

DNA Hit of the Year 2019

All Submitted Cases

1. Tehsil Piplan

- a. Country/State: Pakistan
- b. Story: On the night of August 02, 2018, a complaint was filed with the police of Tehsil Piplan of district Minawali, Pakistan, about a five-year-old girl who had gone missing while playing with other children outside her house. The brother of the girl called upon their neighbors and spread out in the surroundings in search of the girl. The girl was discovered in a semiconscious state in the corn field. She was recovered and the incident was reported to the local police. The girl was immediately taken to the nearby public hospital for medical attention and medico-legal examination.
- c. The medico-legal examination revealed severe rectal injuries and trauma suggestive of sodomy. Anal swabs of the minor girl were submitted to the Punjab Forensic Science Agency (PFSA) for DNA profiling. Spermatozoa were identified on anal swabs. An unknown male DNA profile was obtained from the sperm fraction.
- d. This incident became a blind case as there were no eye witnesses to the kidnapping or rape of the minor girl. A wave of terror and anger spread through the area, public protests erupted, and the government came under immense pressure to apprehend the perpetrator of this heinous crime. Subsequently the local police took 39 individuals in custody on the basis of interrogation and their standard reference samples were collected at PFSA. The DNA profile of suspect 38, a teenager was found to be consistent with the foreign DNA profile on the anal swabs of the victim. Hence the case was solved with the help of DNA profiling.
- e. Previously on May 25, 2018, a four-year-old boy went missing while playing outside his house in Tehsil Piplan of District Mianwali. A search party discovered the boy in an agricultural land later that afternoon. Eyewitnesses reported having seen a thirteen-year-old lad physically engaged with the minor boy who managed to flee from the scene upon arrival of the search party. This teenager was apprehended by the police later on and became the prime suspect of the alleged sexual assault, however he refused to confess the offense.
- f. The physical examination of the victim boy revealed symptoms indicative of forceful anal penetration and the medico-legal examiner submitted anal swabs and shorts of the boy to PFSA for DNA analysis. Spermatozoa were identified on the anal swabs as well as on the crotch area stain of the shorts. The foreign DNA profile obtained from the sperm fraction of both the samples eliminated the prime suspect and hence the case stood unsolved unless the aforementioned first case was submitted in August 2018. The DNA profile of suspect 38 of the

minor girl rape case was found to be the source of foreign DNA in the second case as well.

- g. Hence a pedophile serial rapist was arrested who would potentially have otherwise molested dozens of other children, had he been left loose on the streets. The prosecution case was substantiated on the grounds of DNA test results.

2. The Case of Lindsey Baum

- a. Country/State: Washington State USA
- b. Links to Media Coverage: <https://www.youtube.com/watch?v=iRgaHUjopNQ>
- c. Executive Summary: A cranium was discovered and DNA extracted, which led to a match to a girl who went missing in 2009, bringing closure to the family.
- d. Story: In September of 2017, partial skeletal remains were recovered that consisted of a cranium. The cranium was transferred to the FBI for DNA testing as we believed it to be that of a child due to the examination by the state forensic anthropologist. In addition, we had a male child missing from our county and the FBI lab had processed the father's DNA and the missing child direct sample. In the Spring of 2018, we were notified that DNA was obtained and that it was a female. We had no missing female children in our County. Once the sample was uploaded into CODIS, a cold HIT was generated and the cranium was identified as being missing child, Lindsey Baum, 10 years of age when kidnapped from McCleary, WA. This cold "HIT" brought closure to a family who's daughter was kidnapped in June of 2009 while walking home from a friends house.

3. Filipino Housemaid Found Headless and Handless in Dubai

- a. Country/State: Dubai - United Arab Emirates
- b. Links to Media Coverage: <http://gulfnews.com/news/uae/crime/i-knew-something-bad-had-happened-to-my-wife-1.1900149>
- c. Story: On May 25th 2016, a gruesome discovery was made of a decapitated female body with severed hands and stab wounds to the torso, road-side in a desert area in Dubai. Neither the head nor the hands were found in the area, and so began the challenge of identifying the body. Due to the nature of this horrific case and lack of physical evidence including the murder weapon, answers were needed right away as a matter of public concern. Initially, no database matches were found for the DNA of the victim. To obtain as much information from the DNA, attempts to identify the body included ancestry analysis and facial reconstruction using DNA phenotype prediction-software. The results indicated East Asian ancestry with a high probability that the victim's nationality is Filipino. Furthermore, male profile DNA was obtained from the clothing and leg of the dead body but did not match the DNA database at the time. We also analyzed Y-chromosome DNA of the unknown male DNA sample and found that the Y-STR haplotype on the global Y-STR database indicated origin of Filipino population, which helped narrow down the suspect search. This case triggered an expansive national search of suspects and missing people across the seven Emirates to identify the discovered body. After elimination of

possible matches, it was found that 32 missing person reports had high-match-potential out of around 9000 reports. The missing person's belongings were brought in for analysis and 322 samples were processed for DNA profiling. A breakthrough in the case was made when the DNA from one of the missing person's belongings of a Filipino woman employed in the Emirate of Abu Dhabi matched DNA in the database of the deceased. Once the victim's identity was known, it was time to focus on the suspect. Further investigations in the murder pointed to a relative of the deceased residing in the country, a nephew. After profiling 533 DNA samples, the case began to unravel when DNA obtained from the male relative matched the male DNA sample found on the body. During investigations, the suspect confessed that he murdered his aunt over pressure from a financial debt he owed her and led investigators to the severed hands and head, which he burnt and disposed of in a remote desert area in the Emirate of Ajman. A database search indicated that the DNA from the burnt remains (head and hands) matched the DNA of the female victim. The man was arrested on September 20th, 2016.

