

# The CACNews

News of the California Association of Criminalists • Third Quarter 2012



# The President's Desk

## A Challenge

First, and foremost: I must start out by thanking and congratulating the Kern County Regional Crime Laboratory. I have just returned from our spring seminar and the meeting hosted by Kern County was a great success. The workshops and technical program were full of learning opportunities and were time well spent. Additionally, I can honestly say that the banquet at Buck Owen's Crystal Palace was the most fun I've ever had at a California Association of Criminalists (CAC) Banquet. A heartfelt "thank you" goes out to everyone involved. I know it's difficult to justify the time it takes to host a seminar. In current times our managers want to see faster casework turn around and reduction of backlogs. However, without taking the time to organize and host our seminars, we cannot learn to be better criminalists. CAC seminars are crucial for training and learning. Only by being able to attend professional training, such as CAC seminars, can we learn and improve our work product.

Next, I wanted to let the CAC membership know of an important decision made by the Board of Directors. The Board voted to offer Dr. Peter DeForest Life Membership in the CAC. As stated in the CAC's Bylaws, a Life member is "Any Full or Corresponding Member who has an exemplary record of service to the CAC and the field of criminalistics and who has been elected a Life Member by the Board of Directors." There is no question Dr. DeForest meets the qualifications and it is an honor to call him a Life Member.

Over the next couple of months I will be working with my fellow board members on a significant project. We plan to institute a new method of recording and publishing policy decisions made by the board. These will take the form of "Policy Statements" which will be published on our website ([www.cacnews.org](http://www.cacnews.org)). While not an exciting project, I think this is an important task that will improve the overall function of the CAC. These statements will serve two key functions: First, they provide transparency to the entire membership about the board's decisions, operations and policies. Second, the statements afford better institutional memory. New decisions will be easily accessible to future boards and won't be buried in business meeting minutes. Furthermore, the system designed by our editorial secretary will retain the history of decisions showing old superseded policy (rather than over-writing/deleting it). I think this will improve the way we function and will help future boards with their day-to-day operations.

Another task the board has been actively pursuing: greater collaboration between the CAC and the California Association of Crime Lab Directors (CACLD). Thanks to work by our immediate past president, our editorial secretary and the CACLD, I'm pleased to announce that we'll be having a joint meeting in the fall (November 5th through the 9th). I'm really excited about this joint venture, and appreciate the willingness of the CACLD to join us. The joint meeting allows greater interaction and teamwork between our associations. Furthermore, we ease the burden of travel on our vendors.

With major announcements out of the way, I wanted to close with a challenge to our membership. I thought I'd aim high and start with lab managers and supervisors. Time for some self reflection. First some context: At the Bakersfield CAC Seminar I attended the Teambuilding and Leadership Workshop. Part of the workshop was taught by John Rodriguez, a consultant, from The Table Group (you may have heard of one of their famous products/books "The Five Dysfunctions of a Team"). It is the opinion of Mr. Rodriguez that a successful leader has five behaviors. The *foundational* behavior is building trust within your team. A successful team will feel comfortable with each other and will be able to share their weaknesses, fears and even failures with each other. As I sat in the workshop, I thought, "What a foreign concept to a bunch of left-brained scientists!" As forensic scientists we strive to be right, 100% of the time. Therefore, creating an atmosphere in which we would be comfortable admitting our weaknesses and failures to our colleagues and to our supervisors would be incredibly

**As a supervisor,  
wouldn't you want  
to know if your staff  
thinks your plan, mis-  
sion, or protocol is  
doomed to fail?**



Todd Weller  
CAC President



**Editorial Secretary** Greg Matheson  
editor@cacnews.org

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

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

**Webmasters** Mark Traughber, Eric Helsing  
(951) 361-5000  
webmaster@cacnews.org

**Advertising** Contact the Editor

The *CACNews*, ISSN 1525-3090, is published quarterly (January, April, July, and October) by the California Association of Criminalists (CAC).

The CAC is a private foundation dedicated to the furtherance of forensic science in both the public and private sectors.

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

Copyright © 2012 The California Association of Criminalists. All Rights Reserved.

Notice to Contributors: We publish material of interest to our readers and are pleased to receive manuscripts from potential authors. Meetings and course announcements, employment opportunities, etc. are also solicited. Advertisements are also accepted, although a fee is charged for their inclusion in *The CACNews*. Please contact the advertising editor for further information.

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

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



**On the cover...**

Deep breath! Richard Maykoski administers a breath test to DUI workshop volunteer Maria Rodriguez at the recent CAC seminar. *More photos inside.*

## INSIDE

“The President’s Desk” *President Todd Weller* .....2

CACBits / Announcements / Classes .....4

Brian Wraxall .....5

Ron Raquel .....6

Editor’s Desk: “Passages & Connections”  
*Greg Matheson* .....7

Proceedings of Lunch: “Lake Errbegone”  
*Norah Rudin and Keith Inman* .....8

Ethical Dilemmas Discussion Corner  
*Carolyn Gannett* .....11

My First CAC Meeting  
*Peter DeForest* .....12

What is it in *Cannabis* that reacts with the  
Duquenois Test?  
*Charissa Goggin and John Thornton* .....18

Ethical Dilemmas Discussion Corner  
*Carolyn Gannett* .....11

Bakersfield Hospitality (*photos*) .....20

Seminar Abstracts .....28

# CACBits

## New Board Members Elected

At the most recent business meeting Meghan Mannion-Gray was re-elected regional director, north; Kirsten Fraser was elected recording secretary; Michelle Halsing was re-elected membership secretary and Eric Halsing was elected president-elect.

## Brian Wraxall 1943-2012



Brian died this morning [May 11] at 5:40. He died as he had lived, strong for everyone around him and in the company of those he loved. I feel a vast emptiness this morning, and yet have our daughter and 30 years of memories. Our home is quiet. He lies in his bed beside where I sit, with us and yet gone; and I wait for hospice to come and do their work. He died knowing that he was loved beyond love.

His lifelong best bud, Cousin Julie arrived yesterday afternoon from England to say goodbye. He waited for her. They shared milky English tea and quiet time. He was content. Rebecca was here to hold his hand and hug

him through that long afternoon. It was fitting.

His memorial service stretched through the last month. Every morning I read aloud the emails sent from all over the country and beyond from friends and colleagues expressing their love and their respect and their gratitude. It was wonderful to have that long memorial attended by the honoree. He was so surprised and grateful for the expressions of emotion and admiration, and for the funny stories and the stories of cases where that mind and spirit made such a difference. I appreciate every one of you who loved and respected my husband.

There will be no funeral. He will be cremated and Rebecca and I will decide a fitting final place for him. It will be an intensely private experience. We are so glad that we were able to say goodbye over the last few weeks.

Brian lived a life full of love and that raucous laughter, ever busy, ever accomplishing. He was 68 years old, but his lifespan should be measured in its intensity of purpose and open spirit. I loved him and am grateful for his company this past 30 years. It is very hard to say goodbye.

—Joan Wraxall



## Rhodes Memorial Award

Katerina Doneva (l) poses with Dr. Ruth Ballard after Katerina was presented the Edward F. Rhodes Memorial Award. This award is for new members in the field of criminalistics and offers financial aid in attending significant forensic meetings.

## Outstanding Papers Tied for Biasotti Award

Pamela Hofsass, SFPD, and Eric Collins, Contra Costa SO, each won the Alfred A. Biasotti Most Outstanding Presentation Award for their Fall 2011 papers. Pam's was titled, "When Your Cold Case Turns Hot, Hot, Hot!" Eric presented, "Reconstruction of an Unusual Officer-Involved Shooting: A Multidisciplinary Approach."



Pam Hofsass



Eric Collins

## To Bakersfield Seminar Hosts: You Rock!

My hat's off to the Kern County Regional Crime Lab for hosting an outstanding Seminar! I attended the entire week and was very impressed. The DNA workshop was very well done and the Leadership/Team building workshop was top notch. Speakers were informative and engaging. It didn't stop there. The General Session was great. Presentations on the Amanda Knox case, two CSI cast members explained how an actual episode is made, and many others.

Several very bright graduate students were invited to speak and gave polished and well researched presentations. Not to be outdone the hospitality committee went the extra mile. A live DJ in the hospitality suite, complimentary appe-

*please turn to page 15*

## Brian G.D. Wraxall

December 6, 1943 – May 11, 2012

The past and present staff, families and friends of the Serological Research Institute (SERI) experienced a great sadness in May with the passing of our founder Brian Wraxall who lost his battle with prostate cancer. For the 35 years I knew him, he always exhibited the highest level of scientific integrity and professionalism.

Brian started out his career as a Forensic Biologist at the Metropolitan Police Laboratory (Scotland Yard) in London under the guidance of Bryan Culliford. I met him in 1977 and was lucky to be his assistant on the Bloodstain Analysis System (BAS) project. The laboratory techniques developed with Mark Stolorow became 'the' genetic marker system in forensic labs until the advent of DNA. Brian contributed many techniques to Forensic Biology (Serology) including species cross-over, SAP/VAP, Haptoglobin, PGM subtype on agarose, P30 cross-over, P30 rocket, fetal hemoglobin, AK, EAP, PGM, GLO along with the four Multisystem Groups developed to advance U.S. Crime Lab serologist's techniques which were all firsts (see "A Forensic Journey" published in the *CACNews*, fourth quarter 2007).

Brian was the first one to offer formal training classes in Forensic Serology at the Met Lab in London. He continued on with training classes for the first 20 years in the U.S. and either trained or oversaw the training of hundreds of Forensic Serologists. Many people have told me that they just couldn't help liking Brian largely due to the charisma and charm exhibited by him at social gatherings.

When DNA became a forensic tool Brian "jumped on it with both feet" and over the years advanced the various DNA methods at SERI to keep our staff relevant in casework. Brian played a key role in many important court decisions across the country in the early days of DNA acceptance.

Brian's many interests outside of forensic biology were the theater (in Great Britain), photography of nature, aviaries, gardening, fishing, baseball, cultivating and cross-breeding orchids (past president of the San Francisco Orchid Society), traveling worldwide and he had just started beekeeping after his semi-retirement in January of this year.

Many will undoubtedly remember his infectious laughter, his leadership, high level of energy and enthusiasm for life as well as his love of laboratory bench work. He was truly a person who was larger than life in many ways.

To honor Brian's passing, SERI will soon have a page on our website dedicated to Brian's life and accomplishments. A scholarship fund will be established in Brian's name for training in Forensic Biology. Brian began a living legacy in 1978 which will be proudly continued by the dedicated staff of SERI.

Gary C. Harmor



(top) Brian at a CAC seminar in 1995. (middle) Brian shortly after arriving in the U.S. in 1971, (op. page) at his 68th birthday, which he spent testifying at a hearing in New Jersey, celebrating at an attorney's home in NY. (below) at our holiday party last December.



# Ronald John Raquel

January 5, 1950-March 22, 2012



Criminalist, mentor, colleague, friend, family man... The Los Angeles Police Department (LAPD) lost one of its best when Ron Raquel passed away due to complications with kidney disease on March 22, 2012 in Long Beach, California, with his family at his side. A Southern California native, Ronald John Raquel was born January 5, 1950, the oldest of five boys. After working his way through school at jobs that included donut maker, casket liner maker, and campus police dispatcher, Ron found the perfect marriage of law enforcement and science in criminalistics. Ron began his career in criminalistics as a volunteer at the Los Angeles County Sheriff's Department Scientific Services Bureau after earning his Bachelor of Science degree in microbiology from California State University, Long Beach, in 1984.

Ron joined the LAPD's Scientific Investigation Division as a criminalist in 1986. He began in the Serology Unit where he quickly took on a lead role, preparing the unit for a new forensic technology, "RFLP DNA analysis." Ron left the Serology Unit for the Trace Analysis Unit (TAU) in 1991, before the DNA program really took off. Ron made the TAU his home, developing expertise in paint, glass, fiber, tool, shoe and tire impressions, and damage analysis. In 1994 Ron's career advanced him to Criminalist III of the Field Investigation Unit where he divided his time between overseeing the day to day operation of the Field Unit and performing analyses in the TAU. He developed his expertise in crime scene investigation and bloodstain pattern interpretation before returning to his real home in the TAU, where he stayed for the rest of his career. Ron performed vital casework on countless criminal investigations including most notably, the O J Simpson case.

