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ISHI INTERNATIONAL SYMPOSIUM ON HUMAN IDENTIFICATION

DENVER, CO | SEPTEMBER 18-21, 2023

February 2023

# The ISHI Report

*News from the World of DNA Forensics*

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The ISHI Report

# Letter from the Editor

Greetings from Promega headquarters in Madison, Wisconsin. We are pleased to bring you the first issue of the ISHI Report of 2023 which is chock full of news and updates from the forensic community. This edition includes contributions from authors representing a range of experience and perspectives, from students and young forensic professionals to laboratory leaders from around the world.

Forensic investigative genetic genealogy continues to garner media attention for its utility in providing leads for crimes and doe cases long considered unsolvable. As the forensic and genealogy communities come together to work these cases, new ground rules are needed. Guest authors David Gurney, CeCe Moore, Margaret Press, Carol Rolnick, Bonnie Bossert, Andrew Hochreiter lay out their recommendations for ensuring that standards for conduct, technical proficiency and accountability are followed. Their newly formed board, the Investigative Genetic Genealogy Accreditation Board presents their case to require accreditation for genetic genealogists to ensure that this powerful new technology earns the public's trust and can continue to be used to solve cases.

What's in a name? As Jennifer Wiebe explains, there is much confusion both in the media and in the forensic science community about the best way to describe using genealogical evidence for forensic purposes. Forensic genealogy, forensic genetic genealogy, forensic genetic genealogical DNA analysis and searching, genetic genealogy and investigative genealogy are all being used at present. Jennifer illuminates the current state of the terms and provides clarity for what each conveys.

Most people don't enter the field of forensic science to get rich, but instead are motivated by a desire to contribute to the public good. Dealing with the aftermath of crimes, never ending workloads and victim stories can lead to vicarious trauma. Our colleague Jordan Nutting provides an update on how trauma effects forensic professionals.

Young scientists represent the future of forensic science. Nidhi Sheth, a doctoral student and recent ISHI Ambassador alumni unveils her podcast, "Beyond the yellow tape". A collaboration between Nidhi and her friend Julian Beach, the podcast takes listeners behind the scenes to learn more about the field of forensics.

Speaking of students and young forensic scientists, the ISHI Report details a number of opportunities available for new and aspiring forensic scientists to further their careers. The Threesis Competition has launched with submissions due by April 30. Cash prizes will be awarded to the winners. Students wanting to attend ISHI and act as Student Ambassadors are encouraged to apply for a spot. Four students will be awarded free registration to the International Symposium on Human Identification in Denver this fall.

This year's ISHI 34 will include multiple opportunities for young forensic professionals including a meet and greet before the Welcome Reception on Monday, September 18 and a Young Scientists' showcase on Tuesday, September 19 where students can share their slides and network with fellow students and receive career advice from industry leaders.

Plans for the upcoming symposium are well underway. More than a dozen workshops will be held before and after the main event on Sunday, September 17, Monday, September 18 and Thursday, September 21. Topics are broad and include: Preparing to testify as an expert witness, Practical application of FIGG, Onboarding new hires, Implementing new DNA technologies for missing persons program, Reporting likelihood ratios and much more. Visit the official symposium website to see the list of workshops and confirmed speakers. If you would like to present during the general session, submit your abstract by June 1 for consideration.

Hot off the press- we are delighted to announce that Allison Massari will be the keynote speaker for this year's ISHI. In 1998, as Allison was preparing her paintings for an important museum exhibition, her world was shattered by a fiery and explosive car accident where she almost lost her life. Hit nearly head-on by another car going sixty miles per hour, Allison was stunned by a massive impact and trapped inside her car as it was engulfed in flames. She was conscious the entire time as she was burned alive.

With vision, clarity, and compassion, Allison teaches audiences the potent life lessons that she learned on each step of her path after she was severely burned and faced seemingly insurmountable odds. Her riveting keynote boosts confidence and well-being and offers a balm of hope as Allison intimately shares the nuances of how to respond to difficult circumstances and maintain personal command and integrity despite life's disruptions. With genuine encouragement and support, you'll receive a new perspective from which to see the world and walk away with effective methods to handle challenges and move towards dreams and goals with courage, purpose, and the strength of an open heart.

We hope that you enjoy reading this edition of the ISHI Report and hope to see you this fall in Denver at ISHI 34. As always, reach out with suggestions for articles or volunteer to contribute to our publication.

*The Editorial Board*

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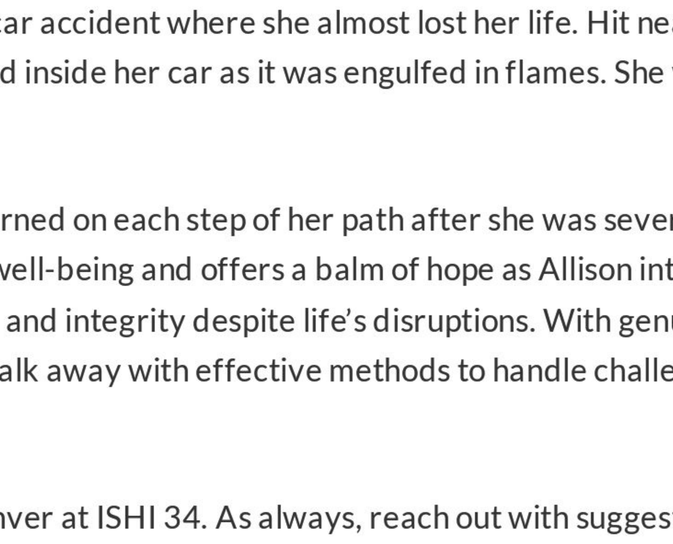

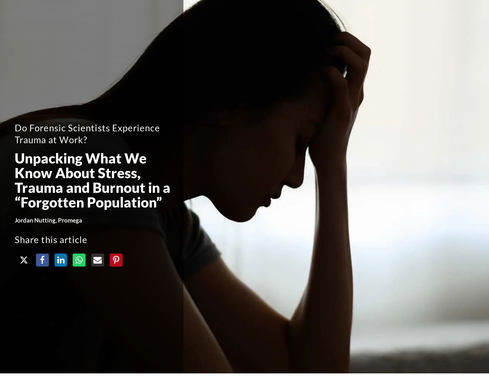

Do Forensic Scientists Experience Trauma at Work?

# Unpacking What We Know About Stress, Trauma and Burnout in a "Forgotten Population"

Jordan Nutting, Promega

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For many years, research and efforts to mitigate workplace impacts on mental health and stress in the criminal justice system have almost exclusively focused on its non-civilian members. This makes good sense. Police officers, for example, carry service weapons, might find themselves making split second life-or-death decisions and work closely with crime victims and their families. In recent years, however, research on workplace trauma and stressors has expanded to include a "forgotten population" of people who might not directly interact with violence but who still encounter its impacts—forensic scientists (1).

Forensic scientists regularly handle the artifacts and intimate details of violent, disturbing crimes, from analyzing bloodstain patterns at the scene of an assault to prepping semen-stained clothing for DNA analysis. Though these are "secondhand" encounters with traumatic events, recent research indicates that forensic professionals' workplace duties can lead to firsthand experience with vicarious trauma (VT). Other stressors that forensic scientists face, such as testifying in court, handling an ever-increasing backlog of casework samples and needing to produce "error-free" work are less graphic, but they are intense and can cause burnout. Altogether, the impacts of stress can have both subtle and outsized impacts on forensic scientists' mental health and the quality of their work.

"I really didn't like working calls with kids because I have three kids. I'd be devastated after those cases," says Heidi Sievers, Ph.D., a former forensic investigator with the Pasco Sheriff's Office in Florida who now is a bloodstain pattern analyst, teaches and runs a forensic consulting business. "I could see it even in something as little as my handwriting being terrible on those case reports. I just wanted to be done with it as soon as possible. That's an avoidance mechanism that I didn't know I was instilling at the time."

During her time as a forensic investigator, Sievers also pursued doctoral research in criminal justice and law enforcement administration to study the impacts of stress in forensics investigators handling homicide and attempted homicide cases (2). Her research joins mounting evidence that points to the potentially harmful mental, emotional, physical and social impacts of forensic scientists' line of work. For example, a 2016 survey-based study of over 899 forensic scientists funded by the National Institute of Justice (NIJ) found that approximately 10–20% of the respondents exhibited symptoms that overlap with symptoms of secondary traumatic stress, including nightmares, detachment and difficulty concentrating (3). Though those numbers may not fully capture the frequency or intensity of traumatic experiences or burnout in the field, they "highlight the impact of work with traumatic materials on forensic professionals," says Andrew Levin, an associate professor of psychiatry at Columbia University. Levin co-authored a 2021 NIJ-funded study on traumatic stress experienced by forensics scientists (4).

As perhaps one of clearest signals that stress, trauma and burnout is a recognized issue for forensic scientists, a 2019 NIJ report listed "developing resources to address workforce stress and vicarious trauma associated with the forensic work environment" as a key need (5).

In light of this growing acknowledgement of the problem of stress and the growing body of research, it is important for members of the forensic science community to not only know what VT and burnout look like, but also to know what potential best practices can build resilience and protect wellbeing in their workplaces.

