Top 6 Cases

As of 6/22/2020, with Addenda

1. The case of Sarah Yarborough

Name of Submitter: Thomas Jensen and Colleen Fitzpatrick [Joint Submission]

Agency: King County Sheriff's Office, Washington State & Identifinders International

Location: Federal Way, Washington, USA

Date of Crime: 1991

Date of Hit: 2019

Executive Summary: A murder of a high school girl in 1991 remain unsolved for 28 years. Although DNA was retrieved from the murder scene, it produced no matches in CODIS due to legal loopholes in Washington State DNA collection and familial searching rules preventing identification of the killer via association to relatives. However, in 2011 genetic genealogy was attempted using Y-STR familial searching, leading to a match to the Fuller family, which included a longtime friend of Yarborough. Fuller voluntarily provided his sample which excluded him from investigation but his Y-STR profile continued to match the killer's indicating paternal cousin relationship. In 2019, using genetic genealogy the killer was narrowed down to two brothers, one of whom was a registered sex offender and whose DNA profile was included into the database. The brother, named Patrick L. Nicholas, was followed and his DNA surreptitiously collected, leading to a match. Nicholas was arrested, charged, and is awaiting trial.

Those legal loopholes include:

- The murderer being able to plead for a lower conviction on child molestation (gross misdemeanor as opposed to felony) which avoided DNA sample collection and inclusion into the database in 1993 under Washington State law;
- The murderer's brother was included into CODIS on a rape convicted. Because Washington State does not practice familial searching, the two cases were never connected.

Scientific Significance: This case received national attention at the time. This case is the first known instance where direct-to-consumer DNA test data was used to generate investigates leads for a cold case, opening the door for future cases solved via genetic genealogy; after DNA match in CODIS in 2019, it was discovered that Sarah's could have been discovered 20 years earlier through CODIS but due to legal loopholes it was not possible.

Although genetic genealogy matched to the Fuller surname, Yarborough's killer's surname was Nicholas because his grandfather was adopted so that his legal surname was not his biological surname. This shows that even genetic genealogy has its limitations.

Investigative Significance: This case lasted for 28 years and was only solved in 2019 through genetic genealogy (Colleen Fitzpatrick and team). This case received national attention at the time.

Submitted Facts by Thomas Jensen (King County):

Sarah Yarborough, a 16-year-old member of the Federal Way H.S. drill team was murdered and sexually assaulted on the grounds of the high school in December of 1991. She was an attractive All-American girl. The murder sent shockwaves throughout the school and the community. The King County Sheriff\'s Office worked the case ceaselessly for nearly 28 years. In spite of ample DNA left at the crime scene by the suspect, and the hundreds of possible suspects that were interviewed and compared, there were no hits in the known offender database (CODIS/NDIS). In 2019 Detective Kathy Decker initiated a request to have this unknown DNA processed for genetic testing and ancestral analysis. Colleen Fitzpatrick and a group of geneticists narrowed the 'suspect' field down to two brothers, one of whom was a registered sex offender, and whose DNA was on file. The other did not have DNA in the system. That individual was followed, and cast-off DNA was obtained that matched to the DNA at the Yarborough crime scene. Patrick L. Nicholas was arrested, charged, and is awaiting trial.

It is difficult to put into words what finally solving this case meant to Federal Way H.S., the community, and the officers and detectives that devoted thousands of hours to this case over three decades.

Submitted Facts by Colleen Fitzpatrick (Identifinders International):

The Yarborough homicide was first attempted in 2011 by comparing the Y-STR profile obtained from crime scene DNA to public Y-STR genetic genealogy databases. When the case was solved in 2019 using autosomal SNP testing/GEDmatch, it was discovered that Sarah's killer could have been identified at least twenty years earlier through CODIS, but loopholes in the legal system had allowed him to avoid detection.

In 2011, a match was found for the killer's Y-STR profile to members of the Fuller Y-STR surname project who were descendants of Robert Fuller of Salem, Massachusetts in the 1630s, a relative of the Mayflower Fullers. Suspicion fell on William Fuller, a long time Yarborough family friend, who had been in the area at the time of the murder, and whose daughter Elizabeth was Yarborough's classmate. When William Fuller voluntarily gave a DNA sample, it was determined that he was not the killer nor was he the father of the killer. However, his Y-STR profile matched the Y-profile from crime scene DNA, indicating he was a paternal cousin of the killer, although it was not possible to estimate how closely they were related. The unusual situation developed that although the killer was still unknown, authorities knew his genealogy back to the 1600s and had even identified a cousin. Fullers living in the area were investigated but the case went cold again.

The 2019 identification of Patrick Nicholas as a suspect using autosomal SNP testing raised awareness of the limitations of CODIS, and fueled debate over the role of familial

searching versus genetic genealogy. Nicholas was convicted in 1983 of attempted first-degree rape in Benton County, WA before CODIS was launched in the 1990s. In 1993, he was arrested again for first degree child molestation. Although his DNA profile should have been entered into CODIS, he was allowed to plead to gross misdemeanor that did not require DNA collection. He escaped detection a second time. After Nicholas 'arrest, it was discovered that his brother Edward had already been entered into CODIS for a prior conviction for rape in the first degree; he was also a registered sex offender. Because Washington does not practice familial searching, Patrick Nicholas had escaped detection a third time.

Upon Nicholas's identification using genetic genealogy, King County Sheriff's Office quickly secured his DNA from discarded cigarettes. His DNA was found to be a CODIS match to the DNA profile developed from the victim. Nicholas has been charged with first degree murder with sexual motivation. He is currently pending trial in King County Superior Court, Seattle, Washington.

Ironically, Sarah's killer was named Nicholas, not Fuller. His grandfather was adopted, so that his legal surname was not his biological surname, highlighting the fact that even genetic genealogy has its loopholes.

Addendum

Submitted by Colleen Fitzpatrick, PhD

The 1991 Sarah Yarborough Homicide
The First Case Ever Attempted Using Genetic Genealogy

Colleen Fitzpatrick, PhD, President, Identifinders International
On behalf of The King County Sheriff Department Retired Detectives James Allen, Kathy Decker, and Tom Jensen

INTRODUCTION

The pioneering use of genetic genealogy in 2011 to generate forensic intelligence on the 1991 Sarah Yarborough homicide was an inauspicious start to what has become a revolution in human identification. The Yarborough homicide was the first known instance where direct-to-consumer DNA test data was used to generate investigative leads for a cold case, opening the door for countless others that have since been solved using genetic genealogy. The case presented unexpected twists, including a link between Sarah's killer and passengers on the Mayflower. Although the case became one of the first to use autosomal SNP testing in 2014, the type of SNP analysis that was available to the forensic community at that time was primitive compared to the Direct-to-Consumer (DTC) genealogical techniques used today, so it did not prove very useful. By 2019 however, genetic genealogy had finally advanced and succeeded where the legal system had failed. The perpetrator, identified as Patrick Leon Nicholas, had escaped CODIS identification three times, thanks to loopholes in the legal system. The cold case solves that appear in the headlines today may be exciting news, but they are the product of a slow and steady development of the forensic use of genetic genealogy that started with the Yarborough homicide.

CASE BACKGROUND

Sarah Yarborough was the all-American girl next door, the epitome of an innocent victim, which is rare in the world of homicide. She was loved by everyone. The murder of the high school drill team member frustrated King County law enforcement for nearly 30 years and deeply affected the tight knit community of Federal Way, Washington.

The community banded together to build a memorial in her honor which still stands today at Federal Way High School. Sarah's grandfather, an executive at Weyerhaeuser, a timberland company located in Seattle, facilitated the donation of a state-of-the-art computer system so that the thousands of tips pouring in could be organized and tracked. Washington State Patrol Crime Lab DNA scientist Jodi Sass was a new DNA analyst in 1991 who worked tirelessly on the case. Anytime a new suspect sample was obtained she rushed the results, to no avail. The investigators, scientists and media kept the case alive over the years. Nobody was going to give up on finding justice for Sarah.

Everyone involved in investigating her murder felt a deep sense of responsibility to solve her case. Det. Doyon took over the case early on. He was a well-respected homicide investigator who was a legend in the sheriff's department. But as time went by without a suspect being identified the stark reality began to sink in that this was not going to be an easy case to solve.

Yet the case had all of the solvability factors that investigators could ask for: a single source male profile; two eyewitnesses who provided a sketch along with a detailed description of the suspect. That sketch and that description were all over the media, generating thousands of leads. It seemed like the case would be solved quickly, but unfortunately that did not happen. The Washington State Police Crime Laboratory routinely ran the profile in state and national CODIS databases. It was also run through Interpol. There were between 200-300 hundred individuals swabbed, yet no suspect was identified, and the case went cold.

