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August 2023

The ISHI Report

News from the World of DNA Forensics

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The ISHI Report

Letter from the Editor

Greetings and welcome to the August edition of the ISHI Report. As summer winds to a close here in Madison, WI, our team is engaged in final preparations for the 34th ISHI. We'll look forward to seeing many of you at the symposium in Denver, Colorado.

This issue features contributions from authors who focus on programs that can help bring justice to underserved communities. Patricia Davis, from The National Center for Missing & Exploited Children (NCMEC) shares successes from the almost 40-year-old non-profit agency. Since its founding, NCMEC has grown into the nation's largest child protection organization and has helped law enforcement recover more than 400,000 missing children. As DNA science advances, the agency is leveraging new technologies in their quest to identify the missing.

Yahaya Sumara Sulley shares the current status of DNA typing in Africa. Progress is being made in many countries throughout the continent, although big challenges remain in the quest to speed up the adoption of DNA databases, sample collection and processing. Yahaya offers suggestions for moving forensic science forward and envisions a future where DNA typing is routinely used in the pursuit of justice.

AnnaKay Kruger reports on forensic DNA analysis from the perspective of victims. She quotes Ashley Spence who was the survivor of a brutal sexual assault. Ashley has since become a victim advocate and strong proponent of expanding DNA legislation. She is founder of the DNA Justice Project, which focuses on legislative advocacy and forensic policy and seeks to educate lawmakers on the value of forensic DNA. Ryan Backmann, whose father was killed in a homicide, is the founder of the victim advocacy organization Project: Cold Case. This organization provides a resource for families to work closely with law enforcement to understand why their case has gone cold and explore other potential avenues of investigation.

Niki Osborne previews the research that she and other members of Expert Working Group (EWG) on Human Factors in Forensic DNA Interpretation team have done to explore how human factors can influence DNA interpretation. This group has spent several years reviewing scientific literature and technical knowledge to develop recommendations aimed at improving practice and reducing the likelihood of errors in DNA interpretation. The team will present a full day workshop at ISHI on Sunday, September 17 to share their findings and offer practical advice. Space is still available in this workshop. Full details and a registration link are available on the official symposium website, www.ishinews.com

Nancy Dinh provides insight from her work as a forensic scientist who often examines casework completed by other labs. She demonstrates how approaching evidence with fresh eyes and meticulous attention to detail can change the outcome of a case. Ms. Dinh encourages other forensic professionals to re-evaluate their laboratory practices and possibly enhance the way they perform their work.

Have you ever wondered about the private lives of renowned forensic scientists? Our colleague Tara Luther interviews many of the speakers slated to present at this year's symposium. Read on to discover fascinating and unknown details about this diverse cast of characters.

We hope you enjoy this issue of the ISHI Report. As always, we welcome your comments and contributions to our publication.

Warmly,

The Editorial Board

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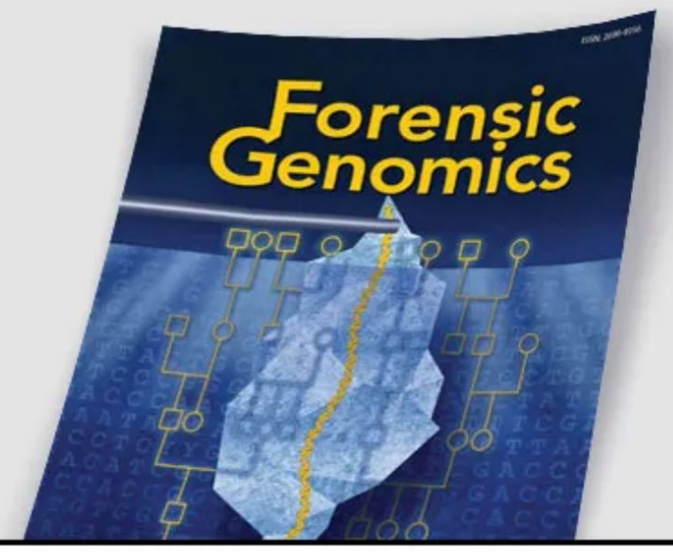

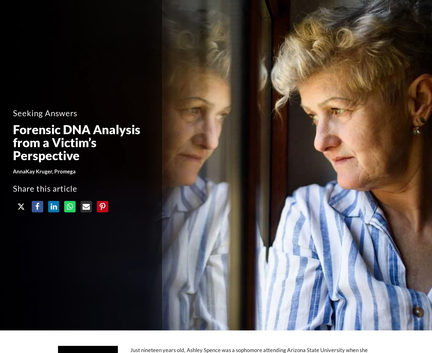

Seeking Answers

Forensic DNA Analysis from a Victim's Perspective

AnnaKay Kruger, Promega

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Just nineteen years old, Ashley Spence was a sophomore attending Arizona State University when she became the victim of a home invasion rape. A stranger broke into her apartment in the middle of the night and subjected her to a brutal, hours-long assault, from which she barely escaped with her life.

"I never was able to see the face of the person who was committing these horrific acts against me," said Spence. "He got away, but I was fortunate enough to survive. Seven years went by, and there were absolutely no leads."

Spence described the fear she experienced in the years following the assault as "truly paralyzing." She lived in terror of the possibility of her attacker's return.

"He told me not to tell anybody, that he would be watching, and that if I did tell anybody he would kill me," said Spence. "I ended up having to drop out of school. I moved to Newport Beach, CA before I relocated back to my home state of Texas and it was there, seven years later in 2010, that I got the shocking phone call: there was a DNA match in my case."

Unbeknownst to Spence, in her attempt to escape her attacker she had inadvertently moved to the very town where he lived. Later, he would even admit to having seen her there. He was ultimately arrested attempting to break into a home where three women were living, just a few blocks from where Spence had lived in Newport Beach. He resisted arrest, a felony offense. Due to a law in California requiring that DNA should be taken upon any felony arrest, law enforcement conducted a buccal swab and submitted his DNA to the federal database, CODIS.

"I had no idea what he looked like, but it was through the power of forensic DNA that they were able to prove at trial that it was 38 trillion times more likely it was this man's DNA on me than anybody else's," said Spence.

Her attacker was sentenced to 138 years in prison.

The Promise of DNA Forensics

Forensic DNA analysis emerged in the 1980's as a means through which law enforcement, in addition to things like fingerprinting and blood type comparison, could trace physical evidence from a crime scene back to a specific individual. At its inception, forensic DNA had the potential to convict offenders as well as exonerate the innocent, and it evolved over the decades that followed to become some of the most reliable evidence that can be collected at a scene.

Countless violent crimes and cold cases have been solved through DNA forensics and, over time, the expansion of the federal database and technological advancements in the laboratory have bolstered its status as one of if not the best tool available to law enforcement in investigations. Additionally, the recent emergence of things like forensic investigative genetic genealogy, where suspect DNA can be crosmatched to familial DNA that has been submitted to commercially available genealogy sites, has closed even more cases than would otherwise be closed through traditional DNA analysis alone.

Victims Left Waiting for Justice

Despite the breakthrough of DNA forensics, there remain limits to its application in the criminal justice process, including restrictions on the types of arrests that warrant the collection of DNA as well as deficits in both resources and existing technology that can lead to delays and can sometimes result in cases going completely cold. Many victims and their families do not discover this until they find themselves seeking answers, only to be told that there are none—as was the case for Ryan Backmann, the founder of the victim advocacy organization Project: Cold Case and himself the son of homicide victim, Clifford Backmann, who was shot and killed on Oct. 10, 2009 in Jacksonville, FL.

In describing his experience immediately following his father's murder, Backmann explained that his exposure to law enforcement proceedings had been, until that point, limited to what he saw in the media.

"My entire experience with law enforcement had been watching television and in the true crime realm," said Backmann. "I expected an arrest within hours of my dad's murder. When it became days, I just thought that the guy was on the run. It wasn't until those days became weeks and those weeks became months that I started having conversations with the lead detective on my dad's case and they told me that they did not have a suspect, that what little physical evidence they had had been sent to the lab, and that they had no idea where to go from there."

Backmann's father's case was suspended after a year and a half of investigating and not long after that Backmann switched careers to become a victim's advocate. In 2015 he founded Project: Cold Case, an organization that began simply as a place where families of homicide victims could memorialize their loved ones. However, Project: Cold Case grew into a resource through which surviving families could work closely with law enforcement to understand why their case has gone cold, whether there are potentially unexplored avenues of investigation and more broadly to educate both parties on the hardships and struggles of living with an unsolved case.

"When you're a family member of a victim in an unsolved homicide, you're living this in real time," said Backmann. "You're coming to the realization that maybe they're not going to find the person that killed your loved one. When you sit face to face with somebody and they tell you the case is cold—I never thought I'd have to prepare myself that there would come a day where the police would stop looking for the guy that killed my dad. That was a very poignant moment in my journey."

Though it is an unfortunate reality that many crimes will go unsolved even with the most sophisticated technology at hand, there are ways to increase the likelihood that offenders are brought to justice. Beyond the advancement of new and better methods for DNA analysis, this can also be achieved through legislation to expand DNA collection and the protection of victim's rights at a policy level.



In this interview, Ashley talks about her path to healing and building the fortitude needed to confront her attacker during trial. She also discusses how she became an advocate for policy change, the mentors who have helped guide her, the progress that's been made, and the work still to be done.

Improved Forensic Policy and Legislation

The details of Ashley Spence's case are horrific, and equally horrific to Spence was the realization that, had her attacker been arrested in Arizona where she went to school, or in Texas where she resided when they finally caught him in 2010, he would still be at large, presumably subjecting other women to the same torture that Spence was forced to endure seven years prior.

"He was a very violent man, and when they arrested him, they found in his possession women's underwear and ID cards from all over the world," said Spence. "What haunted me the most when it happened was that I was not the first. I was not the last, but through the power of forensic DNA and having the law to take DNA upon all felony arrests, he's unable to harm anybody ever again."

Following her attacker's arrest, Spence delved into DNA forensics and the laws stipulating how DNA can be collected and used in criminal investigations. She points to her extensive exploration of this topic as well as the birth of her children as the impetus for the eventual founding of her organization: the DNA Justice Project.

"Part of finding the healing and the lighter after my experience has been to create awareness, to educate the public and policymakers about what goes into the national database," she said.

The DNA Justice Project focuses on legislative advocacy and forensic policy and seeks to educate lawmakers on the value of forensic DNA.

"I've been fortunate enough to partner with the Joyful Heart Foundation, which has done exceptional work to count, to test, to track every rape kit," said Spence. "What we realized was that you can do all this amazing work on rape kit reform, but what you need is the other side of the coin, which is getting the DNA into the database."

Spence went on to explain that, according to the Department of Justice, per state, there are 40-50,000 samples of uncollected offender DNA, also known as lawfully owed DNA, missing from the federal database. This could be a result of anything from ignored court orders, people not understanding that they are supposed to have their DNA taken, others fleeing after arrest or intake errors.

