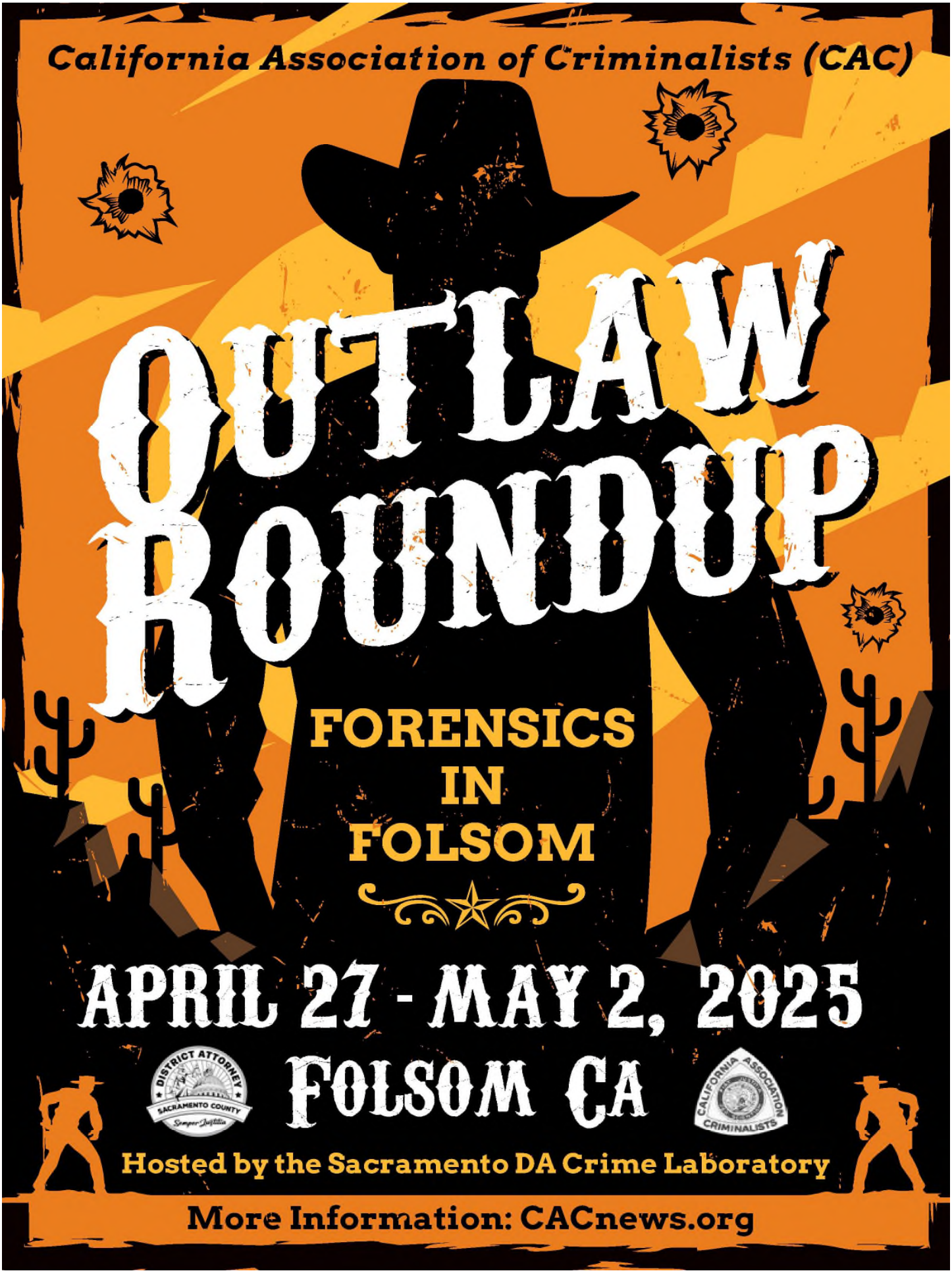
California Association of Criminalists (CAC)
OUTLAW ROUNDUP
FORENSICS IN FOLSOM
APRIL 27 - MAY 2, 2025
FOLSOM CA
DISTRICT ATTORNEY
SACRAMENTO COUNTY
CALIFORNIA ASSOCIATION CRIMINALISTS
Hosted by the Sacramento DA Crime Laboratory
More Information: CACnews.org

Welcome Letter

It is my great pleasure to welcome you to the 139th California Association of Criminalists Seminar. Each seminar is an event that we can all look forward to for a range of reasons. It is a chance to stay abreast of advances in our respective disciplines, a chance to get a short breather from the grind of performing lab work and writing reports, and most of all, it is a chance to reconnect with friends and colleagues, some of whom we may not have seen in years.

The Sacramento County District Attorney's Crime Laboratory and the Seminar Planning Committee have put together an exciting and unique experience filled with presentations by our members and sponsors, all mixed with a bit of fun. I want to give a big thank you to this group of wonderful people who have dedicated over a year of planning for this week's events. It is difficult to appreciate how challenging this can be if you have never done it, but the experience is very rewarding and I am sure they are glad we have finally reached this point on the calendar. Please take a moment to thank our hosts for their efforts and our sponsors for their financial support. None of what you will see and experience happens without them.

The theme of this seminar gives a nod to Folsom's place in history as part of the California Gold Rush. With your time away from the seminar, I want to encourage you to see what gold Folsom has to offer, at least figuratively speaking. There are quite a few opportunities within a stone's throw whether you are interested in museums, dining out, or outdoor activities.

I hope you all can make the most of your time here, both professionally and personally. I believe I attended my first CAC seminar about 18 years ago and I find myself coming back for more. If this is your first seminar, I hope you find it just as enjoyable as I did my first time. When the week is over, you will know you have struck gold if you find yourself looking forward to next year's seminar.

Please enjoy your week and thank you for coming.

Günther Scharnhorst

Günther Scharnhorst, CAC President

Sacramento County District Attorney's Office, Laboratory of Forensic Services

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Lake Natoma Inn Property Map

Lake Natoma Inn
HOTEL & CONFERENCE CENTER

Things to Do in Folsom:

Tuesday, April 29, 2025

Howdy, folks! Mighty glad y'all could mosey on down to these here festivities! We've got a rip-roarin' lineup of special events, so take a gander at what's in store for ya!

Fill up your belly at our no-host Welcome Event over at the Folsom Hotel Saloon from 5-7 pm—ain't nothin' better than some good ol' grub to get things rollin'. But the real hootenanny kicks off at 7 pm sharp when the Weekly Saloon Trivia begins! So saddle up, test your wits, and wrangle yourself a win!

And don't forget—show that lanyard of yours to rustle up a discount on special conference-themed drinks. Yeehaw!

Wednesday, April 30, 2025

Swing by the Placer Room from 8-10 pm for a rootin'-tootin' good time! We've got lawn games to test your grit, plus a rip-roarin' round of crime trivia that'll have ya thinkin' like a sharp-eyed sheriff.

Grab yourself some hearty fixin's and wet your whistle with some fine, liquored-up beverages while you kick back and enjoy the fun. Ain't no better way to spend an evenin'!

Other Fun Stuff

Swing by Samual Horne's, Fat Rabbit, Powerhouse Pub, and Folsom State Slickers Corner Bar (City Slickers) for special conference-themed drinks at a discount—just flash that CAC lanyard! City Slickers is goin' the extra mile, donating a portion of the proceeds right back to CAC. And Powerhouse Pub? They'll let ya waltz right in for free with your badge—ain't that a deal!

Feelin' fired up and need to blow off some steam? Head on over to The Smart Axe in Folsom and throw some steel! Show your CAC lanyard and snag a 10% discount while you let loose. Ain't no better way to unwind after a day of wranglin' knowledge.

Seminar at a Glance

Sunday, April 27, 2025	8AM-12PM	"Drink to Me" How to Run a Drinking Study from Start to Finish	Pavilion
	1PM-5PM	"I Walk the Line" Drinking Study w/ Impairment & Field Sobriety Tests	Pavilion
Monday, April 28, 2025	8AM-12PM	"Forensics Got you Tuckered Out?" Wellness	Pavilion
		Full Spectrum Photography	Placer
		No Longer the Call of the Wild: NGS Solutions for the Crime Lab	Sierra I
		"The Lone Bullet: Tracking its Trail with Ease." Shooting Reconstruction	Sierra II
	1PM-5PM	The Unknown, the Unseen, and the Bloody: Saloon Girl Elsie Vee (LCV) and Sheriff BlueStar are on the case.	Placer
		Recognition, Documentation, and Collection of Footwear and Tire Track Evidence	Pavilion
		Folsom "Blues" Prison Tour	Off-site
		Agilent Tour	Off-site
		ABC Exams	Sierra I & II Ballroom
Tuesday, April 29, 2025	8AM-5PM	"Yippee ki yay" DNA Workshop	Sierra Ballroom
	1PM-5PM	Folsom "Blues" Prison Tour	Off-site
	5:30PM-9PM	No-Host Welcome Get Together/ Trivia	Off-site: Folsom Hotel Saloon
Wednesday, April 30, 2025	7AM-8AM	Breakfast	Sierra Ballroom
	8AM-3:45 PM	General Session	Pavilion
	4PM-5:30PM	CAC Business Meeting	Pavilion
	5PM-7PM	Poster Session	Sierra Ballroom/ Patio
	5PM-7PM	Wine & Cheese/ New Member Reception	Sierra Ballroom/ Patio
	7PM	Group Photos (New Members / Everyone)	Patio
	8PM-10PM	Hospitality	Placer
Thursday, May 1, 2025	7AM-8AM	Breakfast	Sierra Ballroom
	8AM-4:45PM	General Session	Pavilion
	6PM-11PM	Banquet & Awards Ceremony	Pavilion
	9PM	Group Photos (CAC Board/ Seminar Planing Committee/ Past CAC Presidents)	Pavilion/ Patio
Friday, May 2, 2025	7AM-8AM	Breakfast	Sierra Ballroom
	8AM-12PM	General Session	Pavilion

Workshop Schedule

Sunday April 27th, 2025

8:00AM–12:00PM "Drink to Me" How to Run a Drinking Study from Start to Finish – Pavilion

1:00PM–5:00PM "I Walk the Line" Drinking Study w/Impairment & Field Sobriety Tests – Pavilion

Monday April 28th, 2025

7:30AM–9:00AM **"Rise & Shine" Breakfast – Folsom Room**

8:00AM–12:00PM "Forensics Got you Tuckered Out?" Wellness – Pavilion

8:00AM–8:45AM	Yoga
8:45AM–9:30AM	Meditation
9:30AM–12:00PM	Walk/Run the Johnny Cash Trail (Meet at Pavilion)

8:00AM–12:00PM **"**No Longer the Call of the Wild" NGS Solutions for the Crime Lab – Sierra I

8:00AM–12:00PM Full Spectrum Photography – Placer

8:00AM–12:00PM "The Lone Bullet: Tracking its Trail with Ease." Shooting Reconstruction – Sierra II

12:00PM–4:00PM **Folsom "Blues" Prison Tour – Meet in Lobby**

1:00PM–4:30PM **Agilent Tour – Meet in Lobby**

1:00PM–5:00PM "The Unknown, the Unseen, and the Bloody: Saloon Girl Elsie Vee (LCV) and Sheriff BlueStar are on the Case" – Placer

1:00PM–5:00PM Recognition, Documentation, and Collection of Footwear and Tire Track Evidence – Pavilion

3:00PM–4:30PM **"Saddle Up" Break – Folsom Room**

Tuesday April 29th, 2025

8:00AM–5:00PM "Yippee ki yay" DNA – Sierra Ballroom (see page 19 for details)

12:00PM–4:00PM **Folsom "Blues" Prison Tour – Meet in Lobby**

Workshop Speaker Biographies

Sunday, April 27, 2025 Speakers

"Drink to Me" How to Run a Drinking Study from Start to Finish and "I Walk the Line" Drinking Study with Impairment & Field Sobriety Tests

Presented by: Craig Triebold & Kristine Myhre, Sacramento County District Attorney's Office, Laboratory of Forensic Services

Abstract:
Learn the workings of running a drinking study including calculations, dosing, utilizing a PAS device, and more, including dosing of volunteer subjects. Then in the afternoon, learn about the progression of alcohol impairment and observe individuals under the influence of alcohol as they perform SFSTs.

Biography:
Craig Triebold is a Supervising Criminalist at the Sacramento County District Attorney's Laboratory of Forensic Services, overseeing the Toxicology Unit and the laboratory's Crime Scene Response Team. He has 20 years of experience in forensic toxicology, including blood and breath alcohol analysis, presumptive drug screening, and confirmation analysis, and 18 years of experience in crime scene response. Craig has a B.S. in Chemistry from San Jose State University and an M.S. in Forensic Science from UC Davis and is a member of the California Association of Toxicologists (CAT) and the Society of Forensic Toxicologists (SOFT). He is also board-certified by the American Board of Criminalistics in Comprehensive Criminalistics (ABC-CC) and by the American Board of Forensic Toxicology in Forensic Toxicology (D-ABFT-FT).

In addition to his work at the crime lab, Craig teaches forensic toxicology and analytical instrumentation courses at UC Davis and for the California Criminalistics Institute (CCI). Away from work, Craig enjoys spending time with his family, banging on drums, playing guitar, and watching the SF Giants with low expectations.

Workshop Speaker Biographies

Sunday, April 27, 2025 Speakers

Kristine Myhre

Kristine Myhre has been a Criminalist with the Sacramento County District Attorney's Laboratory of Forensic Services for about 9.5 years. She works in the Toxicology Unit which includes blood and breath alcohol as well as drug screening and confirmations. She is also a member of the laboratory's Crime Scene Response Team. Kristine has a B.S. in Biology from St. Mary's College of California, is a certified Criminalist through the American Board of Criminalistics and is certified as a Forensic Alcohol Analyst through the California Department of Public Health.