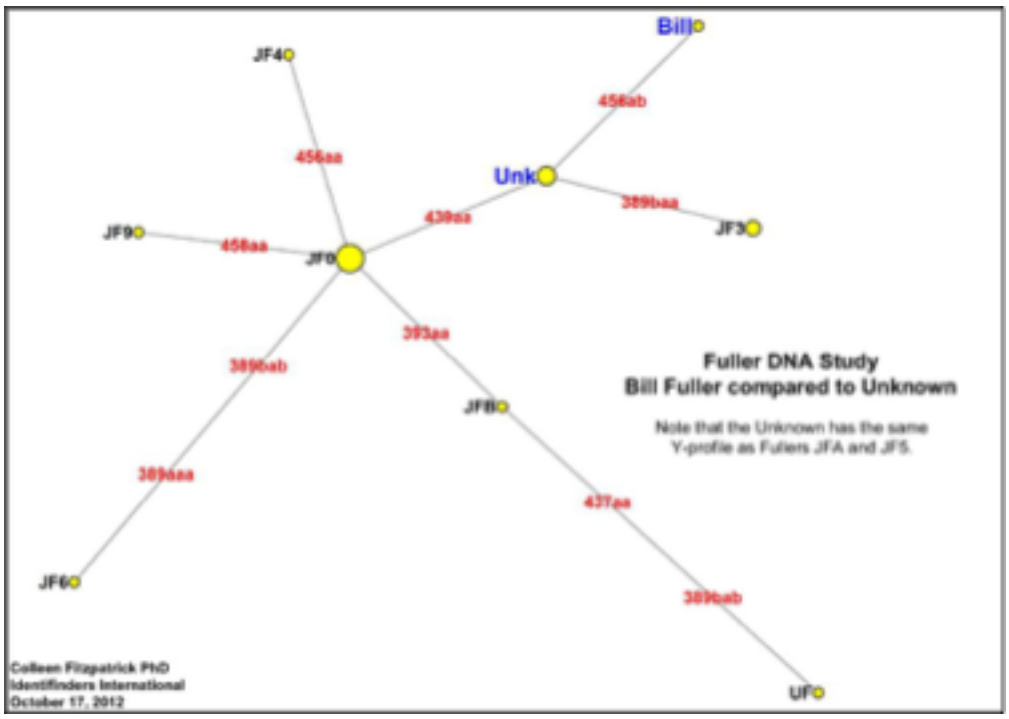
2011 MEETING WITH THE SEATTLE POLICE DEPARTMENT – GOOD NEWS AND BAD NEWS

My 2011 meeting with Seattle Police Department to discuss the use of genetic genealogy for cold case work did not go well. When I suggested comparing a Y-STR profile from crime scene DNA to the genetic genealogy Y-STR databases as a way to discover a possible name for the killer, the detectives pushed back, and understandably so. Because this was new technology, they were confused about how Y-DNA could indicate a family name.

Fortunately, Jodi Sass, the forensic scientist at the Washington State Patrol crime laboratory who had been dogging the case, was present. She saw potential in the techniques I was describing and eventually put me in touch with Detective Jim Allen from the Kings County Sheriff's Office. Jim had been tapped to take Det. Doyon's place as lead on the case when Gary Ridgeway was arrested as the Green River Killer, and Det. Doyon was chosen to lead the remobilized task force in 2001. Jim had carried the case for nearly the entire 17 years he had spent with the Major Crimes Unit, hoping for that one tip that might offer a break. Open to anything that might help, Detective Allen sent me the Y-STR profile of Sarah's killer.

CONNECTION TO THE MAYFLOWER

Using YSearch.org, a public Y-STR genetic genealogy database, I was quickly able to match the killer's Y-STR profile to over a dozen entries with the name Fuller, who were descendants of Robert Fuller, a resident of Salem, MA in the 1630s. Robert Fuller had not been a passenger on the Mayflower, but it was determined through genetic genealogy and historical records that he had been a relative of the Mayflower Fullers. Because the killer matched Robert Fuller's descendants, he was probably also a descendant of Robert Fuller, and also related to the Mayflower Fullers.



Cladogram showing Sarah's killer's and Bill Fuller's relationships to each other and to the descendants of Robert Fuller. Yellow circles represent individuals who share the same Y-STR profile. The size is proportional to the number of individuals it represents. Red labels are the Y- STR markers where their profiles differ. Note that Bill Fuller is one step off on DYS458 from the Unknown. The star pattern is characteristic of a very old family group with each ray representing a different branch of the Fuller family that is distinguished by a characteristic mutation.

The next twist was that Sarah Yarborough had a classmate named Elizabeth Fuller, who was one of five daughters of William Fuller, a long-time acquaintance of the Yarborough family. Bill had worked at the same company as Sarah's father Tom; they had children in the same schools. Bill Fuller had been jogging in the area at the time of the murder. When he became a person of interest, Bill voluntarily gave a DNA sample to the KCSO. No CODIS hit was achieved, ruling him out as the killer and the father of the killer.

However, Bill Fuller's Y-STR profile matched the assailant's on 16 of the 17 Y-Filer loci. Although less than an exact match is not considered forensically significant, the one-step match was genealogically indicative that Bill Fuller could be a cousin along the direct male line of the killer. He also fit comfortably within the matching Fuller family group. In addition, Bill's genealogy indicated that he too was a descendant of Robert Fuller. But considering the number of generations that had elapsed since 1630, William Fuller could even be his 15th cousin. There was no way to estimate that relationship based on Y-STRs alone.

The unusual situation developed that although the killer was still unknown, we had his possible last name, his genealogy back to 17th century Massachusetts, we had connected his family to passengers on the Mayflower and had even identified a patrilineal cousin. Bear in mind that the year was 2011, seven years before the identification of the Golden State Killer and the advent of genetic genealogy autosomal

SNP testing as a tool for generating forensic intelligence. Only Y-STR genetic genealogy analysis was available at that time to law enforcement. Yet even though it provided rich genealogical information, it was not possible to identify the killer based on Y-STR analysis alone.

MAYBE SNPS COULD HELP

Realizing that establishing the connection between Sarah's killer and William Fuller was critical in solving the case, I sought an independent laboratory to perform autosomal SNP testing that I felt might be able to estimate the relationship between them based on the SNPs they shared. Direct-to-consumer (DTC) DNA autosomal SNP testing for genetic genealogy was still a young industry, without the large databases and tools that would eventually become a mainstay of forensic investigation. Finding an independent lab that would do even primitive relationship testing based on SNPs was difficult; at that time, SNPs were commonly used to predict predisposition to disease. There were few commercial labs that could do SNP testing and interpret the results for forensics.

On the referral of Dr. Bruce Budowle, Director of the Center for Human Identification, I was able to run the two Fuller samples as part of a proof of concept study by Identitas Corp, working with Akesogen laboratory in Georgia. Their Identitas v1 Forensic Chip was the first commercially available all-in-one tool dedicated to the concept of developing forensic intelligence based on DNA. The chip, manufactured by Illumina using Infinium technology, allowed massively parallel interrogation of over 200,000 genome-wide autosomal, X-chromosomal, Y-chromosomal, and mitochondrial SNPs that could be used to infer biogeographic ancestry, appearance, relatedness, and gender.

In July 2014, the Sarah Yarborough case became one of the first forensic cases to undergo autosomal SNP testing with the aim of genetic genealogical analysis outside of the direct-to-consumer DNA testing pipeline. The results indicated that the killer was Caucasian European, and probably had brown hair and blue eyes. Detective Allen worked with Detective Tom Jensen to filter leads based on these characteristics. Unfortunately, the relationship estimate generated by Identitas for Bill Fuller and Sarah's killer was inconclusive. Their connection was too remote to be predicted by Identitas algorithms.

Patrick Leon Nicholas from a 1993 mugshot.

SUCCESS AFTER NEARLY 30 YEARS

Five years passed, during which time DTC autosomal SNP testing had developed into a thriving industry. In 2017 Jim Allen could no longer delay his retirement. He reluctantly passed the case to Detective Kathy Decker, who he trusted to carry on. After the Golden State Killer was identified using genetic genealogy in April 2018, the KCSO decided to try it on the Yarborough homicide. Identifinders took the case on August 8, 2019 when another company passed on it after rendering it too difficult to be solved.

We took only six weeks to solve the case. On September 26, 2019, Identifinders genealogists identified then 27-year-old Patrick Leon Nicholas as a suspect using genetic genealogy autosomal SNP testing. His arrest highlighted the limitations of CODIS, fueling debate over the role of familial searching versus genetic genealogy. Nicholas was convicted in 1983 of attempted first-degree rape in Benton County, WA before CODIS was launched in the 1990s. In 1993, he was arrested again for the first-degree child molestation of his stepdaughter. Although his DNA profile should have been entered into CODIS,

because the child's mother refused to testify against him, Nicholas was allowed to plead to assault in the fourth degree, classified as a gross misdemeanor that did not require DNA collection. He escaped detection a second time. After Nicholas' arrest, it was discovered that his brother Edward Nicholas was already entered into CODIS for a prior conviction for first degree rape; he was also a registered sex offender. Because Washington does not practice familial searching, Patrick Nicholas had escaped detection a third time.

Identifinders initially narrowed the field to only the two Nicholas brothers. Since they had the same genealogy, the suspect had to be identified using other means. By analyzing the DNA from two cigarettes discarded by Patrick Nicholas at a local laundromat, KCSO detectives knew that after nearly 30 years, they finally had their man. Surprisingly, he was nowhere to be found in the extensive list of thousands of tips that had come in over the years. Without genetic genealogy, the case would have probably remained unsolved forever.

Laura and Tom Yarborough with Colleen Fitzpatrick, November 2019.

The Nicholas surname was unexpected, but it was discovered that Patrick's paternal grandfather had been adopted by a Nicholas family. His birth name remains unknown. Although the adoption has prevented us from directly validating the Y-DNA connection to the Fuller family, it has since been confirmed through other genetic genealogy matches that the Fuller surname appears among Patrick Nicholas' ancestors.

POSTSCRIPT

An important aspect of the Yarborough homicide is the change in attitude of the genetic genealogy community towards law enforcement use of genetic genealogy data that the Yarborough case facilitated. Although the only Y-STR data used on the case had been posted on public genetic genealogy websites, when the news broke about the link between Sarah's killer and the Mayflower Fullers, the genetic genealogy community publicly broadcast alarm that Big Brother had its data, accompanied by nonsensical statements about how many people had been falsely accused using DNA.