Ron's interest in his profession included membership and involvement in the CAC, the American Academy of Forensic Sciences, and the International Association of Bloodstain Pattern Analysts. Ron served on the CAC's historical committee for several years, which was no surprise to those who knew Ron. Besides his degree in microbiology, Ron also had a Bachelor of Arts degree in history.

Ron never complained about his health—he just took it in his stride. Whether it was dealing with bad knees or diabetes, facing heart surgery or going through dialysis, Ron just said "this is what I have to do." That's it, no grumbling, no hesitation, no "poor me," it was just one more thing he had to do. Through all this adversity, Ron kept a positive attitude and was always available to help others. Ron was known for his giving nature. He mentored many new criminalists, providing moral support and guidance on how to deal with the difficult and uncomfortable situations we see in our line of work. He was a supportive friend to all who knew him. If you knew him, you had a favorite Ron story and it usually included something about Ron's proclivity for napping or love of meatloaf.

Away from work, Ron was a family man who enjoyed spending time with his wife Sandy and son Peter. Ron reluctantly retired in March, 2010 so that he could concentrate on his health and spend more time with his family. Ron enjoyed reading military history and the *Los Angeles Times*; watching CNN, *True Crime/LA Forensics* episodes (which he sometimes saw himself in), and football on TV; attending Raquel family reunions, playing computer games, and going to the movies.

Ron is gone but in the hearts and minds of his family and coworkers he will live on.

Susan Brockbank



# The Editor's Desk

## Passages & Connections

Since the publishing of our last *CACNews*, our profession has lost three of California's forensic scientists: Ron Raquel, Ron Linhart and Brian Wraxall. I had the privilege to know and, to a greater or lesser extent, work with each of these individuals. They will all be missed. Unfortunately, the down side of working in a growing and maturing profession means announcements such as these will become more frequent.

Brian Wraxall is probably the best known of the three. He and the Serological Research Institute (SERI) were directly responsible for the development and growth of serology in crime laboratories. Their group enzyme electrophoresis analysis systems were the backbone of forensic body fluid analysis before the utilization of DNA technology. Those systems didn't generate the astronomical numbers seen with DNA. After many days of effort, if everything worked, and the enzymes hadn't degraded, we were excited to report the genetic markers in a blood or semen stain only existed in something like 1 out of every 500 people. Not much, but it was better than just the ABO system analysis that was the most common system for analyzing biological stains before the Group systems.

Brian founded SERI the same year I started as an LAPD criminalist and within three short years the group enzyme systems developed by SERI were a part of my everyday professional life. Though I didn't know him as a friend, it was easy to know his contributions to forensic serology. Elsewhere in this edition of the *CACNews* is more about Brian provided by Gary Harmor from SERI.

Ron Raquel spent his whole criminalistics career with the LAPD. I had the opportunity to both work with him and be his supervisor in the Serology Unit. He eventually transferred to Trace where, among many other things, he was the LAPD blood spatter expert for the remainder of his career. Ron was a talented criminalist and a very nice, positive and gentle individual. I enjoyed working with him and spending time just talking and sharing stories. In the "it's a small world" concept, we learned many years after

he started at LAPD that we had actually interacted before he joined the department. Ron and I both attended California State University Long Beach. In 1979 I had returned to CSULB to take a couple of additional science classes. One of those classes was an evening course in biochemistry. One week while I was on call and attending the class my pager went off. The teacher stopped the class until I left with the disruptive device clutched in my hand. Years later as I told that story to Ron he remembered the event because he too was attending the class. Nothing earth shattering here, but an unexpected connection. Elsewhere in this issue is more about Ron provided by Sue Brockbank, Ron's long time friend, coworker and supervisor.



Ron Linhart

Ron Linhart served the criminal justice system for 34 years as a criminalist, supervisor and manager with the Los Angeles County Sheriff's Department (with a short "sabbatical" to the coroner's office from 1982-1988). He was well known for his experience in crime scene investigations and reconstructions, serology, trace evidence, toxicology, controlled substances, and blood alcohol. Though not a CAC member, Ron was dedicated to our profession and had many friends and colleagues in the CAC. Though he worked for that other LA crime lab, many times our careers crossed paths and would occasionally follow the same route for years at a time. I grew to know and respect his knowledge and skills.

All of this is just another reminder of how important it is to regularly let your friends, colleagues, and mentors know how much you appreciate their help and friendship.

All of this is just another reminder of how important it is to regularly let your friends, colleagues, and mentors know how much you appreciate their help and friendship.



Greg Matheson  
CAC Editorial Secretary

please turn to page 16

**norah rudin & keith inman**

www.forensidna.com • norah@forensidna.com • kinman@ix.netcom.com

## Lake Errbegone

*Where the evidence is unambiguous, the analyses are robust,  
and all the criminalists are above average*

We were pleased to receive an email a few months ago from a colleague in the Ventura County Crime Lab, Forensic Scientist Helen Griffin. She had been thinking about writing a letter to the *JFS* editor about error rates, but then contacted us about the possibility of discussing it in a *Proceedings of Lunch*. As we are always eager to engage in collegial discussions with peers, we accepted her invitation to chat. This did present a dilemma that we have faced in the past; time, distance, and circumstances prevented a common meal. So as with other guests, we made her vow to enjoy some food or drink while discussing, reading, or editing this piece. Gaining her acquiescence, we proceed to her topic of interest: error, error rates, and the risk of error. While these *Proceedings* have covered various aspects of this topic in the past [Culture of Bias I and II (*The CACNews*, 2003, Q4; 2004, Q1); Fingerprints in Print (*The CACNews* 2004, Q3; 2005, Q1); Know the Code (*The CACNews*, 2007, Q2); To err is Human (*The CACNews*, 2011, Q4)], Helen had much more to say, particularly with regard to the idea that a single error rate is unsuitable to describe this complex topic.

Helen has enjoyed a long interest in this topic, and scans the literature constantly for work and references on it. Among the recent articles on error rate, *JFS* published "A Validation Study for Vinyl Electrical Tape End Matches." (Bradley et al., 2011) The insight she had while reading this article was based on her observation that it was quite easy for everyone to get the right answer when edges of the tape were very irregular, but much more difficult when the edges were smoothly cut. It became clear to her that error rates were being discussed as though there was one value for every type of evidence. In fact, she believes that, for most comparisons, the error rate is dependent on both the quantity and quality of the evidence. The error rate, she opines, drops as either the quality of the evidence increases, or the quantity of the evidence increases.

She continues by stating that the error rate is at its lowest for evidence of both high quality and high quantity. She provides these examples:

- 1) a shoe impression on glass, in which the detail is fine enough to capture the Schallamach pattern along with several well defined cuts, in addition to the complete outsole pattern.
- 2) the full hand print deposited without smearing (five fingers and the palm).
- 3) a physical match in which numerous changes in direction exist, such as when a piece of printer paper is torn in half.

She then offers a set of contrasting circumstances:

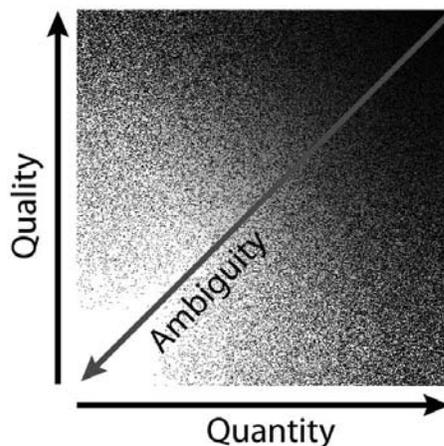
- 1) a partial shoe impression in dirt for which there is

some similarity in pattern and dimensions, but no wear or individualizing marks.

- 2) a partial fingerprint that is distorted.
- 3) a physical match between two pieces of tape that have been cut along a straight line with a pair of scissors.

If thought is given to the likelihood of error for the two sets of case circumstances outlined above, it is apparent, Helen asserts, that the risk of error is necessarily quite different. She goes on to say that error rates should be linked to the evidence by placing the evidence into one of four quadrants - high quantity and quality; high quantity and low quality; low quantity but high quality; and low quantity plus low quality.

This reminds us of a graphic that we had produced for an earlier *Proceedings* (How Low Can You Go: *The CACNews*, 2010, Q3, first suggested to one of us (KPI) by John Thornton). We reproduce a modified version here to accommodate the quality/quantity axes suggested by Helen, and also a diagonal, as we describe below for a synthesis of those qualities into the single descriptor of ambiguity:



Helen now makes a pre-scient commentary based on this analysis: if the evidence in front of us is evaluated for quality and quantity, then we should explicitly acknowledge that "the highest error rates occur when the evidence should have the least impact on a case

(low quantity and low quality)." Keith re-arranges this comment to offer that we should insist that the evidence have the least impact on a case when we discern both poor quality and low quantity. In other words, we should somehow indicate in our reports that such evidence carries a relatively high risk of error associated with any inference drawn from the analytical results (usually a conclusion of source or association). Under these circumstances, everyone involved in the investigation/prosecution/defense should proceed understanding that the conclusion carries, not only some chance of being incorrect, but a greater chance than if the evidence were of

higher quality and greater quantity. In other words, an alternate possibility for culpability or association should be given commensurate consideration based on the relative ambiguity of the physical evidence item. These thoughts lead to a useful equivalence:

**Quality + Quantity = (relative) Ambiguity**

Helen suggests that we expand on the source of error, and she does so by first observing that, in light of papers being published with some sort of error estimate, no one meaning seems to exist for the term “error” in forensic science; is it related to an instrumental error falling within a pre-determined range of values; is it asking the right question? Keith reminds us of a definition offered in a previous POL (*The CACNews*, 2007, Q2):

We believe that an error occurs when someone misunderstands the scientific question or the scientific result or conclusion that comprises the answer. The result of this error is that individuals make a decision about the case armed with some incorrect belief about the physical evidence.

Helen shortens that to: an error (and its magnitude) is related to how misleading your results are compared to reality. Pithy, we think.

With this definition in mind, Helen now suggests another source of error about which we had written earlier, but for which she provides an example from her casework, that of assessing the evidence for *relevance*, and the risk of error associated with conferring more relevance to an item than is warranted, or failing to comment on the relevance at all. She offers this example:

A man was accused of molesting a young girl. Specifically, he was accused of fondling her through her pants. The man shared the same home as the child and had frequent casual contact with her. A forensic scientist was asked to examine the suspect’s fingernail scrapings for fibers from the girl’s clothing. The scientist was concerned that if she proceeded blindly with that analysis, and found fibers that could have originated from the child’s pants, that the (ir)relevance of such a finding could easily be lost. She believed that performing the analysis would represent an error in her judgment that could potentially mislead a jury into thinking that the evidence was relevant, and provided some useful information about the crime event. Ultimately, to eliminate a possible error due to misinterpretation, the analysis was not performed..

Helen believes that to simply provide such analytical results, including the frequency with which this fiber type is found, without considering the context of the situation, potentially misleads the jury. By omitting any commentary about the (ir)relevance of the fiber evidence, the impression is left that the fibers are probative with regard to the issue of guilt. Worse, she feels, is that some lab managers actively discourage that evaluation phase.

Norah notes that DNA analysts have increasingly been presented with a similar problem: swabbing a gun implicated as a murder weapon. Not infrequently, multiple donors are detected. Among the many problems with such an analysis, merely including someone (among several someones) as a potential donor of DNA to the weapon says nothing about the only critical question; who fired the weapon? Absent some showing that a specific person’s DNA on the weapon relates directly to the firing of the fatal shot, this analysis and result also risks influencing a jury beyond the true capability of the

evidence. The probative value of the evidence is rarely addressed in a DNA report, and yet the potential to mislead any reader of such a report looms large.