In addition to her usual duties, Kristine is the laboratory's Professional Development Coordinator which encompasses overseeing laboratory tours, participating in community outreach events with presentations and informational booths, as well as overseeing the laboratory's volunteer/internship program. Kristine is a member of numerous scientific communities including the International Association for Chemical Testing (IACT), the California Association of Criminalistics (CAC), the International Association for Identification (IAI), and the California State Division of the International Association for Identification (CSDIAI). In her spare time, Kristine enjoys hiking, nature photography, admiring her plants, and talking about her adorable cats.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

"Forensics Got you Tuckered Out?"

Presented by: DDA Jennifer Tucker, Sacramento County District Attorney's Office

Abstract:
A career in forensics can be stressful. Join us for a mindfulness triathlon featuring a beginner yoga class, a soothing meditation, and a run/walk along the historic Johnny Cash trail. Do one activity or all three. All levels of fitness are welcome.

Biography:
Jennifer Tucker is a certified yoga teacher and guide. She has been practicing yoga for over 20 years and teaching for 13 years. She currently teaches power vinyasa, breathwork and meditation at The S P Λ C E Studios located here in Sacramento. She has led various workshops, trainings, and retreats for new and advanced practitioners.

Jennifer started teaching yoga to the Sacramento District Attorney community in 2018 in the Jan Scully Conference room as part of the initial LiveWell program and has continued to support the efforts to bring yoga into the workplace.

Jennifer is also a Prosecutor with the Sacramento County District Attorney's Office, currently assigned to the Domestic Violence Unit. She has the unique perspective of being both in the field of criminal justice and in the world of health and wellness. Her vision and mission are to help bridge the gap and provide physical, mental and emotional support to all!

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

Recognition, Documentation, and Collection of Footwear and Tire Track Evidence

Presented by: Philip Hess, Sacramento County District Attorney's Laboratory of Forensic Services

Abstract:
This workshop will provide students with hands-on practical exercises for them to learn how to properly document and recover footwear and tire track evidence. The class will demonstrate how impression evidence can assist an investigation, and the type of examination results that can be expected when submitting evidence to a footwear and tire track examiner. This course will include how to document, photograph and collect two-dimensional and three-dimensional impressions including the use of electrostatic lifters, casting, gel lifters, and chemical enhancement techniques for impressions. There will also be a review of how comparisons are performed using the evidence collected using those techniques and the appropriate terminology that should be used in case reports and notes.

Biography:

Philip Hess is a Criminalist IV at the Sacramento County District Attorney's Laboratory of Forensic Services where he has worked for over twenty years. He is the Technical Lead for the Firearms and Toolmarks Unit, Impressions (Footwear and Tire Tracks) Unit, and the Crime Scene Response Team.

He is a Past President of the California Division of the IAI, is certified in Forensic Photography with the IAI, and has extensive experience teaching law enforcement officers and forensic scientists from around the world. He is also a part time Lecturer at the California State University Sacramento and University of California, Davis.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

Full Spectrum Photography Workshop

Presented by: Cameron Hartwig (Foster & Freeman) and Philip Hess (Sacramento County District Attorney's Office, Laboratory of Forensic Services)

Abstract:
This workshop provides information and hands-on practical exercises for the use of ALS and Full Spectrum Cameras to photograph various biological fluids, bruises, bitemarks, fingerprints, foreign fibers, gunpowder residue patterns, obliterate writing, and transfer footwear impressions in oils and blood. Students will be provided with mock evidence samples to photograph using different ALS's and full spectrum cameras.

Biography:
Cameron Hartwig is a Senior Applications Specialist and has over five years of experience training on photography systems at Foster and Freeman. He holds a Master's degree in Forensic and Investigative Science from West Virginia University, where a significant portion of his coursework focused on crime scene photography and alternative light source imaging. During his time at Foster and Freeman, he has led workshops on alternative light source techniques and forensic photography at agencies across the U.S. and Canada.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

"The Lone Bullet: Tracking its Trail with Ease." Shooting Reconstruction

Presented by: Mike Appel, California Department of Justice, BFS California Criminalistics Institute

Abstract:
Participants will learn a precise method for establishing bullet trajectories without relying on trajectory rods, strings, specialized trajectory measuring equipment, lasers, or other scanning devices. Utilizing only a tape measure or a smartphone measurement application, crime scene responders will be able to accurately determine bullet impact locations at a crime scene. Subsequently, in their own laboratories, examiners can reconstruct bullet paths using a scientific calculator—easily accessible via a smartphone—and the principles of right triangle geometry. Participants are encouraged to download a measurement app from the App Store or Google Play prior to the workshop. Practical exercises will involve measuring bullet impacts and calculating bullet trajectories, demonstrating the accuracy of using trigonometric functions.

Biography:
Mike Appel is currently a Program Manager over the Firearms and Crime Scene programs in the BFS California Criminalistics Institute. He is a graduate of the National Firearms Academy with over 19 years of experience at the BFS-Fresno Laboratory. He is a distinguished member of AFTE and certified by AFTE in Firearms Evidence Examination and Identification.

Since becoming a firearm examiner in 2005, Mike has worked on numerous high-profile cases. In 2012, he performed a shooting incident reconstruction in Minkler, California, where two officers were shot by a suspect. In 2017, Mike linked a firearm to two previously unsolved murders which include, one child from a home invasion and one truck driver that was shot at a truck stop.

Mike has given presentations at AFTE and CAC training seminars on the topic of firearms identification and related topics. Mike has provided instruction to Tulare County District Attorney's Office, Fresno County District Attorney's Office, Kings County Sheriff's Office, Central Valley Crime Scene Investigators group, Fresno Public Defenders Office, Merced Police Department, and other local law enforcement agencies, in firearms identification, crime scene investigations, serial number reconstruction, and shooting incident reconstruction. He has also taught classes in firearm and tool mark evidence for the Fresno City College and California State University, Fresno.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

"No Longer The Call of the Wild" NGS Solutions for the Crime Lab

Presented by: Josh Abernathy, Benjamin Cambridge, Rebecca Schuett, & Erin Laurie, Qiagen

Abstract:
In this workshop we will discuss the next-generation sequencing workflow, its validation and implementation, as well as automation options. Topics also include comparison to CE technology, grant funding opportunities, and troubleshooting. At the conclusion of the workshop, attendees will see NGS is no longer just on the frontier and is a Gold Rush of opportunity!

Biography:

Josh Abernathy
Josh joined QIAGEN almost 6 years ago supporting forensic laboratories as an HID Field Applications Specialist and has been the Account Manager for the Northwest Region since 2021. Before joining QIAGEN, Josh was a Field Applications Scientist on Thermo Fisher Scientific's HID team, supporting both CE and NGS products. Overall, Josh has over 16 years of forensic DNA experience in both the government and commercial sectors.

Josh's hobbies include cooking anything he can on his smoker and trying to keep up with his now almost 8-year-old twins.

Benjamin Cambridge
Ben began his career in forensics at the Houston Police Department Crime Lab where he spent over seven years as a forensic biologist before making the move to the private sector. He joined QIAGEN in 2020 as member of the HID team, where he is now a Validation and Applications specialist supporting forensics customers in North America.

Erin Laurie
Erin Laurie has been a forensic DNA analyst with the Serological Research Institute (SERI) in Richmond, CA for eight years, and their Assistant Technical Leader for three and a half years. She received her master's degree in forensic science from UC Davis and used next generation sequencing (NGS) for her master's thesis project. Because of this experience, she was especially excited to help SERI validate NGS for forensic investigative genetic genealogy. She has been a CAC member for over a decade and is excited to be a part of today's workshop!

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

Rebecca Schuett

Rebecca studied Biology at the University of Göttingen with her main subjects in Human Anthropology, Zoology and Human Genetics. For her PhD, she focused on ancient animal bones and later as a post-Doc, established an ancient DNA lab at the University in Kiel in the Institute of Legal Medicine analyzing bones from the Neolithic era up to recent casework samples. Next to the DNA analysis, she was involved in identifying humans based on anthropological methods. She then became a DNA expert for the German police working in Hannover and Berlin, being involved in establishing automation, establishing forensic workflows and testing the MiSeq as the first police lab in Germany. In 2020 she moved to England to establish forensic NGS workflows for a start-up and then joined Verogen in 2022 as a Field Application Scientist. She became part of QIAGEN as part of the acquisition and moved to the US in April 2024. She is involved in instrument and application demos, training, troubleshooting, optimization, and validation projects (all the FAS things!).

If you don't find her at her desk or in a lab, she is probably doing yoga, meditating or judging American whiskey.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

"The Unknown, the Unseen, and the Bloody: Saloon Girl Elsie Vee (LCV) and Sheriff BlueStar are on the case."

Presented by: Megan Wood, Ryan Nickel, & Danielle Frost, Sacramento County District Attorney's Office, Laboratory of Forensic Services

Abstract:
Participants will learn about using LCV and BlueStar in the laboratory. The focus will be on the enhancement, documentation, and when to use these tools to locate bloodstains on fabrics.

Megan Wood
Megan Wood is a Criminalist IV at the Sacramento County Crime Lab where she has worked for over 18 years. She is qualified in DNA analysis, serology, crime scene investigation, and bloodstain pattern analysis. She is certified by the American Board of Criminalistics in Foundational Knowledge and has a Master's degree in Forensic Science. When she's not solving crimes, you can find Megan with her family or at the poker table.

Ryan Nickel
Ryan Nickel is a Criminalist with the Sacramento County Crime Lab with over 23 years of experience in forensic science. He is an expert in DNA analysis, biological fluid screening and identification, paternity testing, bloodstain pattern interpretation, and crime scene processing and reconstruction. Mr. Nickel began his career with the California Department of Justice, Bureau of Forensic Services working in the state's DNA databank and Missing Persons programs.

Aside from his passion for forensic science, Mr. Nickel enjoys the outdoors, is a competitive distance runner, and aspires to visit all 61 National Parks in his lifetime. So far, he's experienced 16 with Zion National Park being his favorite.

Workshop Speaker Biographies

Monday, April 28, 2025 Speakers

Danielle Frost

Danielle Frost is a Criminalist II at the Sacramento County Crime Lab where she has worked for over 3 years. She is qualified in Serology, is on the Crime Scene team, and is very close to completing her training in DNA analysis. She is certified by the American Board of Criminalistics in Biological Evidence Screening. Outside of her life at the lab, Danielle enjoys making wine under her wine brand, Pack String Wines, and spending time with her 7-month-old daughter, Alice.

DNA Workshop Agenda

7:00-8:00 AM	**Registration (Natoma) / "UP & at 'EM" Breakfast (Pavilion)**
8:00-8:30AM	Santa Clara County DA's Cold Case Unit – Kevin Kellogg (Santa Clara DA)
8:30-9:00AM	The Good, the Bad, and the Rapid: How Rapid DNA is Evolving from Unruly to Respectable – Nichole Tuscher (Contra Costa County)
9:00-10:00AM	Cloverleaf Rapist from the Laboratory to the Courtroom – TeriAnn Grimes (Sacramento DA)
10:00-10:20AM	**"COFFEE CORRAL" BREAK (Pavilion)**
10:20-10:40AM	Proteomic Analysis of DNA Extraction Waste Products on Body Fluids – Daniella Luistro (UC Davis)
10:40-11:00AM	Touch/Trace DNA in Activity-Level Propositions: Real-Life Scenarios – Dr. Ashley Hall (UC Davis)
11:00-12:00PM	The Latest Innovations from Thermo Fisher Scientific – Danielle Jardel and Dave Jackson (Thermo Fisher)
1200-1:00PM	**"HIGH NOON" LUNCH (Pavilion, co-sponsored by Promega)**
1:00-1:30PM	Enhanced Performance from a Prototype Eight-Dye, CODIS-Focused STR System – Joe Pasternak (Promega)
1:30-2:00PM	Identifying Persons of Interest by Utilizing Low-Pass Whole Genome Sequence Data (Miseq FGx) – Gunmeet Kaur Bali (CA DOJ Richmond)
2:00-2:20PM	Using Microbial DNA to Track Forensically Relevant Body Fluids Across a Mock Crime Scene – Nadia Cisse (UC Davis)
2:20-2:40PM	Enhancing Forensic DNA Workflows by Optimizing Automation on the OT-2 Robotic Platform Jenna Jagielski (San Jose State)
2:40-3:00PM	Unlocking Hidden Clues: Car Cabin Air Filters as a Novel Source of DNA Evidence – Jessica Halan Soederberg & Connie Vences (San Jose State)
3:00-3:20PM	**"WATERIN' HOLE" BREAK (Pavilion)**
3:20-4:05PM	Solving Decades– Old Crimes with DNA from a Single Hair – Kelly Harkins Kincaid (Astrea Forensics)
4:05-4:40PM	When You Need to Test All the DNA– Case Studies Involving Animal DNA – Teri Kun (UC Davis)

Santa Clara County DA's Cold Case Unit

Presented by: Kevin Kellog, Santa Clara District Attorney's Office Crime Laboratory

Abstract:
The Santa Clara County DA's Cold Case Unit (CCU) was established in 2011. In 2019 the DA's office was awarded the "Prosecuting Cold Cases using DNA and Other Forensic Technologies, FY 2019" grant. This presentation will highlight the benefits of a Cold Case Unit and how the grant has helped the DA's office solve cold cases.

Biography:
Kevin Kellogg is a Criminalist with the Santa Clara County DA's Crime Lab. He has been in the forensic field since 2005 and has worked as a DNA Criminalist with CA DOJ and the SFPD Crime Lab. He also lectures in Biological Criminalistics at San Jose State University. Currently, Kevin is assigned to the Santa Clara County DA's Cold Case Unit which he has been assigned to since 2014. Outside of work, Kevin enjoys watching/ coaching his two very active daughters compete in gymnastics, soccer, basketball, and flag football.

The Good, the Bad, and the Rapid: How Rapid DNA is Evolving from Unruly to Respectable

Presented by: Nichole Tuscher, Contra Costa Sheriff's Office Crime Laboratory

Abstract:
Are you ready to explore the open range of Rapid DNA? Is your agency thinking of adding Rapid DNA to your workflow? As one of the few laboratories that have both FBI approved instruments, the ANDE 6C and RapidHit ID, hear the advantages and limitations of each system. This presentation will also briefly include the recent results of the FBI Multi-laboratory Study, the updated QAS standards, and how they are shaping the long-term goals for Rapid DNA at the Contra Costa County Sheriff's Criminalistics Laboratory. See how the Wild West of Rapid DNA is being wrangled and harnessed into become a valuable investigative tool!