The community's outcry was only a public manifestation of its lack of understanding of the balance between public safety and personal privacy. As more cases were solved using Y-STRs, including the Phoenix Canal Murders (the first known case solved using genetic genealogy), the Jennifer Bastian Homicide in Tacoma, WA, and the 1960 Gwen Miller Rape Homicide in Rapid City, SD, the attitude of the community began to shift away from the emotional and towards the informed. When the Golden State Killer was identified in April 2018, the community became even more divided in its opinion on the use of genetic genealogy for cold case work, but there were few who would disapprove of using their data to get the GSK off the street. Although that debate on the forensic use of genealogical data will go on long into the future, thanks to the Yarborough case and all the others that followed, what is now known as forensic genetic genealogy has more than proven itself as a valuable means of solving even decades old cold cases. There's no doubt that forensic genetic genealogy is here to stay.

TESTIMONIALS

To Colleen and Whom It May Concern,

For nearly twenty-eight years, Sarah's family and friends lived with the fact that Sarah's killer had not be identified. It remained a constant unknown. Although we went on with our lives, it was always in the back of our minds as unfinished business. In a way it was a Damocles sword hanging over us. We never knew when, or if, the news would come but we knew when and if it did, all the emotions would come roiling back and we'd be thrown into 1991 again. To live with that for 28 years is exhausting. If it had never been solved, it would have been a shadow over us the rest of our lives. Having your darling daughter, the light of your life, murdered is hard enough. Never knowing who did it makes it worse.

For all those years, I've had nightmares about a faceless bogeyman trying to hurt me and my family, hurting Sarah again and again. In the meantime most of Sarah's friends have gone on to college, advanced degrees, marriage, and families. One woman, though she now holds a doctorate, has her own family, and did a post-doctorate at Cambridge, has never been able to return to the Seattle area and Federal Way especially. For her, she told me, not knowing who it was and that he had never been found was the basis of her fears. She, like me, was relieved at the arraignment to see the killer is only a man, an ordinary man. A man with a face I can cope with.

I'm not sure I can adequately explain what that is like—the fear, the not knowing. The relief of knowing is also hard to explain but very real. I think it's a bit like knowing there is a malignancy growing in your body. You know you need surgery and you dread it but relief washes through you when the surgery is over and the cancer gone This case, unsolved, was like that cancerous growth. True, the trial remains but is a process with a known end.

I honestly didn't think this case would ever be solved. Various laws enforcement persons told me that the chances lessened as time went on. We watched as detectives took over the case, working hard but inevitably ending without results when they retired and handed the case off to yet another detective. My father, Sarah's grandpa, used to meet with Detective Doyon once a week for years hoping for a lead, a clue, something that would be the key to solving the case. I'm so glad my dad, now 95, lived to see the case closed. Sadly, Detective Doyon did not live to see it. He told us it was a case he wanted to solve before he retired.

Without the science of genealogical DNA, familial DNA, and Dr. Fitzpatrick's expertise I fear this case would not have been solved. I'm so thankful the King County Police Department never gave up and that they were willing to use the tips science and Dr. Fitzpatrick's team were able to unearth in making an arrest.

We still miss Sarah every day. Her murder left such a hole in our lives. Knowing Sarah's killer is locked up and hopefully will stay that way has brought a measure of peace. I wish I were more eloquent and could adequately explain what it's like for our family. I hope the words I do have will give you some idea.

With great gratitude,
Laura Yarborough, Sarah's mom

I found it encouraging that technology is catching up to criminals like Sarah's perpetrator. Hopefully this shows that law enforcement can continue to leverage advancements in familial DNA analysis to solve more crimes, take more violent criminals off the street. Faster please!

Andrew Yarborough, Sarah's Brother

The tragic murder of Sarah Yarborough had a tremendous impact. This impact was unique. It deeply affected everyone who knew Sarah, those who lived in the same community as Sarah and all of those who worked tirelessly to investigate Sarah's murder. I was a young Detective when Sarah was murdered that December day in 1991. Although I did not work on her case at that time, I certainly felt the emotion and frustration of my co-workers who worked endlessly to try and resolve the case. It is fantastic that this was the first ever attempt at forensic genealogy. How far you have all come in just a few years and how wonderful to know it may very well end where it first began.

I was blessed with being in the right place at the right time to meet and work with the most extraordinary of individuals. Retired Detective James Allen, Retired Detective Tom Jensen and Dr. Colleen Fitzpatrick were instrumental and key to the investigative team. It was an honor to be part of the collaboration and final identification of the killer of Sarah Yarborough. Although there is nothing that can bring Sarah back, or lessen the pain of her family and friends, a man will be held accountable for the horrors and atrocities he created on the cold December morning in 1991. That is justice and justice is what we seek, what I sought.

Det. Kathy Decker (Ret.)
King County Sheriff's Office

This case greatly affected my life. It's hard to put into words. Although the case was conclusively solved by DNA, it wasn't through a traditional CODIS match. The bottom line is this: Colleen Fitzpatrick solved this case, period. If it wasn't for her years of dogged persistence it may have never been solved. It goes to show that cold cases can be solved, no matter how much time passes, and that every tool known should be available to investigators to solve these difficult cases...including genealogy and familial DNA searching. I will always be grateful to Colleen for having the vision and drive to see this case through to a successful conclusion through all of the adversity. I will leave her story up to her, but she had some huge hurdles to overcome yet she stuck with it.

Det. Jim Allen (Ret).
King County Sheriff's Office

ADDITIONAL MEDIA LINKS

The news of the Mayflower connection was published around the world in 1991, as was the news that the case had been solved in 2019. Here are only a few references to the numerous stories that appeared in the press:

The coldest case ever? Police trace DNA of 1991 killer back to 17th century family who came over on the Mayflower. The Daily Mail. January 12, 2012. <https://www.dailymail.co.uk/news/article-

2084692/Sarah-Yarborough-murder-Could-DNA-linked-17th-century-Mayflower-family-solve-1991-case.html>

DNA Links Murder Case with Mayflower-Era Family. *Time*. January 11, 2012. https://newsfeed.time.com/2012/01/11/dna-evidence-links-murder-case-with-mayflower-era-family/

'They had never given up': Arrest made in cold case murder of Federal Way teen. Q13 Fox News. Oct 3, 2019. <https://q13fox.com/2019/10/03/sex-offender-with-lengthy-criminal-record-arrested-in-cold-case-murder-of-federal-way-teen/>

Man arrested in 1991 cold case killing of 16-year-old girl after he's linked by DNA: Sheriff. ABC News. October 4, 2019. <https://abcnews.go.com/US/man-arrested-1991-cold-case-killing-16-year/story?id=66057562>

Charges filed in murder of Federal Way HS teen 27 years ago. KOMO News. October 3, 2019. <https://komonews.com/news/local/suspect-arrested-in-1991-murder-of-federal-way-hs-teen>

Submitted by Thomas Jensen

Sarah Yarborough was a 16-year-old student at Federal Way High School in the winter of 1991. On December 14 of that year she drove herself to FWHS at about 8 AM to assemble for a drill team competition. She will sometimes be referred to as a 'cheerleader' and wore a similar costume, but she was a member of the drill team. It was a very cold morning. She arrived an hour early.

Sometime in that hour Sarah was strangled and sexually assaulted in a bushy area some distance from where she parked her car. Shortly after 9 AM two young teens observed a male coming out of those bushes. They got a good look at him as he hurried away. As they approached the area, they could see something in the bushes, and investigating, they found Sarah's body. They ran home and their parents called the police.

That began an investigation that would span nearly 30 years, involve hundreds of police officers and detectives and thousands of manhours. Over that time nearly 4000 leads and tips were generated.

The suspect was very generous with his seminal fluid and his DNA profile was easily obtained. Over the course of the investigation hundreds of individuals were compared with that sample. There were no matches. Since it was believed that this type of killer was likely to reoffend, there were projects to try and determine what happened to him. Did he die? Did he go to prison for some other offense that did not mandate DNA collection?

The detectives assigned never gave up. I believe that everyone that saw it, fell in love with the photo of Sarah and wanted to give her their very best. She was a beautiful, vibrant young lady, and the epitome of a truly innocent victim of a violent crime.

I personally became involved in the case about 3 or 4 days into the investigation. Because of my background in the Green River cases, I was designated as the 'case manager'. It was rapidly becoming apparent that someone would have to take responsibility for keeping track of what was happening, the suspects, the assignments, etc. And I had something nobody else had, a computer. The Green River computer. I am proud to say that I had the case under control within a week. I was managing the hell out of the case. But, it wasn't cooperating by coughing up a suspect.

My Green River partner, Jim Doyon, took over as lead investigator. With myself as case manager, how could we go wrong?

I guess the easy answer is that we never got a lead on the true suspect.

Over the years there were anniversaries, one, five, ten, fifteen, twenty, you get the idea. We did hundreds of hours of TV news hoping to generate that one tip.

Jim and I worked together on the Yarborough case over the next decade. In 2001 we got a DNA hit that solved the Green River murders, and Jim Doyon and myself were reassigned to a task force to investigate Gary Ridgway. We left the case in the hands of Major Crimes Detective Jim Allen, who would carry it through until his retirement. It was Jim Allen that first started exploring the idea of examining the suspect DNA in different ways.

He was in contact with Colleen Fitzpatrick about something called SNIPS, at least that what it sounded like. From that we learned he probably had blue eyes. Then came Parabon, and the possibility of creating a composite drawing of the suspect based on his DNA. We did that and got a good number of tips (I'm still case manager, logging in tips.)

Jim Allen had told us he was retiring, and may have even postponed it once due to Yarborough. He finally passed the torch to Detective Kathy Decker. She worked the leads and I managed the case for a year of so. Then, after a series of successful solutions to notable local cases, Kathy sent Yarborough DNA to Colleen Fitzpatrick.

And we waited.

Then one day that started, for me, like one in thirty-something each month, I went into the office. (I skipped some stuff for brevity. I retired in 2013, but kept my desk in a volunteer status. I would go into the office as needed, which tended to be about once a month.)

