial DNA HVI/HVII Region-Sequence Typing Kit'. This new system for mitochondrial DNA typing of forensic samples uses the proven technology of reverse dot blotting (used previously in the AmpliType® PM+DQA1 nuclear DNA testing kit) with the exception that the probes are arranged in a linear fashion versus being arranged as a 'dot'. The system is a simple, rapid, and inexpensive way of performing mitochondrial DNA analysis when compared to the standard sequencing analysis. The 'LINEAR ARRAY' kit provides an effective mechanism for screening samples to minimize the number of samples that must be sequenced. The discrimination power of the system is significant, but it is not as powerful as sequencing analysis.

In addition to the developmental validation that a manufacturer must perform prior to releasing a product to the forensic community, forensic laboratories must perform internal validation studies prior to bringing a DNA typing system online. The study presented here was undertaken to investigate how the typing system works with crime scene samples. The samples chosen for analysis were bloodstains collected at actual crime scenes in San Bernardino County, CA sometime prior to 1993. The samples are considered 'secondary reference samples', meaning that their source can be logically inferred (e.g. blood collected from a pool adjacent to a body with a gunshot wound to the head). These samples had been exposed to an array of environmental conditions (e.g. snow, heat, rain) and were deposited on a wide variety of substrates (e.g. carpet, clothing, asphalt, dirt). Also analyzed were the actual reference (origin positively known) blood samples.

Existing DNA extracts from these samples produced from either the organic (phenol/chloroform) method or the Chelex method were used. These samples were not extracted with mitochondrial DNA analysis in mind. Also, various analysts performed these extractions in either 1993 or 2000 and some samples were extracted multiple times.

Using prototypes of the 'LINEAR ARRAY Mitochondrial DNA HVI/HVII Region-Sequence Typing Kit', all but three of the crime scene samples were successfully amplified and typed following the appropriate protocols. For one sample, no additional extract remained for further testing. It was determined that the two remaining non-amplifying samples likely contained substances inhibitory to the PCR. Varying parameters such as amount of input DNA, using alternate primer sets, and the use of bovine serum albumin were employed in an effort to overcome the inhibition. Successful amplification was achieved for both samples simply by decreasing the volume of the input DNA into the PCR.

No contamination was observed when comparing crime scene samples with the corresponding reference samples. Cross-hybridization likely occurred with one prototype of the LINEAR ARRAYS for some samples. When the same PCR product from these samples was typed on a newer version of the LINEAR ARRAYS, the cross-hybridization disappeared. Studies such as this one have been helpful in probe design and in determining optimal DNA input for the final version of the typing kit.

## **Trials and Tribulations Associated With Implementing a Portable Evidential Breath Test Program**

*Robert Reckers, Orange County Sheriff/Coroner Dept. - Forensic Science Services, 320 N. Flower, Santa Ana, CA 92703, breckers@fss.co.orange.ca.us*

**Objectives:** This presentation is the third in a series about the use of the Intoximeters Inc. AlcoSensor IV-XL @ Point of Arrest system as a Portable Evidential Breath Test (PEBT). This third installment will focus on the following: How this instrument is now used in the field, the most common Void Codes encountered and remedies to avoid them, how the system has been further modified by Orange County /Intoximeters and legal challenges.

**Relevance:** After years of breath testing suspects at a jail or police station, portable evidential breath testing is now available in California, using one of several different manufacturers.

**Methodology used:** Information has been obtained from the evidential use of the device since permanent implementation began on July 3, 2002, in high incident DUI areas of the County of Orange. Since training began in March of 2002, over 600 operators have been trained from 21 different agencies.

**Results obtained:** Through the roadside use of this instrument, we have discovered that the two most common Void Codes are Void Code 6 and Void Code 11. Void Code 6 means that a person has not blown into the instrument, as instructed, four times. The instrument aborts the test sequence, allowing the officer to persuade the subject to try again or to choose an alternate testing procedure, such as blood. Void Code 11 means that the blank is too high or that there is a detectable amount of alcohol still left inside the instrument from a previously tested subject. The instrument allows three attempts by the fuel cell to obtain a zero reading, allowing the sequence to continue, or the test is aborted. The operator has several choices to try and clear the instrument, which will be discussed, or they can then inform the subject to select another testing procedure.

Due to communication problems occurring with the old case insert, incorporating a fiber optic cable, OCS-D-FSS and Intoximeters decided that a change to the case insert that holds the three major pieces of the system together had to be done. By changing the insert, a more durable material could be used and the fiber optic cable could be eliminated, if the pieces were repositioned within the insert. By repositioning the pieces within the insert, direct window to window IR communications could be accomplished, allowing for more successful communication to occur.

To date, legal challenges have been made on the system, both in criminal court and in DMV hearings, resulting in the acceptance of test results. As with any breath testing programs, mouth alcohol and the "15 minute continuous observation" are still challenged "issues". We also expect some challenges relating to "new technology", even though AS IVs and AS IV-XLs have been on the Conforming Products List since 1992 and 2000, respectively.

**Conclusions:** With the PEBT program, many areas had to be addressed that crime labs hadn't primarily focused on, such as: officer safety, screening/evidential modes, and agency coordination officers. With proper procedures and training in place and with support from the manufacturer, a roadside evidential breath test program can be successful and perhaps easier to administer than a traditional IR-type program.

## **Vickers Hardness Testing of Selected Primers**

*Frederic A. Tulleners, Laboratory Director, Sacramento Criminalistics Laboratory, California Department of Justice, 4949 Broadway, Room F201, Sacramento, CA 95820, fred.tulleners@doj.ca.gov and Erik Randich, Lawrence Livermore National Laboratory, Mike Giusto, California Department of Justice.*

A study was conducted to evaluate the Vickers microhardness of primers from five different brands of .40 S&W unfired cartridges from major manufacturers. Primer hardness is affected by the structure and the composition of the brass used in its manufacture and by the nickel-plating if one is used. This study measured the Vickers microhardness and the thickness of the primers. Nickel platings increased the apparent microhardness of the primers. Differences were found in the average microhardness values of the underlying brass of the primers, and these differences were clearly attributable to the different grain sizes of the brass. This paper has been published in the *AFTE Journal* as "Vickers Hardness Testing of Selected Primers", Tulleners, F., Randich, E., Giusto, M. *AFTE Journal* Vol. 35 No.2, Spring 2003, p. 204.