"There are variety of reasons why we're missing these samples, but this number is actually shocking," said Spence. "When we don't test the DNA, we are not only withholding justice for victims, but we also know that there are people that are innocent and wrongfully accused of crimes that are sitting in prison right now because the DNA has not been tested properly."

Spence argued that, while many harbor ethical concerns about broadening DNA collection, this is typically due to misconceptions about what is collected and from there, what genetic information is obtained.

"It's not giving your whole DNA genome of 3 billion markers," said Spence. "What actually goes into CODIS is from a minimally invasive cheek swab, and from there it is just 20 markers that have been picked specifically by genetic scientists. It wouldn't say what street I live on. It wouldn't say that I'm Lebanese, or what color my hair is. It wouldn't say that I'm predisposed to any genetic diseases."

She added: "I like to explain to people that this database is not searchable by any third parties. Your arrest record is public, your mug shots are public, but what goes into the actual DNA database cannot be found by any third party, so you cannot be precluded from getting a job by having your DNA in the database."

For his part, Backmann mentioned that it's important to put policies in place that ensure that cold cases aren't lost in the shuffle or forgotten during agency turnover, that evidence from cold cases gets retested at regular intervals and there is clear communication to families even when retesting doesn't yield any results.

"The goal is to get the case to current investigative standards using whatever technology is there today that wasn't there the last time it was looked at," said Backmann. "If we set the bar there, we hope that it's resolved while bringing it up to today's current investigative standards."

The Importance of Advocacy in Supporting Victims

Part of the work that Backmann's organization does is to help families figure out whether new tools like forensic investigative genetic genealogy could be applicable to their case and which questions they need to ask to generate interest from the appropriate investigating agency.

"The first question is always: do they have suspect DNA in your loved one's case? A lot of times the families just don't know. Historically, a lot of the information about the physical evidence has been withheld from families," said Backmann. "But some of these cases are decades old. So, it's created an opportunity for us as advocates to help families understand what this technology is and how it can be used, as well as the right questions to ask."

But in the long run—even if victims and their families get justice—Backmann argued that there really isn't any such thing as closure, at least not in the way that the term is often used.

"I have gone to over 100 trials with families. I have seen convictions. I've seen the death penalty imposed by a jury. I have seen life sentences and plea deals. I've seen the gamut of things that happen in the judicial system, and one thing that I have never seen is a family get what is described as closure," he said. "It's an unrealistic expectation that we put on families, not maliciously, but the problem is nobody is really listening to these families and understanding that at the end of this, that loved one is still dead. They're never coming back for the next birthday, holiday, or anniversary, and every one of those days is going to bring back all those feelings of loss and trauma."



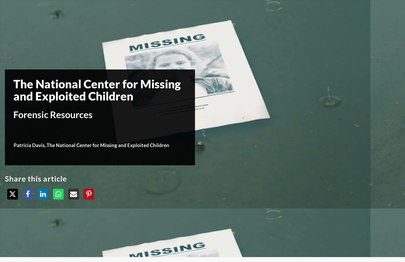
With this in mind, Backmann's organization works to provide families with long-term support from the moment they are in contact and for as long as the family feels they need it. For families that never get answers, it can be especially torturous.

"What haunts me is that this person could do it again. No matter what happens to them, my dad isn't coming back. But will they continue killing? Now that they've gotten away with it for almost 14 years, do they feel like they can do it again?" said Backmann. "When we see new technology and we see these breakthroughs and we see these resolutions, it gives us hope that one day we will have these answers and that we will know that that person responsible can't harm somebody else again."

For everyone involved, it's vitally important that forensic analysts and law enforcement understand the impact that their work has on the lives of victims and their families.

"I love to share my story because I am just one of the millions," said Spence. "The lives that forensic analysts and law enforcement have saved are beyond measure and those who work on these cases are my heroes, my personal heroes, and I am so grateful. I'm floored when I travel and I see all the people that are stepping into this field and this makes me so excited, because they don't realize the actual lives that they are saving through their work."

While it's never out of mind that every case represents a victim and their loved ones, the powerful impact of hearing a victim's story never fades. This year, we are honored to welcome back to ISHI Julie Weld, a sexual assault survivor and global activist who has used her voice to turn trauma into lasting change. Julie will be presenting on Tuesday, September 19th during the General Session, and there is still time to reserve your place in the audience. Register now on our website.



The National Center for Missing and Exploited Children

Forensic Resources

Patricia Davis, The National Center for Missing and Exploited Children

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Along a quiet cemetery access road in Woodlawn, Maryland, just west of Baltimore, the body of a teenage girl was found wrapped in a white sheet, someone's child. She'd been murdered – suffocated – and there was evidence she'd been sexually assaulted. But there were few clues as to who she was, just two brass keys, a "JP" tattoo on her arm and a scar on her right thigh. It was Sept. 12, 1976.

In the mid-1980s, after leads in the case had dried up and DNA was emerging as a promising investigative tool, DNA profiles were developed of the young victim and an unknown male, but no matches were found in CODIS, the FBI's national DNA database. In 2008, as forensic advances were starting to come at a steady clip, Baltimore police turned to the National Center for Missing & Exploited Children (NCMEC) and its Forensic Services Unit (FSU) for help identifying the teenager known only as "Woodlawn Jane Doe."

Since that time, an array of NCMEC resources were devoted to the case, including three facial reconstructions, analytical assistance with leads and a comprehensive case review that included the FSU, partner Bode Technology and Baltimore police, all agreeing to pursue additional DNA testing for forensic genealogy.

At long last, 45 years after her body was found, Bode's team identified a potential name for Woodlawn Jane Doe, and police tracked down relatives and collected DNA samples for comparison. Her family, still living in Alexandria, Virginia, finally had the answers they had long sought, although devastating. Woodlawn Jane Doe was their daughter, 16-year-old Margaret Fetterolf.



"NCMEC never put this case down," Carol Schweitzer, Program Manager of the FSU, said of the identification made in 2021. "We were always evaluating the case and applying internal resources and emerging forensic resources to help keep it moving forward over the years."

NCMEC was established nearly 40 years ago, when America finally awakened to the problem of missing and exploited children by a shocking series of high-profile cases, including the abduction and murder of Adam, the 6-year-old son of co-founders John and Reve' Walsh. Since then, the non-profit organization has become the nation's largest and most influential child protection organization and has helped law enforcement recover more than 400,000 missing children. Yet, there are many families with missing children still yearning for answers – years, even decades, after their children went missing.

As the nation's congressionally designated clearinghouse and resource center on missing and sexually exploited children, NCMEC assists law enforcement, medical examiners and coroners when unidentified child remains are found in an effort to give that child his or her name back. NCMEC, which is not a law-enforcement agency, has forged a large number of public and private partnerships, including with forensic labs and professionals who can provide services to investigating agencies that work with NCMEC at little to no cost. NCMEC works closely with these partners to apply the best services and resources that can help advance cases.

Resources available through the FSU include facilitating biometric collection. FSU staff will proactively work to locate sufficient samples for DNA collection, dental and fingerprint records and facilitate them being entered into national databases such as CODIS, NCIC, NGI, and Namus. The FSU can also facilitate forensic tests that include pollen and soil analysis, forensic genealogy, forensic anthropology, or testing evidence for foreign DNA.

In September 1988, a 17-year-old girl left her home in South Carolina and was never seen again by her family. She'd gone missing before and was suspected to be a victim of child sex trafficking. Law enforcement requested NCMEC's assistance in 2011 and thought all known family members of the missing child were deceased. But in 2019, NCMEC tracked down a sibling and facilitated DNA collection to be uploaded in CODIS. There was a match: DNA from an unidentified deceased child found in Florida in 1993.

NCMEC's highly skilled forensic artists also create age progressions of long-term missing children and facial reconstructions of what unidentified children may have looked like in life in hopes that someone will recognize them.

NCMEC has created a social media page called Help ID Me on Facebook, www.facebook.com/helpidme, to highlight the facial reconstructions and other images associated with a case to help spread awareness of these cases and engage the public in helping to resolve them. Since the page was created in 2014, about a dozen cases have been resolved through a tip that was received through the site. More than 39% of unidentified children are not reported missing, yet in every case someone close to them was looking for them. Engaging the public with these images is critical in finding answers.

When investigating agencies have exhausted all leads, NCMEC has found that DNA collection and testing is one of the few viable options for providing answers to these families. And with exciting advances in DNA testing and genetic genealogy in recent years, NCMEC has used DNA to help resolve more than 380 cases of missing or unidentified deceased children.

In 2004, NCMEC began proactively facilitating law-enforcement's collection of DNA from over 2,430 family members with long-term missing children for entry into CODIS. The FSU is also using that information to help resolve more than 660 cases of unidentified deceased children.

FSU also works with investigating agencies to apply forensic genealogy resources to both missing and unidentified child cases. Since 2018, NCMEC has seen four long-term missing children and 65 unidentified child cases resolved through a lead developed by forensic genealogy.

Forensic genealogy is not only helping identify deceased children but also finding long-term missing children who are still alive. On Thanksgiving Day 2022, more than 51 years after she was abducted in 1971 as an infant in Fort Worth, Texas by a woman claiming to be a babysitter, Melissa Highsmith was reunited with the family she never knew.



Through DNA testing, a link was made between Melissa's own children and her biological parents through a private genetic testing company. It turns out that Melissa, 53 years old when she was located, grew up with the name Melanie Walden and was living in Fort Worth all this time, not far from her biological parents' home. She has since had her name legally changed back to Melissa Highsmith.

"It's overwhelming but, at the same time, it's just the most wonderful feeling in the world," said Melissa said when her past was revealed. Her parents, overcome with emotion, said that after 51 years, they feared this day would never come.

"I feel that was the best day I ever had in my whole life when I saw Melissa again," said her mother, Alta Apanteeco, who lost her first child when she was 22 months old. "After 51 years, it's so emotional," said her father, Jeffrie Highsmith.



From left: Jeff Highsmith Sr, Laurie (his wife), Melissa, Jeff Highsmith Jr, Rachel Highsmith, Levi Highsmith

Advances in DNA testing and genetic genealogy have given long-suffering families hope and answers.

Dawn Olanick was the first unidentified deceased person's case to be entered into NCIC on June 30, 1983, an historic moment for missing and unidentified persons that has played a crucial role in investigations ever since.

On July 15, 1982, the body of a teenage girl was found in a cemetery in Blairstown Township, New Jersey. Her face was beaten so badly she was unrecognizable. She was wearing distinct clothing, and her fingernails were painted red on one hand. Over the years, the Warren County Prosecutor's Office and the New Jersey State Police took advantage of any new technology to learn her identity. With help from NCMEC, Princess Doe's molar and eyelash were submitted to Astrea Forensics in 2021, one of NCMEC's partners.

"What is so special about Astrea is that they are able to extract DNA from samples that are degraded or otherwise would provide no value," said Schweitzer, their FSU supervisor. "We knew that if anyone could get the information that was needed, Astrea could."