I wish I could come up with the date, but it wasn't all that long ago. There I am sitting at my desk, thinking 'why am I here today?', and Kathy Decker says she's got Colleen on the phone, and they think they've got him.

Now, a bit of background is necessary. I have known Kathy Decker for almost as long as I have been involved in the Yarborough case. She came into Major Crimes in the mid 1990's and thrived. But she had other callings. She went back to 'Search and Rescue' and honed her tracking skills. She's good. If I wanted to get lost, and didn't want anyone to find me, I'd make sure she was on vacation.

Then she came back to Major Crimes, and when Jim Allen retired she took over the Yarborough case. She is now retired, but actually stuck around an extra year to see Yarborough through, knowing that the genealogy DNA project was on the horizon.

Back to the story.

Decker put her phone on speaker and came to the front of the room, where myself and the Sergeants work. Colleen explained what they had done, and that they had narrowed the field to one of two brothers.

I don't recall much of the conversation. It was a very emotional several minutes for those of us who had been with the case for so long.

I had been through this before with Green River, when the State Crime Lab announced that they had matched DNA from several victim's with Gary Ridgway and that saga began to come to an end after almost 20 years.

Solving Yarborough took almost 30 years.

Which was more rewarding?

Don't you dare ask me that.

2. DNA Exonerates and Implicates in One Fell Swoop – the case of Ricky Davis

Name of Submitter: Anne Marie Schubert (Sacramento County DA's Office); James Clinchard (El Dorado Hills County DA's Office)

Agency: El Dorado County District Attorney's Office

Location: El Dorado Hills, California

Date of Crime: 1985 (goes cold); 1999 (investigation re-opened)

Date of Hit: 2019 (exoneration match) and 2020 (new suspect match)

Executive Summary: Ricky Davis's housemate is killed the day after she (housemate) moves into the house in 1985 but the case goes cold. In 1999, the case is re-opened and the original set of housemates are interrogated using techniques prone to producing false testimony. One of the housemates falsely testifies that Davis was the murderer, and on the basis of this alone he convicted and spends 14 years in prison. He maintains his innocence the entire time. Around 2016, the Santa Clara Law School Innocence Project takes up his conviction challenge in conjunction with the El Dorado Hills County District Attorney's Office. Original crime scene evidence is examined for DNA evidence, leading to a profile. This profile conclusively excludes Davis and all others living at the house at the time, proving Davis' innocence. On February 13th, 2020, Davis is released. Using genetic genealogy, the forensic laboratory uses the profile to compare against genetic genealogy databases, leading to a match with a Michael Green.

Scientific Significance: DNA match leads to the exoneration of Ricky Davis, a man currently in prison after being found guilty for the offense, and indictment of the true murderer. This is only the "second time in the United States" this has happened.

Investigative Significance: California's standard of proof in examining new evidence post-conviction was changed from an extremely high standard of "point unerringly to innocence" to a standard common to 43 other states. This, coupled with the new DNA evidence, helped lead to Davis' release and finding of innocence.

Facts as Written by James Clinchard (El Dorado Hills County):

On July 7, 1985, 55-year-old Jane Hylton was found murdered in her home in El Dorado Hills, CA. When deputies arrived, they encountered 20-year-old Ricky Davis, his girlfriend, 19-year-old Connie Dahl, and 13-year-old Autumn Anker. The three reported that Anker's mother, Jane Hylton, was dead in an upstairs bedroom.

Anker told detectives that she left the house earlier in the evening with three older boys she met that day, one named Michael Green. However, Detectives were never able to corroborate this story or find any of the boys she claimed to be with that night. Davis and Dahl

said they left the house earlier to attend a party. Davis, Dahl and Anker all gave similar accounts of the events that occurred when they returned home at approximately 3:00 a.m., finding the body of Jane Hylton laid out on her bed, covered in blood.

Jane had been stabbed or cut 29 times, three of which would prove fatal. An autopsy was conducted and in addition to the knife wounds on Jane Hylton's body, a bite mark was noted on her back, left shoulder area. However, with no evidence directly linking anyone to the brutal murder, the case went cold.

In 1999, detectives re-opened the case and re-interviewed Dahl who initially denied any more knowledge of the murder than she had back in 1985. Through the course of several interrogations between 1999 and 2005, Dahl went on to tell detectives that it was Ricky Davis who had killed Jane Hylton, that she had bitten Jane during the attack. Davis was charged, tried, and convicted of murder in 2005.

In 2012, the Northern California Innocence Project contacted the El Dorado County District Attorney's Office about testing items of evidence for DNA. Several items, including the victim's nightgown and fingernail scrapings were sent to the Sacramento County District Attorney's Crime Lab for testing. In 2014, DNA was located on the victim's nightgown near where the bite mark was found on the victim and matching DNA was located in one of the fingernail scrapings. The DNA profile was that of a male, and not Dahl, as she had asserted. The DNA profile was uploaded into CODIS, but no match was found.

The El Dorado County District Attorney's Office had the DNA uploaded into a genealogy database. A relative of the unknown male subject was located, and further investigation revealed that the unknown male DNA profile was none other than Michael Green, who Anker had told detectives she had met on the night of the murder.

Upon getting this new evidence, the El Dorado County District Attorney's Office dismissed the pending murder charges against Ricky Davis, and filed charges against Michael Green who is now in custody awaiting trial.

The DNA profile located in the area of the bite mark on the victim's shoulder both exonerated Ricky Davis, and led to the arrest of Michael Green for the murder of Jane Hylton, a first in California history.

Links to Media Sources:

https://sacramento.cbslocal.com/2020/02/13/ricky-davis-exonerated-jane-hylton-1985-murder-genetic-genealogy/
http://ncip.org/ricky-davis/
https://www.mtdemocrat.com/news/courtroom-stunner-man-declared-innocent-of-1985-murder/

https://www.kiro7.com/news/trending/california-man-cleared-murder-by-genetic-genealogy-after-15-years-prison-new-suspect-charged/IAOFAYHAQJCZZALDPX5BZDZ4YU/

Addendum

Statement in Support

Anne Marie Schubert, Sacramento County District Attorney's Office

As Sacramento District Attorney, I am honored to write a letter of support for this nomination. I am also privileged that our office was asked to assist the El Dorado County District Attorney's Office to conduct post-conviction DNA testing as well as investigative genetic genealogy in the brutal murder of Jane Hylton.

Long before DNA was ever used to identify the guilty or exonerate the innocent, well-known forensic scientist named Paul Kirk said:

"Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness against him. Not only his fingerprints or his footprints, but his hair, the fibers from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. All of these and more, bear mute witness against him. **This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong, it cannot perjure itself, it cannot be wholly absent. Only human failure to find it, study and understand it, can diminish its value."**

There is no greater example of DNA serving as the silent witness to the *truth* than the exoneration of Ricky Davis and arrest of Michael Green for the 1985 murder of Jane Hylton.

In supporting this nomination, it must be understood the extraordinary forensic DNA work that was conducted in this case to exonerate Ricky Davis. It must also be understood the complex and tedious work done to identify Michael Green through investigative genetic genealogy.

In 2013, at the request of the Northern California Innocence Project and the El Dorado County District Attorney's Office, our Crime Lab (the Sacramento District Attorney's Laboratory of Forensic Services) began the scrupulous process of examining the evidence in this case. It was clear from the beginning of this process that the victim's nightgown was the critical evidence since the investigation revealed that the victim had been bit on the shoulder during the attack. Fingernail scrapings also played an important role as well. Countless hours, days and months were spent by DNA analyst Angel Shaw to examine the nightgown. In fact, because of the age and condition of the nightgown, it took Ms. Shaw several days to document and screen it before moving on to further analysis. Inch by inch, Ms. Shaw mapped the nightgown worn by the victim during her vicious attack. Numerous meetings were held with the prosecutors, investigators, Innocence Project and Crime lab to further this post- conviction testing.

Through her persistence, Ms. Shaw successfully developed a DNA profile from saliva left on the nightgown. That profile was also consistent with the fingernail scrapings. This DNA profile did not belong to Ricky Davis and it refuted the testimony of the co-defendant, Connie Dahl.

Armed with this new evidence, the Northern California Innocence Project petitioned the El Dorado Superior Court to reverse the conviction of Ricky Davis case and grant him a new trial. In April 2019, after the Court heard the testimony of Angel Shaw and reviewed other evidence, a new trial was granted for Ricky Davis.

With this new DNA evidence, several questions remained: who's DNA was it? Was it someone who knew Ricky Davis? Was it a stranger to Mr. Davis? Was he possibly innocent after having spent nearly 20 years in prison?

With these questions in mind and the granting of a new trial, El Dorado District Attorney Vern Pierson asked my office to conduct investigative genetic genealogy (IGG) to identify the source of the DNA left on the nightgown. Never had this effort been undertaken on a post-conviction case in California.

Lt. Kirk Campbell and Investigative Assistant Monica Cjakowski's expertise in IGG is remarkable. Having first used IGG in the Golden State Killer case, Lt. Campbell and Investigative Assistant Czajkowski have assisted in countless cold case murder and serial rape investigations and trained law enforcement professionals all over the world.

Within weeks of the new trial motion being granted, Lt. Campbell, IA Czajkowski and El Dorado DA Investigator Joe Ramsey and Crime Analyst Sandra Rivas began the extraordinary work to identify the source of the DNA through genetic genealogy. Hundreds of hours were dedicated to this effort, much of which occurred after hours and on weekends. It was complex and tedious. It demanded passion and persistence.

Ultimately, investigative genetic genealogy was the tool that unraveled the wrongful conviction of Ricky Davis, exonerated an innocent man and identified Michael Green as that man who now stands accused of this vicious crime.