## **Daubert Rulings and Questioned Documents: The Future of Forensic Science**

*Linton Mohammed, San Diego County Sheriff's Department, 5255 Mt. Etna Dr., San Diego, CA 92117*

Daubert hearings have been occurring with increasing frequency in Federal courts and have been trickling down into several State courts. Document Examination is one area of the forensic sciences that has been targeted for these hearings. The Questioned Document Community has vigorously defended itself with increasing success through ongoing research, publications and legal briefs. The experience of the QD Examiners could be a lesson for all forensic scientists who may be subject to a Daubert hearing.

## **The DNA Witness**

*Zach Gaskin, Technical Director of Forensic Genomics, DNAPrint Genomics, Inc., 900 Cocoanut Ave., Sarasota, FL 34236, zgaskin@dnaprint.com*

Five murdered and sexually assaulted women around the Baton Rouge area were found to have a common suspect through STR DNA analysis. The genetic profile of the killer from the crime scene specimens could not be found in a database. With no suspects, the Louisiana Task Force set out to dragnet suspects from the local community. Eyewitness accounts of a Caucasian male acting suspicious near the scene of one of the crimes focused the efforts of the task force in what would later prove to be the wrong direction. In February 2003, the Louisiana State Police Crime Lab contracted the services for DNA WITNESS testing after the dragnet DNA testing produced no "hits" from the more than 1000 individuals tested. Our Results indicated the killer to be 85% Sub-Saharan African and 15% Native American and two months after receiving this information, the task force had an African American male in custody that matched the STR profile found at each crime scene. This SNP based DNA test for the determination of an individual's Biogeographical Ancestry (BGA) has been utilized for geneal-

ogy enthusiasts, adopted individuals, and persons wanting to prove Native American affiliation. This presentation will provide information on the scientific foundation of the test and how it can and should be applied in modern forensics.

### **It Takes a Criminalist to See the Forest for the Trees - A Tale From the Forensic Wilderness**

*Norah Rudin, Forensic DNA Consulting, 452 Key Blvd, Richmond, CA 94805, norah@forensidna.com*

On October 21, 1996, a wildfire occurred in Calabasas county. The fire was reportedly observed to originate from the vicinity of an Southern California Edison (SCE) power pole. Several branches were reportedly cut from Eucalyptus trees close to the power pole by the SCE troubleman while he was on the pole attempting to disengage the lightning arrester. In dispute was whether the trees surrounding the pole had been trimmed to a firebreak of 10 feet from the pole in accordance with regulations. STR typing of binucleotide repeats was used in an attempt to link various cut and burned limbs to particular Eucalyptus trees in the grove immediately surrounding the power pole. Independent review uncovered an error in the original report that resulted from a combination of blind testing and an arbitrary signal threshold. Additional data was subsequently generated which substantiated the cause of the error and supported a corrected conclusion. Arguments for and against blind testing will be reviewed in light of the lessons learned from this case. Additionally, unusual challenges presented by the population genetics and molecular biology of trees will be discussed.

### **The Suspect Who Gave Me the Slip®**

*Robert D. Blackledge, Naval Criminal Investigative Service Regional Forensic Laboratory, 3405 Welles St. Ste. 3, San Diego, CA 92136-5018*

Attendees will learn of a new method of sample preparation/sample introduction for time-of-flight mass spectrometry and of its first application to evidence in a forensic science case.

This presentation logically falls into three parts. First a new method of sample preparation/sample introduction for time-of-flight mass spectrometry (TOF-MS) having potential application for some types of forensic science-related samples will be introduced. Desorption Ionization on Silicon (DIOS)<sup>1</sup>-MS is a matrix-free method of introducing relatively low molecular weight (<5000 Daltons) samples as intact, singly-charged ions into a TOF mass spectrometer. Because of the absence of interfering matrix ions, minimum levels of detection are impressive, and the method is tolerant of the typically dirty samples encountered in forensic science.

Next will be a case history of the first forensic science application<sup>2</sup> of DIOS-MS. It was alleged that an adult male coerced his fourteen-year old stepdaughter into having sex with him and gave her a commercial contraceptive product, Encare®. Encare® vaginal inserts are shaped like a suppository and have a paraffin-like consistency. They are composed of a matrix of polyethylene glycol (PEG), which contains the spermicide, nonoxonyl-9, plus some inorganic salts designed to produce foaming. Examination by DIOS-MS identified traces of PEG from extracts of vaginal swabs from the victim, and also from an extract of a swab of the suspect's penis (glans and shaft).

In the third part of the presentation you will see that the case took a strange twist when the suspect (through his attor-

neys) provided (as an alleged alternative explanation for the PEG traces), a bottle of Slip® Extra personal lubricant. An examination by DIOS-MS (as well as FTIR) showed low levels of PEG. However, the manufacturer of Slip® Extra said that no PEG had ever been used in any of their products. DIOS-MS failed to detect PEG in a sealed Slip® Extra bottle provided by the manufacturer. At the first trial, the defendant's attorneys agreed to stipulate that their client had added some of the Encare® vaginal insert to the bottle of Slip® Extra that he provided to them. The first trial ended with a hung jury. The retrial featured the same three defense attorneys as before, and they added a fourth (a former member of the O.J. "Dream Team") for the express purpose of cross-examining the prosecution's expert witnesses. Attend the talk to find out the outcome.

<sup>1</sup>Wei, J., Buriak, J.M. and Siuzdak, G. *Nature*, 399, 243-246 (1999) <sup>2</sup>Thomas, J.J., Shen, Z., Blackledge, R.D. and Siuzdak, G. *Analytica Chimica Acta*, 442, 183-190 (2001).