d. Media Links:

<http://gulfnews.com/news/uae/crime/i-knew-something-bad-had-happened-to-my-wife-1.1900149>

<http://naradanews.com/2016/09/graphic-contentdubai-police-unravels-the-case-of-the-headless-body-of-a-filipino-woman/>

<https://www.thenational.ae/uae/butcher-who-murdered-and-beheaded-filipina-relative-in-dubai-arrested-1.214745>

<http://www.emirates247.com/crime/local/dubai-police-nab-the-butcher-killer-confesses-zombie-films-influenced-him-2016-09-22-1.640823>

<https://www.khaleejtimes.com/news/crime/dubai-expat-buries-aunts-chopped-up-body-across-UAE-desert?X-IgnoreUserAgent=1>

4. **“No one would miss her”**

a. Country/State: Wisconsin USA

b. Links to Media Coverage: <https://wkow.com/news/crime/2018/09/26/janesville-man-sentenced-in-sexual-assault-cold-case/>

c. Story: Florence Knudson, 78, lived alone in a modest home after her husband passed away. In the predawn hours of April 1, 2000, she was awakened in bed by a male intruder. The man climbed on top of her and sexually assaulted her, threatening that she would not live if she didn't cooperate and that 'no one would miss her'. Knudson did not cooperate, and, at some point, said she managed to scratch the suspect. After the man left, Knudson discovered her phone did not work and it was later found her phone line had been cut. She went next door to a neighbor to call for police. Several swipes of blood across her bed sheets turned up an unknown male DNA profile.

d. An extensive investigation revealed no suspects and the case eventually went cold.

- e. Years went by, including the death of Knudson in 2011, before Kelly Baxter submitted his DNA due to a sexual assault conviction against his own daughter. It was Baxter's DNA on her bed sheets.
- f. In 2017, Baxter told Janesville Police that he didn't know Knudson, or her home and there would be no reason for his DNA there. He was ultimately convicted of her sexual assault and sentenced to 20 years in prison.
- g. Without the technology now in practice for collecting and analyzing DNA evidence, Baxter never would have been identified as the rapist who assaulted Florence Knudson.

5. Lost on the Way to Her Aunt's

- a. Country/State: Kasur, Pakistan
- b. Links to Media Coverage: None provided.
- c. Story: In the city of Kasur, located to the south of Lahore in Pakistan's province of Punjab, on January 4, 2018, a 6-7-year-old Pakistani girl accompanied by her cousin left home at approximately 7:00PM to visit her aunt's house, a short distance away from her family home. Reportedly, her cousin made it to her aunt's house where as the 6-year-old did not. Her aunt thought the little girl had gone back to her family home. When it was noticed that the little girl was missing and may have been abducted, her family members started to look around for her but she was nowhere to be found.
- d. Her family contacted Police that also resulted to no avail. Few days later in a Police led search her dead body was located on a garbage heap. Autopsy was conducted and forensic samples were collected and submitted for DNA and toxicology analyses to Punjab Forensic Science Agency. Toxicology analysis did not reveal poison. An unknown male DNA profile was obtained from the vaginal/anal swabs and the semen stain from her trousers. Autopsy and DNA analysis confirmed the little girl was raped and murder which incited protests and outrage. Police used deadly force to control rioting mob consequently killing two individuals. The Chief Justice of Pakistan took a suo moto notice of the rape/murder and riot incidents. Following the lead of Chief Justice, Chief Minister of the Punjab province demanded Police report about the incident. A joint investigation team (JIT) was announced to oversee investigation in this case and present their report to the Inspector General of Police. The Chief Justice of Pakistan held a hearing to evaluate the proceedings in this case. Punjab Forensic Science Agency (PFSA) had been receiving sexual assault cases of minor girls from Kasur city for almost three years in January 2018. 7 such cases, in addition to the case received in January 2018, had been received and analyzed. Police had submitted a total of 85 reference standards from probable suspects since 2015. All of those individuals were eliminated as being the contributors of the unknown male DNA profile. All of the previously received cases, to include case received in January 2018, had one thing in common, the same unknown male DNA profile. This finding showed that a serial rapist and murderer was on the loose in the community.