## Defining Trauma and Burnout

Vicarious trauma was first described in the context of mental health therapists. It was found that therapists would experience negative, ongoing psychological changes due to working closely with clients who shared details of traumatic life experiences (1). By being exposed to these first-hand experiences with trauma, therapists' own worldviews and views of themselves or others were impacted, creating a second-hand or vicarious trauma experience. The changes that come with VT—such as a new belief that the world is unjust—are "pervasive, cumulative and permanent."

Another term that is related to, but distinct from, VT is secondary traumatic stress (STS). As noted in one literature review, VT typically refers to negative schema changes that arise from long-term, empathetic exposures to symptoms of trauma. In contrast, STS arises from sudden or extreme exposures to survivor accounts or details of a traumatic event, such as a mass disaster or a mass shooting (1). Unlike VT, which causes changes in a person's worldview, STS gives rise to symptoms that are almost identical to PTSD symptoms, such as hypervigilance or avoidance. Indeed, the American Psychiatry Association lists "first-hand or extreme exposure to aversive details of the traumatic event" through workplace duties in the diagnostic criteria for PTSD.

Once VT and STS were identified as risks for psychiatric professions, trauma research was extended to other "helper" professions, particularly for first responders to mass casualty events, police officers, fire fighters and emergency room workers. However, it is only within the past decade that trauma in forensic professionals has been explored (4). Though a lab analyst or crime scene investigator may not directly interact with victims of a crime, they often face repeated exposure to graphic details of traumatic events, such as physical evidence or case notes. Because of the more removed nature of forensic work, current studies suggest that VT, rather than STS, is the form of trauma most experienced by forensic professionals. However, STS has been identified in crime scene investigators, who are more likely to encounter victims and witnesses (1).

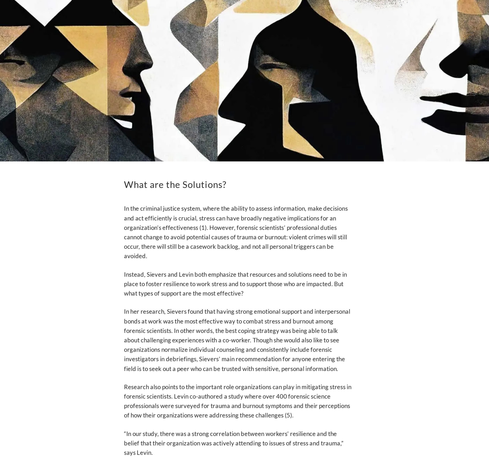
Burnout, which is another important marker of stress, is distinct from trauma. Instead of arising from an experience with a traumatic event, burnout has more to do with the day-to-day pressures of a person's workplace (1). In the case of forensic scientists, these pressures can be intense. Forensic scientists need to work quickly and accurately, creating a pressure for their work to be "error free" than many then must defend in court. Huge casework backlogs can cause feelings of inadequacy or ineffectiveness. Workplace cultures may keep people from processing challenges in a positive way.

"I encountered this toxic notion that there's no crying in law enforcement. There's this sense that if you do, can you really handle the job?" says Sievers.

Another challenge that forensic professionals may face is that they don't receive the same coping support as sworn officials like police offers. Sievers notes that in her precinct, forensic team members were rarely invited to case debriefings, preventing a sense of closure.

In general, burnout leads to job dissatisfaction, detachment and cynicism. In Sievers' case, she found herself avoiding, becoming less efficient and focused:

"I had been a go-getter, but the job weighed on me. I slowed down, I would call in more."



## What are the Solutions?

In the criminal justice system, where the ability to assess information, make decisions and act efficiently is crucial, stress can have broadly negative implications for an organization's effectiveness (1). However, forensic scientists' professional duties cannot change to avoid potential causes of trauma or burnout: violent crimes will still occur, there will still be a casework backlog, and not all personal triggers can be avoided.

Instead, Sievers and Levin both emphasize that resources and solutions need to be in place to foster resilience to work stress and to support those who are impacted. But what types of support are the most effective?

In her research, Sievers found that having strong emotional support and interpersonal bonds at work was the most effective way to combat stress and burnout among forensic scientists. In other words, the best coping strategy was being able to talk about challenging experiences with a co-worker. Though she would also like to see organizations normalize individual counseling and consistently include forensic investigators in debriefings, Sievers' main recommendation for anyone entering the field is to seek out a peer who can be trusted with sensitive, personal information.

Research also points to the important role organizations can play in mitigating stress in forensic scientists. Levin co-authored a study where over 400 forensic science professionals were surveyed for trauma and burnout symptoms and their perceptions of how their organizations were addressing these challenges (5).

"In our study, there was a strong correlation between workers' resilience and the belief that their organization was actively attending to issues of stress and trauma," says Levin.

These results not only emphasize that organizations should take steps to combat stress, but that they should actively promote and communicate relevant resources to employees.

One resource that can help organizations identify ways they can support their forensic employees is the Office for Victims of Crime's Vicarious Trauma Toolkit. Though this toolkit was originally designed to support first responders and other professions at risk of VT, Levin notes that it is a useful tool for forensic professionals as well. The toolkit helps organizations assess specific areas where they can build organizational health and provides guidance for implementing trauma-informed practices. The NIJ Forensic Technology Center of Excellence has also gathered a collection of webinars, podcasts and resources on combatting stress and trauma that is geared specifically for forensic scientists.

Though the specific responsibilities of individuals and organizations in combating stress are distinct, the overall goal is to build greater awareness of the problem and to make sure that people know what resources are available when they inevitably encounter stressful experiences.

"People in forensics need to be aware that trauma and burnout is going to happen and have a plan in place," says Sievers. "The biggest mistake I made going into the field was thinking that nothing was going to bother me."

*Want to learn more about trauma and resilience? Allison Massari, who survived being burned alive in a 1998 car fire, will share her personal story of strength and healing in the keynote address at ISHI 34. Start planning your trip to ISHI here.*

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# Investigative Genetic Genealogy is in Urgent Need of Standards and a Certification Exam, and the Investigative Genetic Genealogy Accreditation Board is Working to Provide Them

By David Gurney, CeCe Moore, Margaret Press, Carol Rolnick, Bonnie Bossert, Andrew Hochreiter

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*This article is adapted from our manuscript,* The Need for Standards and Certification for Investigative Genetic Genealogy, and a Notice of Action, *published in Forensic Science International volume 341 in December 2022*

Investigative genetic genealogy (IGG) has been heralded as the greatest investigative breakthrough since the adoption of DNA for forensic purposes. Hundreds of previously intractable cases have been resolved through leads provided by IGG, and the first criminal cases where IGG was used to identify a suspect have made their way through the courts. As the successes of IGG have mounted, so has the demand for IGG practitioners. At this critical juncture for IGG—where the success of the technique has been proven and the demand for practitioners is increasing—it is imperative that the relevant stakeholders develop a set of standards and a certification for IGG practitioners. To address that need, the authors of this article have created a 501(c)(3) organization, the Investigative Genetic Genealogy Accreditation Board[1], and we have brought together a diverse group of stakeholders to serve as advisory board members to ensure that a wide range of expertise and opinion is brought to bear. In this article, we outline the reasons that IGG is in need of standards and certification, and we provide an overview of the standards and certification requirements we envision for the field.

There are four reasons that IGG needs standards and a certification exam: data privacy, public trust, proficiency, and accountability.

## *Data Privacy*

IGG, like all forms of genealogy, inherently involves accessing records and other information about a variety of individuals, some living and some dead. Family trees shared online and in print include information about people who did not consent to have their identities shared. Yet, all of the information included in these trees comes from public records, and other publicly available information, including documents and photographs voluntarily uploaded to public databases, so it would be difficult for anyone to argue that any rights have been violated by including that information in a public family tree. While all information collected about individuals in an IGG case similarly comes from publicly-available information (or, in the case of direct genetic relatedness, from individuals who have consented to share that information for IGG purposes), in IGG, the purpose of the investigation is to pinpoint a possible violent criminal, unidentified human being, or "Living Doe." Thus, with IGG, the stakes are higher. It would be irresponsible and unethical for an IGG practitioner to fail to take steps to safeguard the information of all of the living individuals who are discovered in the family tree of an IGG case. Yet, to date, there are no standards that require IGG practitioners to do so.

## *Public Trust*

The success of IGG to date, and its success in the future, depends largely on public trust. Individuals choose to make their DNA profiles accessible to IGG searching in FamilyTreeDNA and GEDmatch (the only public genetic genealogy databases that currently allow for IGG searching) and individuals choose to share information publicly in obituaries and on social media. Much of that trust relies on the public's willingness to believe that their information is being used in accordance with the terms of service they agree to. For example, FamilyTreeDNA and GEDmatch assure users that if they allow their DNA profiles to be used for IGG searching, only certain, very serious cases involving violent crimes will be allowed to make use of the information. If either of those sites decided to simply ignore those terms and allow individuals' DNA profiles to be used in an investigation involving, say, a petty shoplifting case from decades ago—or, more topically, an abortion case in Mississippi—users would almost certainly stop allowing their DNA profiles to be used for IGG searching. Similarly, if the public believes that IGG is being used to prosecute non-serious crimes, they may become more wary of sharing information publicly on social media or in obituaries.