One way in which an analyst can control such situations is to actively participate in framing the questions. She wants to know the relevant background of the case so that she may influence what evidence is examined, and for what purpose. Both Norah and Keith interject the idea of sequential unmasking here, the concept that essential information is provided to the analyst only at that stage where it is needed to assist in the evaluation and interpretation of a finding. Clearly, if the analyst is to participate in the framing of questions and deciding which evidence to analyze, she must know a great deal about the case circumstances, with the concomitant biasing potential. When Norah brings up the idea of a case manager, Helen thinks of the RCMP, who have a section called “Evidence Recovery Unit.” (Anderson, 2007) This portion of the laboratory consists of generalists (educated like a case manager) who examine the physical evidence brought in, interface with the detective, and are tasked with finding relevant physical evidence. In this situation, an analyst trained and educated in the meaning of physical evidence is placed in a position to both prevent the irrelevant analysis of physical evidence, as well as to prevent the analysis of irrelevant evidence (not quite the same thing, but producing the same effect). In addition, Norah points out that, under most laboratory organization models, no analyst is assigned to combine the fiber, DNA, and GSR findings into one coherent report. As currently practiced, consumers of the report (investigators, attorneys, judge, and jurors) are free (really, having no alternative, forced) to tell their own story about this evidence. We three co-authors lament the absence of the scientist in these situations to act as arbitrator, including the task of assessing consistency among the analytical results from various items of physical evidence. For example, the blood, fingerprints and handler DNA from a knife may originate from two or three people or even more. What does this mean in the context of the case? Keith believes that some qualified person should be involved in screening the evidence up front to prevent this error of (ir)relevance, and Helen adds that the reports should include a section discussing not only the relevance of a single piece of evidence, but a synthesis of all the items of physical evidence. In addition, analysts should be allowed (encouraged? trained? freed?) to focus more resources on the ambiguous, difficult-to-interpret, cases.

As an aside, all three of us agree that little can be done to avoid defensive criminalistics: performing an analysis, not because it’s essential to the case, but because someone (typically a prosecutor) doesn’t want to be accused of failing to perform an analysis because it’s expected by jurors. We all have experienced power overwhelming rationality. And neither reality nor dramatic TV helps this cause.

Our wide-ranging discussion encompassed several hours over two conference calls. Obviously, we cannot hope to capture it all in a few pages. Therefore, we offer a summary of some important conclusions from our discussion of error, risk of error, and sources of error in an analysis of physical evidence:

1) Error associated with the inherent nature of the evidence relate to the quality and quantity of information that can be obtained from the evidence item. The poorer the quality and the lower the quantity, the greater the ambiguity about the true nature of the item.

*cont’d next page*

In classic psychology circles, this is known as the Kruger-Dunning effect. While typically described as “Stupid people are so stupid that they don’t know they are stupid,” in fact it is more subtle than that, and very applicable to the work of forensic scientists...

2) Errors associated with the testing of the evidence item relate to the concepts of validity (accuracy, is the result correct?), reliability (precision, is the result reproducible?) and discrimination potential (how well can the test distinguish between items in an optimal situation?). To further expand on the idea of discrimination potential, we provide two examples. The conclusions that can be drawn from the microscopic examination of head hair are limited by the relatively large amount of variation possible within a sample of hairs from an individual, and also by the relatively large number of traits that can be shared among hair samples originating from different people; thus microscopic hair comparison allows only a relatively low discrimination potential as compared to DNA analysis of the same hair, which provides for a relatively high discrimination potential. Similarly, SEM/EDX can provide the major elements present in an object, while ICP-MS allows a higher discrimination potential between objects by including many more of the trace element components.

3) An idea that emerged toward the end of our discussion related to errors stemming from the question asked. Although Keith and Norah have written and spoken endlessly about asking the right question, it was never in exactly this context. Helen opines that the question must be pertinent, necessary, and clarifying (the answer should help clarify something about the crime event). Keith thinks that relevance is the only necessary descriptor, in the sense that the answer to a relevant question must provide information likely to discriminate between competing hypotheses. If it doesn't, it is a waste of resources to proceed in trying to answer it.

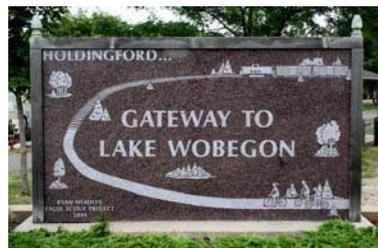
Standing at the nexus of all of these risks, Helen suggests, is the analyst. Neither evidence, instrument nor question provides anything other than the primordial mud that serves as the starting material from which an analyst constructs his analysis, interpretation, and conclusion. It is these last processes that assist or obstruct the administration of justice. To be unaware of the various places in which lurks the quicksand of potential error is to risk misleading those who rely on laboratory results for guidance in an investigation, prosecution, or defense.

While we have spoken many times of the need to understand the limitations of the evidence and the test (as outlined above), Helen has now suggested that we must also understand our limitations as analysts (and not merely at the analytical level). While this could be interpreted as an epistemological question, another approach to this problem is self-awareness; not merely how do I know what I know, but do I know how much or how little I *think* I know?

In classic psychology circles, this is known as the Kruger-Dunning effect. While typically described as “Stupid people are so stupid that they don’t know they are stupid,” in fact it is more subtle than that, and very applicable to the work of forensic scientists; how good am I at knowing my own capabilities, as well as those of others? Research repeatedly demonstrates that we constantly over-estimate our own knowledge and capabilities, and repeatedly under-estimate the same traits in others. (Ehrlinger and Dunning, 2003) In other words, most people (more than 50%!) believe that they are above average<sup>1</sup>. (Wilde, 2002) How many of you readers of this column have said, I could have written a better column? Or, their logic is flawed here?

Lots of studies containing lots of big words and big concepts are devoted to this topic, and this column is incapable of even beginning to do anything other than call attention to it. But when considering the risk of error, we must also begin to ask whether we have sufficient knowledge and capability to opine as we do in a report or testimony. As Dunning himself said, “The presence of the Dunning-Kruger effect, as it’s come to be called, is that one should pause to worry about one’s own certainty, not the certainty of others.”

We are certain that we agree.



## References

- Bradley M.J. et al., A Validation Study for Vinyl Electrical Tape End Matches, *J Forensic Sci*, May 2011, Vol. 56, Nol. 3.
- Ehrlinger, J., & Dunning, D. How chronic self-views influence (and potentially mislead) estimates of performance. *Journal of Personality and Social Psychology*, Vol. 84(1), Jan 2003, 5-17.
- Wilde, S., *Testing and Standards, A Brief Encyclopedia*, Heinemann, Portsmouth, NH, 2002.
- Cannell, J. J. Nationally Normed Elementary Achievement Testing in America’s Public Schools: How All 50 States Are above the National Average, Daniels, *Educational Measurement: Issues and Practice*, v7 n2 p5-9 Sum 1988.
- Cannell, J.J. How Public Educators Cheat on Standardized Achievement Tests: The “Lake Wobegon” Report. *Friends for Education, Albuquerque, NM*, 1988.
- Anderson, G.S., All You Ever Wanted to Know About Forensic Science in Canada But Didn’t Want to Ask, 2007. [www.csfsc.ca/contentadmin/UserFiles/File/Booklet2007.pdf](http://www.csfsc.ca/contentadmin/UserFiles/File/Booklet2007.pdf)

<sup>1</sup> Otherwise known as the “Lake Wobegon effect,” after Garrison Keillor’s mythical community “where the men are good looking, the women are strong, and all the children are above average.” (Cannell 1988)



# Ethical Dilemmas

DISCUSSION CORNER WITH CAROLYN GANNETT

## Is “(IN)CONSISTENT WITH” (IN)CONSISTENT WITH ETHICS?

### The Scenario:

A theory has been proposed by the prosecution regarding how a crime was carried out: X, Y, and then Z. The prosecution asks you to do a forensic reconstruction to examine whether X-Y-Z is possible—in other words, whether it is consistent with the facts. You complete a fully competent, ethical reconstruction resulting in a set of conclusions. Then, to answer the original question, you truthfully state in your report, “These results are consistent with X-Y-Z,” with no further explanation.

Is this ethical?

### Discussion

No, based on the content of a great many forensic science ethics documents. If this is all that is stated regarding the theory’s consistency with the results, then it may be biased and misleading.

Is a statement of consistency ever ethical in a criminalist’s report? Yes. Given a finite set of questioned samples compared to a finite set of known samples (e.g., glass fragments, paint chips, etc.), it can be ethical to determine that the test results from the questioned samples are consistent or inconsistent with those from the knowns. Limitations of such a conclusion are clear: it refers only to the finite sets of questioned and known samples and only to the results of the particular tests being performed.

But, what if the finite set of “questioned samples” is a set of data used in a reconstruction, and the results are the conclusions drawn from them? What is the set of “known samples” that the results are compared to in order to justify a statement of “consistent with” or “inconsistent with”?

The “known sample” in this scenario, by analogy, might be the theory provided by the prosecution. But, this “known” is not really a “known” – it is only a theory. It is not a finite number of items, like known paint chips, each with particular measured properties that are finite in number. The theory is conjecture, drawn from an infinite number of possibilities. More importantly, the number of theories that are consistent or inconsistent with the results is infinite—not finite, like a collection of paint chips submitted as “knowns.”

To state in a report that the reconstruction conclusions are consistent with theory X-Y-Z may be true, but it may not

be enough. Because the conclusions are consistent with an infinite number of theories, choosing to mention just one particular theory over all other consistent theories could be considered biased. This slant could be avoided by clearly communicating that X-Y-Z is not the only theory that is consistent with the results—something like:

“These conclusions are consistent with theory X-Y-Z, but other theories are also possible.”

“These conclusions are consistent with theory X-Y-Z and with any number of other theories.”

“Theory XYZ is not disproved by these conclusions and is therefore possible, as are other theories.”

Without this qualification, the statement, “These results are consistent with X-Y-Z” could also be considered misleading. When an expert simply asserts, “A is consistent with B,” there is the risk that the layperson hears, “A supports B,” or worse, “A proves B.” It might be argued that this is the hearer’s problem, not the expert’s, who has made a truthful statement. But, criminalists are not just scientists; they are *forensic* scientists. That means they are responsible for presenting the facts so that the facts may be argued in a court of law. Facts can’t be argued if they have been misconstrued.

Many organizations assert that the *forensic* scientist has an ethical responsibility for making every effort to communicate results in a manner that the court (which is typically populated by laypersons) will accurately understand. This concept is found in nineteen of 37 forensic science ethics documents (see “Survey of Forensic Science Ethics Documents,” [www.cacnews.org/ethics/quotes.pdf](http://www.cacnews.org/ethics/quotes.pdf), lines 79-85). As an example of just one of those nineteen documents, the CAC Code of Ethics states the concept repeatedly, and in many different ways, shown below. Those of most relevance to this scenario are bolded.

Preamble, paragraph 2: These findings of fact and his conclusions and opinions should then be reported, with all the accuracy and skill of which the criminalist is capable.

**II.E: Where test results are inconclusive or indefinite, any conclusions drawn shall be fully explained.**

IIJ: ...clearly distinguish between that which may be regarded as scientifically demonstrated fact and that which is speculative.