- e. Further analysis of the Police reports in all cases revealed the rapist started to strike in June 2015, struck again once in 2016 and still roamed free. He was so emboldened that during 2017 he abducted 5 little girls with age of 5-7 year. Modus operandi of this heinous perpetrator mainly was to abduct little girls, take them for sexual assault to under construction houses in the area and kill them later on and leave them there. There was an exception though as well.
 - f. In one case he abducted and sodomized a little girl and probably subjected her to physical abuse as well. As a consequence the victim, the only alive individual of eight victims is in the hospital in a vegetative state.
 - g. Regarding the January 2018 case, police and various other agencies had started work on war footing basis and a DNA dragnet was launched. Police collected DNA samples from 1186 male individuals in the area. Punjab Forensic Science Agency Crime Scene and DNA/Serology section individuals worked round the clock in this effort.
 - h. On January 20th, 2018 DNA profile from reference sample number 814 matched with the unknown DNA profile. A confirmation reference sample was also collected from the suspect and typed for DNA analysis.
 - i. Due to the heinous nature of the crimes committed by the suspect, general public was so outraged that some demanded public execution of the suspect so no one would dare to commit such atrocities in the future. Authorities decided to hold trial in this case in Anti-terrorism Court.
 - j. The Lahore High Court Chief Justice ordered that this trial must conclude within seven days. Complying with the Lahore High Court order, an anti-terrorism court in Lahore conducted the swiftest trial of Pakistan's history and awarded four death sentences to the suspect in addition to life imprisonment, a separate 7-year term plus a fine in the amount of 3.1 million Pak rupees and the suspect was also asked to pay compensation to the victim's family.
- 6. The Bittrolff Brothers**
- a. Country/State: New York
 - b. Links to Media Coverage: <https://www.newsday.com/long-island/crime/john-bittrolff-charged-with-cold-case-murders-of-rita-tangredi-colleen-mcnamee-1.8867098> <https://www.newsday.com/long-island/crime/john-bittrolff-faces-50-to-life-at-sentencing-in-double-murder-1.14146418>
 - c. Story: In November of 1993, two prostitutes, Rita Tangredi and Sandra Costilla, were murdered in Suffolk County and found posed in the woods in a similar fashion. In January of 1994, a third murdered prostitute, Colleen McNamee, was found in nearby woods. DNA evidence, namely semen, collected from Tangredi and McNamee's respective crime scenes were compared and the analysis revealed "a match". There was no DNA evidence found at Castilla's scene, but similarities between the three incidents led detectives to believe this murder was connected to the other two. A task force, which was formed in 1994, dedicated thousands of hours of manpower to attempt in identifying the perpetrator responsible for these murderers. Hundreds of suspects were

investigated by the task force and all leads were exhausted. Unfortunately, the case eventually grew cold.

- d. The Suffolk County Crime Lab was able to enhance the DNA found at both scenes to create a single source. That DNA evidence was uploaded into CODIS and did not yield a match to any suspect in the database.
- e. In 2013, the Suffolk County Crime Lab was informed by New York State Office of Forensic Sciences that a partial match to the DNA evidence had occurred when Timothy Bittrolff had been arrested and his DNA was collected and submitted.
- f. In 2014, the Suffolk County Police Homicide Squad formed a second task force, and working in conjunction with the Crime Lab, began collecting discarded DNA evidence from the relatives of Timothy Bittrolff.
- g. On 03/07/14, the Crime Lab informed the Homicide Squad that a DNA pseudo exemplar recovered from the garbage of JOHN BITTROLFF, Timothy's brother, was in fact a match; a "cold hit" to the DNA evidence recovered from the crime scenes in 1993 and 1994.
- h. On 07/21/14, John Bittrolff was arrested for the two cold case murders of Rita Tangredi and Colleen McNamee. Although detectives were unable to charge John Bittrolff with the murder of Sandra Costilla due to a lack of evidence, he remains the prime suspect. A direct exemplar was taken from John Bittrolff at the time of his arrest and it was again confirmed to match the DNA evidence recovered in 1993 and 1994.
- i. On 07/05/17, following a lengthy trial, John Bittrolff was found guilty by a jury for two counts of Murder 2nd Degree. He was subsequently sentenced to two consecutive terms of 25 years to life.
- j. This case attracted significant media attention in the mid 1990's and again twenty years later, with the arrest and prosecution of John Bittrolff. At a press conference announcing the arrest of Bittrolff, former Suffolk County District Attorney Thomas Spota described this case as a "miracle of modern DNA science."

7. The Case of Mary Lynne Vialpando

- a. Country/State: USA, Colorado
- b. Links to Media Coverage: <https://www.denverpost.com/2018/09/20/colorado-springs-cold-case-murder-mary-lynn-vialpando/>
- c. Executive Summary: A clerical error delayed the entry of the DNA profile of a domestic violence arrestee, who was eventually connected to a 1988 murder.
- d. Story: On 06/05/1988 the Colorado Springs Police Department was notified by citizen reporting party of a dead body found in the north alley of the 2600 block of West Colorado Avenue. Patrol Officers secured the scene and Major Crimes Unit Detectives took control of the investigation starting with identifying the deceased as 24-year-old Mary Lynne Vialpando. Evidence from the outdoor crime scene and from Autopsy determined the victim's cause and manner of death as a Homicide. Evidence also supported that the victim had been sexually assaulted. A timeline was developed and suspects were identified and ultimately excluded by DNA and hair analysis/comparison to include the victim's