Even more concerning is that if the public believes the IGG practitioners are routinely violating terms of service of websites, lawmakers may step in and ban the practice altogether, a step that some states have already considered.

IGG practitioners must adhere to terms of service if they want IGG to survive.

## *Proficiency*

As the successes of IGG have mounted, so has the demand for IGG practitioners to help resolve otherwise intractable cases. Many well-meaning individuals have reached out directly and volunteered to help police departments with cases. But there is currently no good way for police departments—or other organizations that might make use of IGG—to know whether any individual is a qualified and ethical IGG practitioner. To be sure, there are success stories here. But we also know of several cases where well-meaning but inexperienced individuals have, at best, wasted a police department's time and money, and, at worst, botched such a case beyond recovery. To protect the reputation of IGG, and to ensure that it remains a tool for helping to achieve justice, there must be a way for organizations that seek to use IGG to know that the practitioners they hire are both proficient and ethical.

## *Accountability*

To survive as a field, there must be accountability for IGG practitioners who fail to address the three concerns we have noted so far. Without accountability, an IGG practitioner who ignored data privacy, violated terms of service, and botched cases, would be able to simply turn around and offer their services to another organization, who would likely have no way of knowing about previous issues with the practitioner. Like other high-stakes fields, IGG needs to have an organization that certified practitioners and then holds them accountable if they fall below standards.

To address these four concerns, IGGAB has begun to develop a set of standards and a certification process for IGG practitioners. We believe that IGG should be a self-regulating field, and our goal is to develop a robust standards and certification regime that will earn the trust of the public and lawmakers, such that states will not feel the need to develop their own local regimes but will instead defer any certification requirements to IGGAB.

We envision standards that cover proficiency and ethics. All IGG practitioners who wish to be certified by IGGAB must be able to demonstrate that they understand—at a high level—the methodology, tools, and standard of proof involved in IGG. Thus, the proficiency standards will, address all components of the IGG process, from knowing what steps to take at each stage of a case, to understanding when a lead is ready to be relayed and subjected to verification.

The ethical standards will address the unique ethical issues that IGG practitioners face in their work. From adherence to terms of service and maintaining confidentiality, to limitations on what kinds of cases qualify for IGG, these standards will ensure that any IGG practitioner certified by IGGAB can be trusted to work to the highest ethical standards.

In addition to agreeing to work to standards, to become a Accredited Investigative Genetic Genealogist (AIGG), applicants will be required to pass a rigorous exam that tests their IGG abilities. Because different IGG practitioners use different tools, we are crafting the exam in a way that will cover general IGG skills that all practitioners must demonstrate and a host of specific skill sets, only a subset of which any applicant must demonstrate mastery.

AIGGs will be entered into a database that will be made available to organizations that make use of IGG practitioners. By relying on the database, organizations will know that the practitioners they hire are proficient and ethical.

Finally, to ensure that standards are maintained in the field, we are developing a series of disciplinary actions that will apply to AIGGs who fall below standards. Like other professions, we envision a graded series of disciplinary actions depending on the severity and persistence of the violation.

At its best, IGG is a methodology that can help to bring about justice—by providing leads that may help identify human remains, take violent offenders off the streets, give relief to victims of violent crime, and exonerate the wrongfully convicted. Yet, as the successes of IGG mount, so do the risks that come with an unregulated field. With the robust set of stakeholders that make up IGGAB and its Advisory Board, we are confident that the standards and certification regime we develop will ensure that IGG practitioners are proficient and ethical, so that IGG can continue to provide justice now and in the future.

[1] The original name was the Board of Certification for Investigative Genetic Genealogy. The name was changed to avoid confusion with another organization.




Written by Nidhi Sheth, Rutgers University

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Beyond the Yellow Tape is a YouTube-based Podcast hosted by Julian and Nidhi, two friends who are passionate about exploring the world of forensic science. The podcast provides a unique, engaging look into the world of forensics and crime investigation. Through the interviews with law enforcement professionals and experts in the field, the podcast deep dives into the science and technology of criminal forensics to bring a better understanding of this field to the everyday person. This podcast aims to explain the complex terminology of forensic science in laymen's terms.

Julian and Nidhi do an excellent job of capturing the humanity of the people involved in forensics, from understanding the toll of the work to celebrating the successes in the lab and field. The podcast provides insight into the intricate details of crime scene investigation and seeks to bring forensics to the mainstream.

Julian and Nidhi's commitment to making forensics understandable to the average person is evident in their work. The podcast serves as an excellent resource for anyone interested in learning more about this fascinating field. In various episodes of Beyond the Yellow Tape YouTube podcast, they discuss the language used by legal professionals, the history of the development of forensics technologies in the United States, and the unique culture within law enforcement and its relationship to forensics.

They interviewed a few professionals, such as Dr. Mechthild Prinz, the director of the forensic graduate program and forensic molecular biology professor at the John Jay College of Criminal Justice, New York. They discussed the possibility of research in the field of forensics and in-depth in the field of forensics. They also interviewed Antoinette Campbell, founder of "Women in Forensics," "Association of Women in Forensics Science Inc.", and "Club Philly Forensics"; Dr. Lena Karkalas; Kimberlee Moran, Matt Steiner, Lex, who is a CSI working in Florida and runs her forensic merchandise shop called Before The Crypt., Dr. Jackson who is a board certified Forensic Pathologist and Medical Examiner for King County in Seattle, WA; and a few others. The experts' interviews about their field of work helps to understand complex concepts in simple terms.

The podcast also provides historical and up-to-date details that help inform the conversation around forensics. In addition to the interviews and case studies, they also provide advice and resources that would be of interest to anyone wanting to learn about forensics.

Beyond The Yellow Tape YouTube podcast offers a unique combination of real-world experience, expertise, and education that makes it a valuable resource for anyone wishing to learn more about the world of forensics.

Overall, the Beyond The Yellow Tape YouTube podcast by Nidhi and Julian is an invaluable resource for anyone looking to increase their understanding of forensics and criminal investigation. Through interviews, case studies, and other resources, Julian does an excellent job of providing an accessible explanation of this complex field. With the Beyond the Yellow Tape YouTube podcast, Nidhi and Julian are trying to bring forensics to the mainstream, making a sometimes-frightening world of science and technology understandable and relatable.

**First name**

**Last name**

**Email address**

example@yourdomain.com

**Do you listen to podcasts?**

- ○ Yes
- ○ No

**What types of podcasts do you listen to?**

Text input

**Would you be interested in participating in a podcast that helps people to better understand forensic science?**

- ○ Yes
- ○ No

**Do you think people are aware of different fields in forensics?**

- ○ Yes
- ○ No

**Would you be interested in learning more about the Beyond the Yellow Tape podcast?**

- ○ Yes
- ○ No

**Would you like to be a guest on the podcast?**

- ○ Yes
- ○ No

**Would you be interested in sharing what a typical day looks like for you?**

- ○ Yes
- ○ No

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# STRmix™ Celebrates Tenth Anniversary

Dr. Jo-Anne Bright, New Zealand Institute of Environmental Science and Research (ESR)




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In late August last year STRmix™ celebrated 10 years since it was first introduced to the world as sophisticated forensic software, capable of resolving mixed DNA profiles which previously were regarded as too complex to interpret.

Since that time, STRmix™ has become the accepted standard for DNA mixture interpretation, used by over 100 forensic labs worldwide to analyze DNA evidence in more than 380,000 cases. That includes more than 210,000 cases in North America, 30,000 in Europe and the United Kingdom, and 135,000 in Australasia.

The widespread adoption of STRmix™ and other probabilistic genotyping (PG) software is due to their ability to better distinguish true from non-donors in a complex forensic DNA profile. PG software use far more of the available DNA profile to determine whether a person of interest is a possible contributor to evidence in a criminal investigation. Our previous manual approach to DNA interpretation was binary and wasted much of the evidentiary value in a profile. Low-level, degraded, or mixed DNA samples that would have previously been dismissed as uninterpretable or inconclusive may now yield DNA results which are not only interpretable but stand up well in judicial proceedings.

Relying on proven methodologies routinely used in computational biology, physics, engineering, and weather prediction, STRmix™ works by rapidly assessing how closely thousands of proposed DNA profiles resemble or can explain an observed DNA mixture. The software calculates the probability of observed DNA evidence by assuming the DNA in question originated from either a person of interest or an unknown donor. These two probabilities are then presented as a likelihood ratio (LR), inferring the value of the findings and level of support for one proposition over the other.

The success of STRmix™ has led the team behind its development to launch two related products which, when combined with STRmix™, complete the full workflow from analysis to interpretation and database matching. These products include FaSTR™ DNA, expert forensic software which rapidly analyzes raw DNA data generated by genetic analyzers and standard profiling kits, and assigns a number of contributors (NoC) estimate; and DBLR™, an application which allows forensic labs to undertake superfast database searches, visualize the value of DNA mixture evidence, determine whether there is a common donor between samples and calculate any kinship relationship conceivable.