**III.D: ...the expert takes care to leave no false impressions in the minds of the jurors or the court.**

**III.E: In all respects, the criminalist will avoid the use of terms, and opinions which will be assigned greater weight than are due them. Where an opinion requires qualification or explanation, it is not only proper but incumbent upon the witness to offer such qualification.**

**III.F: The expert witness should keep in mind that the lay juror is apt to assign greater or less significance to ordinary words of a scientist than to the same words when used by a lay witness. The criminalist, therefore, will avoid such terms as may be misconstrued or misunderstood.**

**III.I: The criminalist, testifying as an expert witness, will make every effort to use understandable language**

*cont’d on page 14*

Share your thoughts and dilemmas at  
[www.ethicsforum.cacnews.org](http://www.ethicsforum.cacnews.org)

# My First CAC Meeting

## *"I Was a Newbie Once"*

Essay by Peter DeForest

My first love was chemistry. At about age ten, I started with a Gilbert chemistry set, but soon graduated to an accumulated collection of flasks, beakers, ring stands, crucibles, mortar and pestle, alcohol lamps etc., that were discarded by laboratories. In those days pharmacies sold chemicals. I would send my mother to the pharmacy to buy a pound of sulfur, a pound of potassium nitrate, etc. Among other things, I became quite proficient in making black powder and setting off explosions from a safe distance. Luckily, my family lived in a very rural area at the time. Dial telephone technology hadn't reached the area. I recall our phone was on a five-person party line. When the phone rang one had to count the number rings to know for whom the call was intended. I still recall that our phone number was 239 ring five. On making outgoing calls one had to crank a magneto to raise the operator. The power for operating the phone came about a half a dozen quart-sized dry cells, which were kept under the kitchen counter. When the local phone company finally converted to a dial phone system, I inherited hundreds of these very large dry cells and quantities of bell wire. I did quite a number of experiments in wiring banks of the dry cells in series and parallel. I managed to make some pretty respectable electromagnets and telegraphs. I also spent long hours making observations with my microscope, but I was by no means a microscopist. That came later. Unlike Skip Palenik, I did no chemical microscopy. My chemistry at that time was unsophisticated and was on a much larger scale.

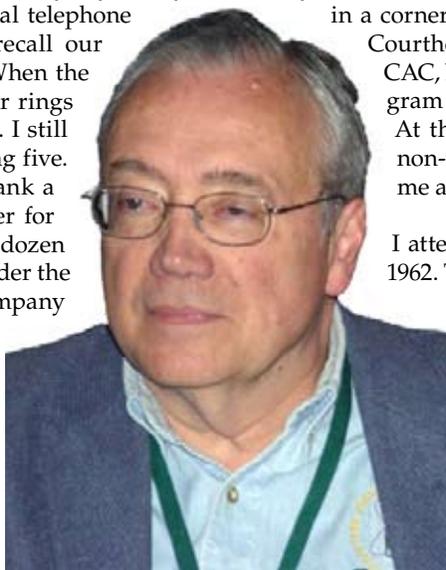
As I became older I finally decided on chemistry as a career. Although, I excelled in chemistry and physics when I started college, I began having reservations about chemistry as a career. I saw examples of chemists working in laboratories doing very routine repetitive operations such as titrating lemon juice. This didn't appeal to me, but ultimately, I went ahead and declared chemistry as my major. I was attending community college. This was in the immediate post-Sputnik era and many of my contemporaries who excelled in science were in what was called a Student Engineering Development (SED) program sponsored by the U. S. Navy. In exchange for agreeing to serve as engineers for the Navy for a few years upon graduation, they received a sizable monthly stipend. The idea of the stipend appealed to me, but the idea of being an engineer didn't. However, money was of concern to me. I had three younger broth-

ers and saw the difficulty my parents would have sending me away to school. I decided I needed to be self-supporting. For that reason I began looking for a job that I could do while I studied. I was particularly interested in getting a job in a laboratory doing something related to chemistry. After some frustrating and unsuccessful searching, fortuitously one opportunity finally came my way. This was a flextime job in the nascent Ventura Sheriff's Crime Laboratory. The entire laboratory was housed in a former resident deputy shower room

in a corner of the third floor in the Ventura County Courthouse. It was here that I learned about the CAC, Dr. Paul L. Kirk and the Criminalistics Program at the University of California at Berkeley. At this point I saw a career in a challenging, non-routine application of chemistry ahead of me and made the pivotal decision to pursue it.

After hearing so much about the CAC, I attended my first CAC meeting in the fall of 1962. The meeting was hosted by John Williams,

then director, of the San Francisco Police Laboratory. We were given a tour of the new laboratory in the Hall of Justice and shown new equipment acquisitions. As I recall the acquisitions included a state-of-the-art Martin Held VM 340 comparison microscope for use with firearms and toolmark cases and a new vertical bullet recovery water tank. I had arrived in the Bay Area a few months earlier to begin my junior year in Paul Kirk's program at Cal. By that time in my criminalistics career I already had two years of experience in a forensic science laboratory, which included conducting independent work on cases and presenting expert testimony in court. I was probably a bit cocky, but I was also in awe of the CAC and the luminaries in criminalistics that I met at this first CAC meeting. Prior to this time the names Lowell Bradford, James Bracket, Anthony Longhetti, Jack Cadman, Hilliard Reeves, John Davis, had been just that, famous names. In Ventura I did use the Bracket distillation apparatus for recovery of accelerant residues from fire debris. One could actually see the recovered accelerant in those days and run refractive indices and boiling points on it. The "smell test" came in handy as well. I referred to a compendium of UV spectra of drugs authored by Bracket and Bradford in my toxicology cases. I had also used the Cadman-Johns 1/4 inch packed gas chromatographic column for blood-alcohol work, although the bulk of my blood and urine alcohol cases were



**I was probably a bit cocky, but I was also in awe of the CAC and the luminaries in criminalistics that I met at this first CAC meeting. Prior to this time the names Lowell Bradford, James Bracket, Anthony Longhetti, Jack Cadman, Hilliard Reeves, John Davis, had been just that, famous names.**

analyzed using Conway micro-diffusion. Curiously, I don't recall seeing a single woman at that CAC meeting in 1962. It is wonderful to see how times have changed.

My attendance at CAC meetings was irregular for a while. I didn't have the travel funds to attend the semiannual CAC seminars in Southern California until I was well along in graduate school.

The summer of 1964 was another major pivotal point in both my professional and personal life. I finished my undergraduate degree at Cal. My cohort was small. The only criminalistics student to graduate with me was Jim White. Just before graduation in that stressful interval when term papers were due and final exams were being given, I met, the love of my life, my wife to be, Carol. I had known her older sister Betsy for some time. Betsy had worked as an assistant to the secretary in Dr. Kirk's off-campus laboratory while she was a student at Cal. Betsy and Chuck Morton had gotten married about six months earlier. Betsy had agreed to type a paper for me. As the time approached she was concerned about her own papers and asked her "little sister" to type it for me. Carol wasn't too enthused about the idea, but Betsy was assertive while assuring Carol "... that I was a really nice guy," and Carol reluctantly agreed to type the paper. Actually, Carol and I had met earlier. We were both part of Chuck and Betsy's wedding party. Carol was a bridesmaid, and I was an usher. Neither of us thought much about the other at the time, perhaps, because I had a date with me. However, soon after Carol typed my paper we began dating. We became very close early that summer. I had never experienced anything like it. I was in love. We married a year and a half later in January of 1966. Carol was a wonderful wife, mother and grandmother. Unfortunately, I lost her to cancer this past fall. It has been very hard. Many CAC members will remember her and her special smile, because she attended many CAC meetings with me in recent years.

It was somewhat later that summer of 1964 that Dr. Kirk asked me to serve as his teaching assistant. This meant that I was committed to going on for a doctorate. At the ripe old age of 23, I was only a couple of years older than some of my students. My early students and many later CAC stalwarts included Dorothy Northey, John Murdock, Steve McJunkins, Peter Barnett, Ed Blake, Jerry Mitosinka, Rich Whalley, Patricia (Knittel) Zajac, Bart Epstein, Carole (Emery) Sidebotham, among others.

During the time that I was a teaching assistant and then a teaching fellow working on my doctorate I was still in awe of the CAC and too intimidated to apply for membership. I finally overcame this reticence in 1967 or 68. I recall that George Sensabaugh and I joined the CAC at the same time. It was the first scientific society that I joined. It will always retain this special distinction in my thoughts.

During 1968 and 1969, Dr. Alexander Joseph of the John Jay College of the City University of New York made visits to meet with the CAC and with Dr. Kirk on a grant he had obtained from the Department of Justice. He was seeking advice on establishing curricula for a BS in Forensic Science program and an MS in Forensic Science program. It may be difficult to realize now, at this point in the 21st-century, that in the 1960s most of the expertise in criminalistics resided in California. Something in the order of one half of all the crime laboratories in the country were in California at that time. Dr. Joseph had come to the right place to seek advice on developing programs at John Jay. The CAC was a pioneering organization. Other regional forensic science associations were a decade in

the future. On, what was probably his second visit to California in May of 1969, Dr. Joseph had made arrangements to meet Dr. Kirk for lunch. The day before the scheduled lunch, Dr. Kirk came to me and said that he had a conflict, because he had received a subpoena for court testimony the next day and asked if I would be willing to take Dr. Joseph to lunch at Spenger's seafood restaurant on the Berkeley waterfront. Seeing this as an opportunity for a free lunch, I readily agreed. Technically, I was no longer a "starving graduate student" living on my \$250 a month salary as a teaching assistant. By that time Carol was teaching school and supporting me. However, a free lunch is a free lunch. I should not have been so cavalier about the free lunch. This lunch ended up being another pivotal point in my professional career. Without going into all the details, at the conclusion of the lunch Dr. Joseph raised the issue about my teaching at John Jay. I was not too interested, primarily because I didn't want to move to New York. In addition I had two other offers at that point, but neither was strictly in criminalistics. I had just filed my dissertation with the University. I recall passing the typed document through a window especially designated for this purpose at Sproul Hall (the administration building). The women receiving it marveled at the quality of the typing, Carol had done a great job. It's hard to recall what a typical typed document looked like in the pre-word processing age. Despite many efforts and attempts, I never learned to type myself until much later. Had I learned to type, I would never have met Carol. I did teach myself typing after building my own computer from surplus parts a decade later in 1979. The word processing software was written in two 8 kB parts by my colleague Chuck Kingston.

During the summer of 1969 the offers from Dr. Joseph became increasingly insistent. I remained undecided and

*cont'd next page*



*Peter DeForest receives appreciation for his CAC founders lecture from John DeHaan in 1997, while Pete Barnett looks on.*

## DeForest, cont'd

sought Dr. Kirk's advice whenever we met. In sum, he told me that it represented a good opportunity and that the experience would be good to have on my CV. Carol and I discussed it. I told her that I didn't think I would stay more than two years. Two years became more than forty years. We decided to drive to New York. Our first stop on the trip East was Winnemucca, Nevada, which was a mere crossroads then. Our camping gear was rudimentary. I rolled the sleeping bags out in the sagebrush just outside of town. Then Carol opened the Japanese bento that her mother had packed. I can still see the tears welling up in her eyes and rolling down her cheeks. She made many friends in New York and taught elementary school until we decided to start our family.

After moving to New York in 1969 my regular connection with the CAC waned for a while. Transcontinental travel was relatively expensive then, and I was occupied building two academic programs at John Jay. I reverted to corresponding member status with the CAC. I did send my first Masters student at John Jay, Steve Ojena, back to California in 1971 or 1972 to present his thesis research at a CAC meeting. A few other students followed over the years.

I have been a very lucky man. I have a wonderful family, and I cannot imagine having had a more rewarding career. I have worked on challenging and interesting cases and have had numbers of excellent students who have achieved much in their own careers. In reflecting on nearly 52 years in the field, I am concerned that what I saw early on as the potential for scientific problem-solving in criminalistics, as opposed to an exclusive focus on necessary but routine repetitive testing, has not been fully realized. In some respect we have regressed. 15 years ago I felt very honored to be asked to deliver the Founders Lecture at the CAC meeting in Irvine. My title was "Recapturing the Essence of Criminalistics". This was later published in the CAC Section in *Science and Justice* in 1999. I aired some of my concerns in that lecture and subsequent publication. I have raised these issues in presentations at CAC and other scientific meetings. The best case solutions do not come from having scientific problems defined for scientists by scientifically naïve investigators or attorneys. There is no one better qualified than a highly experienced criminalist to define and circumscribe physical evidence issues in a case.

[On May 7th, 2012, the CAC board of directors voted unanimously to elevate Peter DeForest to Life Member. —Ed.]



## Ethical Dilemmas cont'd

**while presenting explanations and demonstrations in order that the jury will obtain a true and valid concept of the testimony.** The use of unclear, misleading, circuitous, or ambiguous language with a view of confusing an issue in the minds of the court or jury is unethical.

III.J: The criminalist will answer all questions in a clear, straight-forward manner...