husband. The initial suspect DNA profile was developed using an old, somewhat obsolete method. In October of 2008 the Colorado Springs Police Department laboratory developed an additional suspect DNA profile using the latest technology. The suspect DNA profile was developed in a fraction of sperm located on the victim's pubic hair as well as from a vaginal swab taken during autopsy. This profile was entered into the CODIS database; No matches were found. In December 2015 James Edward Papol absconded from conditions of a Not Guilty Plea due to Insanity on an unrelated Domestic Violence conviction. Papol is subsequently booked in the El Paso County, Colorado jail and submits to buccal swabs for the purpose of obtaining his DNA under the Colorado Katie's Law Act of 2010. A clerical error on Papol's court docket number delayed his DNA standard from being entered into CODIS until November of 2017 - Once the error is corrected and Papol's DNA is entered it hits on the suspect CODIS profile almost immediately. Additional Probable Cause was developed during investigation of Papol subsequent to the DNA hit and he was arrested in September 2018 on charges of 1st Degree Murder.

8. The Case of Jodine Serrin

- a. Links to Media Coverage: <https://www.sandiegouniontribune.com/news/public-safety/sd-me-serrin-solved-20181113-story.html>
- b. Story: On February 14th, 2007, Jodine Serrin, a mentally challenged woman, was brutally rape and murdered in her Carlsbad condominium. Although Jodine lived on her own, her diminished mental capacity required her parents to check on her daily. When her parents, Art and Lois arrived on that fateful evening, they discovered Jodine's killer on top of their daughter, continuing to defile her lifeless body. The killer escaped, but only after leaving behind his DNA. The case remained unsolved for over 11 years.
- c. Over the years that followed, Detectives and technicians deployed every investigative method and technique imaginable. The suspect's DNA profile had been uploaded to CODIS almost immediately, but there were zero matches to compare it to. Both public and private labs were used, dozens of professionals were consulted, and every possible lead quickly went cold.
- d. In 2015, Detective Eric Kovanda performed a comprehensive review of the Serrin homicide. After exploring a number of both traditional and contemporary investigative techniques, Detective Kovanda was not satisfied with the overall status of the case.
- e. In 2016, Detective Kovanda attended a conference, much like this one, where he first recognized the potential value of forensic genealogy. Detective Kovanda knew that several DNA tests had already been performed on the offender sample, and what was remaining was limited. He consulted with several private labs and consultants and ultimately made the decision to submit one of the final offender samples to a private lab to develop a DNA profile suitable for creating a genetic code for forensic genealogical purposes.
- f. In May of 2018, Detective Kovanda received a genetic code suitable for uploading into GEDMatch, an opensource genealogical database. Working with

San Diego District Attorney Investigator Anthony Johnson, Parabon Nanolabs, Colleen Fitzpatrick, Barbara Rae-Venter, and several other law enforcement professionals, Detective Kovanda narrowed his search to several potential suspects. Detective Kovanda used this information to interview other persons with familial links to the offender profile.

- g. In November of 2018, Detective Kovanda focused his efforts on a subject named David Mabrito. Mabrito had committed suicide in 2011 and no known samples of his DNA existed. Detective Kovanda contacted Mabrito's family and obtained some of his personal property which likely contained trace amounts of David's DNA. Detective Kovanda also learned about a traffic stop involving Mabrito, days before his suicide, that produced DNA evidence that was never entered into any database. The San Diego Sheriff's Crime Lab expedited the testing on the DNA discovered by Detective Kovanda and immediately provided him with the results. The DNA evidence discovered by Det. Kovanda was able to confirm the identity of Ms. Serrin's killer with an accuracy ratio of 1:64 Quintillion. The fruits of Detective Kovanda's persistence were finally redeemed as he closed the eleven-year-old Carlsbad Homicide Case #07-1388 – SOLVED.
- h. Detective Kovanda's actions are in keeping with the highest values of the law enforcement profession, and I believe he should be recognized as such. Therefore, it is my honor to recommend Detective Eric Kovanda for the 2018 DNA Hit of the Year.

9. Jane Britton

- a. Links to Media Coverage: None provided
- b. Story: On November 20, 2018, District Attorney Marion Ryan publicly announced that the Homicide of JANE BRITTON on January 7, 1969 a graduate student of anthropology at Harvard University had been solved after 49 years.
- c. This officer was assigned to investigate the cold case in 1997. At this time there was no physical evidence located either at the MSP or Cambridge Police Departments.
- d. This officer did locate the autopsy specimens of Jane Britton, which Dr. George Katsas had retained and stored at his office.
- e. With the onset of DNA testing the autopsy specimens were subsequently sent out to CELLMARK DIAGNOSTICS for testing (1998). A partial DNA profile was identified for use in the newly created CODIS system.
- f. As capabilities in scientific testing increased, and mandated samples were uploaded into the Massachusetts Data Base, a "warm hit" was noted (2004) on a person later identified as MICHAEL SUMPTER. Sumpter had been incarcerated in Massachusetts numerous times and died in prison in 2001.
- g. Chemists began reworking and retesting available samples from the Britton specimens. In a final effort to locate an identifiable sample, an exhaustive sample was found in a previously analyzed micro tube, and established an YSTR profile of a yet unidentified male. YSTR is not compatible for input into the CODIS system to locate matches.