Incremental but significant changes have been made to the software since the introduction of the first version of STRmix in 2012. Like other software, STRmix™ has been regularly upgraded in order to enhance its functionality, improve its user experience, and add new features. New features are often in response to suggestions made by the forensic laboratories using the software, allowing them to better address on-the-job needs. This is also true of FaSTR™ DNA and DBLR™.

The latest release of FaSTR™ DNA (version 1.1) features a range of improvements, further strengthening it as a fast, user-friendly analysis software. Changes include:

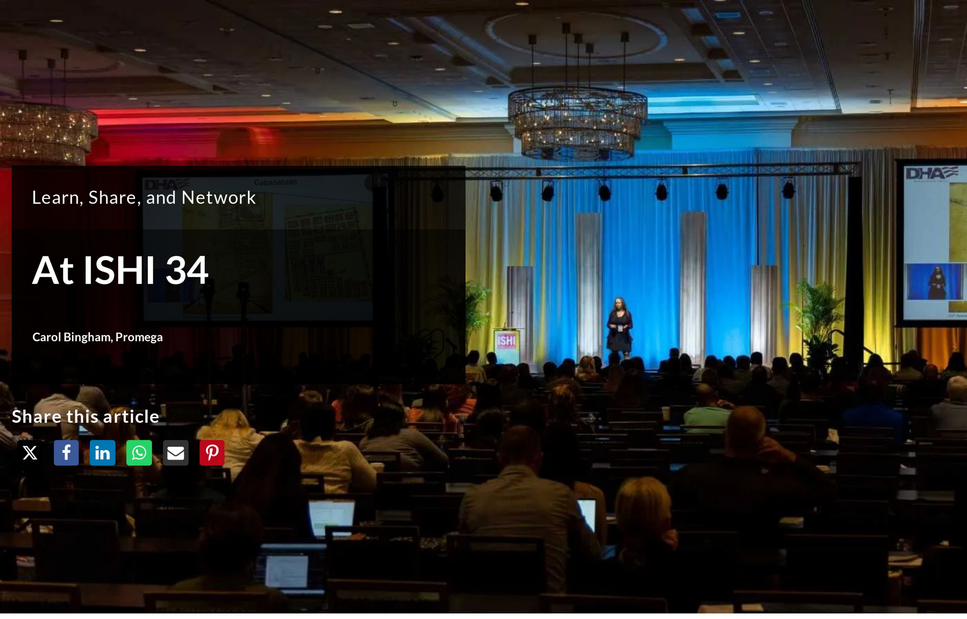
- Inclusion of a sample to sample and sample to database comparison module to facilitate quality checks across your analysis project;
- Changes to the ILS review to improve the workflow for when alignment fails;
- Improvements to the ANN peak classification;
- Inclusion of a Number of Contributors (NoC) decision tree for the PowerPlex® Fusion 6C kit;
- Display improvements including a record of maximum allele count across the profile; and a record of distances in base pairs, peak height ratios, and averages (where applicable) across multiple peak selections.

Released late last year, version 2.10 of STRmix™ contains a number of new features, including the introduction of a Visualize Weights module to help analysts investigate DNA interpretation results and additional improvements to dropout modelling. These changes will allow a labs to set a low, or even no, analytical threshold. STRmix™ v2.10's further integration with FaSTR™ DNA enables forensic labs using both software packages to achieve even greater speed and efficiency in the analysis and interpretation of raw data generated by genetic analyzers and standard profiling kits.

While the next major version release of DBLR™ is nearing completion, significant enhancements to the current version have extended its capability by allowing improved modelling through the introduction of linkage, mutation, and consideration of relatedness (FST) to the Kinship module. These enhancements enable users to apply advanced models in a simple and streamlined solution. It is also able to assign LRs within the Kinship module for single source profiles containing both STR and SNP loci generated using Next Generation Sequencing (NGS) technology. Other improvements to the latest release of DBLR™ include the introduction of a Direct Matching module for database-to-database comparisons, and the inclusion of cluster graphs in the mixture-to-mixture match reporting, enabling better visualization of the results.

Looking to the future, the STRmix™ team is planning to formulate suitable models for interpreting data as the forensic community embraces new analytical techniques such as massively parallel sequencing (or NGS). We are also working on probabilistic genotyping software for the interpretation of Y-STR (male specific) profiles, which are routinely developed during sexual assault investigations. We have a lot of really exciting projects in the works, and we look forward to our continued collaboration with our users and the wider forensic community.

Dr. Jo-Anne Bright is Senior Science Leader at the New Zealand Institute of Environmental Science and Research (ESR) and one of the developers of STRmix™. For more information, visit https://www.strmix.com/.



Learn, Share, and Network

# At ISHI 34

**Carol Bingham, Promega**

**Share this article**

Are you a seasoned forensic professional or newly minted forensic scientist? This year's International Symposium on Human Identification has learning opportunities for attendees just entering the field, those with decades of experience and everyone in between.

The general session will kick off with keynote speaker Allison Massari. Her talk *The Mindset for Success – Activating True Resilience* will describe Allison's recovery from a devasting accident and the lessons she learned which are relevant to anyone (everyone) who wants to live a more fulfilling life. Additional presentations during the 2 ½ day general session will cover a gamut of current topics in forensic science including updates on forensic policy, scientific innovations, forensic investigative genetic genealogy, DNA databases, interesting cases and much more. Oral talks are being solicited through June 1. Abstracts for both oral and poster presentations can be submitted through the symposium website.

A wide range of workshops are on offer this year. Bring practical knowledge back to your lab by learning more about reporting on likelihood ratios, solving cases using alternative DNA matching technologies, solving criminal cases with forensic investigative genealogy and implementing rapid DNA.

Are your called to testify on your results in court? The workshop, *Courtroom Communications- Testifying about forensic science with communication best practices* could be just what you need. In this workshop you'll learn how to effectively communicate results to lay people in a manner that's easy to understand.

"Be vigilant to seek and find the good in every breathing moment. Search with ferocity. Harness an unbending belief. Your struggle and your dedication will sculpt your spirit and bring you to the ultimate destination—your Self-Mastery."

Allison Massari



Are you in a supervisory position? You'll want to check out the workshops focused on best practices for bringing new hires into the lab and a second workshop on effectively dealing with challenging people and situations. In addition, a full day workshop will be held on Sunday with suggestions for improving implementation of new techniques, while minimizing errors, and developing quality management systems including standards for credentialing DNA analysts.

Visit the official symposium website to see more details on the dozen workshops scheduled in conjunction with this year's ISHI.

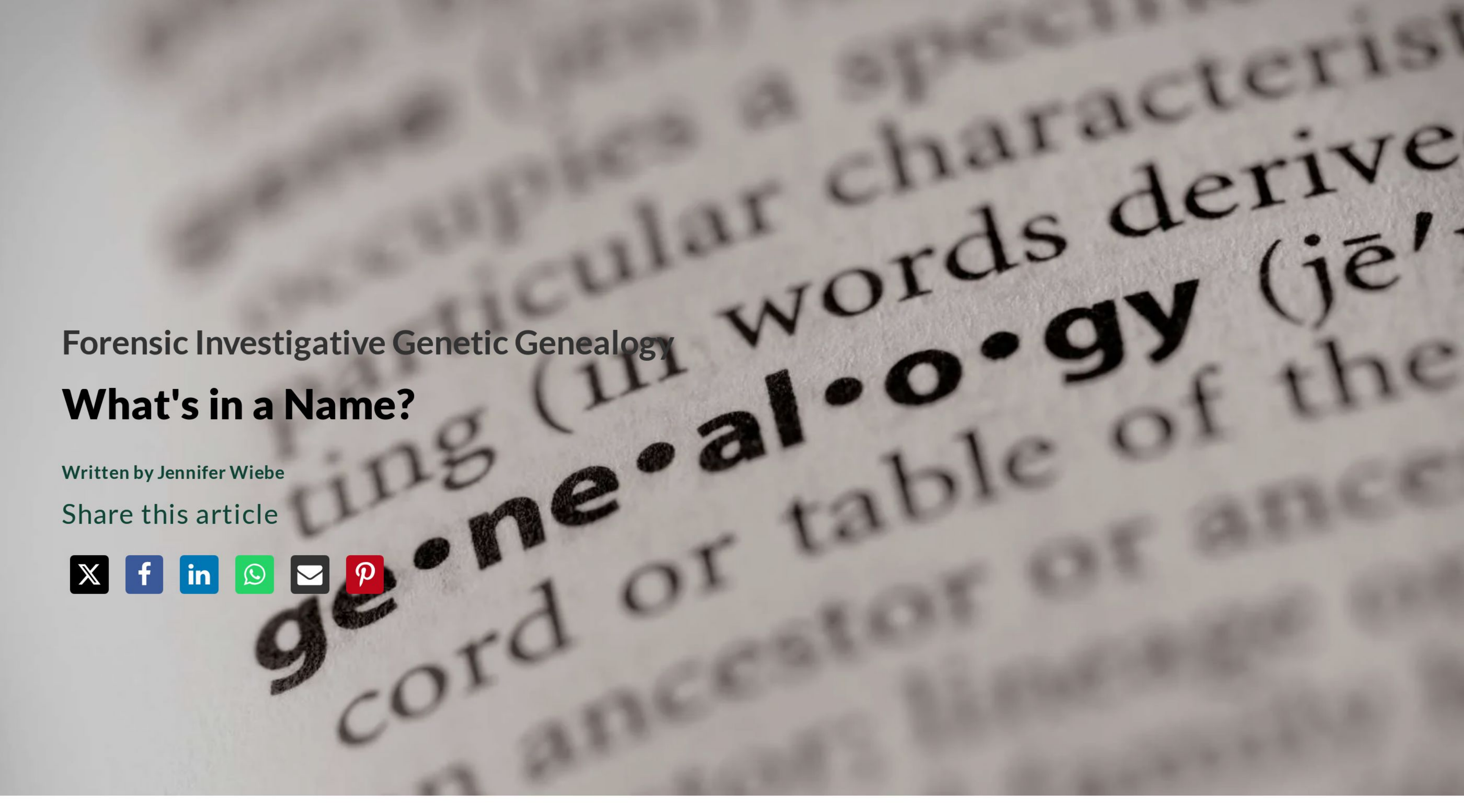
Networking with people who share your interests is one of the biggest reasons to attend ISHI. Opportunities for social engagement abound, starting with the welcome reception on Monday, September 18. Mingle with your fellow attendees, enjoy hors d'oueves, and a beverage to kick off the symposium at the beautiful conference hotel.