III.K: Where the expert must prepare photographs or offer oral "background information" to the jury in respect to a specific type of analytic method, this information shall be

reliable and valid, typifying the usual or normal basis for the method. The instructional material shall be of that level which will provide the jury with a proper basis for evaluating the subsequent evidence presentation, and not such as would provide them with a lower standard than the science demands.

III.L: Any and all photographic displays shall be made according to acceptable practice, and shall not be intentionally altered or distorted with a view to misleading court or jury.

What are your thoughts on this? Have you ever done a reconstruction in which you concluded something like, "The conclusions are consistent with theory X-Y-Z" without including any qualifications? If so, will you continue to do so, and why or why not? Share your thoughts via the forensic science ethics discussion forum at [www.ethicsforum.cacnews.org](http://www.ethicsforum.cacnews.org).

Have an ethical dilemma you'd like evaluated?  
Submit a sanitized version to  
[GannettForensics@aol.com](mailto:GannettForensics@aol.com)

## The President's Desk cont'd

difficult to establish. However, before you wave this idea off as utopian, I think it does make some sense: As a supervisor, wouldn't you want to know if your staff thinks your plan, mission, or protocol is doomed to fail? Do you think your staff feels comfortable sharing their opinions with you? Wouldn't you want to know when a staff member is uncomfortable with certain procedures? Do you think they are comfortable admitting their weaknesses or will they try to muddle through fear of "corrective action"?

The concept sounds easy...but in practice will be difficult to get started. First, some trust comes from providing more positive feedback to each other. How often are our interactions based on the negative: "Correct this." "You forgot to initial this." "You need to improve this." I'm guilty of it too. When technical reviewing cases, I point out the mistakes but rarely do I point out good work. We tend to take the good for granted. Here are some numbers for you: positive to negative feedback should be a 4:1 ratio. I seriously doubt any of us are achieving that!

Maybe reading this will cause you to reflect and consider ways you can build trust within your own staff. Let me close by sharing one way my lab manager instilled trust within me. One day, while privately talking about a controversy at another laboratory, she told me, "...everyone makes mistakes; it's what you do after you discover the mistake that shows the nature of your character." She may not have realized it, but hearing those words from my boss made me feel as I could trust her with my opinions and more importantly with my shortcomings. This may seem obvious, but sometimes just reminding everyone that it's ok to be human goes a long way. With that, I end my "challenge" to our managers and supervisors. In the next *President's Desk* I will put forth a challenge to the rest of us.

tizers at the Bull Shed Saloon (complete with *Dolly* the mechanical bull).

The banquet kept the western theme going with a great steak and chicken dinner at the Crystal Palace. A kick \*\*\* band with county line dancing topped off the evening.



Your hosts: *Ada Rodriguez, Kelly Woolard, Ivette Ruvalcaba, Alison Kennedy, Apryl Brown, Maria Sanchez, Carol Williams and Tammi Noe.*

I think too many people underestimated Kern County and missed out. Kern County rocked! One of the best seminars I've attended, ever. Thank you, Kern County.

*Larry Blanton*

### Kapak Back for Fire Debris

You all remember the sad day in 2008 when Kapak went under and was bought out by Ampac, who was trying to formulate a fire debris evidence package similar to that of Kapak. During the formulation stage, I was in communication with Steve Herlehy (Ampac), and contributed to those trials by testing the new product extensively. The product apparently received some good reviews from other labs. However, I told Steve that it was not a product that I would be using for casework due to some interfering compounds. That was the end of it on my part. If you need more background, I can provide it upon request.

You then can imagine my surprise when I saw Kapak, my old favorite, listed front and center in Arrowhead's catalog awhile back. Brad Brown from Arrowhead Forensics was good enough to listen to my sad history with Ampac and provide some samples for additional testing. Although not the "original" Kapak (although nylon, it still varies considerably in composition), it seems to be a little tougher than the Grand River nylon bags.

The testing was as follows: Set 1: 80°C at 4hrs, 24hrs, 48hrs and 72hrs; Set 2: 80°C at 6hrs using a small, medium and large-sized bag. Set 3: 120°C at 6hrs using a small, medium and large-sized bag.

The 80° tests produced little or no interference at all hours. However, there were some troublesome spots using the 120° setting (prominent cyanocyclohexene and hexanol at 5-6 min., and cluster of phenol compounds at 15 min.). In addition, the bag became brittle and yellowed considerably. Since most casework is done at room temperature or 80°C, I

don't see an issue with using this product if a suitable control sample is run. Most importantly, it comes in the convenient tubular roll stock that was offered with the original Kapak line. [www.crime-scene.com/store/A-TRS13175F.shtml](http://www.crime-scene.com/store/A-TRS13175F.shtml)

Please contact me with any questions, or if you want the data scanned.  
—*Kristen Rogahn*

### November CAC to Include CACLD

The first two days of the upcoming Fall 2012 CAC Seminar will overlap with and be at the same venue as the Fall 2012 California Association of Crime Laboratory Directors (CACLD) Meeting. Collocating and overlapping their fall semi-annual seminars allows the members of each association to learn more about each other and their organizations. It also provides additional encouragement for vendors to participate in both meetings.

### ASTEE—New Trace Evidence Group with Global Vision

The American Society of Trace Evidence Examiners (ASTEE) is an organization dedicated to the promotion and development of trace evidence analyses. The vision for ASTEE is one of a world-wide community of practitioners, educators, and researchers, where ideas and techniques can be shared, new methods can be developed, and support for validating scientific methodologies can be found. The organization was founded in 2010 by trace evidence examiners from several branches of service who shared a common goal: ensure that valid, meaningful trace evidence techniques continue to be performed in laboratories and employed by justice systems to effectively aid triers of fact in resolving criminal and civil cases. In pursuit of this long term vision for ASTEE, the organization has engaged a strategic plan for growth and development.

In the short term, ASTEE is rolling out a membership drive at both the national and international level ([www.asteetrace.org/membershipappl%2002-10.pdf](http://www.asteetrace.org/membershipappl%2002-10.pdf)).

Bringing together the best and brightest from all sub-disciplines in trace evidence will give ASTEE the breadth of expertise and knowledge to act as a powerful resource for information on trace evidence analyses. A broad membership base will allow for the rapid dissemination of new ideas and methods, as well as a platform for constructive intellectual debate. With such a knowledgeable membership base, ASTEE, primarily through its website ([www.asteetrace.net](http://www.asteetrace.net)), will be able to provide a one-stop-shop for comprehensive information and resources related to many fields of trace evidence analysis. This information will be freely available online, and it is the goal that this website will provide meaningful training information to practitioners, background information to drive and direct academic research, and knowledge for accurate and effective courtroom preparation to trial counsels. As an added benefit to the membership, a peer-reviewed journal is published regularly, providing not only a forum for the introduction of new research materials and ideas but also the foundation for the admissibility of new methodologies in the courts. In addition, the journal provides articles on the successful application of well-established trace evidence techniques, thereby helping practitioners maintain a solid grounding in the fundamental



practitioners maintain a solid grounding in the fundamental

*cont'd next page*

On a cheerier note, in this issue's President's Desk, President Todd Weller announced that Dr. Peter De Forest was granted life membership by the CAC Board of Directors. Though a career professor at John Jay University in New York, Peter started as a criminalist with the County of Ventura. His membership in the CAC has spanned over 50 years. Peter is a passionate advocate of the profession of forensic science and the importance of being a scientist and not just a technician so you can provide the criminal justice system with the best possible service. I greatly respect Peter as an individual and as a giant of our profession. Your time will be well spent to read his contribution to this issue of the *CACNews*. It is a heartfelt and personal journey of one of criminalistics' very important people. Peter is both a friend and was a mentor to me during my career.

Taken from the CAC web site: To become a Life Member of the California Association of Criminalists is to receive one of the highest honors the association can bestow upon someone. Life Members are recognized as criminalists who have dedicated much of their professional lives toward serving criminalistics and the CAC. These members retain all rights and privileges of a Full Member, but are excused from all assessments, dues, and registration fees of any type. From the Bylaws of our organization, the group of CAC Life Members are: Any Full or Corresponding Member who has an exemplary record of service to the CAC and the field of criminalistics and who has been elected a Life Member by the board of directors.

I can't think of anyone more deserving of the honor of CAC Life Membership than Dr. Peter De Forest.

Before the occurrence of the events described above, the theme of this editorial was going to be "generations." Understanding the many different generations of people working in our profession is important to adapting and moving forward while continuing to fulfill the responsibilities of our profession. I am going to leave that topic for another time, but I can't drop the event that triggered the idea.

While watching daytime television (yes, being retired I do occasionally have a TV on during the day) I saw an advertisement for a "university" geared toward allowing people without any college education to get their degree and advance their position in life. I was particularly struck by one of the "testimonials" given by a graduate who described her experience with this particular university and why she picked it as her school of choice.

What she said was, "I want lectures I can control, not lectures I have to sit through."

At first I blew it off as typical advertisements geared toward people doing nothing but sitting around home during the day looking for an easy way to move forward without any effort. But then after giving it some thought I started wondering if this isn't indicative of a broader generational view. There is a kernel of truth in that the generation entering the workforce today is used to having significant numbers of options, instant communication, instant gratification and the ability to constantly shape the world to fit their wants and needs. I'm not sure what it means other than there are many different perspectives to life and work, many based on our generation, and without being aware of this fact we will all fail at effectively moving our profession forward.

skills employed in trace evidence analyses.

Over the long run, ASTEE is looking to be a driving force in codifying trace evidence techniques and marketing the capabilities of trace evidence to the legal community. ASTEE is focused on recognizing achievements in trace evidence analyses and exceptional individuals who support the trace evidence community. As the membership in ASTEE grows, the organization hopes to establish grants for members to perform research, attend training, and publish findings. Ultimately, ASTEE would like to fund and organize training classes for members in order to assist organizations and individuals with meeting the need for continuing education and development. ASTEE is also hoping to be heavily involved in the development and direction of scientific working groups for various trace evidence sub-disciplines, employing the best and brightest members of the community to ensure that the highest standards are codified and met across the board.

It is an exciting time as ASTEE continues to grow into a global organization dedicated to fostering the exchange and dissemination of ideas and information within the field of trace evidence analyses. Continued expansion of the membership will facilitate the development of a strong organization which will be at the forefront of the expansion and strengthening of trace evidence analyses through the support of research initiatives, development of forensic practitioners, education of trial counsels and courts, and the promotion of the highest analytical and ethical standards.

For more information please visit [www.asteetrace.org](http://www.asteetrace.org), or contact the current ASTEE President, Chris E. Taylor. [chris.e.taylor@us.army.mil](mailto:chris.e.taylor@us.army.mil)

### **Regional Director, North Report**

A Northern study group meeting was planned for Thursday May 31st. Keith Inman of CSU East Bay in Hayward will be hosting. The following groups plan on meeting, pending confirmation of room availability: DNA, DNA Technical Leaders, QA, Trace/Arson, Drug, and Firearms. This will be the first meeting of the DNA Technical Leaders study group. They will meet in the morning, with the general DNA study group meeting in the afternoon.

*Meghan Mannion Gray*

### **Regional Director, South Report**

Below is Jane Whitworth's report regarding the South's recent Firearms Study Group meeting on 4/26/12.

"...we had a Firearms Study Group meeting yesterday. We had 23 attendees from 7 labs plus some retirees/independent folks. It was hosted by the San Bernardino County Sheriff-Coroner's Department on 4/26/12. The main topic was chronographs. We had a few presentations: Bill Matty – Chrony vs Oehler; Bill Matty – Trip to Woodin Lab; Luke Haag – How and Why Would I use a Chronograph; Luke Haag – On the Matter of Ballistic Chronograph "Calibration"; Luke Haag – Infinition® Doppler Radar Setup for Chronograph Calibration & Velocity Loss Tests.

The presentations were followed by a trip to the range to do calibration checks of each agency's chronographs against the Doppler radar.

Lastly, there was a discussion with the definition of pattern matching. The group's proposal was sent to the AFTE Glossary Sub-committee for additional review."