On February 13, 2020, a joint press conference was held by El Dorado District Attorney Pierson and myself to announce these developments. Northern California Innocence Project Attorney Melissa O'Connell also spoke. In describing the DNA work done in this case, Ms. O'Connell used such words as "Remarkable. Meticulous. Brilliant. Professional." In describing the genealogy, Ms. O'Connell simply stated it was a "gift."

The Ricky Davis exoneration and Michael Green identification represents the ultimate use of both traditional DNA testing along with genetic genealogy to find the truth. As I stated at the press conference, quoting Gandhi, "Truth never damages a cause that is just." This was a just cause.

Thank you for considering this case for the 2020 DNA Hit of the Year.

3. The Little Martyr of the A10 Highway

Name of Submitter: Marie-Gaëlle Le Pajolec

Agency: Genetic Institute of Atlantic Nantes

Location: Blois, France

Date of Crime: 1987

Date of Hit: 2017

Executive Summary: A child's body is found on the side of the road with signs of abuse, human bite marks, burns, wrapped in a blanket, and dead from exhaustion/exposure. At the time of discovery, investigators believed the case could even be cannibalism. For over 25 years, investigators searched for her identity. In 1993 her body was exhumed and DNA profile extracted in an effort to use emerging DNA identification to develop investigative leads. In 2008, a phenotype analysis revealed North African ancestry. In addition, her parent's DNA profiles were found in the original evidence but yielded no match in the database. In 2013, her siblings' DNA profiles were also found on the original evidence. In 2017, the siblings' DNA profiles matched to a man arrested for assault and whose DNA profile was taken upon arrest. This is the brother of the Little Martyr, just 3-years-old at the time of his sister's death. This eventually leads investigators to arrest the parents for the suspected murder of the child.

Scientific Significance: Phenotyping to determine general ancestry of victim in 2008. DNA profiles of parents found on victim in 2008. DNA profiles of siblings found on victim in 2013. Match to siblings in database in 2017 to a 34-years-old man arrested for assault (the child's now adult sibling), which leads investigators to suspect the parents of having killed the child.

Investigative Significance: According to the case submitter, this case is considered as France's biggest investigation ever at the time. Police visited thousands of schools and spoke to over 6,000 doctors and school assistant during the initial investigation.

Facts Written by Submitter:

This case is considered as the France's biggest ever investigation at the time.

August 11, 1987, the martyred body of a 4 years old child, beaten to death, has been found in a ditch along the A10 motorway near Blois, in France. This little girl was died from exhaustion after suffering around twenty fractures, some mutilating bites and iron burns. Her body was wrapped in a blanket. She was buried in a little village and dubbed the "Little Martyr of the A10" by the public.

For over 25 years, the justice tried to give a name to this child, taking care not to exceed the prescription date. The investigators made inquiries in thousands of schools and questioned 6000 medical doctors, the girl's photograph being circulated in public places and alerts sent to

more than 30 countries, vainly. In 1993, her body was exhumed to perform a new autopsy. Her DNA profile was determined and in 2008, a study of bio-geographic ancestry SNP markers indicated that she was probably originated from North Africa. Meanwhile, many DNA investigations were performed on the youngster's clothes and on the blanket that was wrapping her body. In 2008, the genetic profiles from her both parents were identified from different samples collected on the blanket and sent to the national database, with no result.

In 2013, hoping on the progress of molecular biology techniques, the blanket was analyzed one more time and an exhaustive sampling of all the stains present on it was performed. Three new DNA profiles compatible with two brothers and one sister of the little girl were identified and sent to the national database. With unfortunately no matches.

In May 2017, under routine testing, the second profile hit to a match on the database: one of this three profiles matched with the profile of a 34-year-old man who was just registered in the national database for assault. He is the brother of the "Little Martyr of the A10". He was 3 years old at the time of the death of his sister.

June 12, 2018, the French gendarmerie went to the house of the suspected parents of the child. The name of this little girl was Inass Touloub. No one had worried about her disappearance for more than 30 years.

Additional Information:

Records showed that the family stopped claiming family welfare payouts for one of their seven children and a source close to the investigation said the mother had claimed the child was alive and living in Morocco. The parents had separated in 2010 and apparently the girl's father had claimed she died at the hands of her mother.

Both Inass's parents are awaiting trial. After 1 year in prison, her father was released and placed under judicial supervision but her mother is still incarcerated. According to the father's lawyer, the mother only was responsible for the murder and the violence. Furthermore in 1987, during the autopsy, the medical examiner stated that human bite marks visualized on Inass's body were probably from a female dentition according to their small size.

Links to Media Sources:

https://www.theguardian.com/world/2018/jun/14/dna-breakthrough-french-child-murder-case-a10-girl
https://www.franceculture.fr/emissions/une-histoire-particuliere-un-recit-documentaire-en-deux-parties/inass-touloub-la-petite-martyre-de-la10-22-la-petite-fille-de-suevres-0
https://crystalhorizons.nl/2018/07/07/the-unknown-little-girl-on-the-a10-motorway/
https://www.youtube.com/watch?v=z6-oAGxsYeY
https://www.youtube.com/watch?v=k3DNIx_LRrI
https://www.dailymotion.com/video/x7b2j6n
https://www.youtube.com/watch?v=z6-oAGxsYeY
https://www.youtube.com/watch?v=k3DNIx_LRrI
https://www.dailymotion.com/video/x7b2j6n

Addendum

In 1987, the little victim had been buried anonymously in the cemetery of Suèvres (Loir-et-Cher) near the scene of the discovery of her body. Her tomb was regularly flowered by the inhabitants of the commune and donations were regularly given to maintain the grave. On the funeral monument was engraved a simple inscription meaning : “Here lies an angel”. Since the resolution of this tragic enigma in 2018, new donations have arrived. A local funeral company built a new burial with a tombstone mentioning her first name, Inass, her date of birth, July 3, 1983, and the date of her macabre discovered, August 11, 1987

The investigators discovered that the little girl had an administrative existence : Inass had a passport, was registered with the Family Allowances Fund and was even inscribed in a nursery school. But in the end, she never went to school, explaining why the research launched in 1987 in nearly 66,000 schools never yielded anything (to explain her disappearance, her parents claimed she had officially left to live by her grandmother in Morocco).
When they were arrested, Inass's parents were divorced. Inass's mother, aged 64, began by telling that her daughter was not dead, that she was living in Morocco, before admitting the reality of DNA tests. Neither parent assume being the perpetrator of the violence that resulted in Inass' death. Both said they had been spousal assault victims…

Inass was the third of the siblings. She had two older sisters, born in 1978 and in 1981, and four younger brothers. The older sister, who was nine at the time of the facts, was heard by the investigators but explained, in tears, that she cannot remember anything…

This case is a model case, that has crossed generations of investigators. The work of the entire chain of investigation has been without fault, particularly those of the investigators who, in 1987, discovered the body and collected the evidence, while DNA testing was not yet known. This proves that one should never lose hope to solve so named “cold cases”.

4. Mother-Daughter Double Homicide – China's national Y-STR Database

Submitter of Case: Quyi Xu

Agency: Forensic Science Institute of Guangzhou Public Security Bureau

Location: Tianhe, Guangzhou, China

Date of Crime: 2008

Date of Hit: 2019

Executive Summary: In 2008, a mother-daughter double homicide occurred in Guangzhou. Two different male individuals left limited blood stain evidence at the crime scene. Two DNA profiles were developed from the blood stain evidence, but there was no match in the database and the case went cold. In 2019, one of the suspect's DNA profile received a 22 Y-STR genotype hit with a convicted burglar from China's Y-STR DNA database. Using this familial match, police determine one of the suspect's identity. They further determined he worked and lived abroad in Malaysia. Police monitored his flight plans and intercepted him upon return to China. He was arrested at the airport and confessed to the crime and his partner's identity.

Scientific Significance: Strong use of China's national Y-STR database. Match came from the suspect's relative being entered into the national Y-STR database for an unrelated case (burglary). After analyzing the whole family, investigators were able to confirm suspect's biological mother and "speculate" about the biological father's identity. Unfortunately, the possible biological father passed away years ago, and investigators had to work backwards to determine possible genotypes based on the half-siblings. The police department had to sift through 9 male relatives and 2 female relatives in the family across half of the country in 11 years.

Investigative Significance: Suspects cleaned the crime scene and left very little evidence after having committed the murder. Investigators found a drop of blood on one victim's foot and got a hit in the database to one of the suspect's relatives.

Other: The mother in this case was a "famous social figure".

Facts Written by Submitter:

On X, 2008, a double homicide of mother and daughter occurred in Tianhe District, Guangzhou, China. The mother was a famous social figure and the daughter was a medical school student at her age of 20. Both of them were brutally murdered with a knife and the crime scene was cleaned by the suspect afterwards. After crime scene investigation, forensic experts confirmed two suspects were involved, which two male individuals were detected through DNA examination of the blood stains obtained from the crime scene. Blood stain contributor A left multiple blood stain at the crime scene, but suspect B left only a drop of

blood on the younger victim's foot. Unfortunately, none of the blood stain found a DNA match and the case went unsolved for 11 years.

In 2019, suspect B's DNA matched to DNA evidence for an unrelated case from the National Y-STR database. According to the examination of physical evidence, 22 Y-STR got a hit with a burglary ex-con named Jun, who is from Hunan Province. The examination was extended to 59 Y-STR and investigators still found a match between suspect B and Jun, thus confirming the patrilineal family. However, the autosomal STR suggested that suspect B and Jun were not identical. Local police department confirmed Jun is the only son of his parents, which lead us to sample and inspect Jun's family for more male relatives, including Jun's father, 3 paternal male cousins, and 5 uncles. According to Y-STR, we were able to identify all 9 male relatives remained in the same patrilineal family, but no autosomal genotypes match to the suspect.