Biography:
Nichole has been with the Contra Costa Sheriff's Criminalistics Laboratory for 22 years with 20 of those years in Forensic Biology. She obtained her Bachelor of Science Degree in Biotechnology from UC Davis and a Master's Degree from National University in Forensic Science with a concentration in Criminalistics. Nichole performs casework in Biological Screening, DNA Analysis, Crime Scene Processing, Ballistic Imaging, Serial Number Restoration, and Footwear Comparison. She is a member of the California Association of Criminalists and the American Academy of Forensic Sciences and holds an ABC Certification in Biological Screening. Nichole is an active equestrian with multiple National Championships in Dressage with her Arabian stallion and his babies.

Cloverleaf Rapist from the Laboratory to the Courtroom

Presented by: TeriAnn Grimes, Sacramento County District Attorney's Office

Abstract:
JD Simien was a husband, a father, and the Clover Leaf Rapist who went undetected for more than a decade. The powerful tool of forensic genetic genealogy help solved the identity of the man who attacked women alone in dead of night. But the path from identity to evidence in the courtroom still relies on the work of criminalists. This case study will explore the challenges cold cases face from scene to courtroom and the role crime laboratories play in the emerging tool.

Biography:
TeriAnn Grimes became a Deputy District Attorney in the Sacramento County District Attorney's Office in 2010 after graduating from the University of the Pacific, McGeorge School of Law. In Sacramento, TeriAnn started in the usual path of prosecuting misdemeanors and general felonies before spending 7 years prosecuting child abuse and adult sexual assaults. In 2020, she received her office's Outstanding Victim Service Award before serving as a Lead Prosecutor for the general felony teams. Her current assignment is as a trial attorney for homicide and cold cases. She teaches for the Department of Justice on navigating legal challenges associated with the use of Forensic Investigative Genetic Genealogy (FIGG) in the courtroom and assists other agencies with implementing FIGG technics to solve cold cases. She teaches on a wide area of topics including Prosecuting Physical and Sexual Abuse of Children, Charging and Sentencing for Adult Sexual Assault Cases, How to Handle Difficult Witnesses, and Comprehensive Courtroom Preparation and Communication for SART nurses. In 2024, she prosecuted the Cloverleaf Rapist case, the second case brought to trial in Sacramento that was solved with the use of FIGG.

Proteomic Analysis of DNA Extraction Waste Products on Body Fluids –

Presented by: Daniella Luistro, UC Davis

Abstract:
DNA extraction methods are prevalent within the forensic science field, with DNA playing a major role in forensic case work. Yet, DNA is highly degradable with temperature, humidity, and radiation. This reduces and degrades DNA template and making it difficult to type DNA and requiring consumption of evidentiary sample. This sacrifices sample for body fluid identification and creating a tension between finding context and human identification. This research presents an alternative route to body fluid identification. We demonstrate that Protein is preserved in the waste steps of DNA IQ and therefore are available for analysis using proteomic mass spectrometry. This was demonstrated by saving the waste steps of different tested body fluids and running them through SDS-PAGE. The resulting gels were analyzed with densitometry and sent for mass spectroscopy analysis.

Biography:
Daniella Luistro is a Master of Science in Forensic Science student in the DNA track at the University of California Davis. She is currently in her last quarter and will be graduating in June 2025. Daniella is part of the Parker Lab at UC Davis where she has gained experience working with the proteomics of body fluids. After graduation, she hopes to gain some experience working in a crime lab and eventually work towards a PhD down the road to teach the new generation of forensic scientists. A fun fact about Daniella is that she loves BTS and has seen them in concert four times.

Touch/Trace DNA in Activity-Level Propositions: Real-Life Scenarios

Presented by: Dr. Ashley Hall, UC Davis Forensic Science Graduate Program

Abstract:
Consider the scene – your DNA is found on a knife handle at the scene of a stabbing. One side presents this as evidence that you stabbed the victim with the knife. The other side, however, argues that you shook hands with the actual perpetrator, and they stabbed the victim with the knife. The critical question becomes not "who's DNA is it," but, rather "how did the DNA get there?"

Evaluations of the evidence given the donor's activities inform such activity-level propositions. The forensic scientist is uniquely qualified to interpret the data that inform activity-level questions and present them to the trier-of-fact. The fitness of the interpretation depends on the available empirical data, as well as the education, training, experience of the forensic scientist.

The goal of this project was to generate empirical data to support activity-level evidence interpretation. We used a well-established protocol – the domesticated fingerprint, a ground truth sample containing a known quantity of DNA. A transfer vector, the domesticated hand, was included to eliminate the human variable allow us to critically evaluate DNA transfer events. We performed multi-step mock crime scene scenarios including hand-to-hand, hand-to-surface and surface-to-surface contacts. Samples were collected from each surface in the transfer pathway, as well as from each vector, and the DNA was extracted and quantified. Sampling each surface in the pathway allowed us to track the DNA through the multi-step transfer 2 events, accounting for 98 – 100% of the DNA originally added as a domesticated fingerprint and increasing confidence in the results.

By repeating each pathway 20 times independently, we were able to generate mean DNA recovery values, measure the standard deviation, and run an analysis of variance. We found that the difference in recovery after a direct vs indirect transfer shows statistically significant difference for all scenarios tested. Further, the quantification results were predictive of the DNA profiling success. This is a first step toward developing this empirical data to be useful in the Case Assessment and Interpretation processes that are critical to the use of activity-level propositions. We suggest that assessments of alternate scenarios provide tremendous value when they are backed by empirical data and can greatly aid the trier-of-fact. Forensic experts should offer their opinions about activity based on education, training, experience, and empirical data.

Biography:
Dr. Ashley Hall is currently the Director of the UC Davis Forensic Science Graduate Program. She earned her M.S. in Forensic Biochemistry and a Ph.D. in Biomolecular Science, both from the University of Central Florida. After graduate school, she worked in the defense industry before taking faculty posts in forensic science undergraduate and graduate programs at two Big 10, Tier 1 research universities. At UC Davis, Dr. Hall teaches the DNA courses in the Forensic Science Graduate Program and has an active research lab that focuses on the use of touch and trace-level DNA to inform activity-level propositions. She loves to make spooky dolls for Halloween, and they have been known to haunt the UC Davis Forensic Science Center around Halloween.

DNA Workshop Agenda Abstracts

The Latest Innovations from Thermo Fisher Scientific

Presented by: Danielle Jardel and Dave Jackson, Thermo Fisher

Abstract:
Let's catch up on the latest innovations from Thermo Fisher Scientific. This session will provide comprehensive updates on several cutting-edge products and technologies designed to enhance forensic work. We will discuss the SeqStudio Flex, our latest capillary electrophoresis system, which offers enhanced flexibility and performance for forensic analysis the new features and improvements in GeneMapper ™ ID-X version 1.7.

The HID NIMBUS® Presto QNA System is specifically scripted, optimized and validated for use with Applied Biosystems™ forensic human identification extraction, quantification, and STR amplification kits. The rapid, hands-free processing and high quality yields of even the most challenging samples—including bone, tooth, and touch DNA—along with automated quantitation, normalization and amplification simplifies the workflow, improves efficiency, and offers reliable results in forensic DNA analysis. The HID NIMBUS Presto QNA System allows customers to process more samples & spend less time at the work bench.

Expedite crime-solving with the Applied Biosystems ™ RapidHIT™ ID System v2.0 run with the RapidINTEL™ Plus sample cartridge provides an enhanced Rapid DNA investigative lead solution that helps law enforcement provide critical leads within the first pivotal hours of an investigation. We will discuss the most recent updates to the RapidINTELL™ Plus sample cartridge and the published results from the Rapid DNA Multi-Laboratory Study.

Biography:
Danielle Jardel is a Field Application Scientist at Thermo Fisher Scientific, for the last five years she has supported the entire core Human Identification product line and Rapid DNA. She also serves as an Automation Solutions Super User. Prior to joining Thermo Fisher Scientific, Danielle spent 10 years working as a Forensic Biology Supervisor and a Forensic DNA Analyst in private crime labs.

Dave Jackson
Dave Jackson is the Global Customer Experience Leader for Human Identification at Thermo Fisher Scientific. He most recently led the North American Application
Scientist group following a career with both the Washoe County Sheriff's Office and the San Francisco Police Department Crime Labs that included various roles from DNA Analyst, Lab Supervisor, and Technical Leader.

Enhanced Performance from a Prototype Eight-Dye, CODIS-Focused STR System

Presented by: Joe Pasternak, Promega

Abstract:
Promega Corporation has developed a novel enzyme that significantly reduces stutter artifacts in forensic DNA analysis, addressing one of the field's long-standing challenges. This breakthrough, a genetically modified version of Taq polymerase, minimizes the occurrence of stutter by an order of magnitude, enabling forensic analysts to more accurately deconvolute mixed DNA samples. The enzyme's ability to eliminate stutter artifacts enhances the identification of low-level contributors and improves the determination of the number of contributors in complex mixtures. This innovation simplifies the analysis of short tandem repeats (STRs) by reducing the noise that previously complicated the detection of minor alleles. The novel polymerase will be integrated into Promega's future 8 -color STR analysis kits, further improving the reliability and speed of forensic investigations.

Biography:
Joe Pasternak is a Global Validation Scientist in the Genetic Identity Division at Promega Corporation. In this role, he provides validation services for chemistries and instrumentation to forensic laboratories around the world.

Before joining Promega, Joe accumulated over 21 years of forensic experience. He began his career at the City of Phoenix Police Crime Laboratory, working as a serologist for three and a half years. He then spent the remainder of his forensic career at the Montana State Crime Laboratory, serving as a DNA Analyst and later as the Biology Supervisor and DNA Technical Leader for 11 years.

Joe has also contributed to forensic quality assurance across the country as both a Technical and Lead Assessor for the National Forensic Science Technology Center and as a Technical Assessor for ANAB, conducting DNA laboratory audits nationwide. Joe is also a former member of the California Association of Criminalists!

In his free time, Joe enjoys hiking and biking the many trails throughout Montana and is an avid restorer of vintage automobiles.

Identifying Persons of Interest by Utilizing Low-Pass Whole Genome Sequence Data (Miseq FGx)

Presented by: Gunmeet Kaur Bali, California Department of Justice, Richmond

Abstract:
Nationwide, Investigative Genetic Genealogy (IGG) has become a prominent approach to solve violent criminal cases, cold cases and missing person's cases with no CODIS or other investigative leads. The genetic component of IGG is an evaluation of kinship, often performed at genome level involving a large population database (1000 genome project, HapMap, GEDMatch Pro, etc.). The major disadvantage of IGG is its cost, as it is currently expensive and utilizes chemistries uncommon in forensic laboratories such as microarray and high throughput sequencing. However, common benchtop sequencers such as the Verogen Miseq FGx can now be coupled with a targeted PCR assay to conduct IGG (Kintelligence) but such methods limit kinship estimation. Alternatively, this study utilizes low-pass whole genome sequencing data obtained through the Miseq FGx instrument. The data is phased and imputed to fill in nucleotide gaps not directly obtained during sequencing, through imputation platforms, to produce resolution comparable to high-pass sequencing data. Various imputation platforms such as Illumina BaseSpace platform (DRAGEN Imputation), GLIMPSE, Beagle, Impute2 and a custom imputation method 'Tapir' (UNT) are evaluated in this study for accessibility, sensitivity, and specificity of the imputed data. Initially, publicly available low-depth data (Gambian Genome Variation Project (GGVP)) are imputed utilizing above-mentioned imputation platforms and are compared in accuracy to the reference i.e., high-coverage data. Furthermore, sequencing libraries from a known pedigree using high-quality samples will be created, followed by sequencing one sample at a time on the Miseq FGx. A repeat sequencing of the same library to obtain higher coverage by merging the FastQ files may also be assessed. The data will then be imputed using various imputation platforms listed above followed by searching the imputed data in GEDmatch Pro to evaluate known and adventitious kinship associations. The study plans, experimental design, and results thus far of this CAC Endowment-funded research will be presented. An overview of the platform chemistries and bioinformatic insights of the data analysis will also be reviewed.

Biography:
Gunmeet Kaur Bali is currently a Criminalist in the Method Development group at the Department of Justice (DOJ) in Richmond, CA. She joined the DOJ in 2023 and published a paper titled "Effects and considerations of multiplexing ForenSeq Kintelligence libraries with a negative control" in May 2024. Prior to her current role, Gunmeet has worked in biotechnology industries at the 10X Genomics (2021-2023) and Thermo Fisher Scientific (2018-2019). She has also worked as a researcher at UCSF Children's Hospital Oakland Research Institute (CHORI- 2019-2021) on NGS assay development for STRs, SNPs, and mtDNA for forensic samples (NIJ Grant). Additionally, she also worked on development of Non-Invasive Prenatal Test for b-Thalassemia and Sickle Cell Disease Using Probe Capture Enrichment and NGS of DNA in Maternal plasma (published paper in Journal of Applied Laboratory Medicine 2022). In addition to science, Gunmeet enjoys reading, learning, and exploring the spiritual side of this life's journey. She has always felt the need to serve, and this is where she finds the strength and meaning to pursue her career in forensic science by currently playing a tiny role in serving as a voice of justice for the unspoken and providing closure to the grieving families.

Using Microbial DNA to Track Forensically Relevant Body Fluids Across a Mock Crime Scene

Presented by: Nadia Cisse, UC Davis

Abstract:
Microbiology has a well-established history of use in forensic science. It plays a large role in the analysis of post-mortem intervals, trace evidence, and sexual assault cases. Recent studies have shown that body fluids can be identified based on their unique microbial communities. We can use primers and probes that have been designed for bacteria that are present in high quantities in feces, saliva and vaginal/menstrual secretions. Previous studies have focused on the presumptive identification of the aforementioned body fluids using microbial DNA. The aim of my study is to use this information to track how body fluids transfer across a crime scene, providing information on activity-level questions and analyzing if this method is applicable to casework.