As a result, genotype files were able to be used by innovative Forensic Investigations, another partner, to build a family tree that would lead to the identity of Princess Doe, who was 17 years old when she was killed.

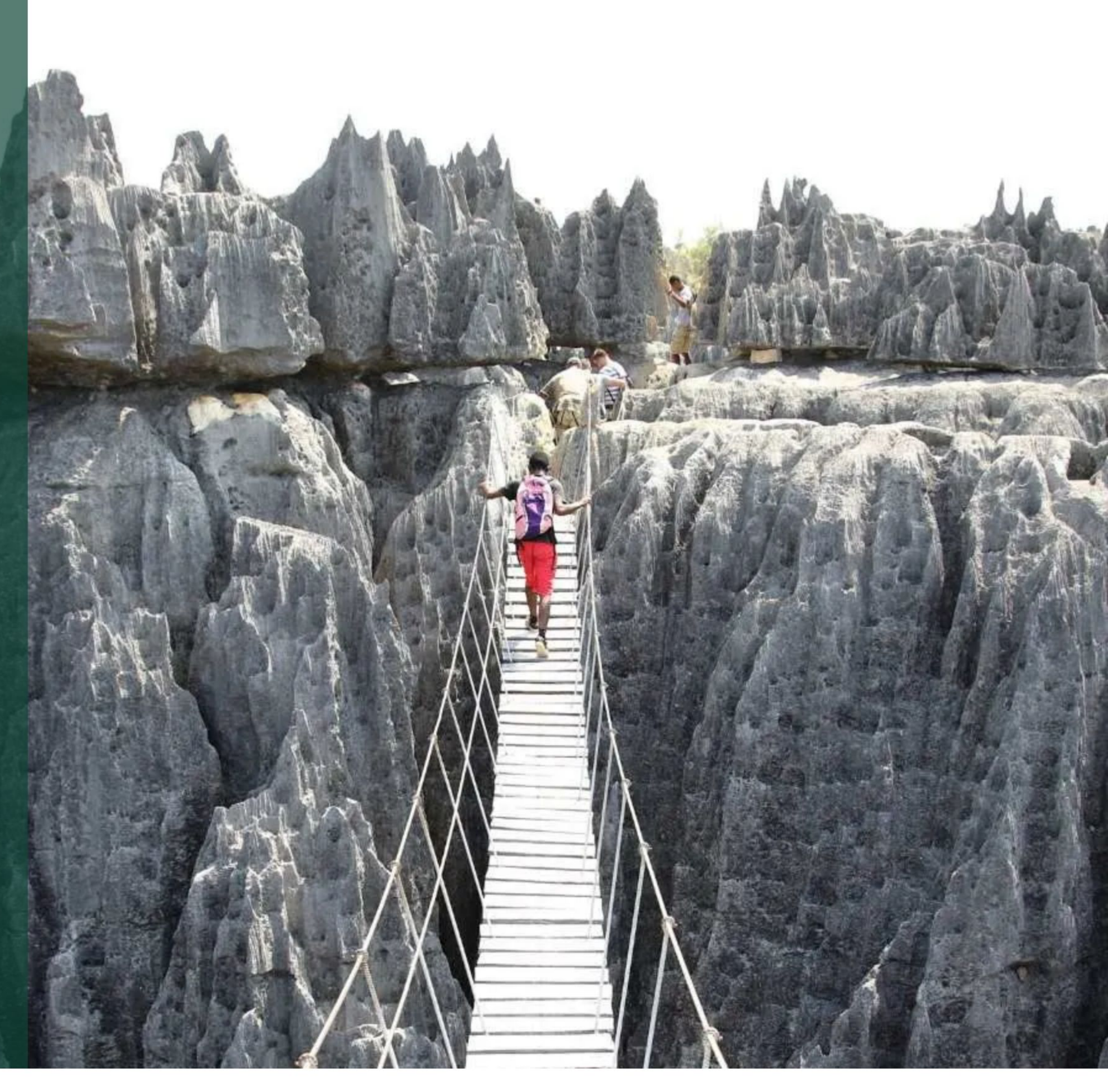
"This is a very big deal for my family," Dawn's cousin said at a news conference. "I'd like to thank Blairstown for treating my cousin like she was one of their own. It touches our family deeply...my cousin is always in my heart," he said, tapping the photo of Dawn pinned to his chest.

NCMEC's facial reconstruction of Princess Doe was one of more than 600 that have been created by forensic artists at its Alexandria, Virginia headquarters and shared with the public through traditional and social media.

"Cases of missing and unidentified children are challenging and require a multidisciplinary approach, strategically layering the right resources to help find a resolution and bring them all home," said Schweitzer. "NCMEC is here to help."

To learn more about NCMEC resources, go to www.missingkids.org





Bridging the Forensic DNA Divide in Africa

Yahaya Sumara Sulley, Department of Forensic Sciences, Faculty of Biosciences, University for Development Studies, Ghana

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Introduction

Forensic DNA analysis has become a powerful tool for finding solutions to social and environmental issues in the justice system. Forensic DNA analysis is the use of DNA evidence in criminal investigations and legal proceedings. It involves the collection, analysis, and interpretation of DNA samples to identify individuals, link suspects to crime scenes, and exonerate the innocent.

In Africa, forensic DNA analysis is used in criminal investigations as well as span across human identification, wildlife crimes and many others. This article sheds light on the progress made and the obstacles encountered in the development of forensic DNA analysis in Africa, which is still in its early stages, in commemoration of International DNA Day.

Forensic DNA Analysis in Africa

According to a 2019 report by INTERPOL, 89 member countries worldwide reported using DNA profiling in criminal investigation procedures. The survey reports that 70 of these countries have national DNA databases or repositories. Out of these member countries, 83 have reported using Y-STR analysis and 34 have reported using mitochondrial DNA analysis. Only 31 reported having a specialized missing persons DNA database (a searchable repository).

Notably, eleven African countries, including Algeria, Botswana, Burkina Faso, Egypt, Seychelles, Namibia, South Africa, Sudan, Swaziland, Tunisia, and Ghana, have embraced DNA profiling in police investigations. Recently Morocco, Egypt, Algeria and Tanzania have had their labs accredited by the International Criminal Investigative Training Assistance Program (ICITAP) which signifies the maintenance of quality laboratory standards. However, the current level of efficacy of DNA databases in some of these African nations appears to be presently unclear, but it is a critical information for optimizing the allocation of forensic DNA resources in the region.

The use of forensic DNA analysis has also been instrumental in solving issues leading to the prosecution of cases and providing a better step towards justice delivery for victims in some African countries. For instance, in the aftermath of the Rwandan genocide, DNA analysis was used to identify the remains of Augustin Bizimana, a suspected top Rwandan genocide leader, through DNA collected from human remains found in a grave in Pointe Noire, Republic of Congo.

Forensic DNA analysis helped track down and identify Fazul Abdullah Mohammed, leader of al Qaeda in East Africa, responsible for the 1998 bombings of US embassies in Kenya and Tanzania.

In West Africa, Mr. Asante, a Ghanaian teacher, was sentenced to 15 years imprisonment in 2005 for defiling a 14-year-old pupil who became pregnant according to the victim's statement. He appealed the conviction in 2006 and 2012, which was followed by a DNA test application.

The Supreme Court ordered the DNA test in 2015, but the family refused to comply. In 2018, the Forensic Unit of the Ghana Police Service confirmed that the DNA test proved that Mr. Asante was not the child's father which led to his exoneration.

Sexual assault is not new in Ghana and as part of international efforts to support the management of such cases recently, U.S. Ambassador Virginia Palmer visited the Ghana Police Service's Domestic Violence and Victims Support Unit (DOVVSU) to donate sexual assault examination kits and DNA reagents, chemicals, and supplies to help prosecute perpetrators and support survivors of gender-based violence.

Most African governments are promoting and making laws that encourage the use of DNA testing tools and products in forensics to enable effective DNA analysis in criminal investigations and other relevant issues.

Despite the increased use and demonstrated effectiveness of DNA profiling in solving criminal cases, there is a paucity of evaluation and discussion regarding the value and performance of forensic DNA analysis services on the continent. This has led to some failures in terms of the utility of forensic DNA to solve issues within the continent.

For instance, due to a lack of resources, the Lagos State University Teaching Hospital (LASUTH) collected DNA samples from relatives of victims who were burnt beyond recognition during the Associated Airline crash in Lagos and took them abroad for DNA analysis.

In 2011, the UN reported that over 100 bodies were found in western Ivory Coast. These were victims of ethnic killings during the ongoing conflict between presidential rivals. Families of most of these victims may never have an idea about the whereabouts of their loved ones in this situation.

Proper forensic DNA systems could aid in identifying the victims and potentially bringing their killers to justice or making a stronger case in a court of law but due to the lack of resources most of these cases have been left unsolved.

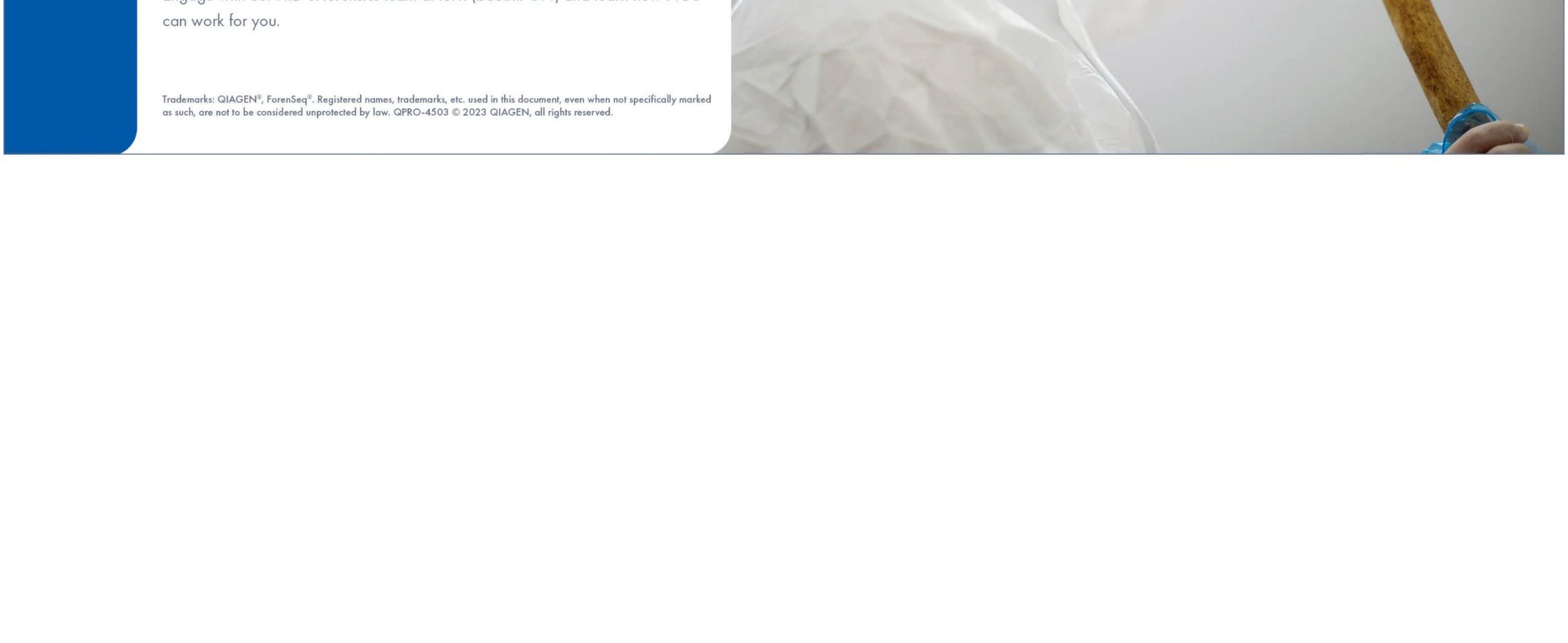
The issue of unidentified bodies is a widespread problem in many African countries, with many people dying every year without proper identification. The lack of proper identification can make it difficult for families to receive closure and for authorities to hold perpetrators accountable.