Further analysis of 40 autosomal STR and ITO algorithm was conducted to calculate the probability of genetic relationship, we were able to confirm suspect B matched half-sibling relationship to all 9 male relatives and also Jun. Furthermore, we collected two female family member's DNA, which is Jun's mother named Xiu and his grandmother named Tao. The results showed suspect B has a parental relationship with Xiu but no grandmother-child relationship with Tao. Comprehensive analysis of all information above, we speculated that the suspect could have a biological relationship with Jun's grandfather Lin. Unfortunately, Lin had been dead for years. Based on the genotype of Jun's father and uncles, we worked backward to speculate on the possible genotype of Lin. Together with the known biological mother Xiu and suspect B, 35 autosomal STR loci of three people showed a trio's match. In conclusion, the suspect consists a paternity relationship with Xiu and Lin as his biological parents. Further investigation confirmed that Xiu and Lin had an illegitimate child more than 30 years ago. The child was abandoned and adopted by another family and DNA information match the suspect B.

Investigation suggested that suspect B was married and worked abroad in Malaysia. Task force received his flight plan of back in Hunan and arrested him at Changsha Hunan airport. After being arrested, he made a confession of his crime and his crime partner.

Addendum

The mother (victim) had been married but was at the time of the murder divorced, so there were no other family members in the apartment. It was a large apartment with 9 floors, and four apartments on each floor. She was a former civil aviation service staff, with apparently many romantic interests and had complex social relations. The daughter was a "sophomore" in medical school.

The location of the crime is a relatively high-end residential community with very little crime. The ensuing investigation covered ten provinces and cities. More than 400 people were interviewed and swabbed for DNA samples, with no matches.

One of the criminals was a former security guard of the community where the victims lived. The second criminal is a classmate of the security guard. They invaded and killed them to steal their personal belongings. There was a struggle between the assailants and the victims, but no sexual assault.

Suspect B's parents are Jun's (database match) mother (Xiu) and Jun's grandfather (Lin) on Jun's father's side.

This case brought significance attention and renewed acknowledgement of the power of forensic DNA within local police and crime laboratory.

Links to Media Coverage:

https://www.toutiao.com/i6783920880226402830/?tt_from=weixin&utm_campaign=client_share&wxshare_count=2&from=groupmessage&timestamp=1579510445&app=news_article&utm_source=weixin&isappinstalled=0&utm_medium=toutiao_ios&req_id=202001201654050101290372370359BF84&group_id=6783920880226402830&pbid=6764512989536617988

https://3w.huanqiu.com/a/340a94/9CaKrnKoZEY?agt=20&tt_from=weixin&tt_group_id=6783972595382354445&utm_campaign=client_share&wxshare_count=1&from=groupmessage&timestamp=1579561561&app=news_article&utm_source=weixin&utm_medium=toutiao_ios&req_id=20200121070601010014047080 11D6B207&group_id=6783972595382354445

5. "Robbery of the Century"

Submitter of Case: Ana Paula Vieira de Castro

Agency: Brazilian Federal Police

Location:
Paraguay (location of crime);
Brazil (origin of criminals and substantial portion of DNA evidence)

Date of Crime: 2017

Date of Hit: 2017

Executive Summary:

This was a military-style robbery and assault of the company Prosegur's (security and cash-protection service company) office in the Paraguayan city of Ciudad del Este (City of the East). At night, about 50-80 heavily armed robbers closed off a perimeter around the office with cars. During a three-hour assault, the small army was reportedly able to access at least one of the three vaults of the company. One police officer was killed and several were wounded. The robbers reportedly stole about USD $8 million. Paraguayan police believed the robbers were Brazilian and had crossed the border into Paraguay to commit the crime. Brazilian federal police found a staging house across the border at Foz do Iguaçu in Brazil, where they seized six rifles, two boats, and seven vehicles. A group of the robbers were reportedly intercepted in Itaipulandia, during which a gun battle broke out and three suspects were killed and four were arrested. Paraguayan police believe a Brazilian gang called the First Capital Command (PCC) was behind the robbery.

After the whole assault ended, Paraguayan and Brazilian police were able to collect DNA from the crime scene, as well as from the staging house in Brazil. From these two sources, 47 profiles were developed and submitted to the database leading immediately to 12 matches. 14 of these profiles led to matches with unrelated crimes throughout Brazil (seven different states) committed as far back as 2012 going through 2019. One of the profiles from this robbery even matched to the murder of a federal Brazilian prison officer.

Scientific Significance: This crime leaves enough to DNA evidence at the crime scene and at a nearby staging house to link the suspects to many crimes throughout Brazil committed over the years.

Investigative Significance: Transnational criminal investigations of a major Brazilian gang.

Other: This case received major attention in Brazil and Paraguay and is deemed the "biggest heist in Paraguay's history". This robbery even has it owns Wikipedia page.

Facts Written by Submitter:

The “robbery of the century”. That was how the assault to the cash-transit company PROSEGUR in Ciudad del Este, Paraguay, on April 24, 2017, became known. Burglars, heavily armed and with explosives, stole about $ 8 million. The robbery had several developments, abandoned vehicles, escape routes towards Brazil, shootings sites, arrests of suspects and a property used as “headquarters” by the criminals.

Evidence and reference materials from suspects were collected by federal forensic experts, aiming to obtain genetic profiles to supply the National DNA Database (BNPG) for matches and eventual identification of the sources. All materials were sent to the Forensic DNA Laboratory of the Brazilian Federal Police.

In the “headquarters” alone, more than 300 evidence were collected, which resulted in 34 different genetic profiles, including 8 that matched suspects' profiles. Bags and apparel abandoned at a shooting site resulted in 4 different profiles, including 2 that matched other arrestees. Vehicles resulted in 8 different profiles. Of these, 2 matched suspects’ profiles. Many identical profiles between the related locations and suspects that were pinpointed in up to 3 different sites. In all, 47 profiles were uploaded into the database, 12 of them with identified sources.

In BNPG, 14 profiles matched others from unrelated crime scenes, with 2 more individuals identified. These hits linked the assault to PROSEGUR in Paraguay to crimes in 7 different Brazilian states between 2013 and 2019.

One profile from the “headquarters” linked PROSEGUR’s case to the murdering of a federal prison officer in Cascavel/PR, on September 2, 2016, and to an ATM explosion site in Campo Grande/MS, on October 11, 2017, inspected by state forensic experts. These identical profiles have an identified source.

Another profile linked the robbery to PROSEGUR in Paraguay to a federal prison escape in São Paulo, on December 8, 2014; to an assault to the cash-transit company SERV-SAN in Teresina/PI, on December 10, 2016; and to an assault to a security van owned by the cash-transit company BRINKS in Jacareí/SP, on November 21, 2017.

Five profiles from PROSEGUR’s case were connected to 3 different assaults to the cash-transit company PROTEGE. The first one on December 8, 2013, in Suzano/SP, whose source was arrested due to the assault to PROSEGUR. The second robbery took place on October 16, 2017, in Araçatuba/SP, and matched 3 unidentified profiles of PROSEGUR’s case. The last one, an attempted assault, took place on January 22, 2018, in Mogi das Cruzes/SP, and whose source was arrested on the investigation of assaults to private banks in Passos/MG, on April 11, 2018. All PROTEGE crime scenes were inspected by state forensic experts.

On March 14, 2019, 3 security vans owned by BRINKS were mugged at the airport of Blumenau/SC. A profile obtained by state forensic experts matched a profile obtained at the “headquarters” of the PROSEGUR’s case.

All these crimes, among others, of federal or state jurisdiction were carried out by one large gang that has been fought with the help of forensic genetics through the Brazilian National DNA Database.

<u>Additional Information on the DNA profiles and matches from Submitter:</u>

A total of 457 evidence were collected during the course of the investigation. After the analysis of all the materials, which demanded the dedicated and coordinated work of all the experts in the DNA laboratory of the Brazilian Federal Police, more than 580 samples were obtained, most of them in the first 10 days of analysis. In all, 45 different genetic single-source profiles and 2 genetic mixture profiles with quality for confrontations were found and uploaded to the DNA databases, 11* of them coincident with suspects arrested or killed 3 days after the robbery.

There are 4 correlated crime scenes in this case, which are:

“Headquarters”
34 profiles
7* of which matched suspects presented by the investigators

“Shooting site and escape route near Itaipu Lake”
7 profiles (4 new profiles, different from the headquarters)
5 of which matched arrestees (3 of them also found among the evidence collected from the headquarters)

“Prosegur branch office”
3 profiles (1 new)
2 of which matched suspects already placed at the crime scenes described above

“Vehicles”
10 profiles (8 single-sourced and 2 mixtures)
2 of which matched other suspects at scene of crime

Total: 47 uploaded to National DNA database

11* of them with “identified sources”

Specifically, resulting in:

In National DNA Database, 14 profiles matched others from 18 unrelated crime scenes of federal or state jurisdiction. These hits linked the Prosegur heist in Paraguay directly to crimes in 7 different Brazilian states between 2013 and 2019. Leading to 3 additional individuals identified.

In particular, one profile from the “headquarters” was linked to the murder of a federal prison officer in 2016, in Paraná state, and to an ATM explosion in 2017, in Mato Grosso do Sul state. The later identified source was the leader of the execution mission of the prison officer.

Another one from the “headquarters” matched one found in a house that would have been used by members of one of the biggest criminal organizations in Brazil. That source was identified as his profile was uploaded to the National DNA Database in compliance with a Brazilian Federal Law, that provides for the criminal identification through the genetic profile by

judicial authorization. This individual is the main suspect in a cargo theft of jewels with the estimated value of $ 28 million in Guarulhos Airport-SP in 2019.

Most profiles are connected to other felonies to cash-transit companies or banks. Among them, one could be pinpointed in up to 5 different crime scenes between 2014 and 2018. The source has not yet been identified.