Discuss topics of interest at the table topic lunches on Tuesday and Wednesday and cap off the fun with a special event at the Denver Museum of Nature and Science on Wednesday evening. The night at the museum will include access to the exhibits, a buffet dinner with drinks and lively dance floor. No need to purchase a ticket- the social events are all included in your ISHI registration.

New forensic scientists and students who are pursuing advanced degrees related to forensic science will enjoy the special events designed to engage their interests. Attending ISHI is a great resume builder. Showcase your research by presenting a scientific poster during the poster/exhibitor sessions or participate in the "bring your slides" portion of the free Young Scientists' Showcase on Tuesday. The Young Scientists' Showcase will allow you to network with others just beginning their careers, educators supporting forensic science programs and seasoned professionals providing helpful advice for landing your first job. Learn more about ISHI's opportunities for students (including reduced registration fees) on our website.

If the scientific content and networking at ISHI aren't enough to entice you to attend, consider the amenities that Denver has to offer. ISHI will be held at the Denver Convention Center and Hyatt Regency hotel. The thriving city center offers stimulating night life, first rate shopping, excellent restaurants and more. Beer fans might decide to extend their stay to participate in the Great American Beer Festival, conveniently scheduled to begin the same day that the symposium concludes. For those with a taste for outdoor activities, the mountains are just a short drive away.

We hope you'll check out the 34th International Symposium on Human Identification and see for yourself why fellow forensic scientists consider it the don't miss conference of the year.



## Forensic Investigative Genetic Genealogy

# What's in a Name?

**Written by Jennifer Wiebe**

Share this article

Genealogical DNA has been in the news a lot lately, and it isn't clear what is implied when this vague term is used. Both Familial DNA searching (FDS) and Forensic Investigative Genetic Genealogy (FIGG) involve the use of genetic analysis and genealogy to determine relatedness, and while they are similar in that regard, they are actually very different. While FDS uses DNA in the form of Short Tandem Repeats (STR) and uses government databases to find partial first degree genetic matches (parent, child, sibling), FIGG analyzes Single Nucleotide Polymorphisms (SNP) in a DNA profile and compares it to opted-in members' SNP profiles in public databases Gedmatch and FTDNA in order to identify genetic matches. Genealogical trees are built for those matches in an effort to identify the contributor of the unknown DNA sample. When referencing the Golden State Killer it is obvious the term "genealogical DNA" is used synonymously with FIGG, the technique used to identify Joseph DeAngelo. His highly publicized arrest in April 2018 is often referenced as the birth of the field of FIGG.

It's important for the media to understand how this new field works so they're able to accurately inform the public they serve. Their misuse of the term is not surprising, however, given current debate between practitioners within the field about nomenclature. The Scientific Working group for DNA Analysis Methods (SWGDAM) published an overview of Investigative Genetic Genealogy in 2020 and wrote that in addition to Investigative Genetic Genealogy, other terms being used include: forensic genealogy, forensic genetic genealogy, forensic genetic genealogical DNA analysis and searching, genetic genealogy and investigative genealogy.[1]

Forensic genealogy as a field existed long before the announcement of the arrest of the Golden State Killer in April 2018. Although forensic genealogists sometimes work with DNA, they have been doing genealogy in a legal context long before the advent of direct-to-consumer (DTC) DNA tests, since at least the 1950s. Their work includes researching genealogy for probate and estate, as well as military repatriation.[2] FIGG is also situated within a legal context, and many would argue that it is a subset of forensic genealogy.[3]

"Investigative Genealogy" was a term coined by Paul Holes, the detective for the Golden State Killer case, in April 2019.[4] This term became Investigative Genetic Genealogy (IGG) and was adopted by prominent members of the field. It became the default term for work done to provide an investigative lead to support the identification of the donor of unknown DNA from a suspect in a criminal case or for unidentified human remains (UHR). Some practitioners, however, consider the forensic context of the analysis of genetic information warrants inclusion of the word "forensic" and began to call it Forensic Genetic Genealogy. A review article by Kling et al. in 2021 states that the two terms are synonymous.[5]

Some liked the use of the word "investigative," and since it helped to further distinguish it from Forensic Genealogy, began to call it Forensic Investigative Genetic Genealogy (FIGG). In the February 2022 ISHI newsletter, Dr. Claire Glynn, Associate Professor & Founding Director of the Graduate Certificate in Forensic Genetic Genealogy at the University of New Haven, states that combining the terms FGG and IGG "highlights and reinforces the fact that this technique utilizes both forensic and investigative processes and it is hoped this satisfies all interested stakeholders."[6]

However, an October 2022 article by Gurney et al, states that the term IGG is used "to distinguish IGG from the forensic sciences."[7] The authors make the argument that unlike forensic science, practitioners of IGG are not trained scientists, do not work in laboratories with all their included equipment and chemicals, do not act as expert witnesses and most importantly, their findings are not used as evidence of guilt, but only as a lead for law enforcement to investigate. The compromise proposed by Dr. Glynn does not appear to satisfy all interested stakeholders.



"What's in a name? That which we call a rose by any other name would smell just as sweet."

Photo credit: Jennifer Wiebe

To add to this confusion, the United States Department of Justice (DOJ) in their interim policy calls it "Forensic Genetic Genealogical DNA Analysis and Searching (FGGS)".[8] The DOJ policy uses the term "forensic genealogy" to refer to the use of DNA analysis with traditional genealogy research, either with STRs or SNPs, and FGG to refer to the use of SNPs specifically, in addition to the type of databases used. Maryland, the first state to regulate the use of FGGS, also uses this term in its legislation, similarly defining it by its use of SNPs and particular databases.[9] The relevance of the term "forensic" is consistent in both the policy and the legislation. Regardless, the expectations for use of genealogical evidence in the judicial process remains unclear. Will practitioners be required to act as expert witnesses? In 2019, defense lawyers made a motion for discovery in the People of the State of California vs. Roy Charles Waller. The defense argued for their right to know the "familial searches of the private genetic genealogy databases as well as the genetic genealogy company or companies that have been involved and all the reports and communications with them."[10] Ultimately, the judge agreed with the idea that the genetic genealogy work is just an investigative lead, and like many tips that law enforcement receive that do not end up in a courtroom, is not relevant and therefore should not be made available to the defense, potentially establishing precedence.

Regardless of whether genealogical evidence is merely for investigative purposes and cannot be used as proof in court, situating the field under the umbrella of forensic science remains important. As Machado and Silva point out in their February 2022 article, quality assurance and standards in the field need to be addressed. Given that "STRs used in traditional forensic DNA analysis are generated by accredited forensic laboratories that must comply with a host of quality assurance standards and requirements,"[11] shouldn't the work done by forensic genetic genealogy service providers for FIGG also be required to follow these standards? John Butler's 2023 review article offers many examples of guidelines and policy to draw upon.[12] The recent establishment of working groups to address this is promising in that regard.[13]

Further, while the proponents of IGG are working on a board for accreditation of investigative genetic genealogists, their proposal highlights another reason as to why they do not wish to be under the forensic umbrella. The board claims the work is not analogous to any existing fields, including forensic science, in support of movement towards self-regulation. Their argument is that although existing quality assurance standards can easily transfer from accredited labs that do STR testing to labs that do SNP testing, given that the work that genetic genealogists do is very different from the work done in labs, the same standards do not hold.[14] However, many standards and guidelines currently exist that would be compatible with genetic genealogy, including data security, privacy, training, and codes of ethical conduct.[15] Policies that emphasize transparency are also important, given that it is a vital aspect of promoting public trust. Drawing from currently available guidelines, policy and best practices developed from well-established organizations and working groups not only avoids recreating the wheel, it demonstrates FIGG practitioner commitment to high standards of proficiency and quality control, and increases confidence in the reliability of work products.