### **Issues Facing Large Firearms Ballistics Imaging Databases**

*Frederic A. Tulleners, Laboratory Director, Sacramento Criminalistics Laboratory, California Department of Justice, 4949 Broadway, Room F201, Sacramento, CA 95820, fred.tulleners@doj.ca.gov*

The recent Beltway Sniper incident renewed the debate about the utility of a "Ballistics Imaging Database" of all firearms that are sold. Based on the successful results that most agencies have had with their much smaller crime gun databases one might think that these result could be extrapolated to large databases. To look at these issues, a simulated large database from one model handgun was developed and various experiments were conducted on this simulated database. Frequently referred to as the California AB1717 study, this paper will discuss the results of these tests and their implications on a large "New Gun" database. A further discussion will bring up possible solutions and issues that have to be considered in the current crime gun databases.

This study has been published and is available at the CCI web site under the news section or from the CAL DOJ AG web site at [http://ag.ca.gov/newsalerts/2003/03-013\\_report.pdf](http://ag.ca.gov/newsalerts/2003/03-013_report.pdf)

### **Validation of the Qiagen Biorobot® EZ1 for the DNA Extraction and Purification of Reference and Evidence Samples for Forensic Casework**

*Shawn Montpetit M.S.F.S., San Diego Police Dept. Crime Laboratory, 1401 Broadway MS 725, San Diego, CA 92101*

With the large backlogs currently being experienced in the DNA sections of crime laboratories across the nation, methods to reduce analysis time are being sought. The DNA section of the San Diego Police Department Crime Laboratory has incorporated robotic DNA extraction technology for reference samples and is currently evaluating the robotic technology for use on evidence samples to streamline the analysis process and make casework more efficient.

The QIAGEN BioRobot® EZ1 System is an automated extraction system that can rapidly purify high quality DNA from 1-6 samples in as little as 20 minutes through magnetic particle technology. Protocols for extraction of evidence samples including differential extractions and reference samples have been devised that incorporate the pretreatment of samples with digest buffer and proteinase K.



The validation demonstrated that by using a pretreatment of digest buffer and proteinase K, high quality DNA can be obtained from all reference sample types. Preliminary results on evidence samples indicate that the BioRobot® EZ1 produces DNA yields comparable to organic extractions. The DNA recovered from the robotic extraction produced STR profiles free of inhibition and comparable to organic extraction. Significantly, the BioRobot® EZ1 was found to eliminate inhibitors that co-purify with DNA when extracted with phenol-chloroform.

We have found the BioRobot® EZ1 offers an immediate savings in analysis time during routine casework. Using the robotics system for the extraction of reference samples is a reliable and simple means of improving the efficiency of how forensic cases are analyzed in the modern crime laboratory.

### **An Unusual Fiber Transfer in a Hit and Run**

*Pennie I. Laferty, Orange County Sheriff/Coroner Dept.- Forensic Science Services, 320 N. Flower, Santa Ana, CA 92703*

A fourteen year old boy riding a blue bicycle was struck and killed by a vehicle that ran a red light. The driver failed to stop and was subsequently arrested several blocks away. The right rear view mirror of the vehicle had been broken off; there was an indentation in the right side of the windshield and an apparent blue paint transfer on the right front quarter panel. However, when the bicycle was examined no damage was observed.

The apparent blue paint transfer, when examined microscopically, consisted of melted and broken fibers, not paint. The fibers from the transfer were identified as polyester and cotton. The victim's pants were blue and were also composed of polyester and cotton fibers. The fabric of the left front pocket area of the pants was discolored and the fibers within the discoloration appeared to be crushed and melted. The fibers from the blue transfer and the fibers from the discolored area on the pants were examined using polarized light microscopy, comparison microscopy, infrared spectroscopy and UV-visible microspectrophotometry. No analytical differences were observed between the fibers from the vehicle and the fibers from the victim's pants. Therefore, the fibers from the vehicle could have come from the victim's pants.

### **Blood from A Bone: Investigating the Survival of Blood Proteins in Skeletal Tissue for the Forensic Determination of Date of Death**

*Bongi A. Bishop and Dr. Greg Hodgins, University of Arizona, NSF Accelerator Mass Spectrometry Laboratory*

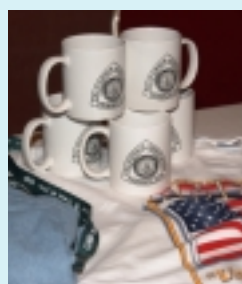
Carbon-14 is a naturally occurring radioisotope that is incorporated into the tissues of all living organisms. In addition to naturally occurring <sup>14</sup>C, above ground nuclear testing between the end of WWII and 1963 contaminated the earth's atmosphere with bomb-generated carbon-14. Organisms that lived during this time have incorporated bomb-radiocarbon into their tissues. This contamination peaked in 1963-64 when levels reached approximately 180% of the natural levels. Since the 1963 ban on above ground testing, levels have been falling back towards natural levels. This phenomenon has potential applications in forensic science. The precise amount of bomb carbon in a tissue depends upon when the organism lived and died in

this period. In attempts to determine the year of death, previous investigators have measured <sup>14</sup>C content of various human tissues such as bone collagen, lipid, and hair, and compared these to atmospheric carbon-14 values over the last 50 years. These results have shown that rates of tissue turnover influence the accuracy of the result. The goal of our research is to develop a technique to determine an accurate date of death from skeletal remains when no soft tissue is present. Our objective is to extract fast turnover tissue such as blood proteins (serum albumin and hemoglobin) from cortical bone and quantify their carbon-14 content. We hope to compare the carbon-14 levels in these tissues to the Atomic Bomb Calibration Curve and improve the accuracy of the determination of year of death.