- h. Having a usable complete YSTR sample for identification purposes, this officer was instructed to focus the investigation on obtaining DNA samples from male persons previously identified in the investigation. Travel across the United States to locations as far as Hawaii and to Canada was undertaken to obtain samples.
- i. Each individual identified agreed to assist in the investigation, despite feelings that they had been “suspect” during their original dealings with law enforcement in 1969. All provided DNA samples for comparison in the case and were subsequently eliminated as the source of the Britton sample.
- j. Noting the previous “warm hit” on the Sumpter sample in CODIS. Permission was needed break down the SUMPTER CODIS sample from STR to YSTR for possible comparison. As Sumpter was now deceased, authorization was permitted.
- k. A new updated search on Michael Sumpter revealed that in 2002, the Boston Police Department identified Sumpter from a sample in their department DNA data base as the suspect in the unsolved 1985 rape in the city of Boston. In 2010 Boston Police again identified Sumpter as the suspect in the 1972 unsolved Murder of Ellen Rutchnick from their DNA data base. In 2012, Boston Police again identified Sumpter as the suspect in unsolved murder of Mary Lee McClain in 1973.
- l. Following breakdown of the Sumpter CODIS sample to YSTR, the Massachusetts State Police Crime Lab was able to identify that Michael Sumpter or a male relative matched the Britton sample. In order to validate, a living male relative would be needed.
- m. This officer traveled to Florida and encountered a very uncooperative brother who wanted no involvement in the Britton investigation. A DNA sample was finally obtained, which was used both to verify Michael Sumpter as the CODIS Source, and later after breaking it down to STR to eliminate the brother.
- n. Michael Sumpter a person unknown to Jane Britton, broke into her apartment on the Night of January 6/7, 1969, sexually assaulted her and violently beat her about the head and killed her. This was the first of 3 murders and other sexual assaults Sumpter would commit, but not be held accountable for until the advent of DNA testing. To date, this is the oldest case solved at the SPDU-Middlesex.

10. Juan Gibson

- a. Country/State: Pawtucket, RI, USA
- b. Links to Media Coverage: <https://www.wpri.com/amp/news/local-news/blackstone-valley/suspect-arrested-in-pawtucket-homicide-from-2013/1822562126>
- c. Story: 2013 cold case homicide of Jeffery Lebrun. 2 months earlier the victim was home invaded and fought off attackers. In July, Jeff was murdered at his home in a similar home invasion where the suspect used the same method of entry but this time brought a gun and shot Lebrun several times. Years later in 2016, DNA hits came back on Juan Gibson for the May Home

Invasion. Detectives Silva and Devine always thought the suspect was the same people in both attacks. DNA scientists at the RI Health Department made a match to Juan Gibson through the Y Chromosome match. This rare form of DNA was able to tell us that a male member of Gibson's family DNA was under the finger nails of Lebrun who fought again in July when he was murdered. Detectives eliminated all male members of his family and he was arrested and charged with murder in February 2019. Lebrun was a medical marijuana provider which may have been the reason for the attacks.

11. Kalashnikov, C4, and Detonators All Linked via DNA

- a. Country: Bahrain
- b. Story:
- c. Case Number 1:
- d. On 19/08/2017, an unknown metallic can was found on the side of the road, near a police road camp. Later on, it was found to be positive for the explosive (C4-RDX). DNA was collected from the plastic cap of the metallic can and a DNA mixture was found. DNA was recorded as NO HIT in the DNA Database. The DNA was amplified using GlobalFiler PCR amplification kit.
- e. Case Number 2:
- f. On 11/11/2017, police authority found a Kalashnikov rifle (AKS) in an abandoned house. DNA mixtures were collected from several parts of the rifle. One of the contributors of the black belt attached to the rifle matched to one of the sources of the cap in the previous case. DNA mixtures were stored in the DNA Database. The DNA was amplified using GlobalFiler PCR amplification kit.
- g. Case Number 3:
- h. On 19/11/2017, several electrical devices were received to the DNA lab. They contained receivers, transmitters, batteries, cardboard box and detonators. After observing the items, Directional Focus Fragmentation Charge (DFFC) type was found. Samples were positive for the explosive (C4-RDX) and (Calcium Carbonate) and when mixed with other explosible materials, a combustible dust cloud can be formed. DNA was collected from several parts of the DFFC. One of contributors of the cells from the electrical device found a DNA match. Other DNA HIT was found as one of the contributors of the cardboard box.
- i. Meanwhile, DNA collected from a hidden tape inside the explosive (C4-RDX) as well as one of the contributors of the battery came as a matching HIT to the unknown suspects of the previous cases. DNA sample was recorded in the DNA Database. The DNA was amplified using GlobalFiler PCR amplification kit.
- j. Case Number 4:
- k. On 16/12/2017, we received another similar explosive IED (i.e. DFFC) containing white powder and detonator. DNA collected from the white substance (which is found to be C4-RDX) is a match to the previous unknown suspect. DNA sample was recorded in the DNA Database. The DNA was amplified using GlobalFiler PCR amplification kit.
- l. Case Number 5:

- m. On 21/01/2018, An abandoned store was located with many dangerous items linked to terrorism activity. One of the samples was a wired remote device. DNA collected from the wire connected to the remote device matching the unknown suspect in the previous cases. DNA sample was recorded in the DNA Database. The DNA was amplified using GlobalFiler PCR amplification kit.
- n. References obtained:
- o. During the investigation into the 5 mentioned cases, many reference samples were collected based upon the areas where these samples were found.
- p. On 23/01/2018, one of the reference samples came as a matching HIT for the previous samples and the suspect was brought for investigating and confessed for dealing with the explosive material and rifle. Reference DNA was amplified using GlobalFiler Express PCR amplification kit.
- q. Significance of the HIT:
- r. This suspect is a dangerous terrorist working with in an organized terrorist cell, with possession of many explosive materials that can wipe off an entire area in the Kingdom of Bahrain. In case of such incident, many human and economic fatalities will occur as the terrorism in Bahrain has no religion and color and affects everyone.
- s. So far, many of policemen and tens of civilians were dead or badly injured due to the explosions that took years in the past years.
- t. Also, we have found out that DNA/STR can be generated from the touch DNA contaminated with explosive material (i.e. C4-RDX) and calcium Carbonate. We have found out that these materials are not affecting DNA recovery. Also, from the source of DNA found on the IEDs and explosives, we can easily define the role of each terrorism in the terrorism cell; whether this person is working as an electrician that deals with electrical circuits, distributors of the IEDs to a specific locations or assembler who assemble the IEDs altogether. Also, from the number of the
- u. DNA profiles, we can estimate the number of the terrorists in the terrorism cells and help us in investigations.
- v. Unfortunately - in an international wise – There is not enough research on the explosives and what we are dealing in Bahrain, is based upon our own research and daily routine work on explosives, arms and ammunitions.

12. DNA from Marlboro cigarettes

- a. Country: Bahrain
- b. Story: Since 2008 till 2019, there had been numerous thefts of houses by an anonymous male in a total of (114) cases, particularly in certain area in the Kingdom of Bahrain known as Manama. Most of the important samples collected as evidences were scattered blood from different compartment of the houses such as walls, curtains, windows and the tiles. Touch DND was collected from household tools such as screwdriver, shoes, tools, head caps and jewelry boxes. Approximately 400,000 B.D (more than one million US dollars) had been stolen. From 2008 till 2016 DNA was amplified using AmpFLSTR Identifier PCR

Amplification Kit. From 2017 till 2019, DNA was amplified using GlobalFiler PCR amplification kit.

- c. Through studying and analyzing the presence of DNA, we had come out the following propositions:
 - i. The thief smokes Marlboro cigarettes due to the presence of DNA in cigarette packs collected from the theft sites.
 - ii. The thief has a relatively long hair (more than 10 cm) because of hair in some sites belonged to his DNA.
 - iii. The thief has a petite physical structure because of his DNA in the house's narrow facilities such as windows and air-conditioning openings.
 - iv. The robber does not wear gloves at all because touch DNA was found everywhere and on samples collected from sites.
 - v. The thief is disorganized and has sporadic injuries due to the presence of blood everywhere.
 - vi. The thief works alone due to the presence of his single source DNA in sites and the absence of other unknown DNA except for the homeowners.
- d. Unfortunately, there were no surveillance cameras (CCTV) located on the theft sites and the inability to recognize the thief's identity by the homeowners kept the thief confident enough to continue stealing for a decade or more. Thus, the name Ghost was given to him.
- e. In July of 2018, we had getting in contact with Parabon NanoLabs in the United States, using the phenotyping SNPs technology known as the Snapshot to reveal the thief's physical, ancestry and genealogical identity. Extracted DNA was sent to Parabon NanoLabs.
- f. While waiting for the Parabon Snapshot Phenotype report, DNA analysis of the Ghost was performed using Yfiler Plus PCR Amplification Kit and through searching in the Y-STR Haplotype Reference Database (YHRD), we had reached for the conclusion that the ghost was of haplogroup E1b1a. Meanwhile, several Bahraini thieves of Iranian origins were arrested, stealing houses in Manama area in the same method as the Ghost. It was suspected that the Ghost was biologically related to them so Yfiler STR was performed to their reference DNA too. Two of the suspects were of haplogroup E1b1a which indicated that the Ghost might be also an Iranian origin.
- g. After receiving the Snapshot report from Parabon lab, the following assumptions was reached:
 - i. Ghost's origin showed to be E-U209 (E1b1a1a1a2a1) from West Africa. Based upon this haplogroup and the database, the Ghost was more likely to be from North Middle east (i.e. Iran, Iraq and Turkey) which confirms with our previous propositions.
 - ii. Based on the melanin dye, the skin color was determined to be light-brown to fair, excluding the dark brown, brown and very fair skin colors.
 - iii. The color of the eyes was determined to be brownish to hazel, excluding the blue and green eye color.