Identifying body fluids plays a crucial role in many forensic investigations, since the body fluids present at a crime scene provide key information about what took place. This method could be very impactful because it allows analysts to presumptively identify the body fluids while performing DNA analysis. Since microbial DNA co-extracts alongside human DNA in commonly performed DNA extraction methods, this method allows analysts to use the same sample to identify the body fluids present and develop a profile.

Using the primers and probes designed for Streptococcus salivarius, I used qPCR to determine if body fluids can be detected after secondary transfer in a mock crime scene. I worked with saliva because of its notably high and well-established microbial community. Additionally, saliva is regularly found on multiple surfaces at a crime scene and is often transferred to different locations by touch. In my study, the primary transfer is represented by a known quantity of saliva from the person of interest (POI) being deposited onto a mock hand, which also belongs to the POI. This mimics primary transfer because the first transfer of saliva is from the mouth to the hand of the same individual. For the secondary transfer, the mock hand was used to turn a doorknob. Results of my study show that saliva is present at lower quantities after secondary transfer.

Although microbial technology is instrumental in forensic investigations, there is no established precedent for using it in many crime labs. Using this method, serology-related benefits of forensic 2microbiology now have the potential to be applied to activity-level propositions. Activity-level propositions allow us to lend a scientific basis to hypotheses about the series of events that took place at a crime scene. Suppose we can distinguish between primary and secondary transfer of specific body fluids and detect them even after secondary transfer. In that case, we will be able to make better use of the evidence provided to determine the sequence of events that took place at a crime scene. Although we will be focusing on salivary microbial DNA in this study, the methodology developed could be applied to other body fluids in the future.

Biography:
Nadia Cisse is in her second year in the UC Davis Forensic Science Graduate Program, and her research is on applying microbial DNA analysis to body fluid identification. More specifically, it is on using microbial DNA to track body fluids across crime scenes. She is from Trinidad and Tobago. Besides her family, the thing she misses most from home is the street food.

Enhancing Forensic DNA Workflows by Optimizing Automation on the OT-2 Robotic Platform

Presented by: Jenna Jagielski, San Jose State

Abstract:
Advancements in forensic DNA profiling increasingly rely on laboratory automation to enhance efficiency, minimize contamination, and streamline workflows. This research focuses on optimizing the Opentrons 2 (OT-2) robotic system for forensic DNA applications by integrating automated liquid handling with customized programming. Through calibration, programming, and troubleshooting, this research demonstrates how low-cost automation can reduce human error, improve sample processing time, and enhance the overall reliability of forensic DNA workflows with a fraction of the cost of mainstream automation solutions.

The OT-2 is a high-precision, open-source liquid handler with a compact design and modular components, capable of automating a wide range of laboratory protocols. Its user-friendly, plug-and play graphical interface allows for easy protocol design and compatibility with ANSI/SBS-compliant labware, making laboratory robotics more accessible.

The project involves assembling, calibrating, maintaining, and programming OT-2 robots for both pre-PCR and post-PCR forensic workflows. Key tasks included software updates, pipette offset calibration, integrating additional modules, (e.g. the thermal cycler and magnetic modules), and Python-based protocol development for automated DNA extraction using the PrepFiler™ BTA kit and amplification with the GlobalFiler™ system (Thermo Fisher Scientific). Initial trials revealed calibration inconsistencies affecting liquid handling precision, necessitating systematic troubleshooting and pipette offset adjustments. Refinements to the robotic system improved 2 reproducibility and reduced variability in DNA extraction and amplification outcomes. Preliminary findings demonstrate that OT-2 automation significantly enhances workflow efficiency while maintaining accuracy and reproducibility in forensic DNA workflows. The implementation of strict calibration protocols and troubleshooting strategies further contributed to refining robotic functions. Ongoing research includes the automation of additional liquid-handling protocols, such as next-generation sequencing library preparation.

This study highlights the critical role of automation in forensic science, bridging the gap between programming and laboratory applications to optimize the forensic DNA analysis pipeline. These findings demonstrate how a cost-effective automation platform can enhance DNA profiling workflows while maintaining forensic science standards and supporting high-throughput operational needs.

This study has been partially supported by the CAC Reed and Virginia McLaughlin Endowment.

Biography:
Jenna Jagielski is a forensic science major at San Jose State University, aspiring to become a digital evidence examiner. As a student-athlete, she is also a student athlete on the swim and dive team. She is currently the school record holder in all three dive events, has received multiple all-mountain west honors, and competed at the team USA Olympic diving trials in 2024. Currently, she is enhancing her expertise through courses in Cybersecurity and Digital Forensic Analysis to bridge the gap between technical skills and legal principles in digital forensics.

Unlocking Hidden Clues: Car Cabin Air Filters as a Novel Source of DNA Evidence

Presented by: Jessica Halan Soederberg & Connie Vences, San Jose State

Abstract:
Environmental DNA (eDNA), the trace genetic material shed by organisms into their surroundings, has revolutionized ecological studies. More recently, eDNA has shown promise in forensic science, enabling the recovery of human and microbial DNA from environmental sources like air, water, and dust. However, the potential for obtaining forensic DNA evidence from heating, ventilation, and air conditioning (HVAC) systems remains largely unexplored.

This research investigates the persistence and recovery of human and microbial DNA from vehicle cabin air filters, a novel and potentially valuable source of forensic evidence. Air filters can capture airborne biological material such as shed skin cells, hair, and respiratory droplets. This is particularly relevant in investigations of kidnapping, homicide, and cold cases where traditional evidence may be limited. This research specifically focuses on examining indirect DNA transfer mechanisms, with the aim of identifying vehicle occupants and potentially estimating their duration of presence.

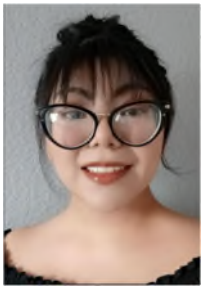
To conduct this research, DNA samples were collected from 5 vehicles of varying makes and models. For each test, the pre-existing cabin filters were replaced with sterilized ones and sampled at various time points over a three-month period. DNA extraction was performed using the PrepFiler BTA™ kit (Thermo Fisher Scientific) and quantified on the Qubit platform. A subset of samples with amplifiable levels of DNA (≥0.03 ng/ul) was amplified using the GlobalFiler™ kit (Thermo Fisher Scientific) and genotyped using a 3500 Genetic Analyzer. Additionally, a subset of samples is undergoing sequencing via the Oxford Nanopore platform, targeting total human DNA and 16S microbial rRNA.

Preliminary results indicate that biological material is not only retained on car air filters, but also sufficient to yield forensically informative STR profiles that can be linked to vehicle occupants. More detailed results and additional findings on the relationship between environmental conditions and DNA persistence and recovery rates will also be presented.

This study highlights the potential of car cabin air filters to provide crucial DNA evidence in forensic investigations, particularly in cases where other sources of DNA are scarce or degraded. This novel approach could significantly enhance investigative capabilities, leading to the resolution of previously unsolvable crimes and providing closure for victims and their families.

Biography:
Jessica Halan Soederberg is from Stockholm, Sweden, and is currently pursuing a master's degree in forensic science at Uppsala University in Sweden. She holds a bachelor's degree in molecular Biodesign and is currently conducting her master's thesis research at San Jose State University. Driven by a strong passion for uncovering the truth through science, Jessica plans to pursue a career in Forensic Science after completing her master's, with a particular interest in both crime laboratory work and field investigations.

Outside of her academic interests, she enjoys music and dance, having played the cello and danced ballet and jazz for many years.



Biography:
Connie Vences is a Forensic Science major with a Biology concentration and minors in Anthropology and Chemistry at San Jose State University, graduating in Spring 2025. She has experience in Forensic Biology and Entomology research labs and currently works as a TA for a Biology Criminalistics course. Connie is seeking opportunities in Forensic Molecular Biology and Microbiology, aiming to apply science to real-world investigations. Beyond her academic and professional pursuits, Connie has a special love for pandas and was incredibly excited to visit Xin Xin the Mexican panda last summer.

Solving Decades-Old Crimes with DNA from a Single Hair

Presented by: Kelly Harkins Kincaid, Astrea Forensics

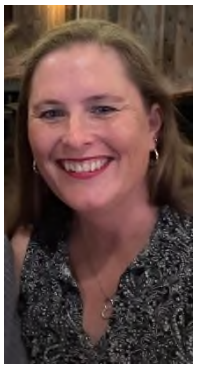
Abstract:
Rootless hair shafts contain only small amounts of degraded DNA, historically making them unsuitable for forensic analysis. However, advances in DNA recovery, sequencing, and computational methods now allow for high-confidence SNP profiles, enabling forensic genetic genealogy as well as identity confirmation in the absence of STR data. I will describe these techniques and their application in two recent Monterey County cold cases. In the 1979 Marina homicides of Uicha Malgieri and Helga DeShon, a single hair helped link the two crime scenes to a single perpetrator, and later confirming the original suspect after decades without answers. Similarly, in the 1982 murder of 5-year-old Anne Pham, a rootless pubic hair provided the key to identifying her killer through whole-genome sequencing, forensic genetic genealogy, and one-to-one comparison. These cases highlight how modern DNA technology can generate and confirm investigative leads from even the most challenging evidence, transforming forensic science and cold case investigations.

Biography:
Ms. Kincaid is the co-founder of Astrea Forensics and a DNA scientist who is trained in paleogenetics. Most of the work she has done has been with archaeological human remains, but a fun fact about her is that the oldest sample she has successfully extracted and sequenced DNA from was a 60,000-year-old extinct woolly rhino. She has also extracted DNA from archaeological humans who were infected with an ancient form of tuberculosis… from seals, which are now extinct.

When you need to test ALL the DNA-Case Studies involving animal DNA

Presented by: Teri Kun, UC Davis Veterinary Genetics Laboratory

Abstract:
From dog hair on a homicide victim, to feces on a shirt or some gruesomely suspicious stew, the evidence at crime scenes is not limited to biological evidence from humans. As a forensic DNA practitioner some of us have specialized in these non-human DNA questions. The UC Davis Veterinary Genetics Laboratory (UC Davis VGL) was one of the first laboratories to be accredited to do forensic DNA analysis on animal evidence in 2010 and to this day is the only laboratory in the US to do so primarily for domesticated animals. While there are clearly applications of analyzing animal DNA in illegal wildlife trade or animal cruelty cases, because domesticated animals are those we welcome into our families and coexist with, the VGL often sees cases that are part of violent human-on-human investigations such as homicide or sexual assault. This presentation will present multiple and varied case studies of domestic animal DNA being applied in different case situations. All of these cases came from investigators and forensic scientists who, when faced with "just animal hairs" or "feces on a shoe", had the forethought to keep pushing, finding the cutting edge of what is possible and pursuing it.



Biography:
Teri Kun is the Lead Forensic Caseworker, Forensics Analyst, and DNA Technical Lead at the UC Davis Veterinary Genetics Laboratory in the Forensic section, which is part of the UC Davis School of Veterinary Medicine. She obtained her Master of Science in Forensic Science DNA from the University of California at Davis, and her Bachelor of Science in Molecular Biology from California State University Sacramento. In the past 25 years she has worked over 1300 cases, testified in multiple states across the USA and published on the topics of animal forensic testing. In her free time, she explores her artistic side creating products using various mediums.

General Session Agenda

7:00AM	Registration (Natoma) / "Sunrise at the Ranch" Breakfast (Sierra Ballroom, co-sponsored by Hamilton)
8:00-8:10AM	Opening Remarks – Laboratory Director Kristel Suchland, Sacramento District Attorney's Office Laboratory of Forensic Services
8:10-8:25AM	District Attorney's Welcome – District Attorney Thien Ho, Sacramento District Attorney's Office
8:25-8:40AM	Vendor Introductions
8:40-9:55AM	Founder's Lecture: The Courtroom Presentation of Evidence Course - The Inspiration, Design and Accomplishments – Raymond Davis (CourtSkills)
9:55-10:30AM	"Rustler's Rest" Break (Sierra Ballroom, co-sponsored by Thermo Fisher), Raffle, and Challenge coin update
10:30-11:00AM	Sticks and Stones: Uncovering a Serial Offender Using Probabilistic Genotyping – Angela Freitas (Contra Costa Sheriff's Office Crime Lab)
11:00-11:40AM	Conclusion-Grounded Opinions vs. Evidence-Grounded Opinions: Should the Firearm and Toolmark Examination Discipline Adjust How it Expresses Opinions? – Todd Weller (Weller Forensics)
11:40-12:00PM	Deep Threads: Digging into Fiber Populations in Soil– Ashley Fricker (Sacramento DA Crime Lab)
12:00-1:00PM	"Ranch Hand Refuel" Lunch (Sierra Ballroom)
1:00-1:35PM	Legal Updates for Forensic Scientists – Michael Chamberlain (California Department of Justice)
1:35-3:45PM	A Tale of Two Murders: A Double Homicide Case in Rural San Joaquin County– Sheltri Gresham & James Hamiel (California Department of Justice), and DDA Elton Grau (San Joaquin DA's Office)
3:45-4:00PM	"Giddy-up Your Snacks Before the Business Meeting" Break (Sierra Ballroom)
4:00-5:30PM	CAC Business Meeting (Pavilion)
5:00-7:00PM	"Trails End" Wine and Cheese Reception, New Member Reception/Poster Session (Sierra Ballroom, co-sponsored by Hamilton)

AM Session Moderator: Natalie Jones PM Session Moderator: Sarah Husa

WEDNESDAY, APRIL 30, 2025

General Session Speakers

District Attorney Thien Ho

Thien Ho was elected District Attorney of Sacramento County in 2022, and officially took office in January 2023. Prior to the election, Thien served in executive management as the Sacramento County Assistant Chief Deputy D.A. over the Justice and Community Relations Bureau, which handles post-conviction litigation, training, community prosecution and media outreach.

Over Thien's 25-year career as an attorney, he successfully prosecuted sexual assault, gang and homicide cases. He was the supervisor of the Gang and Hate Crime Unit and has personally charged and prosecuted hate crimes. Most notably, he successfully prosecuted the East Area Rapist/Golden State Killer, who committed 13 murders and over 50 sexual assaults in 11 different jurisdictions throughout California. Michelle McNamara wrote about the case in her book, "I'll be Gone in the Dark." The case has also been featured on CNN, HBO, 20/20 and countless news outlets across the world.