### **The Priest, the Entrepreneur and the Interstate Trucker: DNA Solves Two 1965 Homicide Cases**

*Connie Milton, San Diego County Sheriffs Dept Crime Lab, 5255 Mt. Etna Dr., San Diego, CA 92117*

With the application of DNA technology to the world of forensic science, new hope has been brought to many previously unsolved cases. Many agencies have investigators devoted to the pursuit of solving cases that were difficult or impossible to prove without the recent advances in forensic science, namely DNA analysis. This presentation will illustrate how laboratory analysis of decades-old evidence, combined with the investigators' ability to obtain an alternate reference sample from a long considered suspect, has led to the resolution of two "cold" homicide cases in California and has linked the same suspect to a 1975 sexual homicide in another state.



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# Report From Dallas AAFS

by Dianne Burns

What good is information if it is not shared? By that metric, the recent 56<sup>th</sup> annual American Academy of Forensic Sciences (AAFS) meeting was a success and offered an impressive body of forensic knowledge. For six days, twenty eight hundred participants from forty-five countries swarmed the giant Adam's Mark Hotel in downtown Dallas. The theme for the meeting was "Truth and Justice in the Balance —Forensic Scientists as the Counterpoise."

Dallas provides a hospitable backdrop for such an enormous gathering. Texans are authentically warm and friendly and the Bar-B-Q menu is meaty and affordable. For first timers, Texas can be a world unto itself. Where else can you buy a 500-page cookbook specializing in last meal requests by inmates before execution which includes such blue-ribbon cuisine as Rice Rigor Mortis or Old Sparky's Convict Chili in escalating levels of spice (5,000, 10,000 or 20,000 volts)?

Although forensic science revolves around the evidence, this meeting hammered home the message that ours is a technologically driven profession. Advances in automation are proceeding at a blistering pace, already establishing a foothold in DNA casework. Databases containing all-felonies are on the horizon, rearing their backlogging heads. Laboratory directors are noticing the gravy train has stopped and they have to start thinking like a competitor or face the troubling consequences created by a lack of financial accountability and productivity.

What to do? Automate, featuring the new kid on the block —nanotechnology. If presentations in Dallas are an indication, DNA on a chip—a heavily researched, well-funded reality - will be arriving at a lab near you. Hand pipetting, along with associated sampling errors, will soon be a memory. Billion dollar companies, leading universities, and avant-garde forensic laboratories have joined forces to co-produce the automated forensic instrumentation of the future.

Repeatedly, I heard DNA presentations in Dallas make reference to the term 'walk-away technology'. For example, a technician introduces a blood sample into a fully integrated rape kit microchip and forty-five minutes later a completed genetic profile is produced.<sup>1</sup> New cell separation techniques are on the verge of reality. Mixtures? No problem. Differential extractions? Bring 'em on! For scientists in blood alcohol and drugs, walk away technology is nothing new. For today's DNA analyst, does walk away technology mean walking all the way back home to wait for an unemployment check? Evidently not.

Automation of body fluids will produce a mountain of data, creating a new bottleneck for the humans to review.

Forensic scientists will not become over-educated paper-pushers, however. In the near future we may not be touching a single piece of paper while at work. IT improvements will initiate 'smart laboratories', like the emerging phenomena known as 'smart hospitals', producing a money saving wireless, paperless work environment. No more paper forms, signatures or bulky files to store. At one presentation, I learned how paperless laboratories are already a reality for the Georgia Bureau of Investigation.<sup>3</sup>

More was going on in Dallas besides the quest for automa-

tion. The actual counterpoise of this meeting was to be found listening to the old school trace evidence scientists. Several authors from my personal forensic library and other big names of the profession, one dating to the Eisenhower administration, reminded us that the backbone of forensic science is the word 'science' and technology is not necessarily better science. They were asking: Where are the scientists? What happened to the Scientific Method?

Peter De Forest wanted to know if, "As trace evidence units are downsized or eliminated, is criminalistics being eviscerated of its essence?" It is feared that forensic scientists are evolving into processing technicians, isolating themselves from the context of the entire case, applying written protocols with pre-approved wording in order to "bullet proof" their reports. The feeling is the generalist approach to criminalistics is as endangered as the Mountain Gorilla and, as they say in Texas, "there is no 'I reckon' about it." For me, this is a scary thought and I couldn't help but wonder if the generalist concept is rapidly becoming a myth we are content to live with.

The importance of knowing the context of an entire case is something architects and planners have long been aware of. They have to see the big picture. Architecturally, *context* is being able to fit a new building comfortably into an old neighborhood. As new buildings pop-up, the old neighborhood takes on a new flavor. The AAFS conference in Dallas offered attendees the opportunity to preview the new forensic neighborhood as it emerges from the drawing board.

- 1 Arni S. Masibay, PhD, MSFS, et al. "Automated PCR Setup for Case-work Samples as Part of a Total Automated System". Presentation AAFS Dallas 2004.
- 2 Colliver, Victoria. "Hospital of the Future". San Francisco Chronicle Technology Section, Feb. 23, 2004; p E1.
- 3 Arthur J. Eisenberg, PhD et al. "Quest for Automation - Addressing the Challenges" Presentation AAFS Dallas 2004.

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## The Culture of Bias, II

We reconvene at another local lunch spot that has earned the dubious distinction of having too many items on the menu from which to choose. The participants in this POL, Chuck Morton, Lisa Calandro, Keith Inman, and Norah Rudin, have, with some difficulty, found a day on which we can all be present in the same space at the same time. With somewhat less difficulty, we manage to select from among the numerous choices from the menu and place our order. While we wait for our meal to be served, we begin our discussion from the point where we left off in the last column. (Rudin and Inman, 2003).

Chuck first wants to clarify a statement that was attributed to him in *The Culture of Bias – Part 1*. (Rudin and Inman, 2003) Because his comments were transmitted through several different human and electronic filters, we incorrectly represented his view that “although many analysts might admit the potential for bias in general (or perhaps in others), each would categorically reject any suggestion that their own work could be affected.” What Chuck rejects is the word “categorically” to describe his opinion of what each analyst would reject, maintaining that he is rarely that certain about anything relating to people’s attitudes. We stand corrected.