*Mey Tamm*

Forensics Source is the one-stop shop for thousands of quality products, supplies and equipment for the forensics professional. From ABFO Scales to Zephyr Brushes, ForensicsSource.com provides customers with quick and easy access to the crime scene, crime lab and educational products needed to succeed in today's challenging environments.

**EVI-PAQ®**

**nik®**  
PUBLIC SAFETY



**iDenticator**

**projectina®**

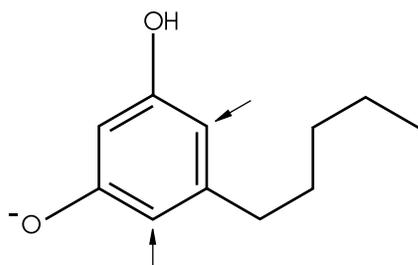
©2010Safariland - 022210-CAC/IAI

# What is it in *Cannabis* that Reacts with the Duquenois Test?

Charissa Goggin and John Thornton  
Forensic Science Program  
University of California, Davis

Some 483 compounds have thus far been isolated from *Cannabis*, and the number is constantly being added to. There are more than 60 cannabinoids, unique to *Cannabis*. This is in addition to many other products which are not unique, including approximately 140 terpenes, 50 hydrocarbons, more than 70 nitrogen-containing constituents, 13 monosaccharides, 12 sugar alcohols, 23 flavanoids, 33 fatty acids, 34 non-cannabinoid phenols, 7 alcohols, 21 acids, 13 ketones, 11 phytosterols, carotene and Vitamin K. A pantheon of these materials has been presented by Brenneisen (1).

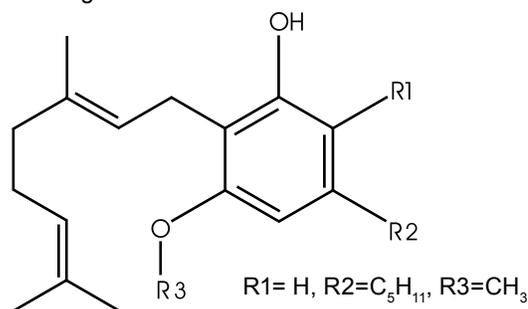
The Levine modification (2) of the Duquenois-Negm test (3) is the preeminent chemical test for *Cannabis*, eclipsing all others. Thornton and Nakamura (4), working with model compounds, established that the basic Duquenois test reacts with cannabinoids as a nucleophilic reaction at the *ortho*- and *para*- positions of the aromatic ring of cannabinoids. Specifically, under the acidic conditions of the Duquenois test, the aldehyde (vanillin) is protonated, making it a stronger electrophile that can bring about substitution of the undissociated phenol. Substitution at the *ortho*- and *para*- positions are mediated, with the product undergoing further condensation by the same mechanism, and subsequent oxidation to an intensely colored quinone. The Levine modification of the test involving extraction of the color into chloroform is a result of the polar aliphatic chain on the aromatic ring. This indicates that the Duquenois test, with the Levine modification, would react with both the  $\Delta^8$ - and  $\Delta^9$ - isomers of tetrahydrocannabinol, as well as cannabiniol, and cannabidiol, the compounds likely to be represented in most samples of *Cannabis*. In summary, any cannabinoid with the following structure could be expected to participate in Duquenois-Levine reactivity.



(It should be noted that under the strongly acidic conditions of the Duquenois test, cannabidiol will cyclize to tetrahydrocannabinol, so any cannabidiol present will ultimately test as tetrahydrocannabinol.)

But this work was reported in the early 1970's. What do we know now about compounds in *Cannabis* that can be expected to react with the Duquenois test? Although typically present in small concentration, and some in very small concentration, a number of Cannabinoids would appear to have structures that would be reactive toward Duquenois by virtue of having either an *ortho*- or a *para*- position (or both) open on the aromatic ring. What are they?

Cannabigerol



Cannabigerolic acid

R1=COOH, R2=C<sub>5</sub>H<sub>11</sub>, R3=H

Cannabigerolic acid monomethylether

R1=COOH, R2=C<sub>5</sub>H<sub>11</sub>, R3=CH<sub>3</sub>

Cannabigerol monomethylether

R1= H, R2=C<sub>5</sub>H<sub>11</sub>, R3=CH<sub>3</sub>

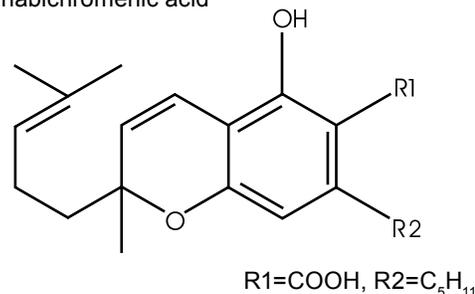
Cannabigerovarinic acid

R1=COOH, R2=C<sub>3</sub>H<sub>7</sub>, R3=H

Cannabigerovarin

R1=H, R2=C<sub>3</sub>H<sub>7</sub>, R3=H

Cannabichromenic acid



Cannabichromene

R1=H, R2=C<sub>5</sub>H<sub>11</sub>

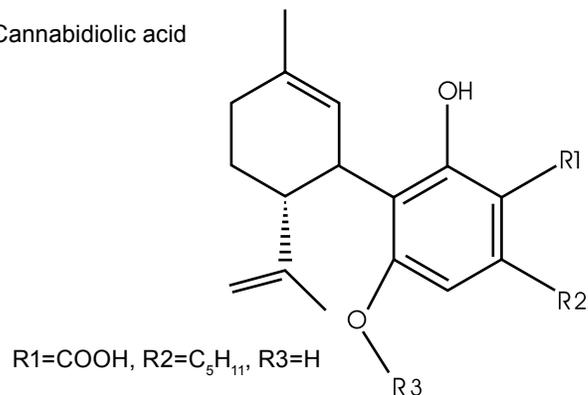
Cannabichromevarinic acid

R1=COOH, R2=C<sub>3</sub>H<sub>7</sub>

Cannabichromevarin

R1=H, R2=C<sub>3</sub>H<sub>7</sub>

Cannabidiolic acid



Cannabidiol monomethyl ether  
R1=H, R2=C<sub>5</sub>H<sub>11</sub>, R3=CH<sub>3</sub>

Cannabidiol-C<sub>4</sub>  
R1=H, R2=C<sub>4</sub>H<sub>9</sub>, R3=H

Cannabidivarnic acid  
R1=COOH, R2=C<sub>3</sub>H<sub>7</sub>, R3=H

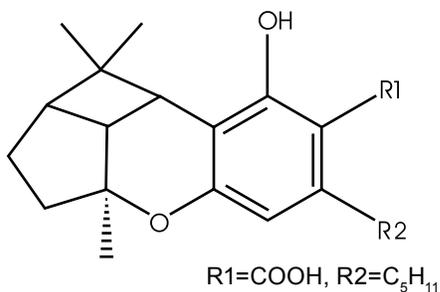
Cannabidivarin  
R1=H, R2=C<sub>3</sub>H<sub>7</sub>, R3=H

Cannabidiocol  
R1=H, R2=CH<sub>3</sub>, R3=H

(This compound is likely to give a color with the Duquenois test, but it is questionable whether the color formed would extract into chloroform. The one carbon at the *meta*- position to the phenol isn't likely to be sufficiently polar to extract.)

[with all the THC acids, at this point the game doesn't seem to be worth the candle; we can talk about what to include]

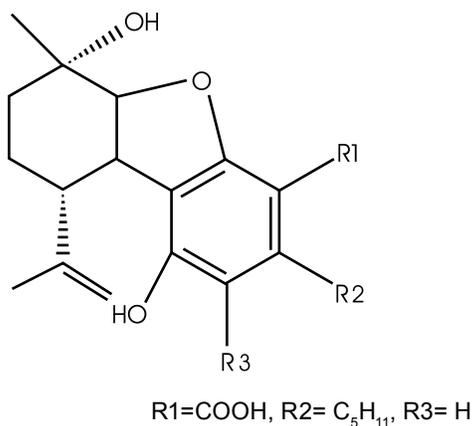
Cannabicycloic acid



Cannabicyclol  
R1=H, R2=C<sub>5</sub>H<sub>11</sub>

Cannabicyclovarin  
R1=H, R2=C<sub>3</sub>H<sub>7</sub>

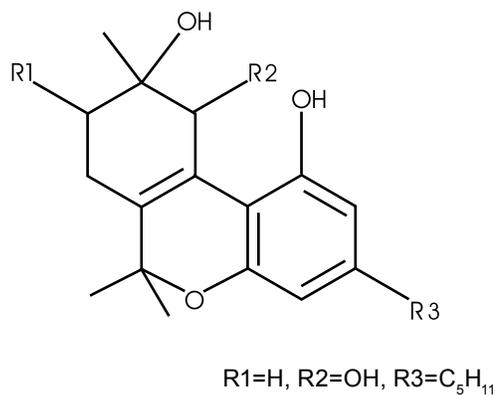
Cannabielsoic acid A



Cannabielsoic acid B  
R1=H, R2=C<sub>5</sub>H<sub>11</sub>, R3=COOH

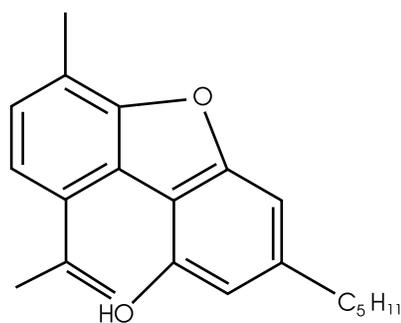
Cannabielsoin  
R1=H, R2=C<sub>5</sub>H<sub>11</sub>, R3=H

Cannabitriol



Cannabitriolvarin  
R1=H, R2=OH, R3=C<sub>3</sub>H<sub>7</sub>

Dehydrocannabifuran



## References

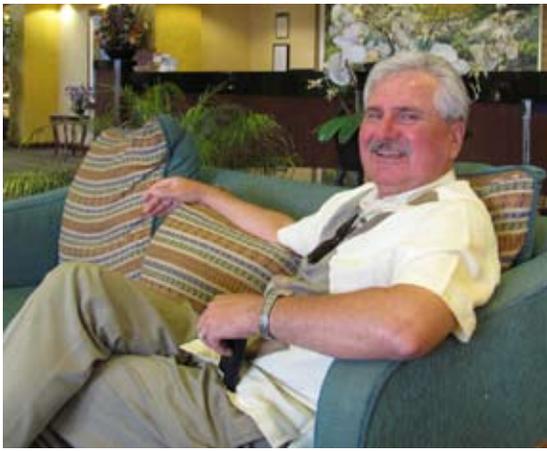
- (1) Brenneisen, R. "Chemistry and Analysis of Phytocannabinoids and Other Cannabis Constituents," in *Forensic Science and Medicine: Marijuana and the Cannabinoids*, ed. M.A. ElSohly, Humana Press, Totowa, New Jersey, 2010.
- (2) Butler, W., *J.A.O.A.C.* 45:597 (1962).
- (3) Duquenois, P., and Negm, H. *Bull. Sci. Pharm.* 45:203 (1938) and *Ann. Med. Legale* 18:485 (1938).
- (4) Thornton, J., and Nakamura, G. *J. For. Sci. Soc.* 12:461 (1972).

# CAC Spring 2012

## Bakersfield Hospitality

If it was workshops you craved, then this was your meeting! The Spring 2012 CAC Seminar offered a buffet of opportunities to try out new techniques and learn new technologies in addition to lectures and focus groups. *clockwise from upper left:* Ethics, Leadership, DNA, DUI, True Allele, Body Fluid ID and Micro Trace Techniques. If you missed this meeting, start planning now for a second helping of workshops at the November CAC seminar in San Jose.