Thien has previously taught for the California District Attorneys Association (CDAA) on "Voir Dire in Sexual Assault and Homicide Cases," and was an adjunct professor for trial advocacy at McGeorge School of Law. He helped to build a nationally ranked trial advocacy program at McGeorge, winning multiple regional and national mock trial competitions.

In 2017, he was presented with both the National Asian Pacific Islander Prosecutors Association and Sacramento District Attorney's Office Prosecutor of the Year Award.

General Session Speakers

The Courtroom Presentation of Evidence Course - The Inspiration, Design and Accomplishments

Presented by: Raymond Davis

Abstract:
The concept for a course on courtroom expert testimony began as an inspiration three weeks into my career with the California State Department of Justice in Sacramento, CA in 1972. That event led me on a 17-year Odessey to create a training program to assist forensic experts with the skills to survive and thrive in the courtroom.

CourtSkills was established in 1989 to provide courtroom skills training for criminalists, latent print examiners, CSI technicians and later Sexual Assault Nurse Examiners (SANE). Only a few classes were taught from 1989-1991, mainly one day workshops, mostly to police officers. Several presentations were given at forensic symposia announcing the offering of expert testimony training. There was general enthusiasm but no takers. Then in the Fall of 1990, I received a call from Lou Maucieri at the California Criminalistics Institute (CCI) requesting a training syllabus for a three-day course on courtroom testimony workshop. Lou was the program manager at the time, and he informed me that he had sent his request nationwide.

He requested specific modules to be included in the course and that he preferred the title, Courtroom Presentation of Evidence. It was to include elements for an effective presentation of evidence in court with the use of a visual aide. He also required that the program includes videotaping of each student so that they could receive feedback on their performance in a courtroom setting. I sent my proposal in the Fall of 1990. I leaned later that I was the only one to submit a proposal. I wasn't surprised since there were no others teaching a formal class on courtroom testimony, let alone by a forensic expert. There were a number of forensic courses offered around the country where the instructor may have included a short module on courtroom testimony. These short sessions, usually an hour, covered the elements on their particular discipline. My next call from Lou informed me that my proposal had been accepted. The first class was scheduled for the Spring of 1991 at CCI for twelve students. My co-instructor, Richard Konieczka, president of Sound Communications and I flew to Sacramento from Seattle where I had been operating my private forensic lab since 1980. That class marked the first offering of the Courtroom Presentation of Evidence course.

Over the past 31 years, CourtSkills has provided 305 workshops to nearly 7,000 students. The Courtroom Presentation course was given at: NWAFS, SWAFS, SWAFDE, SAFS, NEAFS, MWAFS and at the AAFS. In addition, classes were taught at many law enforcement agencies from 19 states including Washing DC. This course was also taught at the FBI, ATF, Customs and Border Patrol Labs and the California Clinical Medical Training Center in Sacramento, CA for SANE personnel.

General Session Speakers

Over the course of 31 years, I have had the privilege of working with a dedicated group of co-instructors who brought a special talent to the training. I want to publicly thank Richard Konieczka who worked with me for the first eight years for CourtSkills, then, Lou Maucieri, after retiring from DOJ who assisted me many times, my brother Ron M. Davis, retired DEA field supervisor and Dick Eigenbrod, Eigenbrod Consulting. Finally, to my wife who attended 50 or more courses over a span of twenty-nine years. Her support and recommendations for improving the course always make me look forward to teaching the next class. It never got dull or boring.

As a result of my wife's recommendations and the feedback I received from hundreds of students, the Courtroom Presentation of Evidence course underwent numerous modifications to meet the students' needs. These changes were important for keeping the course relevant and dynamic, especially for me.

To all those who have attended my course, you have my deepest gratitude for your participation and timely contributions. Thank you.

Biography:
Raymond Davis received his degree in Chemistry from the California State University at Sacramento in 1972 and began his career with the California State Department of Justice as a forensic toxicologist.

Over the span of his career, he has worked in the examination of controlled substances, trace evidence, firearms and toolmark evidence. He has extensive experience in crime scene investigation and reconstruction and has attended numerous autopsies. He has testified in over 1600 trials at every judicial level including military court martial cases.

Raymond joined the California Association of Criminalists in 1979. He has held several official posts: Past president of the CAC (2002-2004) and former Editorial Secretary of the *CACNEWS* (1994-1998), served on the seminar planning committee (1995-1998), past seminar chair for the Santa Clara County Crime Lab (1996) as well as serving on the Financial Review committee. He is currently serving as the chair for the Founder's Lecture Committee recently appointed by the CAC Board of Directors (2024).

Raymond has received numerous awards from the CAC: The Anthony Longhetti Distinguished Life Member Award, The W. Jack Cadman Award and the Al Biasotti Most Outstanding Presentation Award. Raymond has also conducted numerous workshops on the subject of Ethics in Forensic Science and Interviewing Skills Training at many scientific symposia.

He has published three novels based on his professional experience: Dark Side of Justice, Parabellum, and Dilemma. Raymond currently lives in Meridian, Idaho.

General Session Speakers

Sticks and Stones: Uncovering a Serial Offender Using Probabilistic Genotyping

Presented by: Criminalist Angela Freitas, Contra Costa County Office of the Sheriff Criminalistics Laboratory

Abstract:
From 2019 until 2021, the California Highway Patrol estimates that there were approximately 44 incidents of rocks or other heavy items being thrown at cars in the vicinity of Highway 4 and Highway 242 in Concord, CA. Among the victims was a grandmother who was killed and a nurse who was blinded. Evidence from approximately 10 crimes were submitted to the CCC Crime Lab. Using STRmix, which was newly validated by the Lab in January 2020, the Forensic Biology Unit was able to analyze many low-level mixtures and provide the CHP, and the numerous victims, with answers.

Biography:
Angela Freitas is employed at the Contra Costa County Office of the Sheriff Criminalistics Laboratory, where she has been assigned to the Forensic Biology Unit for nearly 15 years, and also to the Crime Scene Unit for over 10 years. Prior to her employment with Contra Costa County, she obtained her undergraduate and graduate degrees from Duquesne University in Pittsburgh, PA. In her spare time, Angela enjoys “old lady” hobbies, such as baking bread, knitting, and (recently) quilting.

General Session Speakers

Conclusion-Grounded Opinions vs. Evidence-Grounded Opinions. Should the firearm and toolmark examination discipline adjust how it expresses opinions?

Presented by: Todd Weller, Weller Forensics

Abstract:
In 1990 the AFTE Criteria for Identification Committee first proposed a range of conclusions for use in the field of firearm and toolmark examination. AFTE adopted this range and definitions in 1992. This was a significant advancement since it provided a common, standardized scale and language for the field to use. When an examiner in New York, California, England, or Australia concluded "Identification", it was understood what this meant and the basis for that conclusion. A few relatively recent rulings in the United States have seen courts admit firearms evidence, but the courts have also altered the language examiners, requiring limitations such as "consistent with" or "cannot be eliminated". This talk will discuss possible reasons for the courts' concerns, and present an alternative way of expressing firearm and toolmark conclusions.

Biography:
Todd Weller has been a forensic scientist since 2000. He began his career at the Oakland Police Criminalistics Laboratory where he performed casework in drug chemistry, forensic biology, crime scenes, and firearm and toolmark examination. Since 2016, Todd has worked at his own company Weller Forensics. Todd has a Bachelor's degree in Biochemistry from Dartmouth College, a Master's degree in Forensic Science from UC Davis, and a Certificate of Advanced Studies in Statistics and the Evaluation of Forensic Evidence from the University of Lausanne. Todd is the current Chair of the Organization of Scientific Area Committees (OSAC) Firearm and Toolmarks Subcommittee, is certified by the American Board of Criminalistics (ABC), and a member of the Association of Firearm and Toolmark Examiners (AFTE), 3DToolmarks TWG, California Association of Criminalistics (CAC) and American Academy of Forensic Sciences (AAFS).

General Session Speakers

Deep Threads: Digging into Fiber Populations in Soil

Presented by: Criminalist Ashley Fricker, Criminalist Karen Buckman, Sacramento County DA's Laboratory of Forensic Services; Dr. Sanjai Parikh, Dr. You-Lo Hsieh, UC Davis

Abstract:
Population studies have been used to determine the frequency of fiber types in a certain environment. These benefit forensic analysis because uncommon fibers provide greater probative evidence than common fibers. Many of these studies focused on fiber populations found on seats, people, and clothing as these locations are likely to have strong contact with textiles and can be encountered in casework. Another location where fibers have been found in casework is in soil; however, published population studies on fibers in soil are not readily found. This study characterized the population of fibers in soil samples and observed how their distribution varies based on soil depth. Soil samples were collected to a depth of six inches from three parks and one area off a hiking trail. Fibers were collected from sieved samples using a stereomicroscope and analyzed using a TAGARNO microscope, polarized light microscope, and Fourier transform infrared (FTIR) spectrometer. A total of 1406 fibers were collected and evaluated for color, 964 of which were also analyzed for length and type. The distribution of fibers was similar to past population studies with white/colorless (53%), black/gray (18%), and purple-blue (9.7%) being the most common colors and cotton (41%), polyester (26%), and acrylic (18%) being the most common fiber material. The distribution of fiber types varied across locations, with fewer synthetic fibers occurring in the hiking trail sample; however, there did not appear to be any significant differences in fiber distribution through different depths (0-2 in., 2-4 in., 4-6 in.).

Biography:
Ashley Fricker is employed as a Criminalist in the Comparative Evidence section at the Sacramento County DA's Laboratory of Forensic Services. Prior to being a Criminalist, she was an intern in the Trace Evidence section, where she conducted research on fibers in soil for her M.S. degree in Forensic Science from the University of California, Davis. During her time at UC Davis, she was also the laboratory manager for the criminalistics lab where she oversaw the operation and maintenance of the lab and coordinated orders and waste disposal. Ashley has been a CAC Affiliate Member since 2023 and has since applied for Associate Membership. She is also a Provisional Member of AFTE as of 2025.

General Session Speakers

Legal Updates for Forensic Scientists

Presented by: Deputy Attorney General Michael Chamberlain, California Department of Justice

Abstract:
This presentation will update attendees about recent case law and legislation relevant to forensic science professionals. It will include a discussion of the hearsay and confrontation clause implications of the United States Supreme Court's decision in Smith v. Arizona.

Biography:
Mike Chamberlain is a Deputy Attorney General in the California Department of Justice's Office of General Counsel. He has been a state prosecutor since 2002. Before joining the AG's Office Mike served as a Deputy District Attorney in San Diego and Contra Costa counties. Mike serves as counsel to DOJ's Division of Law Enforcement, with a focus on the Bureau of Forensic Services. He provides advice, training, and consultation on DNA/forensic evidence topics to law enforcement and prosecutors statewide and nationally. He is a past Chair of the State Bar of California's Criminal Law Section. Mike co-authored Forensic DNA Evidence: Science and the Law, a legal practice guide. He teaches at the U.C. Davis Forensic Science Master's Program.

General Session Speakers

A Tale of Two Murders: A Double Homicide Case in Rural San Joaquin County

Presented by: Senior Criminalists Sheltri Gresham and James Hamiel, CA DOJ BFS Central Valley Laboratory; Deputy District Attorney Elton Grau, San Joaquin County District Attorney's Office

Abstract:
This presentation follows a case from the first 911 call through processing the crime scene, forensic analyses of various evidence types and continuing with defense challenges at trial and culminating with the final verdict. Forensic casework using Bloodstain Pattern Analysis, Biology/DNA, Latent Prints, 3D Laser scanning, Firearm Examination, Impressions and GPS Tracking all played a role in a case that spanned nearly four years during the COVID Pandemic (2020-2024).

Biography:
Sheltri Gresham has a BS from UC Davis in Neurobiology, Physiology and Behavior. Sheltri began working for the DOJ in 2001 in the DNA Databank Section of the Berkeley (now Richmond) Laboratory. After completing casework training, Sheltri performed DNA analysis for the Missing Persons DNA Program (MPDP) until 2011 doing both STR and mitochondrial DNA casework. In 2011, Sheltri transferred to the Central Valley Laboratory. There, she continued DNA analysis, including training in Y-STR DNA. She also began training for crime scene response. She completed her training as a secondary responder in 2015 and as a primary in 2020. Sheltri currently performs DNA testing (STRs and Y-STRs), crime scene response and continues to train in additional sub-disciplines of crime scene response.

General Session Speakers

Biography:
James Hamiel has a BS in Forensic Science from CSU Sacramento. His current primary duties at the DOJ Central Valley Laboratory in Ripon are crime scenes, firearm/toolmark examination, footwear/tire impression examination, and GSR distance determination. He began responding to clandestine laboratory scenes while at the Riverside Laboratory and continued processing clandestine laboratory scenes at Central Valley. In 1999, he began responding to all other types of crime scenes. He completed his training in firearm/toolmark examination in 2000, footwear/tire impression examination in 2003, and GSR distance determination in 2019. To date, James has responded to over 150 crime scenes including trajectory reconstruction, bloodstain interpretation, reconstruction, 3D laser scanning, and grave exhumation, and was the BFS technical lead for crime scenes from 2009-2024. In addition, James has been an instructor for Basic Firearms Safety through CCI since 2004, and other CCI classes as well, including Shooting Incident Reconstruction, the Crime Scene Investigation series, and Bloodstain Pattern Interpretation. He has also provided crime scene training to the Merced Police Department, Merced County Sheriff's Department, Stockton Police Department, and Modesto Police Department.

Biography:
DDA Elton Grau has dedicated his career to the pursuit of justice and public service. After earning his history degree from UC Riverside in 1999, he graduated from McGeorge School of Law in 2002 and began his journey as a prosecutor. On August 22, 2005, he joined the San Joaquin County District Attorney's Office, where he has handled a wide range of complex criminal cases. Over the years, DDA Grau has spent the majority of his career in the Child Abuse and Sexual Assault Unit, as well as handling Homicides. These roles have given DDA Grau the opportunity to seek justice for victims and hold offenders accountable while navigating some of the most challenging cases in criminal law. Through this work, he has gained extensive trial experience and developed a deep commitment to fairness, integrity, and advocacy in the courtroom.