We recapitulate some of the previous discussion about definitions. What is bias? How is it different than fraud? We agree that fraud entails knowingly and deliberately falsifying results. Keith suggests that blatant fraud is easily identified and halted, should someone accept the responsibility to do so. He wants to know at what level the accountability should lie. Chuck replies that, at the level of the laboratory, the management is responsible for establishing a culture that does not tolerate fraud and discourages bias. Norah counters that bias can and often does come from outside the laboratory, from the larger culture of detectives, attorneys, and the court. Chuck answers that one role of the laboratory director is to act as a buffer for these outside influences. Scientists are supposed to be objective and neutral. However, investigators are supposed to be biased; they rely on their subjective predispositions to effectively perform their jobs.

Keith proposes that most people don’t set out to be dishonest. The occurrence of non-fraudulent bias is insidious; it creeps in from many directions. Sometimes it stems from a lack of education or awareness. Not everyone has been exposed to concepts such as the requirement for contemporaneous documentation and the need for transparency so that another scientist can independently determine if the data support the conclusions. Norah provides an example of a laboratory

who resisted discovery of electronic DNA typing files because the data could potentially be altered.

Leaving aside for the purpose of this discussion the question of whether the data could, in fact, be substantively altered, we all wondered what the analyst feared and what was the basis of her fear. Why did she resist legitimate review of her work product? Again, we conclude that a lack of understanding about the fundamental process of science, and perhaps a certain lack of sophistication about the profession of forensic science, might contribute to such attitudes.

We begin to ramble, and Norah suggests that we might focus the discussion by addressing some of the specific examples proffered in the last column. Unfortunately, no one has offered any opinions on the discussion board, so we proceed to discuss them amongst ourselves.

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### Case #1

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*An analyst is provided with a green blanket in which a body was wrapped. The analyst carefully analyzes the fibers comprising the blanket by several different methods. He then searches through a collection of fibers collected from a site suggested by detectives as the crime scene to see if he can find any matches. He finds fibers that match those from the green blanket among the fibers collected from the putative crime*

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Keith proposes that bias in this example is involved at the level of the question being asked. If the question is, are fibers from the blanket present at the crime scene, the question has properly been answered by the analyst. However, he maintains that this is the wrong question; the danger is that the answer to this limited question is extrapolated to be the (or at least the only) relevant question in the case. Perhaps, for example, a few green fibers are detected amidst a plethora of red fibers. The source of bias is the implicit assumption that the green fibers are the ones that are important and relevant because they match a potential source. Lisa argues that looking for green fibers, per se, is not an egregious sin. But failing to explore and report their random occurrence in the environment is another source of bias. When the relevant questions are filtered through detectives and attorneys, whose defined role requires them to be partial, bias is inevitable. Keith adds that general directives disguised as questions, for example “analyze the DNA” are unhelpful. The most important role of the forensic analyst





is to translate the relevant legal question to an answerable science question.

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Case #2

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*A laboratory writes a report including an unqualified statement that several hairs recovered from the scene “came from” the suspect in the case. The hairs were examined by light microscopy.*

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We have no trouble agreeing that such a statement is virtually never supportable. But does it represent bias? And if so, is the bias deliberate or the result of arrogance, misunderstanding, or incompetence? Lisa reminds us that, at a purely scientific level, at least some proportion of microscopic hair matches have been proven false using mtDNA analysis. Chuck facetiously interjects that the agency who performed the analysis in the case from which the example was taken has special powers and, in fact, can make such statements. We keep returning to the question of, should they know better? Is the misrepresentation deliberate or inadvertent? Has the analyst succumbed to poor training or pressure from the attorney? Not knowing the answers to these questions for this particular case, we cannot determine if the conclusion represents fraud or bias; in either case, it is inappropriate.

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Case #3

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*An analyst receives three samples collected in a sexual assault case: a vaginal swab, a cutting from the victim’s panties, and a sample collected from a chair in the room where the alleged assault took place. In all three samples, semen was confirmed and the sperm fraction showed the same type as the suspect. In the vaginal swab and panties samples, the non-sperm fraction showed the same DNA profile as the victim; in the chair sample, the non-sperm fraction showed a DNA profile that was different than either the victim or suspect. During testimony, the prosecutor asked the analyst about the sperm fraction results from all three samples and about the non-sperm results from only the vaginal swab and panties. The analyst answered the prosecutor’s questions exactly as asked*

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Keith insists that it is never acceptable to allow an attorney to distort your results. The analyst should always speak with the attorney to define and clarify questions and answers prior to assuming the stand. If a question is clearly designed to mislead, the analyst has the responsibility to correct any misrepresentations when answering. This one strikes a chord with Lisa. She points out that the analyst doesn’t always have control over what is asked or how it is asked. She does not always know the questions in advance and could be (and has been) blindsided by one attorney or the other. Often the situation is more gray than black or white; to what degree is the analyst responsible for the questions an attorney asks? Lisa believes that this is one of the reasons why the written report must be complete and unambiguous. Both sides

receive the report and have access to the full scope of the analyst’s results, conclusions, and opinions. If the opinions of the criminalist are misrepresented in testimony by deliberate omission of relevant questions by an attorney, competent opposing counsel still has the opportunity to elicit the missing information on cross-examination by referring to the report. She adds, however, that scope can be a problem if the issue was not covered in direct examination. Keith concedes that the analyst can provide a lead-in, but cannot force attorneys on either side to ask a question.

Keith further reminds us that the US criminal justice system is set up to be biased; it is inherent in the nature of an adversarial system.

The job of the scientist is to resist outside pressure; however, we are not always in full control over how our results are used. Lisa proffers that science is unbiased, it is the person who may be biased. One decision that must be made by the analyst, and therefore a potential source of bias, is how much additional information to incorporate into a report that will explain the results, or put them into the context of the case. She suggests that, in some sense, bias cannot be avoided because it is present in one direction or another whichever decision is made. Lisa provides another example of a case involving multiple analyses and multiple reports, either within one lab, or even among multiple labs. Is any one of the scientists responsible for bringing information to the court’s attention that the attorney has chosen to suppress? What if the reports apparently conflict, one supporting the case theory of the attorney and another contradicting it. Norah offers that one solution to this dilemma, at least for multiple analyses performed by a single agency, is for a full service laboratory to submit a single comprehensive report so that the analyses can’t be separated from each other.