There are numerous cases of corpses of migrants in the Saharan deserts in Agadez, a town in Niger. These cases highlight the challenges faced with identifying the remains of migrants who have died while attempting to cross the Sahara Desert.

Many of these individuals are buried in unmarked graves, making it nearly impossible to identify them. Forensic DNA tools could help in identifying these bodies, but resources and expertise are often lacking in this part of the world.

The use of rape as a weapon of war is a heinous crime that has affected many people in African countries, including Sierra Leone, Rwanda, and Congo. This has led to a significant number of children being born out of rape, with many not knowing their fathers.

Forensic genetic genealogy has the potential to identify the real fathers of these children, leading to the prosecution of the perpetrators. This approach can provide justice to the victims and their families, bring closure to communities, and send a clear message that these crimes will not be tolerated. However, the challenge remains in implementing this technology in regions with limited forensic resources and infrastructure.



Why We Must Act Now

Even though there has been recent progress made in the development of forensic DNA applications in Africa, several challenges exist, including.

Lack of Resources: These resources include funds for carrying out forensic DNA research, training an adequate number of personnel through scholarships and fellowships to address the challenge of limited staffing and establishing appropriate laboratory infrastructure. It appears that many African countries that are lagging lack these resources, which can hinder the development of effective forensic DNA applications.

Lack of Awareness and Understanding: Many people in Africa are not aware of the benefits of forensic DNA analysis or how it works. This lack of awareness and understanding is a result of the lack of forensic science communication on the African continent.

Legal and Ethical Concerns and Cultural Sensitivity: Forensic DNA analysis involves the collection and storage of biological samples all the time. This practice is one of the aspects of the discipline that raises concerns about privacy, consent, and confidentiality. It is rather unfortunate that most people tend to find mistrust in a lot of human institutions and the field of forensics is no exception.

In some African cultures, the collection of biological samples is seen as taboo or culturally inappropriate. These concerns contribute to the slow-paced development of forensic DNA laws and policies in Africa.

Lack of collaboration: Nations in the West African region, for instance, face very similar issues including sexual assault and gender-based violence, nameless and anonymous body identification, kidnapping, trafficking and other transborder crimes. There however seems to be a lack of collaborative effort to work toward the establishment of regional forensic DNA laws and policies to clamp down on these regional challenges.

There is also a poor connection between institutions running forensic DNA testing and undergraduate or graduate degree programs and international partners who support forensic DNA research. This and many other related issues contribute to the slow-paced development of forensic DNA in Africa.

Pragmatic Courses of Action

Conversations about existing policy gaps could lead to significant growth in the African forensic DNA application market. This could eventually have implications for the present and future use of forensic DNA in Africa. To overcome the challenges of creating effective applications of forensic DNA in Africa, several measures can be taken.

If Africa prioritizes the safety and security of its people, one such measure is to build capacity by learning from successful approaches in developed and neighbouring countries, developing partnerships with international and regional organizations, and providing funding for laboratory infrastructure, research and scholarship just as is done for other scientific disciplines like agriculture and allied health sciences. This would allow for a good understanding and effective creation of regional DNA databases, making data more accessible across borders.

Establishing an African Forensic DNA Center of Excellence in countries such as Ghana, Nigeria, South Africa, Kenya, and Rwanda can lead to significant advancements in forensic DNA technology and training. The proposed center would offer state-of-the-art testing and training laboratories, aid in the development of expertise in advanced DNA analysis, and create validation guidelines and training modules. This approach can reduce case backlog and improve the level of expertise in forensic DNA analysis across African countries.

Forensic investigative genealogy and forensic DNA phenotyping are two emerging technologies that hold tremendous potential for solving crimes and identifying suspects. In the context of Africa, where many forensic laboratories lack the resources and capacity to analyze some kind of DNA evidence just like in the case of Ivory Coast and Nigeria mentioned earlier, these technologies could be very helpful in providing accurate and reliable information about the available evidence.

Another strategy is to increase public education and awareness about the benefits of forensic DNA analysis. This includes educating the public, law enforcement, and policymakers about genomic literacy, legal and ethical considerations, and privacy concerns. By doing so, mistrust and cultural sensitivity in the use of forensic DNA analysis can be minimized.

Furthermore, it is important to provide training for the next generation of professionals in forensic DNA analysis. This should include incorporating forensic science communication into their training to facilitate proper communication with the public. By implementing these strategies, Africa can effectively tackle the challenges associated with developing effective forensic DNA laws and policies in the future.

Conclusion

In the vast expanse of the African land, forensic DNA analysis takes a stand as a tool to solve crimes and bring justice to light. From the coast of Casablanca to South Africa's shore to the horn of Africa to the Island of Cape Verde some progress has been made, though challenges persist.

It is clear that the road is not yet fixed in the development of forensic DNA as we are challenged with a lack of resources, awareness, increased cultural sensitivity, legal and ethical concerns and the need for collaboration to unify and strengthen our efforts. But we must not give up, for the future holds a chance.

African governments should invest in building capacity through training, education and scholarships and establish partnerships to help unlock the potential that lies beneath and pave the way for a brighter tomorrow. As we celebrate International DNA Day, let us remember the progress made and focus on the way forward to overcome the challenges, no matter how hard.

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The Role of Post-Conviction DNA Testing

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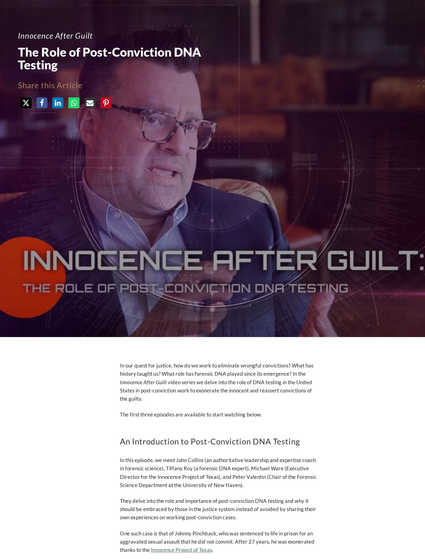


In our quest for justice, how do we work to eliminate wrongful convictions? What has history taught us? What role has forensic DNA played since its emergence? In the *Innocence After Guilt* video series we delve into the role of DNA testing in the United States in post-conviction work to exonerate the innocent and reassert convictions of the guilty.

The first three episodes are available to start watching below.

An Introduction to Post-Conviction DNA Testing

In this episode, we meet John Collins (an authoritative leadership and expertise coach in forensic science), Tiffany Roy (a forensic DNA expert), Michael Ware (Executive Director for the Innocence Project of Texas), and Peter Valentin (Chair of the Forensic Science Department at the University of New Haven).

They delve into the role and importance of post-conviction DNA testing and why it should be embraced by those in the justice system instead of avoided by sharing their own experiences on working post-conviction cases.

One such case is that of Johnny Pinchback, who was sentenced to life in prison for an aggravated sexual assault that he did not commit. After 27 years, he was exonerated thanks to the Innocence Project of Texas.

On March 22, 1984, two teenage girls were confronted by a man with a gun as they walked along Illinois Avenue in Dallas. The man took them to a nearby vacant lot where he sexually assaulted them. The man fled on foot and the victims went to a nearby home and called police.

A few days later, the two were at the apartment where one of them lived when they noticed a man in the parking lot who they believed was the man who attacked them. They recorded the license plate number of the man's car and called the police.

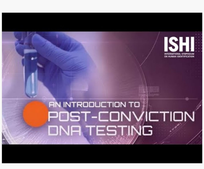
Police spoke with the owner of the vehicle who said he had loaned the car to 28-year-old Johnny Pinchback. When Johnny learned that the police were looking for him, he went to authorities. After briefly questioning him, Johnny was released. On April 4, police presented a photo line-up to the two girls, who both identified Johnny as their attacker.

On October 5, 1984, Johnny was convicted based almost solely on the identifications of the victims. He was found guilty of two counts of aggravated sexual assault and was sentenced to 99 years in prison.

After his conviction, Johnny learned the name of a man that his friends claimed had confessed to committing the sexual assaults. A motion for a new trial was filed based on newly discovered evidence but was rejected. Johnny lost his appeals and in October 2007 wrote a letter to the Innocence Project of Texas (IPTX). In May 2009, IPTX launched an investigation of his case.

On July 13, 2010, the Dallas County District Attorney's Office joined with IPTX to request DNA tests of remaining physical evidence. The testing found a small amount of seminal fluid and isolated a male DNA profile from the fluid that was different from Johnny's, proving that he was not the rapist. On May 12, 2011, Johnny was released from prison.

Today, Johnny is a board member for the Innocence Project of Texas, helping others who have been wrongfully convicted. The science that was used to retest evidence in his case did not exist in 1984, underscoring the importance of post-conviction DNA testing and those who perform this work.



Selecting the Appropriate Case for Re-Examination

In this episode, our experts discuss how cases are selected for re-examination. Is there an alternative narrative of innocence? Can it be proven? Is there DNA evidence to test?

We also look at the process for having a case re-examined; differences between states, the personnel involved, finances required, and the legal procedures, including the ramifications of self-representation.

One such case is that of Johnny Pinchback, who was sentenced to life in prison for an aggravated sexual assault that he did not commit. After 27 years, he was exonerated thanks to the Innocence Project of Texas.

Michael Ware discusses the first Conviction Integrity Unit (CIU) established in Dallas County in 2007, dedicated to both reviewing cases involving allegations of actual innocence and cases involving instances of wrongful conviction when related to an innocence claim as well as a result of systematic errors. Currently, there are over 115 CIUs in the United States.

One example of a conviction being overturned due to review by a CIU is the case of Patrick Waller, who served 16 years for a robbery and kidnapping that he didn't commit.

On March 25, 1992, a Dallas couple was abducted at gunpoint by two men. The men forced themselves into the couple's car and had the couple drive the car to another neighborhood, withdraw $200 from an ATM, and later to an abandoned house, where the abductors tied them up and sexually assaulted the woman.