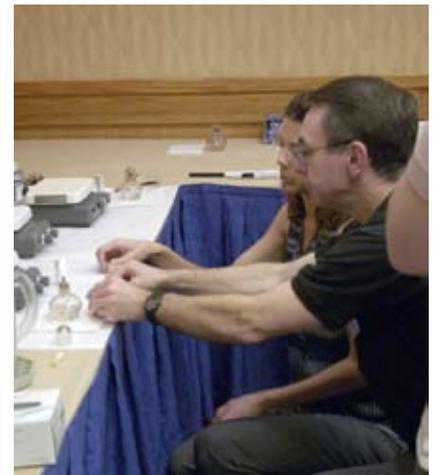
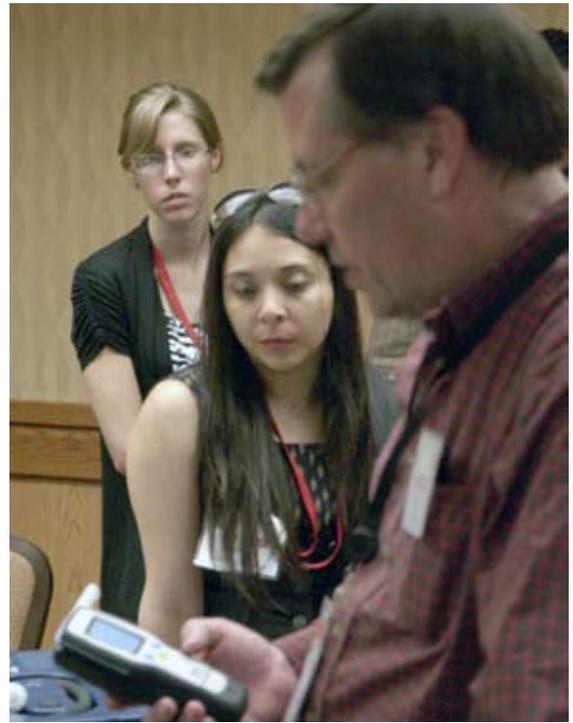


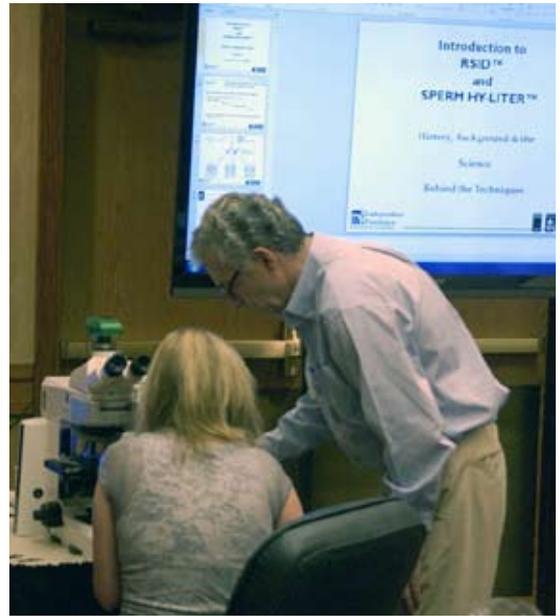


*Your 2011-12 CAC Board weighs the important issues affecting our association.*



# Bakersfield Hospitality





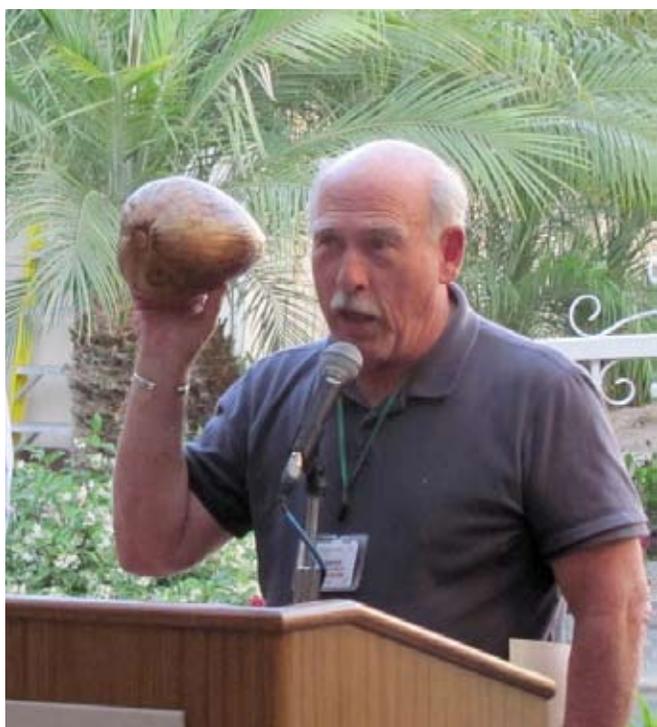
## Bakersfield Hospitality



*A quartet of hard-working seminar staff taking a well deserved break. (l-r) Courtney Nuzum (intern), Carol Williams, Tammi Noe, Jennifer Williams (Carol's sister, volunteer).*

*(below) Tammi and Greg receive official CAC appreciation.*

*Outgoing Pres. Kevin Andera passes the trappings of office to incoming President Todd Weller.*



*Pete inviting the inevitable comparison.*

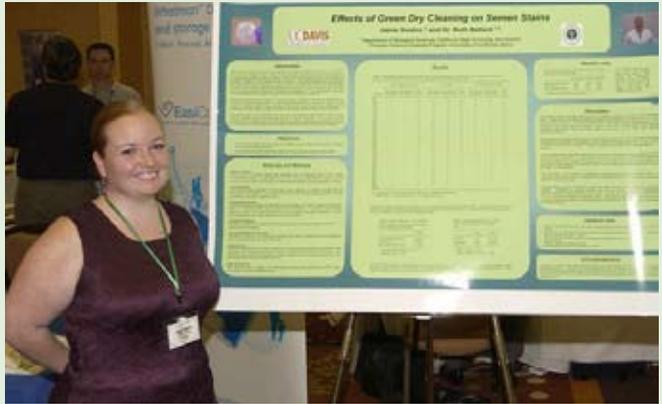


*Dr. Greg Hampikian (above) dicusses the Amanda Knox case.*

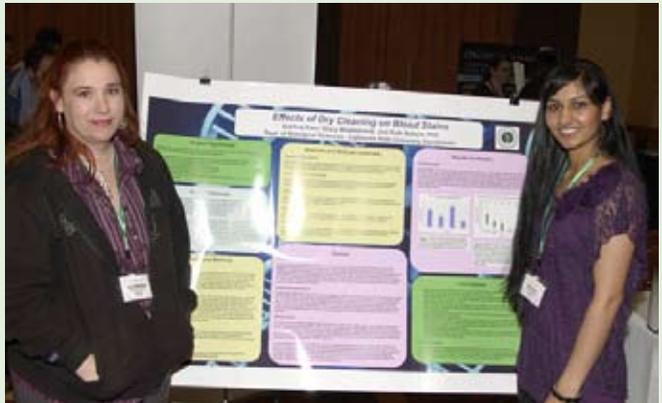
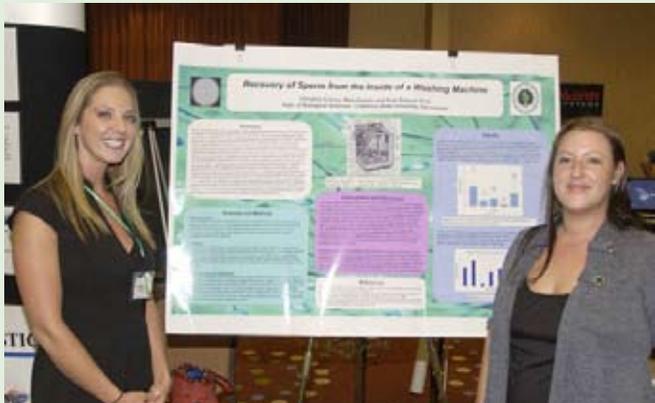


*2012-13  
CAC Board of  
Directors*

## Bakersfield Hospitality



**Poster Sessions:** Four posters were exhibited at the seminar: (clockwise from upper left): Desiree Chong: "Urine Screening Tests", Jamie Gualco: "The Effect of Dry-Cleaning on Semen Stains", Stacy Middlebrook (l) and Sukhraj Kaur: "The Effect of Dry-Cleaning on Dried Blood Stains", and Christine Corona (l) and Maia Sosiuk: "Recovery of Sperm from the Inside of a Washing Machine."



Dan DeFraga (l) offers a tribute to soon-to-be retiring Greg Laskowski

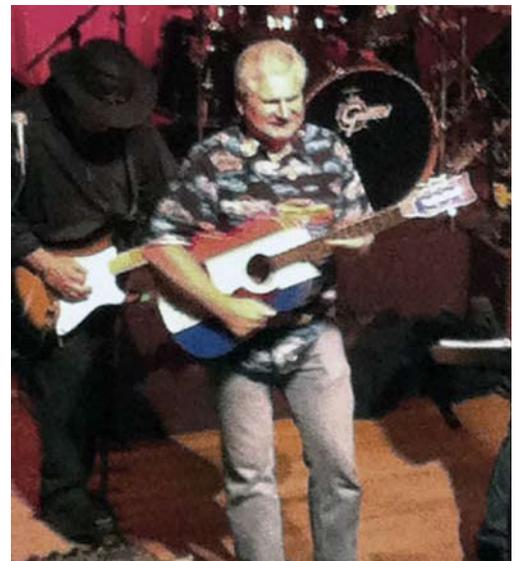




**CSI: Poses with CAC**  
 Promega reps Sara and Danielle flank CSI actors (l-r) David Berman (plays David Phillips) and John Wellner (plays Henry Andrews) along with Greg Laskowski.

(middle row, l-r) Jennifer and Laura each win Raymond's book. The after-banquet dance at the Buck Owens Crystal Palace.

(bottom, l-r) Raymond signs his new novel for Amanda. Greg proves he will not find retirement boring!



Greg Matheson photo

# ABSTRACTS

FROM THE  
SPRING 2012  
CAC SEMINAR

## **Amanda Knox Case Presentation**

*Greg Hampikian, Ph.D., Professor of Biology and Criminal Justice, Boise State University*

Boise State professor, Dr. Greg Hampikian will speak about the work he did on the appeal for Amanda Knox.

## **Bias in Mixture Interpretation**

*Greg Hampikian, Ph.D., Professor of Biology and Criminal Justice, Boise State University*

The objectivity of forensic science decision making has received increased attention and scrutiny. However, there are only a few published studies experimentally addressing the potential for contextual bias. Because of the esteem of DNA evidence, it is important to study and assess the impact of subjectivity and bias on DNA mixture interpretation.

## **Application of the Raman Microscope to Forensic Science: From Trace Elements Analysis to Drug Identification**

*Sergey Mamedov, Fran Adar, David Tuschel, Horiba Instruments*

Raman analysis has been recognized to have potential for solving an entire variety of problems of forensic science. However, one of the barriers to exploiting this potential has been the overhead of the technology – the cost of the equipment, its footprint, and the level of skill required for successful use. New Raman microscopes have been introduced at about one quarter the cost of larger research systems, and they take up no more lab table space than an ordinary optical microscope. During this talk, this new equipment will be described, as well as forensic applications including identification of illicit drugs in their containers, counterfeit currency, fibers, and glitters.

## **Application of the Raman Microscope to Forensic Science: From Trace Elements Analysis to Drug Identification**

*Sergey Mamedov, Fran Adar, David Tuschel, Horiba Instruments*

Raman analysis has been recognized to have potential for solving an entire variety of problems of forensic science. However, one of the barriers to exploiting this potential has been the overhead of the technology – the cost of the equipment, its footprint, and the level of skill required for successful use. New Raman microscopes have been introduced at about one quarter the cost of larger research systems, and they take up no more lab table space than an ordinary optical microscope. During this talk, this new equipment will be described, as well as forensic applications including identification of illicit drugs in their containers, counterfeit currency, fibers, and glitters.

## **CSI: Crime Scene Investigation, The Making of the Show**

*David Berman and Jon Wellner*

Researcher/actor David Berman and actor Jon Wellner discuss the making of the show. Topics will include how they do the research and the “CSI effect.”