Another profile from this assault was linked to a prison escape in São Paulo, in 2014, and to two other similar cash-transit assaults (on vehicles), in 2016 and in 2017, one in Piauí state and another one in São Paulo state.

Five profiles from the robbery to Prosegur in Paraguay were connected to 3 different assaults on the cash-transit company Protege (as opposed to Prosegur). All crimes took place in São Paulo state between 2013 and 2018. The source of the last one was arrested in the investigation of assaults to private banks in Minas Gerais state, in 2018.

In 2019, two years after the robbery, 3 security vans owned by BRINKS were mugged at an airport in Santa Catarina state and DNA recovered from the scene matched to a DNA profile obtained at “headquarters”.

In the scope of this crime investigation, genetic profiles of 57 individuals were obtained. Among them, 15 had their genetic profiles uploaded to the National DNA Database in compliance to court orders, 10 of which already connected to at least one location of these events through the DNA analyzes.

Links to Media Sources:

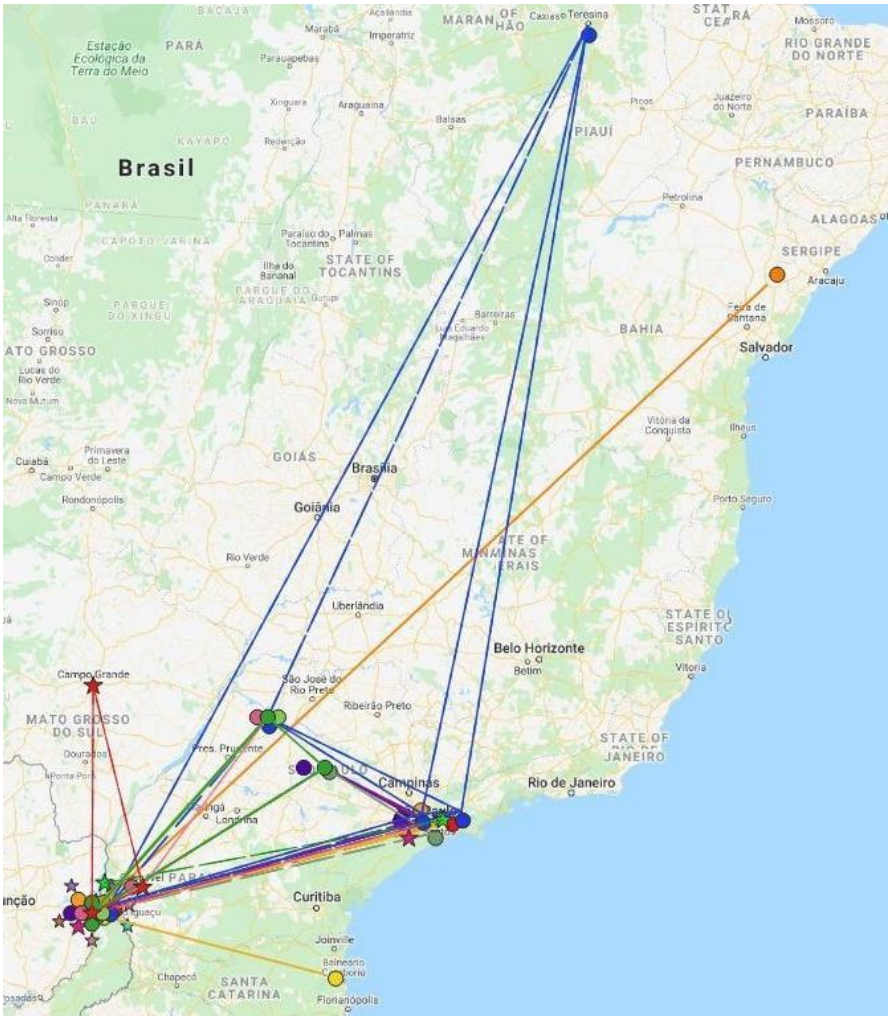
https://apcf.org.br/noticias/banco-de-dna-confirma-participacao-de-suspeito-em-assalto-a-prosegur
https://www.foxnews.com/world/army-of-60-robbers-gets-away-with-spectacular-heist-in-paraguay
https://www.telegraph.co.uk/news/2017/04/26/paraguays-interior-minister-fires-police-chiefs-hunt-continues/
https://www.npr.org/sections/thetwo-way/2017/04/25/525584135/mega-robbery-in-paraguay-dozens-reportedly-took-part-in-violent-heist
https://www.abc.net.au/news/2017-04-26/brazil-police-arrest-suspects-in-multi-million-dollar-heist/8471828
https://www.cnn.com/2017/04/25/americas/paraguay-vault-robbery/
https://en.wikipedia.org/wiki/2017_Ciudad_del_Este_robbery

Addendum

Complementary information about the matches:

The DNA results showed that at least 47 individuals participated in the heist of the cash-transit company Prosegur in Ciudad del Este, Paraguay, on April 24, 2017, with 14 identifications based on genetic profiles, so far. This emblematic work of forensic genetics and

crime scene expertise also made it possible to link this crime to robberies and murders in the states of Paraná, São Paulo, Santa Catarina, Piauí, Bahia, Minas Gerais and Mato Grosso do Sul, in locations more than 3,000 km apart, with a notable concentration of cases in the state of São Paulo (Figure 1). The analysis of the matches registered by the National DNA Database shows this criminal organization is specialized in crimes against cash-transit companies, security vans and ATMs, always using heavy weapons and explosives.



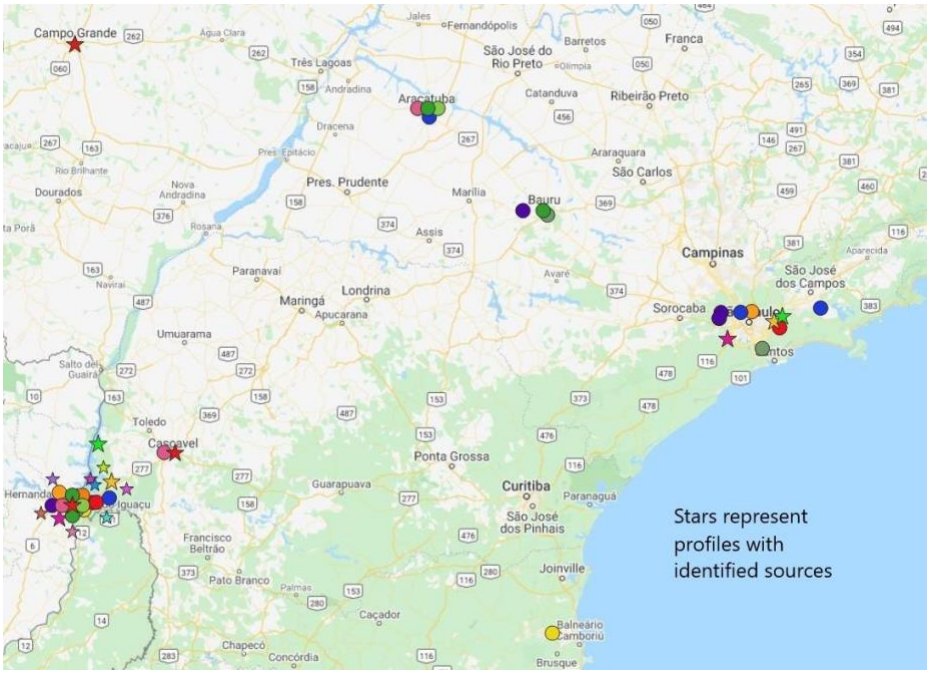
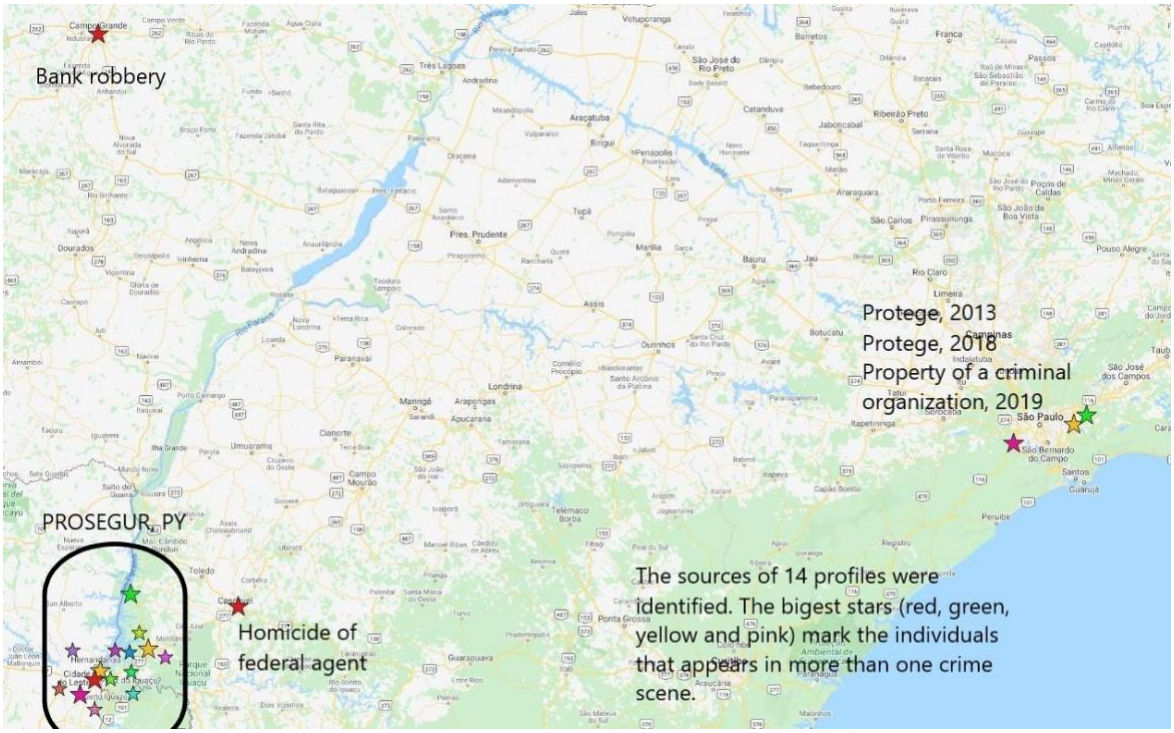


Figure 1. Crime scenes directly connected to the robbery to Prosegur in Paraguay.