During the assault, another couple unexpectedly drove up to the abandoned house. One of the abductors forced the second couple into the house at gunpoint. When a school district security officer drove by the home, the perpetrators fled the scene separately in the couples' two vehicles.

One week after the crime, three of the four victims picked Patrick Waller out of a photo lineup. The fourth victim would later pick Patrick out from a live lineup. Patrick was identified by the first couple as the man who held the gun during the attack and committed the sexual assault.

Patrick, who was on probation for an unrelated incident, was arrested and charged with aggravated robbery and aggravated kidnapping. The Dallas Police Department never identified or charged a second suspect.

At the trial, the four victims identified Patrick as one of the men who attacked them. An analyst who testified for the state said she had conducted blood type testing on a rape kit collected from the sexual assault survivor, and that Patrick could not be excluded as a potential contributor of the semen, even though 58% of the population could be excluded.

DNA testing was conducted in Patrick's case in late 2007 as part of a joint effort conducted by the Innocence Project of Texas (IPTX) and the Dallas District Attorney's Office Conviction Integrity Unit. The results revealed a male profile and excluded Patrick Waller as the perpetrator.

Officials then ran the DNA profile through the national DNA database, and found a match to Byron Bell, a Dallas man serving a 45-year-sentence for a burglary that took place months after the abduction. Bell eventually confessed to the original crime when confronted, telling police he had an accomplice, who police would soon learn was Lemondo Simmons.

County officials told local press that Simmons, who had been convicted and incarcerated in 2002 for assault on a public servant and released in 2004, admitted to his role in the crime but could not be charged since the statute of limitations on the crime had passed.



The Process for Re-Examination

In this episode, our experts discuss the process for re-examining a case, which has been described in Texas as a 'Herculean Effort' and begins with an inmate claiming their innocence.

Throughout this process, it's important to consider how technology and the process for examining evidence has dramatically changed since the use of DNA became commonplace.

Beyond that, the technology available for analyzing DNA has drastically changed in a relatively short period of time. Whereas it was once necessary to consume larger quantities of evidence to obtain a profile and mixtures remained inconclusive, we can now deconvolute those mixtures with greater accuracy and can retest much smaller amounts of evidence. All of this is important to consider when re-examining a case.

If everything goes smoothly, the full process can take between 8-10 years, which is an eternity to someone who is incarcerated for a crime that they did not commit. Such was the case for Stephen Brodie.

In September of 1990, a 5-year-old girl was abducted from her home in Richardson, Texas and molested. With little information to go on aside from the victim describing her attacker as a "fat white man" and a fingerprint from the window screen where the attacker had entered the home, the case started to turn cold.

In August of 1991, Stephen Brodie was arrested for burglary of a coin-operated soda machine at a swimming pool in Richardson near where the girl had been assaulted. The police brought him in for questioning where he quickly confessed to the burglary. They then began to question him about the crime which had occurred the year prior.

Stephen was interrogated over 18 hours about the assault. He was deaf, so much of the questioning was done through writing and without the benefit of an interpreter. Ultimately, Stephen did confess to the crime, but had gotten a 44 of 46 details of the crime wrong or failed to mention them at all. Faced with a possible 99-year sentence, Stephen pled guilty to rape and received a 5-year sentence.

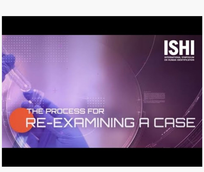
Stephen subsequently filed a state law petition for a writ of habeas corpus but was denied. Stephen served his five-year term and was released in 1998. However, he was subsequently convicted three times for failure to register as a sex offender. He was sentenced to five years in prison for two of the cases and two years in prison for the third.

It was later discovered that Stephen was excluded as a match to the fingerprint on the victim's screen. Analysis had linked the print to Robert Warterfield, who had previously been convicted of sexually assaulting a child less than a mile from the Richardson attack and was suspected in a number of other assaults in the area. Stephen's case was re-opened by the Dallas County District Attorney's Conviction Integrity Unit.

In 2010, prosecutors in that unit argued for Stephen's release, and in September 2010, a Texas District Court judge granted a second state law petition for a writ of habeas corpus and vacated his conviction on the grounds of actual innocence. On November 10, 2010, the Texas Court of Criminal Appeals granted the writ and ordered the conviction vacated. The case was then dismissed in Dallas County Criminal District Court.

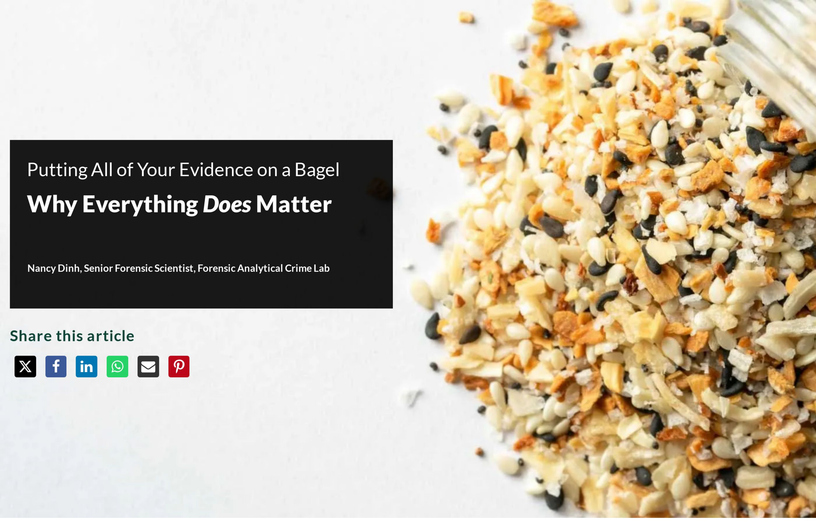
The Texas Court of Criminal Appeals also granted a separate habeas writ and vacated his convictions for failing to register as a sex offender. The appeals court found Stephen "actually innocent."

In 2012, Robert Warterfield was convicted of two other abductions and assaults of young girl—one in Dallas County and the other in Collin County—after he was linked to the crimes through DNA testing. He was sentenced to two life terms in prison.



For more information:

- National Registry of Exonerations
- Innocence Project



Putting All of Your Evidence on a Bagel

Why Everything *Does* Matter

Nancy Dinh, Senior Forensic Scientist, Forensic Analytical Crime Lab

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Some readers may be familiar with the film "Everything Everywhere All At Once" (EEAAO). Briefly, it's a story of a woman named Evelyn who works at a laundromat with her husband and they both share a rebellious teen daughter. Evelyn has a complicated relationship with every person in her life, including herself, and each of these relationships is explored through alternate universes. Eventually with the help of every person she interacts with, she is able to find the key to happiness through these otherworldly experiences and learn to live her life in the real world with a greater understanding of people and her surroundings. I watched this movie recently and it inspired me to talk about work.

Much like Evelyn, we as forensic scientists started in our own seemingly normal lifepaths, but as we became more involved in our forensic careers, we became experts at traversing between the normal real world and the alternate world that is casework. Every day we enter multiple alternate universes where we play detective, investigating crimes in order to understand how to sample our evidence, and we do the evidence justice by getting as much information as we can from it. However, this requires many resources that are hard to obtain, and when our focus shifts from finding truth in evidence to pumping out as much casework as possible to make someone happy regardless of the quality of the work, the motivation to get the resources we need wanes. What we once found to be enchanting about this field gets lost in the weeds of workplace politics, outside pressures that we as individual analysts are no match for, and the drudgery that standard 9 to 5 work inevitably becomes.

My work situation is unique in that most of the work that I do is for the defense, and in most cases, DNA work has already been completed on some or all of the relevant evidence by a state or local agency's lab. I review bench notes and reports produced by other labs, assist attorneys in understanding the data and conclusions, and sometimes I provide recommendations for further testing. I then might re-examine items or look at items that were never examined before and perform DNA testing. Being a part of the investigative team means contributing to a story – whether it be by translating DNA-speak into layman-speak or prodding at evidence in an attempt to fill in some of the gaps in the storyline. Ultimately, the goal is to find truth in DNA evidence. The cases that I share below are not meant to be disparaging to other experts; we're all on the same team and I am hoping that hearing some of these stories will lead to meaningful discussions about the areas in which we can all improve.

Case #1

The first case is a sexual assault/murder cold case – believed to be part of a string of serial crimes that occurred in the mid-1980s – wherein the victim was found deceased along the highway. Little was known about the victim. A sexual assault kit collected from the victim was first examined and tested in 2003. Semen was detected on the victim's vaginal swab but the DNA result was determined to be ineligible for comparison to known samples due to limited genetic information. Semen was not detected on the anal swab and subsequent revisits to the evidence in this case did not include the anal swab likely because the swab was consumed during the initial testing and the result was not informative.

In 2020, my lab received the victim's sexual assault kit and among the specimens that remained was an empty glass vial labeled "anal swab". I noticed there was residue along the inside of the anal swab tube, so I decided to give it a shot and swab the residue despite previous findings (or lack thereof). I examined my sample microscopically and discovered sperm, which meant that there in fact was semen on the anal swab. And just like that, the anal swab that was once an unremarkable pawn in this case was now promoted to King. I took my sample through DNA testing and generated a result that was a mixture of at least two males – a major contributor and at least one minor contributor – and submitted this result to CODIS for search. Unfortunately, the anal swab sperm result was not eligible for CODIS upload; however, the case is still being investigated and potential suspects are continually being compared to this profile to this day.

From this case we can see that the true results were not discovered during the initial round of testing and that those results likely had an impact on all subsequent examinations of the evidence. If there's anything I learned from my years of re-testing items, it's that it's best to treat the item as if it had never been tested before. Make your own observations and come to your own conclusions despite previous results because your findings may be different – and in this case the opposite – of what someone else found. For almost 40 years, the DNA evidence in this case did not provide any leads, but with a little bit of ingenuity (and some determination), we were able to uncover very useful information.

Case #2

In a 1997 homicide case, a man was shot and killed outside of a nightclub during the course of a robbery. Witnesses identified the suspect as having worn an oversized football jersey which he had discarded in a bush while fleeing the crime scene. An anonymous caller phoned police and accused a man – who we'll refer to as John – of being the gunman. John was ultimately convicted of the crime in 1998. Postconviction DNA testing at a private lab in both 2009 and 2014 focused on testing the football jersey for wearer DNA from the suspect. These examinations focused on areas that might be in contact with the skin of the wearer and areas of potentially high friction, such as the inside neck and the inner cuff areas. In 2009, the lab was unable to obtain any DNA results. In 2014, the lab determined the DNA results were far too limited and complex for interpretation.