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Case #4

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*A biological stain on a piece of evidence was analyzed using DNA. A two-person mixture was detected, comprising approximately equal amounts of material from each of the two donors. It was not possible to unambiguously pair alleles into genotypes at each locus; hence, complete profiles for each individual could not be assigned independently from the evidence. Two individuals for whom reference samples were available could not be eliminated as donors to the stain, and their combined profiles could account for all of the alleles detected. The analyst provided no population frequency estimates that addressed the strength of the mixture. She did, however, provide the population frequency for each individual reference sample.*

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This example can easily be extended to any type of evidence, where a statement of the strength of the evidence, whether quantitative or qualitative, is based on the reference item rather than the evidence item. It is the classic reversal of Stoney’s crime object (usually the

evidence) and suspect object (usually the reference) (Stoney, 1984). Determining the cause of the reversal is more difficult. Keith suggests that sometimes, mere laziness might be the villain. Caseloads are high and calculating statistics for DNA mixtures can be difficult and time consuming; determining the strength of non-biological evidence can be even more challenging. When the predilection to take the easier path is combined with a lack of understanding of its consequences, the result can literally be lethal. Norah suggests that a root cause of egregious errors such as reporting the frequency of a reference item is a lack of basic understanding, not of basic science or statistics, but of forensic science. The frequency calculation itself is mathematically correct; however it answers a forensically irrelevant question. While forensic science is not the only applied science in which items are compared and questions of source are asked, the nature of forensic evidence does present challenges absent from other fields of study. Analysts who have not been trained to think forensically may not appreciate that the question to which they have provided an, albeit correct, answer is not only irrelevant but potentially misleading.

Chuck reiterates that a key task of the criminalist is to help ask the relevant forensic question. We are the experts in physical evidence, its uses, advantages, and limitations. When an investigator asks an analyst to analyze a sample for some particular fibers, the question to which he really wants an answer is often, were these two items in contact? The criminalist may be able to suggest different analyses, or ask for specific samples that can better answer that question. Laboratory workers who are not willing and able to suggest a course of analytical action are not criminalists; they are merely technicians, at best performing competent laboratory procedures. Norah notes that the Risinger (2002) article specifically contradicts this thesis; in fact, the article proposes that the "solution" to bias is for criminalists to have as little information about the case as possible and to simply answer the questions put to them by investigators and attorneys. Chuck observes that the examples proffered in the article reflect laypersons performing non-scientific tasks. He argues that extending the results of such tests to trained scientists is invalid. We all easily agree that allowing detectives and attorneys to control the flow of case information is not only a really bad idea, but would increase the incidence of bias rather than reduce it. Bias is introduced through the questions much more strongly than through the answers. The most immediate check on subconscious analyst bias is a blind independent read of the data by another qualified analyst. A strong argument also exists for external independent review of every case.

Keith adds that case information is also necessary for the most useful interpretation of results, even at the level of source determination. Knowledge about the provenance of a sample can be used to deconvolute otherwise complex results. The most obvious example is a biological evidence sample taken from an intimate

orifice. In the case of an unresolved mixture, the known contributor can be subtracted from the mixture, yielding a much more understandable and tractable profile. We are sure the reader can think of both biological and non-biological examples in which case information was helpful, or even critical, to interpreting a result.

Keith takes the concept of assisting the criminal justice system a step further. He insists that information about the case is critical to helping the criminal justice system understand the event in terms of the physical evidence. This goes beyond basic source determination, to asking questions about association and reconstruction. The criminalist is the most qualified professional involved in a case to answer hypothetical questions about the likelihood of seeing the observed evidence given a particular scenario. Chuck is immediately concerned that what starts out as a hypothetical becomes a judgment about what did happen. Norah suggests that one way to guard against this is to perform the analysis and interpretation in a very deliberate and hierarchical fashion. At the level of source determination, assumptions are few and well-defined. The part of the analysis should be completed and conclusions stated before proceeding to the next level, association (the relationship of target to source) (Inman and Rudin, 2001). The incorporation of additional assumptions increases the uncertainty of any conclusions drawn at this level. The process is repeated for reconstruction (ordering associations in time and space), again introducing another layer of assumptions, limitations, and uncertainty. By carefully separating the analytical and interpretive steps, and overtly stating assumptions, the analyst can avoid overstating an opinion about nature and order of events. Evett and Cook have also suggested this approach. (Cook, et. al., 1998a,b)

Keith summarizes several key concepts that counteract bias: 1) admit the possibility of bias 2) state assumptions 3) state limitations 4) entertain multiple hypotheses. Bias is introduced when only one hypothesis is considered; if it is the hypothesis proffered by the investigator, then the conclusion or opinion is filtered through his bias. The analyst can further clarify her position by avoiding "weasel words" such as "consistent with" that allow the attorney to spin the conclusion to best support his case. If the evidence more strongly supports one hypothesis than another, the analyst is not only allowed to say so, she must say so.

In the interest of time and column space, we decide to skip to the last scenario to conclude our discussion.