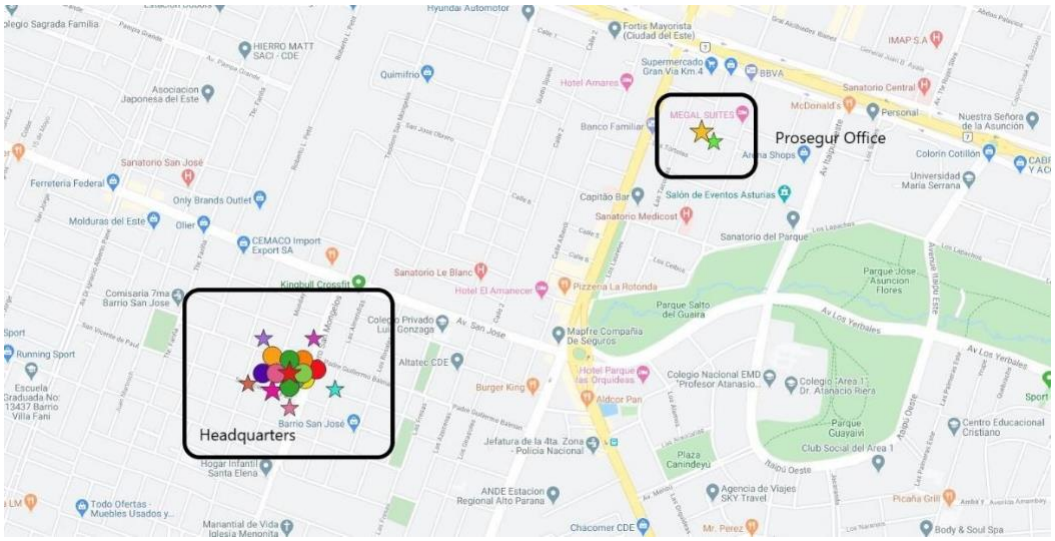


Figure 1. Continuation.

A particular identification demonstrated the importance of the National DNA Database in solving crimes. One individual was arrested as one of the suspects of the crime against Prosegur in Paraguay. He did not matched profiles of the Prosegur case at first. When uploaded to the National DNA Database, his genetic profile showed a coincidence with one from an assault on the cash-transit company Protege in 2013. Due to the link of the suspect to the burglary to the Protege company's security van in 2013, and not to the crime that occurred in Paraguay in 2017, this individual was kept in custody while the investigation of the Prosegur case was still going on.

Just a few months later, when more evidence was analyzed, a match was found to connect this individual to the crime against Prosegur in Paraguay.

In addition to solve a case without suspects in the state of São Paulo, if there were no DNA databases in Brazil, this suspect could have been released for lack of evidence at the beginning of the investigation.

Such results were only possible due to the proper technology and qualified personnel for the analyzes, the National DNA database and the appropriate and modern legislation in Brazil, that provides for the criminal identification through the genetic profile by judicial authorization and the mandatory sample collection from those convicted offenders of heinous crimes or committed with violence or serious threat to life. The great integration between different police forces, in addition to the judicial system, was also essential for the progress of this crime investigation.

The region where the crime occurred has a Tripartite Command, established in 1996, which formalizes cross-border police cooperation between Argentina, Brazil and Paraguay. After the crime, there was rapid articulation between the border countries through the Tripartite Command and the Paraguayan National Police requested the cooperation of the Federal Police of Brazil since evidence pointed out that one of the largest Brazilian criminal organizations was involved in the act.

This work would not have been done without the partnership of the Federal Police Technical Scientific Directorate and the Federal Police Station in Foz do Iguaçu- PR, as well as their staff. And, of course, without the hard work of the forensic experts from the Federal Police DNA Laboratory, with such dedication in analyzing the large amount of traces collected in the shortest time possible, and the Technical Scientific Unit in Foz do Iguaçu-PR, for painstaking work on crime scene forensics.

Complementary information about the event, as narrated by the leading federal investigative delegate:

In the early hours of April 24, 2017, Paraguayan citizens woke up to the noise of violent shots of firearms, including .50 caliber machine guns, by dozens of criminals who took the perimeter in the region of the company Prosegur in Ciudad Del Este, Paraguay. The thieves blocked the main access roads with burning vehicles and any attempt to approach them was rejected with several shots guided by laser sights.

The invasion of the company began, with explosions of walls and the taking of the building. After cutting a steel grid, they climbed a ladder that led to the vault room. A new explosion brought the wall down, however, the debris spread across the stairs, blocking access to the main room. The incident led to a delay of more than an hour to clear the rubble until the company's safe was finally accessed.

The criminals withdrew several pouches with values in US Dollar, Real and Guarani, the Paraguayan currency, in addition to checks totaling about $ 11.7 million. Hours after the assault began, the group dispersed and part of it crossed the border between Paraguay and Brazil on Lake Itaipu, taking stolen valuables with it, as well as backpacks with clothing and weapons. The fleeing group encountered federal police officers and the incident dispersed them in a disorderly manner. Many criminals went into the woods and abandoned pouches with money, clothes, weapons, accessories and ammunition. Others took assault vehicles to escape.

Several criminals arrived in the urban area of the city of São Miguel do Iguaçu- PR and there were confrontations with police from security forces. Five thieves were shot and three of them died. Searches for criminals lasted three days. In the end, 8 people were arrested, including the two wounded in a shootout with the Police.

6. Newborn Bloodspots

Submitter of Case: Carolyn Weigand

Agency: California Department of Justice

Location: Woodland, California

Date of Crime: 2007

Date of Hit: 2018

Executive Summary: In 2007, the remains of an infant boy were discovered in a metal chest cooler in an irrigation canal in California. The infant's remains showed evidence of blunt force trauma. A partial DNA profile was recovered from the remains, and it was uploaded to the Combined DNA Index System (CODIS) where it was regularly searched against DNA profiles from other unidentified human remains, missing persons, relatives of missing persons, and convicted offenders. For over a decade, these searches did not result in a CODIS hit or any investigative leads. In 2018, a kinship search was conducted to determine if a potential close relative of the deceased infant may be in the convicted offender database. The results of this search provided an investigative lead that led to the identity of both the deceased infant and his alleged biological father. The alleged biological father has since been charged with the murders of his deceased infant son and four of his other children.

Scientific Significance: This is the first time that a kinship search of unidentified human remains was undertaken in an attempt to identify a potential close relative in the convicted offender database. With the success of this case, the door is now open for other unidentified human remains cases to be investigated using this approach. Without this innovative search, the deceased infant would have never been identified, and his four siblings would have never been revealed as additional potential homicide victims.

Investigative Significance: Familial/kinship analysis leads to the identity of a deceased infant boy and his killer.

Facts Written by Submitter:

On March 29, 2007, a fisherman discovered the skeletonized remains of a 1-3-month-old infant boy inside a weighted metal chest cooler that had been submerged in an irrigation canal near Woodland, California. In April 2007, the remains, which were discovered wrapped in a Winnie the Pooh baby blanket, were submitted to the California Department of Justice Missing Persons DNA Program for DNA testing. The partial short tandem repeat (STR) DNA profile obtained from the infant's remains was uploaded to the Combined DNA Index System (CODIS) for searching against DNA profiles from other human remains as well as DNA profiles from missing persons, relatives of missing persons, and convicted offenders. Despite searching since 2007, no database hits or investigative leads resulted from the weekly searches of the

deceased infant's profile. More than a decade after discovery of the infant's remains, kinship searching was available but additional DNA testing was necessary to generate additional genetic information needed to comply with kinship search requirements. As the original DNA profile was incomplete, additional DNA typing, including male-specific Y-STR DNA typing, was performed to obtain a more complete DNA profile from the infant remains.

With the additional genetic information, a kinship search of the deceased infant's DNA profile was performed. In 2018, the California Department of Justice Missing Persons DNA Program released the results of the kinship search to the Yolo County Sheriff's Office. This provided an investigative lead that led to the identification of Paul Allen Perez as a possible biological father of the infant. The identity of the deceased infant, Nikko Lee Perez (DOB 11/8/1996), was confirmed in October 2019. Nikko Lee Perez had one sibling who was known to have died as an infant and three siblings whose whereabouts were unknown as there is no record of their lives after birth. In January 2020, almost thirteen years after the remains of Nikko Lee Perez were discovered, Paul Perez, who was about to be released from prison for unrelated crimes, was charged with the premeditated murders of Nikko Lee Perez and his four siblings. Authorities believe that all five of Paul Perez 'children were under six months old when they were allegedly killed. The remains of three of the infants have not been recovered.

Links to Media Coverage:
https://sacramento.cbslocal.com/2020/01/28/dna-newborn-bloodspot-biobank-accused-serial-infant-killer/
https://www.kcra.com/article/arrest-made-in-infant-killing-cold-case-in-yolo-county/30678793
https://www.usatoday.com/story/news/nation/2020/01/27/paul-perez-california-man-arrested-killings-his-5-infants/4591648002/
https://www.washingtonpost.com/nation/2020/01/28/perez-baby-killings/
https://www.huffpost.com/entry/paul-perez-charged-infants-deaths_n_5e30770dc5b6e8375f63d8e5