In 2020, my lab reviewed the previous work and opined that the approach to sampling the jersey for wearer DNA was not appropriate because jerseys are typically worn over other layers of clothing and do not make as much contact with skin in the same way that a fitted t-shirt or a long-sleeve button up might. In our re-examination of the jersey, we attempted to look for any biological deposits that could have come from other types of contact, such as wiping of the nose or mouth. Biological stains were located on both outer sleeves of the jersey. DNA testing of stains from both sleeves revealed a unique male DNA contributor. John was eliminated as this male. The profile was searched in the CODIS database without success. Continued investigation into the case by law enforcement led to the identification and arrest of the actual gunman in 2022. In 2023, twenty-five years after his conviction, John was formally exonerated.

These are just two of hundreds of cases we've encountered in our laboratory alone. These oversights and/or omissions are not localized to any specific lab. They span different counties and states, from state-level to federal. Many causes and factors are culpable, from limited resources and unreasonable outside pressures to inadequate training and experience. My hope is that we can all take a step back and re-evaluate our laboratory practices and think about how we can all enhance the way we perform our work. Seemingly small errors have the potential to create big problems: A perpetrator could remain free to commit additional crimes, or the wrong person could be behind bars for a crime they did not commit.

Unlike EEAAO where the proverbial everything bagel that holds all of our hopes and dreams is regarded as something that does not matter, in the forensic DNA world where the everything bagel metaphorically represents every facet of a case, everything *does* matter. The outcome of a case hinges upon the meticulousness, the creativity, and the diligence of the work put into the process.

Remind yourself of why this particular line of work was and continues to be so important to you and to your community and why it's important to always try to uncover the actual truth in the evidence. In an alternate universe where we weren't forensic scientists, we probably would have really liked just doing laundry and taxes; but in this life we have now, it is our responsibility to continue asking questions and to aim to be better stewards of justice and truth because the lives of other people in this particular universe depend on it.



Enhancing Forensic Science

Exploring Human Factors in DNA Interpretation

Niki Osborne, Forensic Research Scientist | Project Management Support, National Institute of Standards and Technology (Contractor)

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The study of human factors in forensic science has emerged as an essential component in understanding the interaction between humans and the systems they use. Through a human factors lens, we can recognize and address potential errors and biases, shape a positive laboratory culture, improve work productivity and quality, and enhance the communication of scientific results. To delve into this critical topic, we are excited to present a workshop at the International Symposium of Human Identification in Denver on Sunday 17th September that focuses on the study of human factors in forensic DNA interpretation.

The workshop will bring together experts from the National Institute of Standards and Technology National Institute of Justice Expert Working Group on Human Factors in Forensic DNA Interpretation. This group has spent 3.5 years evaluating scientific literature and technical knowledge to develop recommendations aimed at improving practice and reducing the likelihood of errors in DNA interpretation. Workshop participants will gain valuable insights into key areas such as management, quality assurance, education and training, technology implementation, communication of results, and the interpretation of DNA results in relation to alleged activities.

By attending this workshop, participants will benefit from a range of learning outcomes that can be applied to their forensic DNA analysis practices:

1. In-depth Knowledge: Gain comprehensive knowledge of the NIST/NIJ EWG recommendations pertaining to management, quality assurance, education, training, technology implementation, and result communication.
2. Practice Implications: Understand how these recommendations improve the practice of forensic DNA interpretation and their direct implications for participants' own work.
3. Error Culture: Acquire practical tools to foster a positive error culture within forensic DNA laboratories, ensuring continuous improvement and learning from mistakes.
4. Human Factor Considerations: Recognize the importance of human factors in managing forensic DNA laboratories, developing quality management systems, and shaping the training and continued education and training of DNA analysts.
5. Bias Mitigation: Identify strategies to mitigate cognitive bias and improve review procedures.
6. Implementation of New Techniques: Gain practical tools to thoughtfully implement new techniques, technologies, or methods within forensic DNA laboratories.
7. Contribute to the Debate on DNA Results and Activity-Level Propositions: Become familiar with the limitations and different viewpoints surrounding the evaluation of DNA results when responding to questions related to alleged activities.

This workshop is designed for a diverse range of professionals involved in forensic science, including DNA analysts, forensic practitioners, laboratory management and leadership personnel, quality assurance/control personnel, forensic DNA researchers, legal practitioners, education/training facilitators, certification/licensure bodies, and probabilistic genotyping software developers. No prerequisite knowledge is required, making it accessible to all interested individuals. Join us to be a part of this transformative workshop and be part of the change needed in forensic DNA interpretation.

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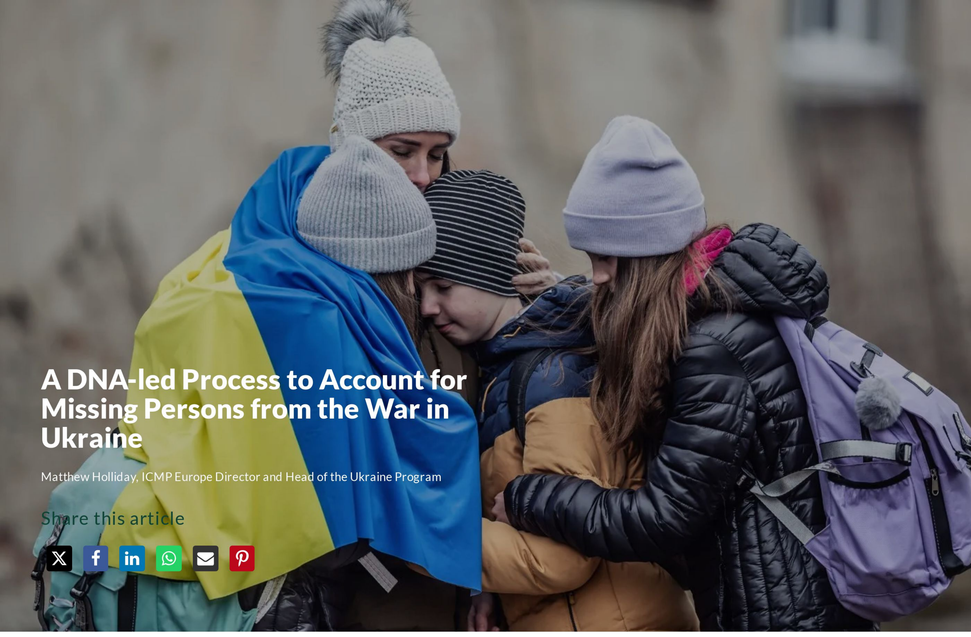

A DNA-led Process to Account for Missing Persons from the War in Ukraine

Matthew Holliday, ICMP Europe Director and Head of the Ukraine Program

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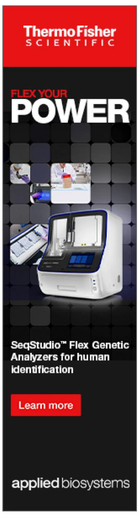

"A Country of Missing People: Securing Justice and Truth for Families of the Missing in Ukraine", published by the International Commission on Missing Persons (ICMP) at the end of August, reviews the steps that Ukraine is taking to account for tens of thousands of missing and disappeared persons as a result of the Russian invasion. Among other things, the book examines how Ukraine can integrate DNA profiling in an effective system to identify victims of forcible deportation, summary execution, incommunicado detention, kidnapping, and family separation, including unlawful adoptions and human trafficking.

An ICMP program, requested by the Ukrainian authorities and supported by the European Union, the US, Canada and Germany, envisages campaigns to collect data from up to 90,000 families of the missing inside Ukraine and among the country's huge diaspora. ICMP's DNA laboratories in The Hague are assisting Ukrainian forensic scientists in the DNA profiling process, and Ukrainians can already report missing persons using ICMP's Online Inquiry Center.

"A Country of Missing People" notes that Ukraine's pre-war DNA laboratory network, with nine Ministry of Internal Affairs labs spread across the country, was staffed by well-trained personnel and had adequate resources to handle peacetime demands. However, the conflict has created demand that goes well beyond the capacity of the peacetime system. In October last year, for example, the DNA laboratory in Kharkiv was receiving 20 cases *a day* from the recently liberated town of Izium, compared to five cases *a month* before the war.

Through its experience in the Western Balkans and elsewhere, ICMP has been able to demonstrate that advances in genetic science, including recovering DNA from highly degraded bones and the practical application of Next Generation Sequencing (NGS), are hugely effective when integrated with advances in database technology. Current, in-house developed software – ICMP's Integrated Data Management System (iDMS) – allows information to be collected, protected, stored and shared, supporting identifications with extremely high levels of certainty (posterior probability of 99.95-percent, and often higher).

While some elements of a DNA-led identification system already exist in Ukraine, they haven't been brought together. The default method of identification continues to be based on visual recognition and secondary identifiers – artefacts found at the gravesite, markings, tattoos and so on.

Developing an effective system will involve collecting DNA profiles from tens of thousands – perhaps hundreds of thousands – of relatives of missing people (to account for 30,000 missing people in the Western Balkans, ICMP collected samples from more than 100,000 relatives, not just in the region but throughout Europe, North America and Australia). When a comprehensive database of donor reference samples has been compiled, DNA taken from unidentified human remains can be compared in a manner that results in identifications. For this model of mass identification to function, all of the information gathered by different agencies – the military, the police, the various institutions established to account for missing persons – has to be brought together.

In May 2023, the Ministry of Internal Affairs launched the Unified Register on Persons gone Missing under Special Circumstances, which is a significant step towards developing a secure system for collecting and sharing information.

DNA-led identification has introduced a new element to the conduct of war crimes investigations. In the former Yugoslavia, the attempt by perpetrators to hide evidence of the Srebrenica massacre and other atrocities was part of a systematic campaign – that continued for decades – to seize the historical narrative and bend it to support political objectives by challenging the nature and the scale of civilian deaths. By presenting incontestable scientific evidence – the identification of victims – ICMP was able to refute genocide denial and support an accurate historical record. At the International Criminal Tribunal for the former Yugoslavia (ICTY), ICMP provided scientific evidence, DNA match reports and DNA case files (with the explicit permission of families) and expert witness testimony. The evidence presented by ICMP allowed prosecutors to identify the connection between geographically distant mass graves, which supported the charge that killings in Bosnia and Herzegovina had been part of a joint criminal enterprise.

The Ukrainian authorities have to ensure (with limited resources and in the most challenging circumstances, they are already trying to do this) that evidence from missing persons cases is collected and maintained in a manner acceptable to the courts, and that it will stand up to judicial scrutiny. Clandestine gravesites should therefore be treated as crime scenes and excavated remains and exhibits processed in line with international forensic standards.

Ukraine has an advanced administrative system but many of its key components work in relative isolation. Targeted and effective steps to coordinate and streamline competencies will reduce inefficiency and allow experts to work across ministerial mandates.

"A Country of Missing People" argues that Ukraine can account for tens of thousands of people if it coordinates the work of diverse agencies and establishes a system that includes legislative and administrative provisions, and an active program to engage civil society, including families of the missing. If such a system is established, then the latest developments in forensic science and database technology can be applied effectively.

About ICMP

ICMP is a treaty-based intergovernmental organization with Headquarters in The Hague, the Netherlands. Its mandate is to secure the co-operation of governments and other authorities in locating persons missing as a result of conflicts, human rights abuses, disasters, organized violence and other causes and to assist them in doing so.