Poster Abstracts

1	**Evaluating Activity Levels: Investigating Primary and Secondary DNA Transfer on Drug Baggies** Authors: Jenisha Lal, Dr. Ashley Hall Organization: University of California, Davis
2	**Comparison of Primary and Secondary Transfer of Touch/Trace DNA on Cellphone Protection Screens** Authors: Angel Reyes, Dr. Ashley Hall Organization: University of California, Davis
3	**Primary and Secondary Transfer of Touch DNA on Knife Handles: A Quantitative Analysis** Authors: Casey Robinson, Dr. Ashley Hall Organization: University of California, Davis
4	**Tracing Nuclear and Cell-free Touch DNA on Fired Cartridge Cases Using Domesticated and Wild Fingerprints** Authors: Destiny Rivera, Philip Hess, Dr. Ashley Hall Organization: University of California, Davis
5	**The Occurrence of Evidentiary Blood Spatter: The A.J. Armstrong Case** Authors: Allison Guss, Ana Villalpando, Sydney Ketts, Philip Hess, Dr. Ashley Hall Organization: University of California, Davis
6	**Measurement of mtDNA Copy Number from Environmentally Compromised Samples** Authors: Seamus Aparicio, Dr. Ashley Hall Organization: University of California, Davis

Poster Abstracts

Evaluating Activity Levels: Investigating Primary and Secondary DNA Transfer on Drug Baggies

Presented by: Jenisha Lal, Dr. Ashley Hall, University of California, Davis

Abstract:
Touch DNA, a term often used interchangeably with trace DNA, refers to small amounts of DNA left behind on objects, surfaces, and people through contact. This phenomenon is rooted in Locard's exchange principle, which states that "every contact leaves a trace." The significance of touch DNA lies in its potential to provide crucial evidence at crime scenes, leading to the recovery of complex DNA profiles. DNA evidence alone does not always provide clear answers about when or how it was deposited. This has led forensic scientists and legal professionals to rely on an approach known as activity-level reporting, which goes beyond identifying the DNA's source and instead examines the circumstances under which the DNA was transferred. This includes assessing whether the DNA was deposited directly (primary transfer) or indirectly (secondary transfer) and determining the most likely scenario in which the DNA came to be present on an item.

This research utilizes a domesticated or mock fingerprint method, which incorporates a known quantity of DNA within a sebaceous fingerprint matrix, to track DNA across various transfer pathways. It quantifies the DNA recovered from different surfaces involved in direct and indirect transfers at simulated crime scenes. The direct pathway was hand to drug baggie, while the indirect was hand to hand to drug baggie. We recovered significantly more DNA after the primary transfer and will present the DNA profiling results. This research aims to inform activity-level questions that could help the trier-of-fact in the determination of the most probable scenario for DNA deposition.

Poster Abstracts

Comparison of Primary and Secondary Transfer of Touch/Trace DNA on Cellphone Protection Screens

Presented by: Angel Reyes, Dr. Ashley Hall, University of California, Davis

Abstract:
The potential of identifying a suspect through the analysis of touch DNA has a significant impact on the practice of forensic science. Forensic scientists can identify the relation between touch DNA and the crime in question; including where the evidence was discovered, how it was collected, potential sample lost during testing, and whether the amount recovered is sufficient to generate a DNA profile and connect a suspect to a crime. This study focuses on comparing direct and indirect pathways involving touch DNA transfer on cellphone protection screens. These pathways were investigated using domesticated or mock fingerprints, a sample containing a known quantity of DNA in a background of a sebaceous solution, which allows for the quantification of DNA recovered. The transfer pathways were repeated with wild fingerprints for comparison. Each pathway represents a different scenario; the primary is an individual grabbing a cellphone from the table. The second will be two individuals shaking hands, and then the second individual will grab the cellphone. Touch DNA was collected from the cellphone screen from the thumb of the individual who touched the screen, and from the other individual's hand. The amount of DNA recovered, amount of DNA lost, total yield, and standard deviations were calculated and recorded. The quantified DNA recovered from each pathway was compared observing the percentage recovered or loss, revealing a significant difference between the direct and indirect pathways.

Poster Abstracts

Primary and Secondary Transfer of Touch DNA on Knife Handles: A Quantitative Analysis

Presented by: Casey Robinson, Dr. Ashley Hall, University of California, Davis

Abstract:
Touch DNA is easily transferred onto any object touched and is becoming an important topic for forensic scientists. Touch DNA helps clarify the potential events that led to DNA deposition, commonly referred to as the activity level. However, there are many gaps in the standardization of variables that can affect the transfer or recovery of touch DNA on objects. This study focuses on the gap in data for indirect transfer of touch DNA, by comparing the values of DNA recovered from knife handles after indirect or direct deposition. Examination of these quantities will help in real-life scenarios and allow the assessment of primary and secondary pathways at the activity level. Samples will consist of fingerprints, laboratory-created and naturally occurring, recovered from knife handles after direct or indirect contact. Domesticated fingerprints containing a known quantity of DNA will be deposited on a mock hand with lorica leather skin to create a laboratory standard. Collection of samples occur at every touch point to quantify loss and retention of DNA. Isolating male and female DNA, as a mock fingerprint, throughout transfer in both pathways will identify the indirect amount of DNA retained on the surface. Differences in quantities recovered will help identify the activity level proposition, or the transfer that took place before deposition. Reported quantities will reflect the recovered touch DNA after primary and secondary transfer, in a laboratory created mock environment and a real casework environment. These values will standardize the retention and loss rates of touch DNA throughout direct and indirect pathways on knife handles and can help explain the activity level proposition of touch DNA in casework.

Poster Abstracts

Tracing Nuclear and Cell-Free Touch DNA on Fired Cartridge Cases Using Domesticated and Wild Fingerprints

Presented by: Destiny Rivera, Philip Hess, Dr. Ashley Hall, University of California, Davis

Abstract:
With the large number of crimes involving firearms, any touch DNA found on a firearm or fired cartridge case can serve as crucial evidence. Touch DNA is a collection of epithelial cells and cell-free DNA deposited onto surfaces and objects through contact. With the high probability that a suspect will leave touch DNA on a firearm and cartridge case, standardizing quantifiable methods for touch DNA is necessary. A domesticated hand, made of leather attached to a latex glove at the main points of contact, acts as a vehicle for DNA transfer. A domesticated fingerprint, a ground truth sample, containing a reproducible known quantity of DNA, was applied to a domesticated hand. This project follows the transfer of cell-free and nuclear touch DNA on a firearm and its fired cartridge case through a direct transfer pathway using a ground truth positive control to quantify DNA recovery at every step. Utilizing a reproducible domesticated fingerprint will eliminate any variation in results caused by human fingerprints and allows for closer examination of what causes a decrease in DNA yield. To simulate hand-to-bullet transfer, a domesticated fingerprint was applied to the domesticated hand and transferred onto a casing. Touch DNA was quantified on several transfer points where DNA transfer is likely: on the bullet after DNA was deposited, inside the firearm barrel after firing, on the fired cartridge case, and at the final point of impact. DNA was collected with a swab, extracted, separated by cell-free and nuclear DNA, and quantified. The results from the cell-free and nuclear DNA extractions were compared to see if there was a difference in the amount of genetic information that is collected at each step of the pathway. The mean and standard deviation of the DNA yield from multiple pathway runs were calculated. Understanding the DNA loss patterns at each step provides valuable insight into future multi-step transfer studies. The loss and recovery data can inform activity-level propositions, which aid in determining how DNA was transferred in a given scenario rather than solely using it for identification.

Poster Abstracts

The Occurrence of Evidentiary Blood Spatter: The A.J. Armstrong Case

Presented by: Allison Guss, Ana Villalpando, Sydney Ketts, Philip Hess, Dr. Ashley Hall, University of California, Davis

Abstract:
Bloodstain pattern analysis (BPA) is the analysis of the shape, category, and interpretation of bloodstains. It remains an integral part of understanding the relationship between evidence, the scene, and individuals who were present at the time of a crime. With all the factors that affect blood and its travel once outside the body, BPA can have variations in its interpretation. This is why many studies seek to improve the accuracy of analysis through physics or computer software programs despite the ability to reconstruct scenarios that pose these scientific questions. One case in which the interpretation of blood spatter was critical to the case was when Antonio (A.J.) Armstrong Jr. was accused of shooting his parents in bed, despite the lack of any physical evidence that could link him to the crime. Days before the third trial for the two homicides, criminalists discovered tiny blood flakes on the back of a visitor's sticker attached to the shirt he had worn to the police station the night of the shooting. The reports of initial investigators, however, saw no apparent blood present on him. The defense team claimed that the presence of blood was due to contamination (following the shirt's collection into custody) while the prosecution believed the flakes to be the result of expirated blood that dried in flight due to its small size. In this study, three scenarios for both the prosecution and the defense were recreated to examine the likelihood of the sequence of events occurring. Size, angle, and distance to target were compared to understand how each component affected the distribution and deposit of expirated blood. The interactions between victim, perpetrator, and evidence were observed and results of the blood spatter will be presented along with its transference. This research will speak to the importance of forensic reconstruction of BPA cases along with offering support to the accuracy and limits of a criminalist's opinion.

Poster Abstracts

Measurement of mtDNA Copy Number from Environmentally Compromised Samples

Presented by: Seamus Aparicio, Dr. Ashley Hall, University of California, Davis

Abstract:
The analysis of mitochondrial DNA (mtDNA) has been an essential tool in forensic science for decades. Historically, mtDNA has primarily been used for the identification of possible suspects or of forensic unknowns. It is especially used when the DNA present in the sample is degraded or not abundant enough for autosomal STR analysis. Much of the research done with mtDNA has been conducted in optimal, controlled lab conditions or with dental or skeletal samples. These samples are typically well-preserved and abundant. Much of the current research on mtDNA degradation is done to detect biomarkers that denote mitochondrial dysfunction in living cells. Many of the stresses studied are external toxins that are internally absorbed by the individual. These are internal stressors that impact mitochondria. However, there is little-to-no discussion on the exposure of mtDNA in blood to external environmental stressors, like UV-rays, microbial activity, and humidity. These conditions do not commonly reflect the challenges faced in real-world forensic cases. Samples, especially those originating from body fluids like blood, are often sparse, degraded, or contaminated when collected for analysis in real-world examinations. Samples are often compromised by environmental factors such as temperature, UV radiation, and microbial degradation before they are collected. In this study, we seek to quantify the copy number of mtDNA that can be obtained from blood stains that are exposed to these environmental insults.

We collected blood samples from 25 anonymous individuals, placed the blood on a cut strip of a cotton T-shirt in 50 µL aliquots, and let the samples dry for 24 hours. A control condition was collected for each individual to establish their initial mtDNA copy number. We set the samples outside from late November through early February in Davis, California. Samples were collected after 1, 7, 14, 21, 28, and 56 days. The extracted DNA from each sample was initially quantified using a Qubit fluorometer, then quantified again using real-time quantitative PCR. The nuclear DNA (nuDNA) was co-amplified the mtDNA, as the nuDNA normalizes cycle threshold values. We amplified the pyruvate kinase gene (PK) to quantify nuDNA and cytochrome oxidase B (CYTB) to quantify mtDNA. We approximated the copy number in each sample using the equation 2 * 2ΔCT], with ΔCT being the difference between nuclear DNA cycle threshold values and mtDNA cycle threshold values. In order to analyze the degree of degradation, we then compared the copy numbers between time conditions within the same individual's sample. We compared the copy number from samples with weather and climate data from UC Davis Atmospheric Science to see if the weather, such as freezing temperatures, had any significant impact on degradation. This study will add important information about the viability of analyzing mtDNA during casework where blood stains are involved.

General Session Agenda

THURSDAY, MAY 1, 2025

7:00 -- 8:00AM	"The Morning Roundup" Breakfast (Sierra Ballroom)
8:00 – 9:00AM	Effectively Addressing Sexual Assault Kit Backlogs through Private/Public Partnership – Melissa Haas (Bode Technology) and Shawn Montpetit (San Diego PD)
9:00 – 9:30AM	The Use of Advanced Technological Automation for Seized Drug Analysis– Scott Oulton (DEA)
9:30 – 10:00AM	The History and Impact of the California Association of Criminalistics - Jerry Chisum
10:00 – 10:30AM	"Snack Stampede" Break (Sierra Ballroom, co-sponsored by Agilent), Raffle, and ABC Update
10:30 – 12:30PM	The 15-Year Quest for Justice: The Christie Wilson Case – Keynote Speakers: Debbie Boyd and Nuno Tavares
12:30 – 1:30PM	"Giddy Up & Grub" Lunch (Sierra Ballroom) and CAC Update
1:30 – 2:00PM	The Forensic Scientist & Mental Health – Jessica Winn (California Department of Justice)
2:00 – 3:00PM	Investigative Genealogy Basics – Kirk Campbell (Sacramento DA's Office)
3:00 – 3:30PM	"Wrangler's Rest" Break (Sierra Ballroom) and Raffle
3:30 – 4:15PM	The Space Between: Filling Investigative Gaps with Wireless Companies' Other Tool -Timing Advance– Detective Garth Keffer (Sacramento County Sheriff's Office)
4:15 – 4:45PM	Postmortem Interval - Is it all about the temperature? – Mark McLellan (Contra Costa Sheriff's Office Crime Lab)
6:00-11:00PM	Boot-Scootin' Banquet (Pavilion)

AM Session Moderator: Ryan Nickel
PM Session Moderator: Kristine Myhre

General Session Speakers

Effectively Addressing Sexual Assault Kit Backlogs through Private/Public Partnership

Presented by: Melissa Haas, Bode Technology; Supervising Criminalist Shawn Montpetit, San Diego Police Department

Abstract:
For 30 years, Bode Technology has assisted law enforcement agencies to clear sexual assault kit backlogs. High throughput capacity enables processing and reporting over 2,000 sexual assault kits each month, generating investigative leads and reducing the burden on public crime laboratories. January 1, 2020, California SB 22 went into effect establishing mandatory requirements for the submission and testing of Sexual Assault Forensic Evidence (SAFE) kits. SB22 requires a turn-around time of 120 days for testing SAFE kits and requires crime laboratories to effectively address incoming cases and any existing backlog. This presentation will cover how a public crime laboratory was able to successfully plan, organize, and execute the outsourcing of SAFE kits to a private laboratory, eliminating their backlog to effectively meet all the SB22 mandated timelines for current cases.