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#### Case #9

*A federal laboratory, seeking a demonstration of concordance, sent copies of two latent prints from a getaway car and an inked fingerprint card containing a full set of the suspect's ten fingerprints to all 50 State laboratories for independent comparison. Initially, seven laboratories failed to match one of the latent prints with the Suspect's inked prints, and five failed to match the second latent print. These*

*laboratories were sent a follow-up package that contained better quality photographs and enlargements of both the latent and reference prints. The enlargements arrived in plastic sleeves marked with red dots indicating the corresponding ridge characteristics. The state examiners were instructed to "test your prior conclusions against these enlarged photographs with the marked characteristics" and to return the results as soon as possible. Almost all the respondents changed their minds and declared that both prints matched. (Cole, 2000)*

Norah opines that this is a clear example of pure bias at work. Particularly shameful is the fact that the pressure came from within the forensic science community. Keith offers that forensic scientists walk a tightrope, often balancing ego and humility. They must have the humility to change an opinion that has been demonstrated to be wrong, yet maintain a healthy ego to stand up for an opinion they are convinced is correct. In this case, the balancing act failed, resulting in a major embarrassment for the fingerprinting community. Chuck offers another fingerprinting example, where American experts disagreed with Scottish examiners about the source of a print found at a scene. (see URLs below) A subsequent investigation in that case has convinced most people that the initial identification was incorrect. Was this an example of bias or a genuine disagreement among experts? Keith suggests that, because fingerprint examiners have historically been required to choose between two extremes, identification or exclusion, no room remains for less definitive conclusions such as inconclusive or not enough information. This simplistic approach may sometimes force the examiner into characterizing a very tentative determination of source as absolute. In this instance, it is the examination protocol that forces bias. Lisa adds an example of a print that was sent to several different agencies for comparison. The agencies offered contradictory conclusions and the attorney presented only the results that supported his case theory. Bias was introduced in selecting only certain results to present in court.

Since Chuck has been doing this longer than any of us, and is one of the original generalists, Norah wants to know what examples of bias Chuck has seen. Chuck offers an example of foot imprints on the insoles of shoes. He says that the individual he has in mind was biased about her ability to translate a theoretical possibility into a practical application. He doesn't disagree that all feet are probably different, but he is skeptical that an imprint of the morphology of a foot can be unequivocally individualized to a particular foot. He equates this statement about the uniqueness of the foot with providing a statistic for the reference sample in DNA analysis; it is a purely theoretical and irrelevant number, with limited application to the case at hand. Lisa further clarifies the analogy with the example of a DNA sample for which results were obtained for only 3 loci. The frequency for

the reference profile, for which results were obtained for 13 loci, is on the order of 1 in a trillion; however providing this frequency for the evidence sample assumes that the rest of the loci match. The proper statistic, on the order of about 1 in a thousand, correctly conveys the limitation of not knowing the types at the other loci; it rejects the implicit assumption that the loci for which no information was obtained match. Similarly, in a foot impression, a few characteristics that appear in common between evidence and reference samples do not necessarily predict that other, obscured characteristics will be the same. The theme that assumptions, not facts, usually account for differences of opinion between analysts resurfaces.

Keith returns to our continuing lament that very little academic research has been directed toward the question of how the uniqueness of a reference sample translates into the information that is left behind at a crime scene. Another way bias enters is in our assumptions and expectations about this process. Chuck mentions that a large volume of research exists on the individualization of biological traits for biometric analysis, but, for the most part, this research is not helpful because it is based on pristine samples.

Chuck offers another example of bias exemplified by a failure to properly research the frequency of shared traits. An expert offered an opinion that reference and evidence soil samples analyzed using neutron activation had an astronomically small chance of originating from different areas because of a particularly high chromium content. Unfortunately, he failed to uncover the fact that chromium mining had once taken place in the area from which the evidence sample was recovered. Keith wants to know what kind of bias that represents? Chuck replies that the bias is the willingness to accept one hypothesis without checking the data against reasonable alternative hypotheses. Lisa wonders if a basic lack of understanding could have accounted for the failure to check such basic facts. Chuck is quite sure that the analyst should not have been lacking in such knowledge.

Lisa brings us back to our original dilemma. Unless it can be determined whether an apparently biased conclusion stems from ignorance, incompetence, or deception, it is difficult to troubleshoot or even categorize the problem. We agree that, in any event, the practical solutions are the same, education and training, blind second reads of data, rigorous internal review, and independent review of cases by qualified analysts.

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## Leadership, cont'd from page 8

such a person to develop an over inflated sense of one's importance.

A quiet, understated self-confidence is important to excel in a supervisory level position. A humble attitude is critical; in which one is ready to admit that while he or she may have many answers, they are not the single repository for all that is good and right. I am not suggesting that a supervisor has to be democratic in all decision making. However, I am suggesting that a supervisor who either does not seek input from his or her staff or seeks it only as a point of show is doing a tremendous disservice not only to the staff, but also to the organization. It is also arrogant. Frankly, there is nothing worse than an egocentric, arrogant supervisor.

Sadly, if an autocratic type person is in charge of the final selection, things will rarely get better. Such a person is too insecure to allow a freethinking individual to become part of the inner circle. Such a person will select someone who will do exactly as told without concern for different approaches. In essence, such a person will generally select a mirror image of him or herself. They will select someone just like them. This rarely allows for innovation or development. Generally it simply leads to smelly stagnation infested with insects. A little harsh? Maybe, but it is true.

Society gives emphasis to the brash and the arrogant. Rarely does it matter that the job got done but who did the job that becomes important. People become less and less identified with the person that they are, but rather more highly recognized for the job that they do. Contemporary society has really done a number on self-image. An individual who is humble and understated is seen as weak and less "up to" the task of leading a group of people. One need only look out the window onto the streets to realize the ultimate futility of such thinking. Suicide, depression, and divorce rates are at an all-time high. Why is that in such a "feel good" society? I will leave you to answer the question.

Making the grade and excelling in a supervisory role requires wisdom, skills and abilities that are not necessarily required to excel on the bench. Yes, I did say wisdom. An individual can be very knowledgeable but come up quite short on the wisdom thermometer. Wisdom requires knowledge but it is also the appropriate application of that knowledge that is important. While there may be personnel guidelines there are rarely any Standardized Operating Procedures for personnel management. People are not evidence and cannot be handled in the same manner.

None of this is to imply that a good bench scientist would not make a good supervisor. What it is meant to say is that one cannot make the decision to offer one a supervisory position based solely on an individual's performance on the bench. They are completely different jobs requiring completely different skill sets. Therefore, they need to be assessed accordingly.