The name of this field isn't just relevant to English. As Scudder et al. point out in their 2019 article, "the technique has an international and cross-border element."[16] When matches in the databases can come from around the world, it is necessary to develop a vocabulary to talk about this field in all languages. Tillmar et al. published a case study of a 16 year old double murder that was solved in Sweden.[17] An article referencing this, published by the Swedish Chemical Society, refers to the technique as "rättsgenetiska släktforskningsmetoder"[18] which translates to forensic genetic genealogy methods. A Spanish article refers to it as "genealogía forense" (forensic genealogy) or "genealogía genética investigativa" (investigative genetic genealogy).[19] As jurisdictions around the world begin to regulate this technique, following the regulations in cross-jurisdictional cases requires knowing that they are referring to the same methods. Scudder pointed out in his presentation at ISHI 33 that the language issue remains relevant even if the regulations are written in English. For example, the Gedmatch PRO terms of service give an example of a violent crime that is eligible for upload to their database as "aggravated rape." This may not be a term used by various jurisdictions and it may be necessary to clarify this to be consistent with the terms of service.[20]

In the end, the name debate may not matter. What the field will be called as defined in legal and regulatory contexts will certainly influence the name. More likely, what the media calls it will enter public consciousness, and the shorter "forensic genealogy" may win out, making the rationales for the various terms moot. However, regardless of whether FIGG practitioners will be able to testify in court or will be regulated like the forensic sciences, continuous development and rigorous commitment to standards and best practices is necessary.


[1] *"Overview of Investigative Genetic Genealogy," SWGDAM (https://www.swgdam.org/_files/ugd/4344b0_6cc9e7c82ccc4fc0b5d10217af64e31b.pdf : accessed 27 January 2023).*

[2] *"Forensic genealogy," ISOGG Wiki (https://isogg.org/wiki/Forensic_genealogy : accessed 27 January 2023).*

[3] *"Investigative genetic genealogy FAQs," ISOGG Wiki (https://isogg.org/wiki/Investigative_genetic_genealogy_FAQs : accessed 27 January 2023).*

[4] *Tara Luther, "To Catch a Predator: An Interview with Paul Holes," The ISHI Report (https://promega.foleon.com/theishireport/april-2019-final/to-catch-a-predator-an-interview-with-paul-holes/ : accessed 27 January 2023).*

[5] *Daniel Kling et al., "Investigative genetic genealogy: Current methods, knowledge and practice," Forensic Science International: Genetics 52 (2021), 102474.*

[6] *Claire L. Glynn, "The Development of a University Educational Program in Forensic /Investigative Genetic Genealogy to Meet Industry Needs," The ISHI Report (https://promega.foleon.com/theishireport/the-ishi-report-february-2022/development-of-a-figg-educational-program/ : accessed 27 January 2023).*

[7] *David Gurney et al., "The need for standards and certification for investigative genetic genealogy, and a notice of action," Forensic Science International 341 (December 2022), 111495.*

[8] *"2019 Interim Policy: Forensic Genetic Genealogical DNA Analysis and Searching," United States Department of Justice (https://www.justice.gov/media/1025866/dl?inline=#:~:text=FGGS%20is%20a%20law%20enforcement,nature%20of%20any%20genetic%20association : accessed 27 January 2023).*

[8] *"2019 Interim Policy: Forensic Genetic Genealogical DNA Analysis and Searching," United States Department of Justice (https://www.justice.gov/media/1025866/dl?inline=#:~:text=FGGS%20is%20a%20law%20enforcement,nature%20of%20any%20genetic%20association : accessed 27 January 2023).*

[9] *"Forensic Genetic Genealogical DNA Analysis and Search (FGGS) Data Definitions and Reporting Guide," Maryland's Office of Crime Prevention, Youth, and Victim Services (http://goccp.maryland.gov/wp-content/uploads/Forensic-Genetic-Genealogical-DNA-Analysis-and-Search-FGGS-Data-Definitions-and-Reporting-Guide-.pdf : accessed 27 January 2023).*

[10]*"Motion for Discovery, People of the State of California vs. Roy Charles Waller, Oct 7 2019, case no: 18FE018342," Superior Court of California, County of Sacramento (https://meshbasestorage.blob.core.windows.net/dnacontainer/Waller-Court-Ruling.pdf : accessed 27 January 2023).*

[11] *Helena Machado and Susana Silva, "Investigative Genetic Genealogy: An Ethical and Privacy Assessment Framework Tool is Needed," Forensic Science Review 34 (2022), pp. 17+.*

[12] *John Butler "Recent advances in forensic biology and forensic DNA typing: INTERPOL review 2019-2022." Forensic Science International: Synergy 6 (2023) 100311*

[13] *Matthew J. Gamette et al., "Establishment of the National Technology Validation and Implementation Collaborative (NTVIC) and Forensic Investigative Genetic Genealogy Technology Validation Group (FIGG-TVG)," Forensic Science International: Synergy (January 2023)*

[14] *Gurney et al., "The need for standards."*

[15] *"Ethics, guidelines and standards," ISOGG Wiki (https://isogg.org/wiki/Ethics,_guidelines_and_standards : accessed 27 January 2023); see also "2019 Interim Policy," United States Department of Justice and "Overview of Investigative Genetic Genealogy," SWGDAM.*

[16] *Nathan Scudder et al., "An international consideration of standards-based approach to forensic genetic genealogy," Forensic Science International: Genetics Supplement Series (2019).*

[17] *Andreas Tillmar et al., "Getting the conclusive lead with investigative genetic genealogy — A successful case study of a 16 year old double murder in Sweden," Forensic Science International: Genetics (2021).*

[18] *Erika Lindbom Sierakowiak, "Rättsgenetik: "Vi utnyttjar att alla har tusentals släktingar,"" The Swedish Chemical Society*

(https://kemisamfundet.se/rattsgenetik-tusentals-slaktingar/ : accessed 27 January 2023).

[19]*Óscar García, "Genealogía forense. Implicaciones sociales, éticas, legales y científicas," Spanish Journal of Legal Medicine, volume 47, issue 3 (July - September 2021), 112-119.*

[20] *Michelle Taylor, "Forensic Genetic Genealogy Needs International Cooperation," Forensic (https://www.forensicmag.com/591618-Forensic-Genetic-Genealogy-Needs-International-Cooperation/ : accessed 27 January 2023).*

# An Update from the Organization of Scientific Area Committees (OSAC) for Forensic Science

Share this article

## Your Input Needed: Assessing Research Needs and Standards in the Forensic Human Biology Community

OSAC's Human Forensic Biology Subcommittee's Research Task Group is seeking input regarding current research needs, standards and training for the forensic biology community. This survey will aid the OSAC Human Biology Task Group in:

- Identifying the most practitioner-relevant research needs in the forensic biology community
- Generating new standards or training documents based on practitioner feedback
- Understanding and identifying future training needs

For more information and to access the survey, visit https://go.fiu.edu/OSACSurvey.

## Four New DNA Standards Added to the OSAC Registry

OSAC recently added the following three OSAC Proposed and one published DNA standards to the Registry:

- OSAC 2021-S-0028, *Standard for the Use of Serological Testing Methods Associated with Forensic Investigations*. Added to the OSAC Registry on November 1, 2022, this OSAC proposed standard provides quality assurance requirements for documenting analytical procedures/protocols needed for the use of forensic serological methods to evaluate body fluids associated with forensic investigations.

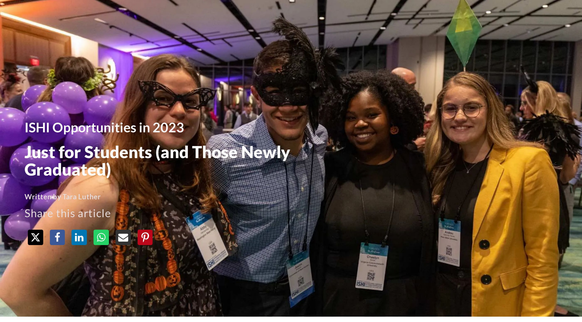
- ANSI/ASB Standard 077, *Standard for the Developmental and Internal Validation of Forensic Serological Methods*, First Edition, 2020. Added to the OSAC Registry on December 6, 2022, this Academy Standards Board published standard provides requirements for developmental and internal validations of forensic serological methods to evaluate body fluids, stains, or residues related to forensic investigations.

- OSAC 2021-S-0021, *Forensic Autosomal STR DNA Statistical Analyses – General Protocol, Protocol Verification, and Case Record Requirements*. Added to the OSAC Registry on January 5, 2023, this OSAC proposed standard provides general requirements for the laboratory protocol for performing statistical analyses, verification, and consistency of use of the protocol, and documentation in the case record of all pertinent information regarding the statistical calculations. This standard applies directly to polymerase chain reaction (PCR) amplification of autosomal short tandem repeat (STR) loci; many of the general requirements may also apply to other types of DNA testing and analysis.

- OSAC 2021-S-0029, *Standard for Familial DNA Searching*. Added to the OSAC Registry on January 5, 2023, this OSAC proposed standard requires laboratories that perform familial DNA searches have a written policy specifying criteria for: a) accepting a familial DNA search request; b) administrative structure and responsibilities; c) the search process; d) reporting results; and e) safeguarding individual privacy and confidentiality of the results. This standard also defines validation requirements.