Biography:
Melissa Haas serves as a Technical Account Manager for Bode Technology. She holds a Bachelor of Science in Biology and Psychology from East Texas Baptist University and a Master of Science in Forensic DNA Analysis and Serology from the University of Florida. Melissa is licensed as a Forensic Analyst in the state of Texas and holds a Forensic Manager Level II certification from the National Forensic Science Academy. Prior to joining Bode Technology, she served as the Casework Laboratory Director for the Center for Human Identification at the University of North Texas Health Science Center overseeing all technical operations of the laboratory and as a DNA Section Supervisor for the Texas Department of Public Safety Regional Crime Laboratory in Garland, Texas. Melissa has over 20 years of experience in forensic DNA casework with expertise in STRs, Y-STRs and SNPs.

Biography:
Shawn Montpetit has been employed with the San Diego Police Department for 25 years and has 27 years of experience in the field of forensic DNA analysis. Shawn is currently employed as a Supervising Criminalist in the Forensic Biology Unit and has served in that capacity since 2021. In addition to being a supervising Criminalist, he currently serves as the Quality Manager for the San Diego Police Department Crime Laboratory. He has been participating with the Scientific Working Group on DNA Analysis Methods (SWGDAM) since 2014 and currently serves on SWGDAM's Autosomal DNA Interpretation subcommittee.

General Session Speakers

The Use of Advanced Technological Automation for Seized Drug Analysis

Presented by: Assistant Administrator Scott Oulton, Drug Enforcement Administration, Forensics Division

Abstract:
This presentation will discuss how DEA implemented efficiencies that resulted in a 88% reduction of their seized drug evidence backlog in less than two years. DEA accomplished this, in part, by leveraging the use of Robotic Process Automation to reduce/eliminate the manpower required for routine administrative tasks and the use of macros, and algorithms. This presentation will also highlight use cases being explored utilizing Artificial Intelligence and Machine Learning. Lastly, DEA will share their plans to implement state-of-the-art robot used for sample preparation, qualitative and quantitative identification of seized drugs.

Biography:
Scott R. Oulton began his career with the Drug Enforcement Administration (DEA) as a forensic chemist (testing seized drugs) in 1990. He has nearly 35 years of distinguished Federal Service and has progressively served in key leadership positions since 1999. In 2011, Mr. Oulton was appointed to the Senior Executive Service as Associate Deputy Assistant Administrator, where he was responsible for leading DEA's forensic laboratories. In 2022, Mr. Oulton was promoted to the Assistant Administrator which placed him in charge of DEA's Forensic Sciences Division. In that capacity, he oversees ten decentralized and six sub-regional laboratories with more than 560 employees that provide analytical, intelligence, scientific and other forensic and administrative support to law enforcement, prosecutors, legislators and the public.

General Session Speakers

The History and Impact of the California Association of Criminalistics

Presented by: Jerry Chisum

Abstract:
In this presentation I will share the history of key events that shaped the California Association of Criminalists (CAC) into a leading forensic science organization. From its founding members to the early laboratories that laid the groundwork, I will explore the milestones that contributed to CAC's growth and influence in the field of forensic science.

Biography:
Jerry Chisum has been a member of CAC for 64 years; he joined in May 1961 at the Roy Rogers Motel in Apple Valley. He served 15 of his first 30 years on the Board of Directors including an unequaled 3 terms as President. During that time there were a number of things that happened to change the CAC. He has worked for: San Bernardino SO; set up the lab in Bakersfield: CII Lab; SRI; CA DOJ; Bakersfield City College; College of the Redwoods; DOJ Modesto; US State Dept in Tanzania; Bond University, Australia.

General Session Speakers

The 15-Year Quest for Justice: The Christie Wilson Case

Presented by: Debbie Boyd and Nuno Tavares

Abstract:
Christie Wilson was abducted from a casino parking lot in Placer County during the early morning hours of October 5, 2005. This presentation will discuss a 15-year journey involving a no-body homicide investigation and the successful prosecution of Mario Garcia. Attendees will learn about the challenges faced during the investigation and gain insight from a mother's perspective. Christie's mother, Debbie Boyd, will share her experience as she fought to find her daughter and bring Christie's killer to justice.

Biography:
Debbie Boyd is a dedicated advocate for cold case investigations and families of the missing. Her daughter Christie Wilson was murdered in 2005. The killer was convicted in a no-body homicide trial but refused to reveal where he had hidden her remains. Debbie spent 15 years relentlessly searching for answers—efforts that helped investigators persevere in further investigating the case, which ultimately lead to the discovery of her daughter's body. As a respected negotiator in the high-tech industry, she used her strategic skills to work with the media, build critical relationships, and advocate without burning bridges. Now, from a mother's perspective, she shares her insights as a speaker for the California Commission on Peace Officer Standards and Training (POST) and serves on the board of Crime Victims United, where she fights for victims' rights, and is also board secretary for Placer Justice Foundation.

Married for 35+ years to a retired law enforcement detective, she understands the complexities of the justice system and remains committed to ensuring no case is forgotten. Her upcoming book, *A Mother's Quest for Peace*, is a powerful account of perseverance, advocacy, and justice for families still searching for answers.

Nuno Tavares retired as a lieutenant from the Placer County District Attorney's Office after a 27-year career in law enforcement. During his tenure, he held various positions, including assignments to narcotics and auto theft task forces, crimes against persons, and cold-case homicides. Throughout his career, Nuno received multiple commendations, including Investigative Excellence awards from both the International Homicide Investigators Association and the California Robbery Investigators Association, as well as recognition for Excellence in Instruction from the California Commission on Peace Officer Standards and Training (POST).

Currently, Nuno serves as a POST instructor and frequently speaks at homicide conferences. Additionally, he works as an adjunct professor at the University of San Diego and holds a Master's degree from Saint Mary's College.

General Session Abstracts

The Forensic Scientist & Mental Health

Presented by: Criminalist Supervisor Jessica Winn, CA DOJ BFS Fresno Laboratory

Abstract:
In recent years, there has been a significant increase in research and resources available to first responders and law enforcement regarding workplace trauma and mental health. However, very little research or discussion has been done in the area of forensic science. This talk will bring attention to the stress and trauma forensic scientists experience throughout their careers and provide resources to build resilience and improve overall mental health.

Biography
Jessica Winn earned her B.A. in Chemistry and her M.S. in Forensic Science, both from California State University, Fresno. In 2008, Jessica was hired as a Criminalist by the BFS Fresno Laboratory, where she began her career in forensic alcohol analysis and seized drugs analysis. In 2014, Jessica was promoted to Senior Criminalist working in multiple disciplines, including firearms and tool marks, at the BFS Fresno Laboratory. In 2019, Jessica was promoted to Criminalist Supervisor where she currently supervises the firearm and tool marks, seized drug analysis, ignitable liquids, clandestine laboratory, and crime scene units. In 2021, she became a peer support counselor with the DOJ/DMFEA's Peer Support Program.

She became a member of the Association of Firearm and Tool Mark Examiners (AFTE) in 2012 and became a Distinguished member in 2016. She is also a member of the California Association of Criminalists (CAC), where she serves as co-chair of the Northern Firearm Study Group committee. She has presented several presentations at CAC Conferences related to firearms examination and served on the host committee for the BFS Fresno hosted CAC Conference.

Jessica maintains her involvement in controlled substances and forensic alcohol analysis. She is certified by the American Board of Criminalistics (ABC) in Drug Analysis. She is a member of the Clandestine Laboratory Investigating Chemists (CLIC) Association. She also serves as the Control Substances Technical Advisory Group (TAG) facilitator for BFS.

In 2022, along with three of her colleagues and friends, formed the KLTW Group, a non-profit training and mentorship collective. KLTW Group provides pro-bono mentorship and training for college students, as well as new and existing forensic examiners.

Jessica is an adjunct faculty member at California State University, Fresno where she teaches a course in Forensic Science.

General Session Abstracts

Investigative Genealogy Basics

Presented by: Lieutenant Kirk Campbell, Sacramento County District Attorney's Office

Abstract:
Kirk Campbell's presentation will be an overview of investigative genealogy. Kirk will cover the basic steps, locating cases, submitting DNA evidence to private labs for SNP testing, difference between STR and SNP testing, using Ged Match and Family Tree DNA, obtaining results and reviewing matches, tree building basics, how we narrow down the potential suspect pool, reference testing and surreptitious DNA collection. I will focus on working with your lab to locate new cases once the "low hanging fruit" is picked and you need to find more cases with DNA that can be sent out for SNP testing.

Biography:
Kirk Campbell is a 40 year plus law enforcement veteran who retired from the Sacramento Police Department in 2011 as a Supervisor in the Homicide Unit and is currently a Lieutenant in the Homicide/Gangs Unit with the Sacramento County DA's Office. He was a member of the small team that conducted the investigative genetic genealogy in the Golden State Killer case. Since 2018, Kirk has been involved in many cases across California and the United States that have utilized investigative genetic genealogy to both identify the guilty and exonerate the innocent. Included in this was the investigation, identification, arrest of the "Nor Cal Rapist" who was responsible for sexually assaulting 9 victims over a 15-year period in Northern California. Additionally, Kirk was the key investigator in the use of investigative genetic genealogy to exonerate Ricky Davis for a murder he did not commit. Kirk has trained law enforcement both nationally and internationally and is an expert on the use of investigative genetic genealogy.

General Session Speakers

The Space Between: Filling Investigative Gaps with Wireless Companies' Other Tool -Timing Advance

Presented by: Detective Garth Keffer, Sacramento County Sheriff's Office

Abstract:
Inspired by the idea of uncovering what lies in the unknown, this presentation examines how Timing Advance data helped fill critical gaps in one particular homicide investigation involving a young girl – killed in a tragic shooting where she was not the intended target. Detective Garth Keffer will walk attendees through a case study where cellular network data played a pivotal role in building timelines, corroborating evidence, and challenging suspect narratives.

Biography:
Detective Garth Keffer has served with the Sacramento County Sheriff's Office since 2015 and has been assigned to the Homicide Bureau within the Centralized Investigations Division since 2021. He specializes in investigating homicides, suspicious deaths, kidnappings, and officer-involved shootings. He holds an Advanced Homicide Investigator POST Certificate, is a certified Terrorism Liaison Officer, serves as a subject matter expert and host for POST's Science Based Interview (SBI) training, and acts as a facilitator for the Robert Presley Institute of Criminal Investigations (ICI).

Detective Keffer earned his Bachelor of Arts in Political Science with a minor in Middle East History from the University of California, Davis. During the course of his undergraduate studies, he interned in Arlington, VA at the Potomac Institute's International Center for Terrorism Studies. Additionally, Detective Keffer earned a Master of Arts in Emergency Management and Homeland Security from Arizona State University. He furthered those studies in Israel where he focused on international terrorism and international policing. He also completed a professional certificate in Critical Infrastructure Protection through Texas A&M University.

Over the course of his career, he has held assignments in corrections, patrol, crime suppression, and investigations. He has led or supported more than 100 major homicide investigations. Detective Keffer is a member of the California Homicide Investigators Association, International Homicide Investigators Association, Association of Threat Assessment Professionals, and the Association of Certified Fraud Examiners.

General Session Speakers

Postmortem Interval - Is it all about the temperature?

Presented by: Forensic Analyst Mark McLellan, Office of the Sheriff Contra Costa County (UC Davis Forensic Science Graduate Program)

Abstract:
When vertebrate scavenging is excluded, the Evapotranspiration Rate (ETo) of a given geographic region directly regulates the decomposition rate of unclothed vertebrate carrion, with any deviation attributed to insect activity. We conducted four decomposition experiments using pig carrion (Sus scrofa) over the span of two years (2018-2020) at a location in Davis, California. We used ETo, a variable that accounts for five climatic parameters: wind, temperature, humidity, solar radiation, and altitude, as the rate-determining variable of the decomposition process. We found ETo to have a strong (R2 = 0.98) predictive relationship with the decomposition rate. To account for maggot activity actively decomposing the carrion, we measured maggot weight in 2019 and 2020 using a novel method, and in 2020 we used FLIR imagery to measure maggot mass temperatures as a surrogate measurement of total maggot activity. Maggot activity was a significant predictor (p-value < 0.0001) of the decomposition rate, while maggot weight was not (p-value > 0.1). We hope to show the forensic entomology community the potential of using ETo. Future projects can incorporate ETo as a baseline to decomposition studies to determine if ETo remains the most accurate descriptor of decomposition and ultimately increase certainty in the Postmortem Interval (PMI).

Biography:
Proud husband and father, Mark McLellan has a bachelors in biochemistry and molecular biology with a minor in Forensic Entomology (2016) and a Master's in Forensic Science (2021) all with UC Davis. Mark conducted his thesis research with Dr. Robert Kimsey (Forensic Entomologist) focused on the climatic effects on the vertebrate decomposition rate. He started his forensic career as a Scientific Aid with the Wildlife Forensic Lab with the California Department of Fish and Wildlife (2019 - 2021), then joined the Contra Costa County Office of the Sheriff Crime Lab Biology Unit as a Forensic Analyst (2021 - Present).