- iv. Hair color was determined to be black color, excluding the brown and the blonde hair color.
- v. The face freckles were set to be very low to zero, excluding people with freckles.
- h. References obtained:
- i. The FSI team (Forensic Science Intelligence) was assembled in cooperation with the Department of Criminal Investigation (CID) and the investigation team of Capital Police Directorate (Manama) to analyze all the physical and ancestry data provided by Parabon Snapshot and the previous propositions. We had searched through our databases for people of Iranian origins who didn't have biometrics date available in our systems and live in Manama area.
- j. On January 2019, biosecurity campaigns were done in Manama area where DNA and fingerprint samples were routinely collected from people of Iranian origins sharing the same physical traits. On 27 January 2019, two reference samples were received for two persons, one of them was of Iranian origin with same physical specifications matching the Ghost. After analyzing his reference sample through GlobalFiler PCR amplification Kit and his fingerprint, it came a match to all of samples and fingerprint collected in the 114 cases of theft.
- k. Significance of the HIT:
- l. This is an important match achieved by using the modern technology such as the use of NGS devices, as well as Phenotyping SNPs, which have made a quantum leap in criminal investigation and how to reach to the physical and genealogical features of suspects. This technique can be applied in various criminal cases such as terrorism, organized killings, robbery and human trafficking.
- m. This significant hit was obtained through the continuous progress in the forensics which is based upon worldwide research and the constant pursuit of the use of science in the achievement of criminal justice in the field of human identification.

13. Mr. Sha

- a. Country/State: Yang Zhou, JiangSu, China
- b. Story: On March 1, 2015, a female corpse was found at the roadside of the expressway in Yangzhou City. Based on the investigation of the scene, it was determined to be a murder case. However, the corpse was naked and highly corrupt. Thousands of samples which come from corpse and the woven bag for wrapping corpses were carried out DNA test, but nothing valuable evidence was detected except the DNA of the deceased. A key point of the case is to search corpse source. DNA of the deceased was compared daily in the database. More than 500 Letters of Assistance were sent to other DNA laboratories. More than 10,000 pieces of missing persons information and more than 3000 notices for Seeking Persons which come from the internet were screened. Five months after the case was discovered, the DNA of the deceased was submitted to the Ministry of Public Security's Institute of Forensic Science, and parent/child relationship was searched in the national database. At first, there were more than 90,000 pieces of information about parent/child hits. And then, the experts adjusted the

comparison parameters and narrowed down to 32,084 parent/child hits. After that, these personnel information such as height, body shape, health experience, teeth characteristics, etal, were screened by the investigation team, at last, Mrs. Zhang whose the daughter of Mrs. Wu was considered as the dead. Husband of Mrs. Zhang and her children's DNA samples were test, and the dead was confirmed as Mrs. Zhang. Mr. Sha who was the contact of the dead was investigated immediately, and he admitted that he killed Mrs. Zhang and dumped the corpse

- c. DNA was the only investigative lead and the key to determine the source of the deceased in the case. With the long parent/child hit list, the investigative team exhausted all available resources (i.e., DNA, non-DNA information, Internet records, public databases, etc.) to solve the case. It was a great success because of the DNA information of parent/child relationship.

14. Gypsy Hill Murders

- a. Country/State: CA, USA
- b. Links to Media Coverage:
- c. <https://www.mercurynews.com/2018/09/18/gypsy-hill-killings-jury-convicts-suspect-of-two-murders/>
- d. <https://www.rgj.com/story/news/crime/2018/03/09/2015-more-man-whose-dna-ties-him-1976-reno-murder-michelle-mitchell/411443002/>
- e. <https://www.latimes.com/nation/la-na-false-confession-20180805-story.html>
- f. Story: Five murders of young women occurred between January 7, 1976 and April 1, 1976 in northern San Mateo County, an area known as Gypsy Hill. Copious amounts of forensic testing over the next 20 years did not yield any investigative leads. In 1996, autopsy evidence in two out of the five homicides were linked with DNA typing, but still no intimation to the actual perpetrator. The first victim, Veronica Cascio, was 18 years old and was last seen walking to a bus stop from her home. Her body was found the next day at a nearby golf course. The second victim, Paula Baxter, was 17 years old and was last seen leaving her high school. Two days later her body was discovered in a remote area behind a church, a few blocks from her school.
- g. DNA testing with these cases continued over the years to generate profiles for entry into the Combined DNA Index System (CODIS). In 2013, one of the profiles hit to a cigarette butt found at the crime scene of a 1976 homicide out of Reno, Nevada. The suspect still remained unknown.
- h. The victim of the Reno homicide, Michelle Mitchell, was 19 years old when her car had broken down across the street from her University. She called her mother for help and when her mother arrived 15 minutes later, the victim was nowhere to be found. Her body was found later that evening in garage of a nearby home, approximately 300 feet from her vehicle. The cigarette butt was located near her abandoned car. In 1980, a woman previously committed to mental hospitals, Cathy Woods, confessed to the murder and was convicted. In 1985, due to her mental state she was granted a second trial and was once again convicted.