The OSAC Registry now contains 133 forensic science standards! Has your organization implemented any of the DNA or other discipline-specific standards on the OSAC Registry? Complete the OSAC Registry Implementation Declaration Form (found on the Registry Implementation webpage) and submit it to mark.stolorow@nist.gov to let us know!

To learn about OSAC's activities or apply for membership, visit www.nist.gov/osac or contact forensics@nist.gov.



ISHI Opportunities in 2023

# Just for Students (and Those Newly Graduated)

Written by Sara Luther

Share this article

As a student (or someone who recently graduated) in forensic science, it's exciting to think of all the opportunities that lay before you, but it can also be intimidating, leading to a number of questions. We'd like to help by creating a community to help answer your questions, build your network, and to a place to share your research.

February is a BIG month for students in the ISHI community as we will be launching our Threesis Academic Challenge and our search for our next Student Ambassadors. We'll also be hosting our first online forum designed specifically for students. Read on to learn more about all three!




If you find yourself wondering "what comes next?" after graduation, you're not alone! We've asked our ISHI Advisory Committee to share their vast experience and help answer your questions ranging from what to put on your resume to what you can experience once you're hired.

Panel members include:

**Brian Hoey | Director, Missouri State Highway Patrol**

Brian Hoey is a twenty-nine-year veteran of the Missouri State Highway Patrol Crime Laboratory. Brian worked much of his career as a DNA analyst and served as the DNA technical Leader for 8 years. Brian has given talks and taught workshops for MAFS, Promega, ASCLD, Bode to name a few. He is a certified facilitator for Police Leadership: The West Point Model.

**Dr. Claire Glynn | Associate Professor, University of New Haven**

Dr. Glynn, who joined the University of New Haven in 2014, teaches both undergraduate and graduate courses in forensic science, focused on forensic biology, forensic DNA analysis, and forensic/investigative genetic genealogy (F/IGG). Her research interests are focused F/IGG, and a broad range of applications for this novel investigatory tool. This includes investigating the effects of degraded samples and novel technologies, establishing best practices, the international feasibility of this tool, historical applications, and ethical considerations, to name just a few. Her other research interests include Rapid DNA analysis, RNA (mRNA and miRNA) analysis, Single Nucleotide Polymorphism (SNPs) applications, and DNA Methylation markers.

**Brian Kim | Criminalist, Los Angeles Police Department**

Brian Kim joined the Los Angeles Police Department in 2011, where he was assigned to the Serology DNA Unit which processes over 20,000 DNA samples a year. He is currently a member of the validation team which evaluates and implements new technology to assist in forensic DNA analysis.

**Dr. Nicole Novroski | Forensic Geneticist and Assistant Professor, University of Toronto, Mississauga**

Dr. Nicole Novroski's educational training largely focused on the exploration of previously uncharacterized genetic markers for improved DNA mixture de-convolution of complex forensic profiles. Her publication record includes over 20 peer-reviewed manuscripts, 35 scientific communications, public abstracts and oral presentations as well as two book chapters. She is the Editor-in-Chief for the peer-reviewed Forensic Genomics journal and is an ad hoc reviewer for multiple international journals in the areas of human and forensic genetics.

**Deedra Hughes | Assistant Director, CODIS Administrator, Mississippi Crime Laboratory**

Deedra Hughes is employed with the Mississippi Forensics Laboratory since 2000 where she oversees the technical aspects of the four laboratories in the state and oversees the state's DNA Database. She has assisted in authoring the DNA arrestee collection law for the state of Mississippi, and trained Sexual Assault Nurse Examiners throughout Mississippi on the proper collection of sexual assault evidence.

Watch On Demand




Can you summarize your research in just three minutes? As a student or newly minted forensic scientist, you have limited opportunities to showcase your work before your peers and presenting at a scholarly conference can be daunting. This Threesis challenge is an opportunity to refine your thinking and hone your communication skills so that you can articulate the impact your research has on the field of DNA forensics. The competition also hopes to foster engagement and collaboration between individuals by promoting your research to a wider audience.

To participate in the challenge, prepare a three-minute video explaining your research and submit by April 30, 2023. Videos should be received in MP4 format (horizontal format preferred) and will be shared on our YouTube Channel where viewers will have between May 15-31, 2023 to cast their vote for their favorite by liking the video. Winners will be announced by June 15, 2023. Videos will be judged on the following criteria:

- Did the presenter introduce the topic well?
- Need and relevance of the research to the field of DNA forensics
- Did the presenter explain the methods and results concisely and clearly?
- Did the presenter make good use of slide design/images/etc.?
- Did the presenter speak at an appropriate pace and volume?
- Was the presentation captivating?

Two winners will be selected based on the number of likes their videos have received. The first-place winner will receive a $500 cash prize and the opportunity to have a pizza party for their entire lab. The second-place winner will receive a $250 cash prize. Additionally, all videos will be shared in the May issue of *The ISHI Report*, and winning presenters will be be eligible to submit an article for consideration to be printed in the peer-reviewed *Forensic Genomics* journal. All who submit a video (and their advising professor) will receive a free t-shirt just for entering the challenge.

Learn More and Submit Your Video




The ISHI organizing committee invites students currently pursuing a degree in the field of forensic science with a focus on DNA analysis to apply to become ISHI Student Ambassadors. Chosen applicants will be awarded free registration (including workshops) to the 34th International Symposium on Human Identification in Denver, Colorado.

Each entry should clearly answer the prompt provided below and follow all contest rules. Please contact the ISHI Team with any questions or for troubleshooting assistance.

**Prompt & Requirements**

**Written essay- answer the following questions using between 500 to 750 words total.**

- Forensic science can be a demanding career. The work may be exacting and tedious without a lot of recognition for a job well done. How did you decide that forensic science was the career for you? What aspirations do you have for your career after graduation and what is your scientific area of focus?
- If you are selected to attend this year's ISHI, what do you hope to gain from your participation? What impact might participation in ISHI have on your personal and career growth?
- If you are awarded free conference registration, you will be asked to present a scientific poster. Briefly describe what your scientific poster will be about.

**Video recording- prepare a video between 30 seconds and 2 minutes long.**

The video should explain why you would like to participate in this year's conference. It can elaborate on any aspects of the conference that especially appeal to you (i.e., meeting a certain speaker, attending a specific workshop, participation in networking events, etc.). Don't be afraid to let your personality show through. The committee is looking for candidates who can communicate their excitement for forensic science to fellow students.

The students awarded free registration will be asked to co-coordinate the Young Scientists' Showcase offering 10-minute presentations to fellow students and those newly graduated. Ambassadors will also be asked to provide the ISHI committee with (but not limited to) the following materials to be shared on social media by ISHI show management:

- A head shot or photo of the student.
- A day in the life series to be shared on our Instagram stories.
- Two interview style blog posts before the ISHI symposium to get to know you better and to preview your poster research.
- Photos to be shared on the student's social media channels of you preparing for the conference.
- A scientific poster presentation at ISHI (abstract due July 7, 2023).
- Social media posts each day of the ISHI conference.
- Onsite interviews at the symposium with the ISHI media team including (but not limited to) sharing of the student's scientific poster, and a sit-down interview.
- A handful of photos taken at the event.
- An interview style blog post after ISHI about what you took away from the conference.

Learn More and Submit Your Application



# ISHI 34 Workshops Announced

Share this article

Pre and post-conference workshops have been announced for the 34th International Symposium on Human Identification. Topics covered include probabilistic genotyping, forensic investigative genetic genealogy, leadership, expert witness testimony, and more.

Registration is limited, so claim your spot early!

Shortened descriptions, dates, and costs are included below. For more information on any of the workshops, including speakers, visit our website.

## Sunday, September 17

8:30am - 5:00pm

**Management, Quality Assurance, and Quality Control in a Forensic DNA Laboratory: A Human Factors Perspective Workshop**

The National Institute of Standards and Technology (NIST)/National Institute of Justice (NIJ) Expert Working Group (EWG) on Human Factors in Forensic DNA Interpretation first convened in February 2020 and was charged with conducting a scientific assessment on the effects of human factors in forensic DNA examination with the goal of recommending approaches to improve its practice and reduce the likelihood of errors. The study of human factors in forensic science is an essential element to inform our understanding of the interaction between humans and the systems they use. This EWG has since been evaluating relevant bodies of scientific literature and technical knowledge to develop a report containing these recommendations.

In this workshop, speakers will present the EWG's recommendations specific to two key topic areas of interest: Management and Quality Assurance (QA)/Quality Control (QC) in a forensic DNA laboratory. In understanding human factor issues, it is possible to identify and address the potential for error and bias and develop ways to shape positive laboratory culture, improve staff morale, and increase work productivity and quality.