ICMP was one of the organizations that helped to identify victims of Flight MH17, shot down by a Russian missile over eastern Ukraine en route from Amsterdam to Kuala Lumpur in July 2014. It has recommended legislative and institutional measures to enhance Ukraine's capacity to account for missing persons. Many of these recommendations had already been implemented before the 2022 Russian invasion. In April 2022, the authorities in Ukraine requested urgent ICMP assistance. ICMP deployed staff in the Spring of 2022, opened an office in Kyiv in July, and launched a comprehensive program to help the Ukrainian institutions account for those who are missing as a result of the Russian invasion.

Advertorial

Get to Know Microread Genetics

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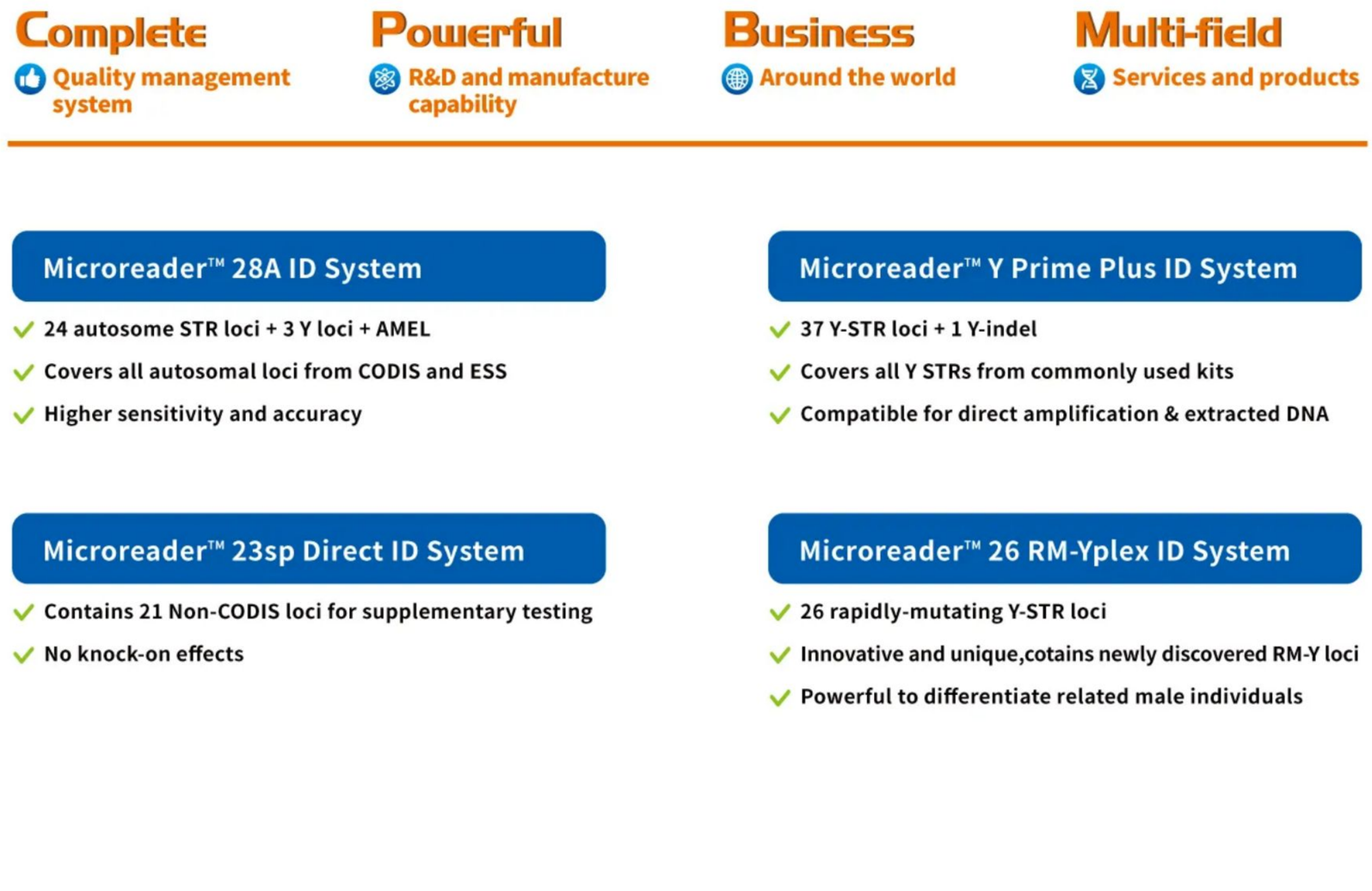
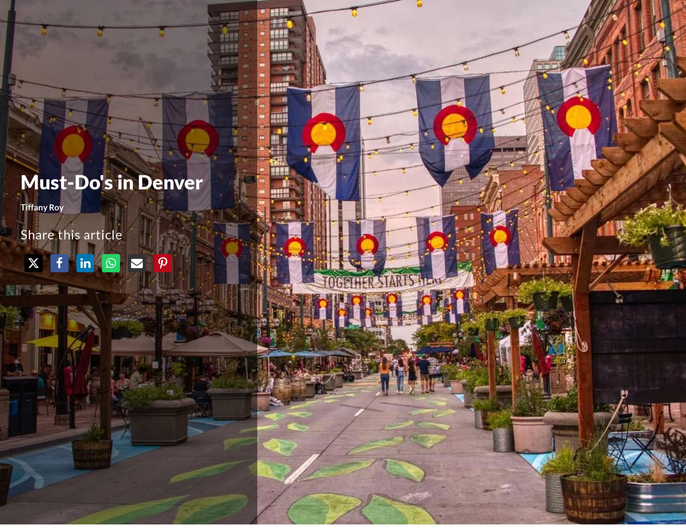
Microread Genetics (stock code: 873723.NQ) is mainly engaged in the R&D, production and sales of multi-gene joint detection products, and provides technical services and innovative solutions for downstream customers based on the medium-throughput genetic detection technology platform, with a wide range of products and services Applied in forensic science, clinical medicine, industry and agriculture and other fields.

Guided by market demand, Microread Genetics fully utilizes its technical accumulation in the field of genetic testing, takes the medium-throughput fluorescent PCR-capillary electrophoresis platform as the core technology platform, and forms key capabilities such as testing equipment, testing reagents, and software system development and services. Committed to the technological progress and product development in the field of clinical medicine of major disease spectrum and the field of forensic science genetic testing, it has gradually become an innovative enterprise with the advantages of equipment, reagents and software integration in the domestic genetic testing field. A series of one-stop overall solutions have been launched, covering forensic DNA identification, DNA database construction, tumor drug use, reproductive genetics, drug guidance for cardiovascular and mental diseases, biopharmaceuticals, farming, animal husbandry and breeding, and general health.

Microread Genetics is one of the leading companies involved in manufacturing reagent systems for use at forensic science laboratories worldwide. With reagent systems developed to analyze autosomal STRs, sex chromosomal STRs with a unique Rapidly Mutating Y-STR (RM-Y) analysis kit included, we are serving more than 500 domestic and overseas DNA laboratories. Microread Genetics is aiming to provide complete range of solutions in the forensic field, including nucleic acid extraction reagents and related instrumentation, STR amplification kits, DNA database software and scientific research services.







Must-Do's in Denver

Tiffany Roy

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Evidence collection at its best!

You may have noticed that Denver, Colorado is really popular on the professional meeting circuit this year. Several major forensic conferences are being offered in Denver this year, including the 34th International Symposium on Human Identification and the 76th Conference of the American Association of Forensic Sciences.

There are more than 300 professional meetings scheduled between August of 2023 and August of 2024 in the Denver Convention Center. So what gives? Why are so many professional conferences choosing Denver this year? There is a lot to do in Denver and the surrounding areas. I did my research for a conference I attended with my husband in May 2023, and I found Denver had some great offerings for food, culture, arts and entertainment.

When I travel, one of the first places I start my research is restaurants. For my research on dining in the city of Denver, I started with recommendations from Conde Nast editors about the best restaurants in the area. From there, I go directly to the restaurant websites to see if the menu interests me. While in Denver, we tried two restaurants from the Conde Nast list, The Wolf's Tailor and Tavernetta. First, if you want to go to either of these restaurants, you're going to need to make a reservation early. These aren't restaurants where you can walk up and grab a table. The Wolf's Table is small, and when we visited in May, they utilized their back garden for al fresco dining to increase capacity, but it's unclear what they would do in the colder months. Tavernetta is larger, but it's one of the most popular restaurants in Denver and reservations tend to fill up fast for prime dining hours. Highlights from Tavernetta include the simple and classic Italian dishes and the extensive wine list. The wait staff were also friendly, knowledgeable, and attentive. The service at Tavernetta elevates this restaurant beyond the delicious food to make dining here an exceptional experience. Dining here isn't cheap, but you get what you pay for with this one. Five out of five stars would recommend.



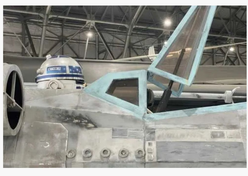


Next, The Wolf's Tailor was a completely different experience. The menu changes seasonally and the meal is served as a pre-fixe tasting menu instead of a la cart. And they don't tell you what they're going to cook specifically, you just have to reference what ingredients they list as "in season" on their website. Kinda scary, but I'm an adventurous eater and like researching forensic DNA experts (or any experts), you have to do your research to know who you should trust! We trusted the chef at The Wolf's Tailor, and I was not disappointed. When we dined here, I will say the menu felt very fresh. There were a lot of bright vegetable notes in our dishes, and you could tell the restaurant sources their ingredients locally. My husband isn't a big vegetable guy, so some of the dishes were misses for him, because he could taste, well...vegetables. I love tasting menus because I get little portions of a lot of different things so even if one isn't my favorite, I still have other bites to look forward to. We also did the cocktail pairing with our meals, which I recommend.



There are some excellent museums in Denver, and I know at least one reception at ISHI will be held in one of Denver's many excellent museums. While we were there, my husband's conference held a reception in the Wings over the Rockies Air and Space Museum. They had a lot of really cool Star Wars exhibits and props that we thought were fun.

The historical artifacts displayed from the space shuttle program were impressive. This museum would be good for families who are Star Wars fans, anyone interested in the military and anyone with interest in being an astronaut. I also received many recommendations to visit the Denver Museum of Nature and Science, which is still on my list of places I need to visit in Denver.





Finally, I wanted to see something in Denver that I would never be able to see anywhere else. On a day when my husband had lectures all day, I took an Uber to Garden of the Gods in Colorado Springs. It was about an hours drive away, but it was absolutely breath taking. I would recommend this to anyone, the landscapes and rock formations were like nothing I'd even seen before. I booked a half bus tour, half hike and took in some of the beautiful sights, including Pike's Peak in the distance. You can probably imagine that the pictures do not do it justice, you have to see it with your own eyes.