General Session Agenda

7:00 – 8:00AM	"Saddle Up" Breakfast (Sierra Ballroom)
8:00 – 8:25AM	Breech Face Marks Due to Varying Pressures Created by Changing Bullet Weights – Connor Sichler (Sacramento DA Crime Lab)
8:25-9:25AM	OD Justice – Distribution Resulting Investigations - Supervisory Special Agent Bob Thomas (DEA)
9:25-9:45AM	Blow Flies Under the Lens: Forensic DNA Retrieval Post-ESEM – Riley Hoffman (UC Davis Forensic Science Graduate Program)
9:45-10:05AM	"The Final Mosey" Break (Sierra Ballroom) and Raffle
10:05-10:30AM	Old Drugs, New Tricks: Updating Opioid Testing in Forensic Toxicology – Drew Vandalia (Sacramento DA Crime Lab)
10:30-11:00AM	A Tale of Two Dismemberments – Cindy Anzalone (San Mateo County Sheriff's Office Crime Lab)
11:00-11:30AM	Identification of Resizing Die Marks from a Carbide Die – Samantha Houle (Alameda County Sheriff's Office Crime Lab)
11:30-12:00PM	What Happens after Law Enforcement and Forensic Teams Leave? – Aaron Burt & Dawn Tempest (Forensiclean)

AM Session Moderator: Daniela Vasquez

FRIDAY, MAY 2, 2025

General Session Speakers

Breech Face Marks Due to Varying Pressures Created by Changing Bullet Weights

Presented by: Criminalist Connor Sichler, Sacramento County DA's Laboratory of Forensic Services

Abstract:
Previous research has examined breech face marks produced by various firearms with little to no research on the effects of bullet weights on breech face marks. The purpose of this study was to determine if bullet weights, and primer types would affect marks created on the breech face. During the comparison process, comparison microscopy as well as virtual comparison microscopy was used. Although a quantitative measurement of the differences was not obtained, visually there was a notable visual difference between cartridge cases with 147-grain bullets and 50-grain bullets with no noticeable difference in marks created between brass and nickel primers.

Biography:
Connor Sichler graduated from California State University, Sacramento with a bachelor's degree of science in biology with a concentration in Forensics. He currently works in the criminalistics section at the Sacramento County District Attorney's Laboratory of Forensic Services and is a recent graduate of the National Firearms Examiners Academy (NFEA) class 2401.

General Session Speakers

OD Justice – Distribution Resulting Investigations

Presented by: Supervisory Special Agent Bob Thomas, Drug Enforcement Administration

Abstract:
This presentation is designed to familiarize investigators with the federal charging option to hold dealers accountable for a resulting death or serious bodily injury. Information will be provided on scene response, case evaluation, and best investigative practices to maximize potential for prosecution, as well as available DEA resources to assist with these investigations.

Biography:
Bob Thomas has been with the Drug Enforcement Administration (DEA) since 2009 and was assigned to the Los Angeles Field Division (LAFD) since 2010. During his career, he has worked various assignments, including as a member of the Southwest Border Initiative, FBI and Los Angeles Sheriff's task force groups, and Tactical Diversion. Supervisory Special Agent (SSA) Thomas has been involved with the LAFD OD Justice Task Force since its inception in 2018. In March 2021, SSA Thomas was designated the OD Justice Coordinator, responsible for oversight of the distribution resulting cases investigated by the DEA in the seven southern California
counties which comprise the Central District of California. In this capacity, SSA Thomas has evaluated over 550 death/serious bodily cases and been involved with over two hundred investigations into distributions resulting in death or serious bodily injury. Since June 2022, SSA Thomas has supervised the Los Angeles Field Division's HIDTA Tactical Diversion Squad and the OD Justice Task Force.

Based on his work with distribution resulting investigations, SSA Thomas is the recipient of the 2020 California Narcotics Officers' Association Region III Al Steward Award for Narcotic Officer of the Year, a 2022 Finalist for the Association of Federal Narcotics Agents Special Agent of the Year Award, and recipient of the Peace Officers Association of Los Angeles County 2023 Centurion Award for Excellence in Investigations – Multi Agency. He has also been recognized with awards from the United States Attorney's Office, Central District of California, in 2022, 2023, and 2024.

Prior to joining the DEA, SSA Thomas graduated from Oklahoma State University in 2000 with a degree in Natural Resource Management – Forestry. Following graduation, he enlisted in the U.S. Army where he served as a Signals Intelligence Analyst and Mandarin Chinese linguist from 2000 to 2005. Following separation from the military, SSA Thomas served as a patrol officer for the City of Wilmington, Delaware from 2006 to 2009.

General Session Speakers

Blow Flies Under the Lens: Forensic DNA Retrieval Post-ESEM

Presented by: Riley B. Hoffman, Forensic Science Graduate Program, UC Davis and Nicholas J. Miller, PhD Department of Biological Sciences, Illinois Institute of Technology, Chicago, IL.

Abstract:
Calliphoridae, known as blow flies, are among the first forensically important insects to arrive at a corpse to lay eggs [1]. The larvae are difficult to identify due to the minute nature of the morphological characteristics used for identification. Two complementary methods for insect identification are scanning electron microscopy (SEM) and DNA barcoding [2], [3]. Morphological identification of insects by microscopy is the gold standard but requires considerable training and expertise, while DNA barcoding relies on standard molecular techniques. In this research we test the hypothesis that DNA suitable for barcode identification may be obtained from specimens prepared for SEM imaging in a nondestructive manner.

Specimen were prepared for SEM imaging with an ascending series of ethanol and acetone. Following the imaging process, three different DNA extraction methods are followed using the Zymo Research Quick-DNA To help protect your privacy, Microsoft Office prevented automatic download of M this picture from the Internet. ™ Miniprep Plus Kit: soaking intact specimens in lysis buffer, soaking specimens that have been perforated with a fine needle, and specimens that are homogenized in lysis buffer. Total DNA yield from each method is measured by Qubit fluorometry. The suitability of extracted DNA for DNA barcoding is tested by amplification via PCR of the cytochrome oxidase I mitochondrial gene. Identity of the PCR products is confirmed by Sanger sequencing and comparison of sequences to known references.

The research presented will show that Calliphoridae larvae can be dried, used for SEM imaging, and used for DNA extraction. This research will inform forensic scientists on best practices for obtaining DNA for preliminary identification of insects while simultaneously obtaining images and maintaining intact specimens for expert identification as needed. The knowledge gained from this research broadens investigative agencies' access to forensic entomology as a tool for determining postmortem interval without sacrificing the rigor of expert morphological analysis [1], [4], [5].

Biography:
Riley Hoffman is a second year in the Forensic Science Graduate Program at UC Davis on the DNA Track.

General Session Speakers

Old Drugs, New Tricks: Updating Opioid Testing in Forensic Toxicology

Presented by: Forensic Laboratory Technician Drew Vandalia and Supervising Criminalist Craig Triebold, Sacramento County DA's Laboratory of Forensic Services; Dr. Tran Nguyen, Dr. Donald Land, Dr. Glendon Parker, UC Davis

Abstract:
The Sacramento County District Attorney's Laboratory of Forensic Services offers services in various scientific departments, such as toxicology, controlled substance (drug chemistry) analysis, firearms analysis, trace evidence, biology/DNA analysis, and more. The toxicology unit focuses on the analysis of biological samples, primarily blood and urine, for the presence of alcohol and drugs. For confirmation testing, the toxicology unit uses Ultra-Performance Liquid Chromatography-Tandem Mass Spectrometry (UPLC-MS/MS) to analyze drugs in these samples. The toxicology unit has separate validated methods for analyzing different classes of drugs (depressants, stimulants, THC, opioids, etc.). These validated methods follow guidelines recommended by the American National Standards Institute/American Academy of Forensic Science Standards Board (ANSI/ASB) Standard 036: Standard Practices for Method Validation in Forensic Toxicology. The current method for quantitative analysis of opioids in blood samples (and qualitative for urine samples) was last validated by the Sacramento County Crime Lab in 2014. The opioids included within the scope of this method are morphine, hydromorphone, codeine, oxycodone, 6-monoacetylmorphine (6-MAM), hydrocodone, fentanyl, buprenorphine, and methadone. The goal of this project was to update and validate the method by adding five new target analytes and two deuterated analogs used as internal standards to the method: tramadol, o-desmethyltramadol, oxymorphone, norfentanyl, norbuprenorphine, tramadol-13C-D3, and oxymorphone-D3. Method parameters such as bias (accuracy), precision, linearity (calibration models), limit of detection (LOD), limit of quantification (LOQ), carryover, compound interference, matrix interference, ion suppression/enhancement, dilution integrity, extracted sample stability, and robustness/reproducibility (recommended by ANSI/ASB) were to be evaluated. Tramadol, o-desmethyltramadol, oxymorphone, norfentanyl, norbuprenorphine, tramadol-13C-D3, and oxymorphone-D3 were added to the original 2014 UPLC-MS/MS acquisition and processing methods for opioids. Test batches were run, and the quantifier/qualifier ion transitions, collision energies, and injection volumes were adjusted for certain analytes to improve the abundance levels of all twenty-five analytes. The next phase of the project is for other criminalists in the toxicology unit at the lab to extract and analyze test batches using the validated method and compare results. Once that is complete, the other validation parameters that can be checked are accuracy and precision, linearity, LOD and LOQ values, sample stability, and reproducibility.

Biography:
Drew Vandalia a forensic laboratory technician at the Sacramento County DA's Laboratory of Forensic Services. Drew completed her master's degree in forensic science at UC Davis in September 2024. She did her thesis in the toxicology unit at the laboratory, which is what she is presenting today!

General Session Speakers

A Tale of Two Dismemberments

Presented by: Criminalist Cindy Fung Anzalone, San Mateo County Sheriff's Office

Abstract:
Two homicide investigations, separated by 15 years, will be presented highlighting the enduring importance of forensic techniques. Both cases involved complex crime scenes where meticulous documentation and crime scene safety were crucial. Atypical decomposition, toolmarks on bone, and human remains recovery necessitated interagency cooperation. Despite the time gap, both investigations demonstrate the challenges of complex homicide cases, emphasizing the critical need for systematic procedures, interdisciplinary collaboration, and adaptability in the face of evolving crime scene investigations.

Biography:
Cindy Anzalone is a Senior Criminalist with the San Mateo County Sheriff's Office Forensic Laboratory. In her almost 25 years with the Forensic Lab, she has worked in the Controlled Substances Unit, Toxicology Unit, and is currently assigned to the Forensic Biology/DNA Unit as well as the Crime Scene Investigation Team. Cindy previously served as the CAC Northern Regional Director and currently serves as the CAC North Crime Scene Study Group Chairperson. She enjoys working on Cold Cases and seeing a case from crime scene to evidence examination to the courtroom.

General Session Speakers

Identification of Resizing Die Marks from a Carbide Die

Presented by: Criminalist Samantha Houle, Alameda County Sheriff's Office

Abstract:
This presentation shows the research conducted to identify the toolmarks left on ammunition during the reloading process. These marks, known as resizing die marks, are observed on the dies used for resizing the sides of the cartridge case wall, ensuring a proper fit in the firing chamber. The objective of this study was to observe whether these resizing die marks can be linked to the specific die used to reload multiple .32 caliber cartridges, which were fired through a Ruger SP101 chambered for .327 Federal Magnum. The comparisons used pattern matching as the identification criteria. Although some slight variations were observed in the toolmarks, the study successfully established a connection between the cartridge cases and the resizing die used in the reloading process.

Biography:
Samantha Houle began her forensic career as a Firearms and Tool Mark Examiner at the Alameda County Sheriff's Office Crime Laboratory. Prior to this, she earned her degree in Molecular Biology from San Jose State University and completed a 4-year internship with Contra Costa County SO and was a Latent Print Processing Technician for 1 year at the San Mateo County SO. She has now been a part of the Alameda County team for 4 years, where she serves as a member of both the Firearms Unit and the Crime Scene Response team. Her training includes graduating from the ATF's National Firearms Examiner Academy (2023), recipient of the Ed Rhodes Memorial Award (2022), and recipient of the Micki Rainey Scholarship (2013). Lastly, she is a proud member of both CAC and AFTE.

General Session Speakers

What happens after law enforcement and forensic teams leave?

Presented by: Owner and Founder Aaron Burt & Dawn Tempest, Forensiclean LLC

Abstract:
The proposed presentation will offer an engaging and candid look at the often-overlooked realities of forensic cleaning after a crime scene investigation. With a blend of humor and sensitivity, we will explore the chaos left behind by criminal activities, including forensic debris, messy scenes, and the unpredictable situations that arise in this line of work. We'll cover experiences such as cleaning law enforcement vehicles after traumatic events, navigating crime scenes in dark alleys, and the challenges of dealing with officer-involved trauma. Anecdotal stories will highlight the messiness of the job, from dropped gloves and debris in yards to the emotional toll of cleaning environments tied to law enforcement and trauma. The presentation will provide a raw, honest look at the complexities and unpredictability of forensic cleaning, all while keeping the audience engaged with humor and relatable scenarios.

Biography:
Founded in 2013 by a brother-sister team, Forensiclean LLC began with no roadmap, no industry experience, and nothing but personal vehicles, News & Review ads, and a relentless work ethic. In the early days, we waited for the phone to ring—often relying on tragedy just to get our next call. We took whatever jobs we could find, undercharged, over-delivered, and built our knowledge from the ground up. We cleaned crime scenes, hoarded homes, encampments, human waste, hypodermic needle collection and disposal—whatever it took to grow. Every job made us better.

Today, Forensiclean is a recognized leader in forensic cleaning, trauma scene remediation, and biohazard decontamination. With over 60 employees, 35 service vehicles, 3 tractors, haulers and full statewide capability, we've built a company rooted in resilience, integrity, and purpose. Our work supports public safety, environmental health, and the dignity of those affected by crisis.

We are proud partners of the Sacramento Sheriff's Department, the Sacramento District Attorney's Office, and the DA's Victim Advocacy Group, providing trauma-informed cleaning services in the aftermath of violent crimes and critical incidents.

Our reach spans California—from encampment cleanups for the City of Sacramento to hazardous waste response with the Sacramento Police Department, along Union Pacific rail lines and federal land remediation for the Department of the Interior's Bureau of Reclamation. Our team is trained in OSHA and EPA compliance and works closely with law enforcement, social workers, and emergency responders in high-risk, high-sensitivity environments.

Dawn and Aaron built Forensiclean, one cleanup at a time. Forensiclean LLC is honored to be part of Forensics in Folsom, where science, justice, and public service converge.

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