**Cost**

Early Registration - $250
Standard Registration - $295
Student Registration - $195

*Fee includes breakfast, lunch, breaks, and materials.*

8:30am - 5:00pm

**Courtroom Comms: Testifying about Forensic Science with Communication Best Practices**

Communicating forensic science is an essential aspect of the criminal justice process. Challenges for practitioners include the interrogative structure, varied audiences, specialized language and adversarial narratives. This workshop addresses those challenges using research-driven communication principles to help scientists convey complexity while preserving accuracy. The Alda Method is a unique communication training technique blending improvisational theater with audience-focused design strategies. Driven by the adaptability and active listening central to improvisation and the empathy and connection prescribed by social science research, the Alda Method helps scientists effectively engage with non-expert audiences. Participants should expect active involvement and iterative most testimony practice.

**Cost**

Early Registration - $250
Standard Registration - $295
Student Registration - $195

*Fee includes breakfast, lunch, breaks, and materials.*

9:00am - 12:00pm

**AABB Workshop**

This workshop will address AABB accreditation topics, including the accreditation process, Relationship Testing Standards, proficiency testing, validations, and calculations.

**Cost**

There is no charge for this workshop, but pre-registration is requested:

*The AABB Standards for Relationship Testing Laboratories may be purchased prior to the workshop at AABB.org*

1:00 - 4:00pm

**Beyond The STRs: Effectively Using Forensic DNA Technology to Solve Current and Prevent Future Crime Workshop**

In this workshop, attendees will learn how additional DNA analyses can be leveraged cost-effectively to solve current investigations and prevent future crime. Attendees will be introduced to the various methods of indirect DNA matching, including the use of X-STRs, Y-STRs, mitochondrial DNA, familial searching, and forensic investigative genetic genealogy (FIGG). We will explore how these techniques can be used in combination for routine casework, and how it can be done cost-effectively. Finally, we will hear from analysts on how they have used these techniques in sexual assaults, disaster victim identification, missing persons and unidentified human remains identifications, and cold cases.

**Cost**

Early Registration - $150
Standard Registration - $175
Student Registration - $125

*Fee includes breaks and materials.*

1:00 - 4:00pm

**Technical Challenges and Analysis of the Results in Kinship Cases that Appear to Comply with Murphy's Law**

Murphy's Law says: "Everything that can go wrong will go wrong." Using standard STR markers sets to establish biological relationships analysis complex can generate ambiguous data. Several drawbacks appear when a high enough likelihood ratio is not obtained, or not excluded with totally inconsistent genotypes. We could add other challenges such as no availability of close relatives, insufficient concentration or poor DNA quality, allelic discrepancies, mutation rate, triallelic patterns, etc. And further to that, the legal pressure behind the case. We will try to reverse the "bad luck" with different technical strategies and statistical analysis. This workshop will be presented in Spanish.

**Cost**

Standard Registration - $75

*Fee includes breaks and materials.*

## Monday, September 18

8:30am - 5:00pm

**The Other NGS: Next Generation Students and How to Prepare them for the Workforce Workshop**

The COVID pandemic impacted all of us in different ways. In academia, student mental health moved to the forefront of education. Educators in forensic science programs struggled to find ways to deliver content and hands-on laboratory experiences in a remote format, with internships dissolving at most laboratory agencies, and other challenges, all while supporting our student's well-being. These students are now graduating and preparing for the workforce; many of them are prepared academically but may not be ready to face the workplace and the day-to-day trauma that is encountered in a crime lab. Our experienced facilitators will create an interactive workshop, bringing all of us together to network, discuss best practices in the training of new hires and the onboarding process, and share ways to develop a more resilient workforce. The workshop will also offer attendees an opportunity to bring their own challenges and questions to the peer group for advice and solutions.

**Cost**

Early Registration - $250
Standard Registration - $295

*Fee includes breakfast, lunch, breaks, and materials.*

8:30am - 5:00pm

**Advanced Workshop on the Reporting of Likelihood Ratios**

This workshop will provide attendees guidance for the reporting of likelihood ratios (LRs) for DNA profiling evidence. Topics include: an introduction to Bayes' Theorem and the assignment of LRs, setting propositions for complex scenarios with examples, approaches when relatives are a consideration (including mixtures of relatives and propositions considering relatives either as co-contributors or alternate contributors), and reporting LRs. We will provide analogies for the layperson, discuss pros and cons of verbal scales, and reporting LRs with an emphasis on avoiding fallacies. Examples and interactive activities will be provided to help avoid misrepresenting the LR, and how to correct.

**Cost**

Early Registration - $250
Standard Registration - $295
Student Registration - $195

*Fee includes breakfast, lunch, breaks, and materials.*

8:30am - 5:00pm

**Practical Application of FIGG in a Case of Unknown Identity: A Guided Interactive Approach Workshop**

The purpose and goal of this workshop is to provide a basic understanding of the steps involved in using FIGG to identify an unknown individual.

Speakers have prepared a case that will allow attendees to watch or participate depending upon their level of FIGG experience. Each module will include a presentation followed by a period of directed collaborative research. Solutions will be given at the end of each module enabling attendees to assess their skill level.

Handouts will include module content, flowchart and reference guide.

**Cost**

Early Registration - $250
Standard Registration - $295
Student Registration - $195

*Fee includes breakfast, lunch, breaks, and materials.*

9:00am - 5:00pm

**Grupo Cientifico Latino-Americano de Trabajo Sobre Identificacion Humana**

Description to be announced. This workshop will be presented entirely in Spanish.

**Cost**

Standard Registration - $100

*Fee includes two breaks.*

## Thursday, September 21

1:00 - 4:00pm

**Preparing for Crime Scene Rapid DNA and CODIS Workshop**

The primary goal of this workshop is to begin preparing CODIS laboratories for the FBI's future vision and implementation of crime scene Rapid DNA for CODIS enrollment. It is estimated that national crime scene Rapid DNA Quality Assurance Standards may be available as early as the first quarter of 2025. Presentation topics include progress on the FBI's vision, expanding a CODIS Laboratory's scope of accreditation to locations outside the laboratory to include partner agencies, lessons learned from non-CODIS crime scene applications, and important concepts regarding future national crime scene Rapid DNA Standards and Procedures. The workshop will conclude with a panel discussion with all presenters from the workshop.

**Cost**

Early Registration - $200
Standard Registration - $225
Student Registration - $125

*Fee includes lunch and materials.*

1:00 - 4:00pm

**Conflict and Personalities – How to Engage Challenging People and Situations Workshop**

What if you had a specific method for engaging in conflict or other challenging situations? You can, and this workshop will teach you a variety of principles and strategies for boosting your confidence when you need it most. Taught by John M. Collins, the author of four books and one of the most well-known and sought-after speakers in forensic science, you will learn to use your analytical mind to understand and engage more effectively with people who you may find especially difficult to deal with.

**Cost**

Early Registration - $200
Standard Registration - $225
Student Registration - $125

*Fee includes lunch and materials.*

1:00 - 4:00pm

**Silent Mass Disasters: Evidence Based Strategies for Implementing New DNA Technologies for Missing Persons Programs Workshop**

Every year, 4,400 unidentified bodies are recovered in the US, according to the National Missing and Unidentified Persons System (NamUs). National databases like CODIS provide a powerful framework for linking repeat crimes and providing leads to the identity of individuals who have left biological evidence at crime scenes. However, the same database is underutilized to identify unidentified human remains (UHRs); only ~1% of cases are resolved. For minority, native and indigenous peoples, particularly women and girls, the statistics are significantly lower because of a combination of database representation and reporting. Despite the advancements in high resolution next generation sequencing (NGS) capabilities and forensic investigative genetic genealogy (FIGG), the vast majority of missing persons cases do not avail of its benefits. As a result, missing persons programs throughout the United States and beyond have relatively low success rates and do not have a cost-effective and standardized approach to address this "silent mass disaster".

This workshop, consisting of academic experts, forensic practitioners and medical examiners, will review established and emerging methods to associate UHRs to families, discuss considerations and practices for expanding database utility for underserved populations and strategies for operationalizing an end-to-end small, large-scale or national programs for the identification of UHRs.

**Cost**

Early Registration - $200
Standard Registration - $225
Student Registration - $125

*Fee includes lunch and materials.*

1:00 - 4:00pm

**Technical Leaders Meeting**

Description to be announced.

**Cost**

Early Registration - $200
Standard Registration - $220

# Sign Up to Receive Future Issues In Your Inbox

## Registration is open for ISHI 34!

What does the future hold for forensic DNA? At the 34th International Symposium on Human Identification (ISHI 34) we'll be covering these topics and more through our workshops, General Session presentations, poster presentations, and focused topic lunches. If your lab is wondering how to prepare for the future, you're not alone. Building a network by discussing these issues at conferences is a great way to move the field forward together.

View the full agenda and register on our website: www.ishinews.com.




## Deadlines

**April 30, 2023**
Threesis Challenge Videos Due

**April 30, 2023**
Student Ambassador Applications Due

**June 1, 2023**
Oral Abstracts Due

**June 1, 2023**
Interesting Case Abstracts Due

**July 7, 2023**
Poster Abstracts due

**July 15, 2023**
Early Registration Deadline

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Bode X-traction technology enables DNA recovery from spent shell casings and rootless hairs. Advanced sampling methods developed from the ATF[8] combined with technology developed at Bode enable analysts to obtain **~10 X more DNA from spent shell casings** and obtain useable nuclear **DNA profiles from a single hair**.