Some other members of my tour group had taken the gondola to the summit of Pike's Peak, and they told me that was excellent as well. Unfortunately, we were there during the Canadian wildfires, so visibility was reduced but in September I'm hopeful there will be some nice clear skies for beautiful viewing from the summit of Pike's Peak.



Events Just for Young Scientists
At ISHI 34

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Are you a student or scientist early in your career? We've created two events at ISHI this September designed just for you!

Student Mixer

Monday, September 18th | 4:00-5:00pm | Hyatt Regency, Silver AB

Start your week at ISHI by connecting with fellow students and those in academia during a mixer before the Welcome Reception. Non-alcoholic refreshments will be served. This event is free of charge, but pre-registration is requested.

Young Scientists' Showcase

Tuesday, September 19th | 6:00-8:00pm | Hyatt Regency, Agate ABC

Are you looking to share your research and gain feedback from colleagues? Consider attending our first Young Scientists' Showcase scheduled for Tuesday evening.

The evening will begin with a chance to network with fellow students, newly minted forensic scientists, and representatives from forensic institutions over light appetizers and non-alcoholic beverages. Following this, participants will share their research in 10-minute presentations (including time for Q&A). A limited number of presentation slots will be available.

If you are interested in sharing your work, sign up for a slot. Please keep the following guidelines in mind as you prepare:

- Presentations should be in PowerPoint format using a widescreen template. An ISHI template has been created and can be downloaded here.
- Sending your slides ahead of time is the easiest way to ensure we will have them pre-loaded. Presentations can be sent in PPT format to ISHI@promega.com by September 8th. Even if you have sent your presentation in advance, please bring a copy with you on a flash drive.

Reserve a Presentation Slot

Additional Student Resources

Don't forget our Student Resources page located on our website. Whether you're looking for advice, upcoming news, or are beginning your job search, we have it covered with articles, videos, webinars, and more!

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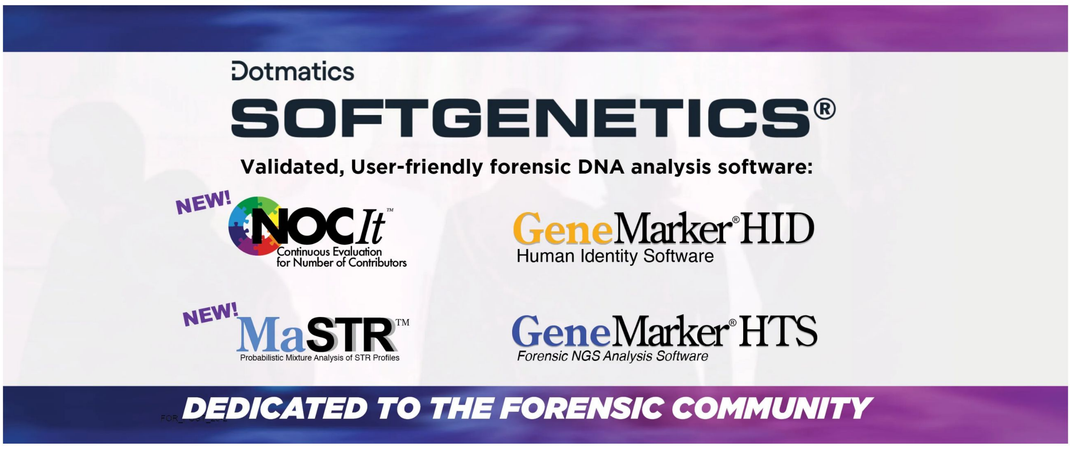



Get to Know the ISHI 34 Speakers

Tara Luther, Promega

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Before heading to ISHI this year, let's get to know some of the General Sessions speakers a little better.

What inspired you to seek out a career in the forensic field?



Melody Josserand: Honestly, it was the television show CSI! lol

Natasha Poe: "Science-Service-Compassion"

Science: In college I started in the fields of chemistry and biology and found that the forensic science degree overlapped both degrees. But it was the internship requirement that solidified the love for the career.

Service: I wanted to help the community and state where my family lives and hope I have made a difference in my 27 years of service.

Compassion: Over the years when I hire and train new employees, I tell them you will either love this profession or you will not last long in it. It takes a unique person to have compassion for someone's situation, to work a case tirelessly, to never give up on a case, to think about that case when they go home at night, and never know that person personally.

Quentin Gauthier: I've always been interested in the sciences and how to apply it to solving puzzles, so forensic felt like a natural fit.

Colleen Fitzpatrick: I didn't seek out FGG. I invented it.

Greg Hampikian: Studying wrongful convictions.

Allison Lewis: Working as a public defender for many years, i saw and experienced how difficult it was for defenders to dive deep on challenging scientific principles while also working to be effective advocates with incredibly high caseloads and nonstop demands of court. As the complexity and prevalance of dna evidence continued to increase, it became obvious that we needed attorneys to specialize and advise. I love teaching my colleagues how to understand, investigate, challenge and communicate these sophisticated scientific principles to clients, to courts, to factfinders. Dna can be a powerful ally in storytelling. For both sides.

Amy Smuts: A natural interest in science.

Nicole Novroski: I was first inspired in high school, but it is the constant evolution of the field, the excitement of research, and forensic science education that keep me passionate about my future in forensic genetics.

Meradeth Snow: I came to this field, in part, from the ancient DNA world, where I was often working with DNA from the strangest of sources that was hundreds to thousands of years old. Moving to Montana and working on the forensic anthropology cases that came through our lab exposed me to so many sad and frustrating stories of young people, mostly women, who had vanished. I wanted to help with the skillset I had: infinitesimally small starting concentrations, highly degraded DNA, and oseous materials, which has turned out to be the perfect fit.

If you had to pick one thing, what do you enjoy most about your job?

Melody Josserand: The satisfaction of doing a job that has a real-world impact daily.

Natasha Poe: Forensic science is ever changing. Nothing is ever constant, and every case is different. This makes my job a new experience every day!

Quentin Gauthier: Getting to throw out the SOP and do whatever it takes to achieve a better result.

Colleen Fitzpatrick: Solving the puzzle.

Greg Hampikian: Thinking and laughing with my colleagues and students.

Allison Lewis: Working with my clients, supporting them and their families, and letting them know there is someone in their corner, no matter guilt or innocence, but also no matter their darkest moment or worst actions. Everyone deserves an advocate.

Amy Smuts: My coworkers.

Nicole Novroski: The novelty that each new project brings – the field of forensic genetics in constantly in flux.

Meradeth Snow: Working with students. I have a host of graduate students I work with and they inspire me to no end!

If you currently work in the lab, or have in the past, what's the weirdest thing you've ever collected DNA from?

Melody Josserand: Dirt

Natasha Poe: A block of cheese, the suspect decided to take a bite of it during a home burglary.

Quentin Gauthier: Snapper DNA brought straight from the Florida Keys

Colleen Fitzpatrick: I'd like to hear the answers to that....I can only imagine....

Greg Hampikian: The sewers of Boise.

Amy Smuts: Anything and everything.

Nicole Novroski: When I worked at the OCME in NYC, the NYPD would often get creative when collecting suspect exemplars. My time there was always so exciting because you never knew what would be inside the evidence bag!

Meradeth Snow: Oh, I have a long list of weird stuff! It's pretty much my specialty. Probably the one that cracks me up the most is the 2000-year-old poop from a dry cave site.

If you could go back in time and give advice to your younger self, what would it be?

Melody Josserand: Look for the oddball, niche jobs that stimulate your intellectual curiosity – you'll never go wrong if you are doing something that interests and excites you.

Natasha Poe: Get comfortable speaking in front of people. A public speaking class was a degree requirement that I took begrudgingly. Looking back, I wish I had made more of the experience of getting comfortable in front of an audience. Being an introvert makes public speaking difficult and networking difficult at times so practicing basic public speaking skills is important.

Quentin Gauthier: Ignore the crime scene forensics. The laboratory is where the fun stuff is.

Colleen Fitzpatrick: To understand the impact that what I did would have on forensics.

Greg Hampikian: Time is your friend, there is only one deadline, and we all make it on time.

Allison Lewis: Don't be afraid to ask the question! You're certainly not the only one wondering. And even if you are, it's better to ask now than to never know. Also wear sunblock...

Amy Smuts: Be aware of burnout and trauma from years and years of casework.

Nicole Novroski: Interestingly, I'm very happy with the path I'm on. But, if I could go back in time, I would have loved to do a placement/exchange internationally in Europe or NZ/Australia.

Meradeth Snow: Don't forget to breathe a little more! I think we get caught up in our work a lot—it's important stuff that we do! But, that means I have often had to remind myself a whole lot to take time to step away. It's important for being a good scientist and researcher, but also a healthy human.

What's one thing that others may not know about you?

Melody Josserand: I'm pretty good at Cowboy Mounted Shooting

Natasha Poe: Growing up I was an active member in 4-H and FFA and showed cattle.

Quentin Gauthier: Despite my best efforts, I ended up with a degree in chemistry, my least favorite subject in high school.

Colleen Fitzpatrick: I've been in three operas. Two were in a small town in Texas so that everyone who showed up got to sing. The third was as an extra in a production of La Boheme by Opera Pacifica – I played a floozy who was thrown out of a bar.

Greg Hampikian: I can get any child to eat vegetables, the secret is to let them demonstrate the strength they gain by pushing you across the room. The harder you fall, the more they eat!

Allison Lewis: I love artichokes. I think there is no argument -- they are definitely the most interesting vegetable out there.

Amy Smuts: They know everything because I have no poker face.

Nicole Novroski: I have my motorcycle license and enjoy getting outside on the bike! It's definitely not my strongest skill, but I love learning and improving in everything that I do!

Meradeth Snow: I'm a novelist on the side. Nothing related to the field, as I need an escape from that world sometimes, but it is something I very much enjoy.

What is one item on your bucket list? Have you checked it off yet?

Melody Josserand: Visit Australia – was able to do that twice so far!

Natasha Poe: Visit All the National Parks. I have started.

Quentin Gauthier: I really want to go skydiving. Hopefully someday.

Colleen Fitzpatrick: More than one - To win a McArthur Foundation Genius Grant, to be invited to do a TED Talk on FGG, to travel first first first class to somewhere international where I've never traveled before (Latvia, Lithuania are candidates).

And by the way, if you get to talk to the McArthurs, please don't forget to mention my name.

Greg Hampikian: Working in Africa. Not yet!

Allison Lewis: Jazz Fest in NOLA, and i am planning to go in 2024!

Amy Smuts: Swim with sharks, and yes.

Nicole Novroski: I've always wanted to write a novel - my goal is before I turn 40... So, I still have a couple of years. Wish me luck!

Meradeth Snow: a. I teach Human Evolution on top of my forensic work and really want to go to South Africa and the Cradle of Mankind sites there. I'd like to see them in person and look for fossils. The other biggie is seeing Chauvet Cave, too! Neither have happened, but someday!

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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

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Workshop Proposals Due

February 2024

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