Are you seeking to add an individual to your supervisory staff? First, don't treat it like a promotion. It isn't. It is a position that requires a skill set quite different than the skill set necessary to succeed on the bench. Look for the person who has good interpersonal relationship skills. Look at the individual who has a wide variety of interests. A look at their undergraduate background could be useful. Is it filled with nothing but science and technically related courses or is there a good balance with some liberal arts background? Look for the individual who has experience in leading even if it is not within your organization. Prepare in advance. When it becomes necessary to have temporary assignments then balance the assignments between different individuals.

Do you wish to be considered for a supervisory role one day? First, don't look at the move as the next logical step up a career ladder. The next logical step up the career ladder is improving on yesterday's performance and working towards being the best you can be at a particular position. There is absolutely nothing wrong with being a bench analyst for your entire career. Just work at being the best you can be at that position. However, if you aspire to something different then a supervisory role may be the right call. Prepare for it. While your success on the bench may cause others to seek you out when they have an urgent case that needs to be worked, it will not necessarily help when you are trying to lead a group of bench scientists toward a common goal.

Become active in leadership roles outside your organization. Whether it is in a professional forensic organization or a community organization leadership development is critical. It matters less where the skills are acquired than simply that they are acquired. In addition, consider furthering your education. There is an abundance of courses and workshops available to help teach those necessary leadership skills. Take advantage of them. Fortunately, many organizations offer continuing education incentives. Take advantage of those opportunities to fill in when your own supervisor has to be away for a short or extended period of time. Learn from those opportunities. Finally, find time simply to relate to those around you. Interpersonal relationship skills are best built through practice. Be a good listener. Be empathetic. Simply, be a good person.

In closing, it is important to remember that your position does not define who you are as a person. Simply because you have not been offered a supervisory role does not mean that you have not been a "success." What marks a successful person is not what we do for a living but rather the type of person we are.



### 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 ON THE WEB. Visit [www.cacnews.org](http://www.cacnews.org) to see what is offered. Content changes periodically, so visit often!

## ***President's Desk, cont'd from page 2***

forensic science which will require each student to complete a thesis. Fred foresees the merging of the U.C Davis program with the California Criminalistics Institute at some level. Should be a great collaboration. Best of luck to you Fred in your new position.

This article was also written to acknowledge approximately 20-30 criminalists who will be retiring within the next couple of years. I want to wish you all the very best in your next career.

As I sign off on my last president's message I want to take this opportunity to thank the members of this association for their support during my tenure. I look forward to the next seminar in May which is being hosted by my former colleagues at the San Mateo County Sheriff's Forensic Laboratory. I'll see you there.

## ***Editorial Secretary, cont'd from pg. 7***

when we fail and do not get back up.

The CAC membership is 750 strong. It is time. No, it is beyond time. This organization has to begin some sort of program in which the young forensic scientists can glean from those who are more experienced. There has to be some mechanism by which those who have been around the organization and profession for a number of years can impart their wisdom on the younger generation. The CAC has a responsibility to its membership to develop such a program. But, since the CAC is the membership, the membership has a responsibility to itself. The question is, is anyone willing to share in this responsibility?

What will it take? Well, first and foremost I suspect it will take someone who has a compassion and empathy for the coming generations. In line with this, it will take young people who understand that sometimes sacrifices need to be made but they need not be continual. Second it will take individuals who are willing to invest a little time, a little time in the life of another. Time is indeed a valuable commodity. Work backlogs are intense and the pressures of management to complete casework can be high. So, good time management skills would be helpful. Finally, but certainly not least, it takes someone who genuinely wants to be there and is willing to persevere.

I am going to move forward with a proposal to the Board on how to establish such a mentoring program. And if there is only a handful that indicates an interest, well so be it. I refuse to waste any more time on those who do not care and intend to focus my efforts on those that do, even if it is a few. Even if it makes a positive impact in the life of only a single individual, the time will have been better spent than browbeating those who do not care anyway.

I look forward to working with all of you on this worthwhile project. I am excited about it and I hope you can be too. Only good things can result. If you have an interest, you can feel free to e-mail me. I must admit though, I prefer a phone call. I am always excited to talk with someone who cares.

Until next time my best wishes to you and your family.

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# California Association of Criminalists

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## **The World Was David Burd's Adventure**

*By Edgar Sanchez*

*Bee Staff Writer*

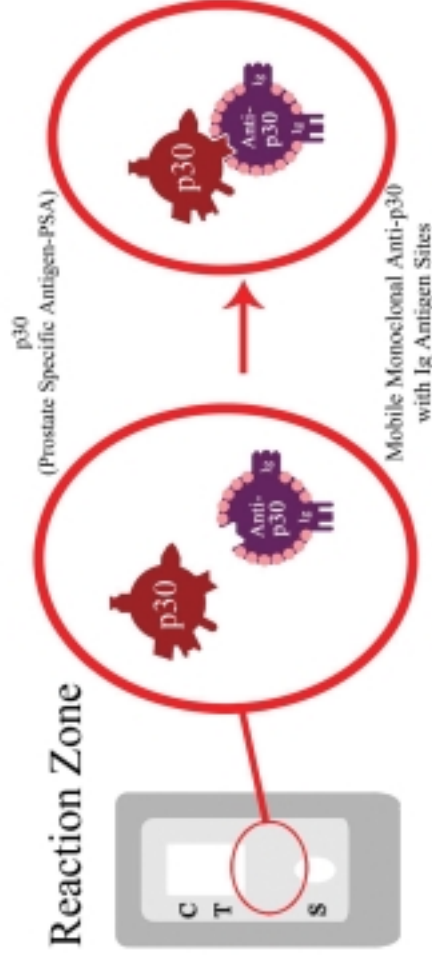
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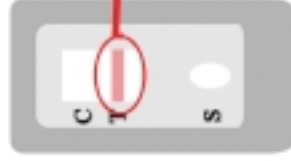
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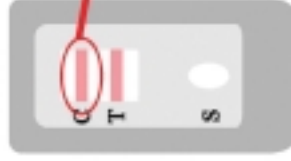
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Test Line



Control Line



# Immunochromatographic p30 Membrane Test

for Sample Not Containing p30