## **Solving Forensics Mysteries with the XRF Microscope**

*Sergey Mamedov*

X-Ray Fluorescence (XRF) spectroscopy is useful for identifying substances and confirming their identity with little or no sample preparation. With the new technology of micro XRF and integrated computer databases of known XRF spectra, nearly any substance can be identified. The goal of this study was to investigate the utility of XRF microscopes in determination of trace elements concentration and distribution in gun shot residue, glass, steel/alloy, antiques, museum objects, and counterfeit products.

## **Solving Forensics Mysteries with the XRF Microscope**

*Sergey Mamedov*

X-Ray Fluorescence (XRF) spectroscopy is useful for identifying substances and confirming their identity with little or no sample preparation. With the new technology of micro XRF and integrated computer databases of known XRF spectra, nearly any substance can be identified. The goal of this study was to investigate the utility of XRF microscopes in determination of trace elements concentration and distribution in gun shot residue, glass, steel/alloy, antiques, museum objects, and counterfeit products.

## **Poster: The Effect of Dry-Cleaning on Semen Stains**

*J. Gualco, C. Waddle, E. Lee, and R. Ballard, Ph.D., University of California, Davis*

Research on the effects of water immersion and aqueous-based cleaning methods (e.g. machine laundering, detergents, machine drying) indicates that a number of variables affect whether a stain can be detected post-exposure, including the body fluid examined, the fabric type, and the presence or absence of detergents and agitation. However, the effects of dry-cleaning on body fluid stains are not well understood, despite the fact that many fabrics are “dry-clean only.” The effect of dry cleaning of three dry-clean-only fabrics stained with semen was examined.

## **Poster: The Effect of Dry-Cleaning on Dried Blood Stains**

*S. Middlebrook, S. Kaur, and R. Ballard, Ph.D., California State University, Sacramento*

The effects of water immersion and machine washing on blood stains have been researched and indicate that blood stains are difficult to detect after the stains have been exposed to water, particularly in the presence of agitation and detergents, and that most of the DNA is removed by such treatment. We wanted to see if the same is true for dry-cleaned stains.

## **Poster: Recovery of Sperm from the Inside of a Washing Machine**

*C. Corona, M. Sosiuk (Nemitz), and R. Ballard, Ph.D., California State University, Sacramento*

Prior studies show that washing stained clothing does not necessarily remove sperm and one study demonstrated that sperm can be transferred from one item to another during machine washing. Thus stained clothing, or even clothing washed with the stained item, may be a source of sperm. We took this research a step further by examining whether sperm can be recovered from the inside surfaces of a washing machine.

## **Poster: Urine Screening Tests**

*D. Chong, California State University, Fresno*

The Jaffe reaction, Marshall Reaction, DMAC reaction, and two novel commercially available urine detection kits (Uritrace® and RSID™ Urine) were evaluated for the detection of urine in forensic laboratories.

## **Case Presentation**

*District Attorney Lisa Green; Detective Herman Caldas; Criminalist Tammi Noe; Donna Beeson SANE; victim Donna Bulford*

In 2009, a woman was with her infant child in the parking lot of a popular shopping center when she was forced into her car at gunpoint in broad daylight, made to drive to an ATM machine where she was robbed and then to the parking lot where she was sexually assaulted. The attack left the community in fear of a brazen and dangerous predator walking loose in their city. Due to the continued threat to the community and the victim, SART team members coordinated efforts to expedite identifying the assailant through DNA and apprehending him.

## **Murder in the Mojave: When the DA Needs to Take Over a Homicide Investigation**

*Tam Hodgson, Assistant Chief District Attorney Investigator*

In 2010, a man was found dead in his workshop on a property in Ridgecrest. The man had extensive injuries to his head and torso and the scene was littered with numerous bloodstains. A crime scene team discovered a bloody pipe in the back of the workspace behind a partition. Despite the contradictory evidence, the detectives with jurisdiction over the scene continued to believe the death to be accidental.

## **Bullet Path Reconstruction: Probe Method Accuracy and Error Rate**

*Chris Coleman, Contra Costa County Sheriff's Office Crime Lab; Bruce Moran, Sacramento County District Attorney Crime Lab*

One of the main components of Shooting Incident Reconstruction (SIR) is Bullet Path determination. Though there are several methods to do this, one of the most used is probing. Over the last 6 years of teaching SIR, we have implemented an empirical validation study into this training to collect data to determine how accurate the probing method is and the potential error rate. Now with over 2000 data points we will present the results of this ongoing study, as well as comparing it to other such studies.

## **Legal Updates: Criminalization of Synthetic Cannabinoids and Stimulants, Ongoing Challenges to Fingerprint Evidence, and Confrontation Clause Developments**

*Michael Chamberlain, Deputy Attorney General, California Department of Justice*

Spice and other synthetic cannabinoid products are one of the latest growing trends in recreational drugs. Deputy Attorney General Michael Chamberlain will discuss the legal challenges under California law and federal regulations.

## **Unusual Toolmark/Fracture Mark Case**

*Greg Laskowski, Supervising Criminalist, Kern Regional Crime Laboratory*

In the summer of 2011, the Bureau of Land Management submitted to the Kern Regional Crime Laboratory, sections of a 19th century smokestack that was once an integral part of a steam boiler that had been dismantled, cut up, and removed from a gold mine that had been declared as an archaeological site. This presentation will discuss the challenges of comparing remnants of scrap metal using toolmark and fracture matching techniques on rusted and crushed metal scraps. In addition, the history of gold mining in Kern County and the Archaeological Resources Protection Act (ARPA) will be discussed.

## **Rethinking Man's Place: Toward the Establishment of New Guidelines for the Classification of Human Hair**

*Garrett Sugimoto*

When a hair is found during a forensic investigation, it is important to determine if the hair is from a human or a non-human animal. Differentiating between human and non-human hairs can usually be accomplished using light microscopy to observe various hair characteristics. A combination of generally accepted characteristics has been used to establish human hair uniqueness. However, many human hair characteristics are common in hairs from non-human primates, as well as species from non-primate orders.

## **Qualified Opinions: What Is Ethical and What Is Not?**

*Peter Barnett*

The CAC Board of Directors has asked the Ethics Committee to make a brief presentation at CAC Seminars on the subject of ethics. In this first presentation by the CAC Ethics Committee, we will consider the responsibility of the Criminalist for full disclosure of opinions and conclusions reached as a result of the examination of physical evidence, and necessity of data to support conclusions that are expressed.

## **The Drug War in Mexico and How it's Spilling Over into the United States**

*HIDTA Detective Demacio Diaz, Bakersfield Police Department with ICE/Border Patrol Investigators, Bakersfield, CA*

Detectives discuss how the drug war in Mexico has spilled over into the United States.

### **DUI, Personal Story**

*Carla Pearson, Program Coordinator, Mothers Against Drunk Driving (MADD)*

Carla Pearson will discuss the personal impact DUI had on her life. Individualization of Leopards via Pattern Analysis DUI, Personal Story Carla Pearson, Program Coordinator, Mothers Against Drunk Driving (MADD) Carla Pearson will discuss the personal impact DUI had on her life.

### **Individualization of Leopards via Pattern Analysis**

*Natasha Robinson, California State University, Fresno*

Discussed is a method using photographs to identify individual leopards by employing a "clock-face" method to code the types of rosette pattern present. This method was used against a population of 38 leopards and resulted in no two leopards with the same rosette pattern.

### **Quantitative Algorithm for Digital Comparison of Torn Duct Tape**

*Jessica Malley, University of California, Davis*

Research in the use of MATLAB® software to show that a quantitative algorithm can be used for the digital comparison of torn and cut duct tape ends to evaluate their end match.

### **PEBTS Program and the Presentation of the DUI Alcohol Workshop Data**

*Dan Defraga, Supervising Criminalist, Kern Regional Crime Laboratory*

The results of Monday's alcohol workshop study of drinkers using two driving simulators with toxicology sample data will be presented along with video clips. A OTS grant program for PEBTS will also be discussed. Presentation will include issues of the Alcotest 8610 units including calibration, linearity, specificity, mouth alcohol and ambient air pressure.

## **More Ys in Half the Time...Come See Y**

### **Promega's PowerPlex® Y23 System – The New Standard in Y-STR Analysis**

Promega is pleased to bring you information on the latest advances in Y-STR analysis in a half day seminar at the Embassy Suites, Walnut Creek on Thursday, August 16<sup>th</sup> from 9:30 a.m. to 3:30 p.m. The seminar will feature presentations by leaders in the forensic community, as well as updates on the latest technologies and products from Promega. Topics of discussion will include:

- *The Benefits of Y-STR Analysis*
- *Mixture Interpretation*
- *Population Studies & Statistics for Y-STRs*
- *Implementation & Usage of a Y-STR Database*

The seminar is **free of charge** to individuals involved in forensics. Lunch and snacks will be provided. Space is limited, so be sure to register early!



Register at: [www.promega.com/y23road](http://www.promega.com/y23road)

**CALIFORNIA ASSOCIATION OF CRIMINALISTS  
B O A R D O F D I R E C T O R S**

President:  
**Todd Weller**



Oakland PD Crime Lab  
455 7th Street, Rm 608  
Oakland, CA 94607  
(510) 238-3386  
president@cacnews.org

President-Elect:  
**Eric Halsing**



CA DOJ Jan Bashinski Lab  
1001 W. Cutting Blvd, Ste 110  
Richmond, CA 94804  
(510) 620-3300  
president-elect@cacnews.org

Recording Secretary:  
**Kristen Fraser**



LASD Scientific Services Bureau  
1800 Paseo Rancho Castilla  
Los Angeles, CA 90032  
(323) 267-6152  
recordingsecretary@cacnews.org

Treasurer:  
**Laura Silva**



Oakland PD Crime Lab  
455 7th Street, Rm 608  
Oakland, CA 94607  
(510) 238-3386  
treasurer@cacnews.org

Regional Director: (North)  
**Meghan Mannion-Gray**



CA DOJ Jan Bashinski Lab  
1001 W. Cutting Blvd, Ste 110  
Richmond, CA 94804  
(510) 620-3300  
northregion@cacnews.org

Regional Director: (South)  
**Mey Tann**



CA DOJ Riverside  
7425 Mission Blvd.  
Riverside, CA 92509  
(951) 361-5000  
southregion@cacnews.org

Membership Secretary:  
**Michelle Halsing**



CA DOJ Jan Bashinski Lab  
1001 W. Cutting Blvd, Ste 110  
Richmond, CA 94804  
(510) 620-3300  
membership@cacnews.org

Editorial Secretary:  
**Gregory Matheson**



Los Angeles Police Dept.  
1800 Paseo Rancho Castilla  
Los Angeles, CA 90032  
editor@cacnews.org

Immediate Past President:  
**Kevin Andera**



Orange County Sheriff-Coroner  
320 N. Flower St.  
Santa Ana, CA 92703  
(714) 834-4510  
past-president@cacnews.org



The "CAC logo" is a registered service mark of the CAC and its use is restricted to official communications and by other authorization of the CAC Board.

**i**nterested in  
becoming a  
member?

Visit us online at  
[www.cacnews.org](http://www.cacnews.org)

**CAC QR Codes**

Quick Response codes work with your smartphone to save time and typing. Point your phone's camera and visit the CAC!



CACNews.org  
Website



CAC Store

# CAC FALL SEMINAR 2012

# SAN JOSE



Performing Arts Center photo courtesy San Jose Visitor and Convention Bureau

Picture yourself in beautiful downtown San Jose for the 2012 CAC Fall Seminar hosted by Dr. Steven Lee, Forensic Science Program, San Jose State University.

Planned workshops include Dr. Christian Orrego—DNA and Advances in Human Rights, John Jermain—Explosives, Dr. John DeHaan—Fire Debris, and Dr. Lorna Pierce will conduct a Forensic Anthropology “Pig Dig.” Also featured is an “Advances in Forensic DNA” Awards Banquet honoring Dr. George Sensabaugh for his years of contributions and dedication to forensic science. Make your reservations at the Holiday Inn (Formerly Wyndham). Reserve a room now: 408.452.6200 and check [www.cacnews.com](http://www.cacnews.com) for updated information.