- i. It wasn't until 2014, a felon was transferred from a Nevada prison to an Oregon prison to serve time for a violent assault. His DNA was typed and uploaded into CODIS. After 38 years, the murderer was finally identified, Rodney Lynn Halbower.
- j. In February of 2014, Cathy Woods with a new attorney filed a motion for a new trial based on the DNA results. After 35 years of incarceration, she was released.
- k. In September of 2018, Halbower stood trial for the murders of Veronica Cascio and Paula Baxter. During the trial, Halbower had numerous outbursts including "I am not guilty of these charges", "He's a liar" (referring to the prosecution), and "Bullshit" (after the DNA results were presented). After 42 years, Halbower was convicted of two of the Gypsy Hill murders. The San Mateo County jurors deliberated for less than an hour before deliberating the verdict.
- l. With these cases in mind, the Washoe Sheriff's Office requested the Nevada State Attorney General review case law to include retroactive collection of DNA samples. The Attorney General determined that DNA specimens could be collected. Since then, samples have been collected from inmates who were convicted of felonies prior to 1996, in hopes to solve more crimes.

15. Hung by a Scarf

- a. Country/State: Montevideo – Uruguay
- b. Links to Media
Coverage: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKewiGuImyuoThAhXnHrkGHTQW DnUQFjAAegQIBRAB&url=https%3A%2F%2Fwww.montevideo.com.uy%2FNoticias%2FMadre-de-Dayana-Yeye-sospecha-de-la-ex-pareja-de-su-hija-y-de-quien-hallo-el-cuerpo-uc311783&usg=AOvVaw0VThE5NOXn0PIWRopAxEs4>
- c. Story: A woman who had previously been missing approximately 18 days was discovered hung by a scarf in a scrub, the crime committed was tried to be covered by an act of a supposed suicide
- d. The state of putrefaction uncovered was too high as well as animals proved to have ate both legs of the body and almost entirely the pelvis. The coroner stated that the victim presented evidence of sexual assault due to the detection of a hematoma in the utero
- e. Furthermore Lab analysts were able to use the method of ungüeal swabs of both of the victims hands, surely enough to discover in one of the finger nails and recovered a DNA mixture profile with the victim and another man
- f. The DNA mixture profile taken from crime scene did not received a matched with the provided CODIS. After one year of the learned victim investigators had sent three persons in interest including the victim's previous partner and two friends. The previous partner of the identified victim matched with the base. (In spite of the previous partner of the victim was in jail before the crime, he's DNA was not in the police data base).

16. France and Germany Team Up

- a. Story: On February 20, 2018, a rape occurred in France, in Val de Marne, in the Paris region. The analyzed stains allowed to determine a male profile, unknown in the French database (FNAEG).
- b. In June 2018, an article 4 Prüm exchange with Germany revealed a hit (quality 1 – hit count 16) with a reference profile of the German database.
- c. A few days later on July, 2018 a rape with violence and theft is committed in Yvelines, France. The query undertaken in the French DNA database (FNAEG) and an article 3 Prüm request allowed to identify the same DNA profile. Both cases are associated.
- d. After confirmation of the hit by a DNA national expert, The French police requested their European counterparts with the Prüm step 2. The German police informed them that the suspect was a 22 years old Moroccan migrant, with police records for robberies with violence and illegal stay
- e. His identity has been registered in the French wanted persons database. Using the geolocation of his mobile phone, the police located the suspect in the Paris region, then at Agde in southern France.
- f. On August 6, 2018, the suspect was arrested by the local police for traveling by train without ticket. The verification of his identity revealed that he was searched in for these rape cases. The analysis of his DNA confirmed his involvement in the two rapes in the Paris region
- g. Charged with a judicial inquiry, he was placed in pre-trial detention. The Prüm exchange system have allowed to identify and arrest the perpetrator of these two rapes

17. Jane Britton (Second Submission)

- a. Country/State: Massachusetts, United States
- b. Links to Media Coverage:
- c. <https://www.middlesexda.com/press-releases/news/dna-used-identify-man-responsible-1969-murder-jane-britton>;
- d. <https://www.washingtonpost.com/nation/2018/11/26/nearly-years-harvard-was-haunted-by-an-unsolved-murder-dna-now-points-serial-rapist/>
- e. Story: The mystery of Jane Britton's death has haunted people since 1969. She was a young, attractive graduate student from a prominent family, who was found sexually assaulted and bludgeoned to death in her apartment. The case received national attention at the time, in part because of the Boston Strangler murders. Based on elements at the crime scene, investigators had a long-held belief that whoever assaulted and killed her was a member of the Harvard University anthropology department. An umbrella of suspicion loomed over several people in Jane's circle for nearly fifty years.
- f. In 1998, a male STR DNA profile was developed from a swabbing of the victim's vaginal smear slide using the GenePrint™ Multiplex amplification kit (TH01, TPOX, and CSF1PO). Several years later, in 2005, the profile resulted in a CODIS link at the state level to a convicted offender by the name of Michael Sumpter; this individual, who died in prison in 2001, was not a person of interest given the

crime's apparent connection to the Harvard University community. This CODIS link was recorded in the case record but it was not verified nor disseminated, potentially due to the non-discriminating nature of a three locus "match." Nearly twenty years after the three-locus STR profile was developed, the case was re-examined at the Massachusetts State Police Crime Laboratory (MSPCL). After several unsuccessful attempts at generating a profile from additional items of evidence, an effort to re-suspend the evaporated 1998 extract from the epithelial fraction of the vaginal smear was attempted. This extract was typed with Y-filer™, which resulted in a major male profile. Six reference samples from potential suspects were submitted to be compared to this profile; all were excluded.

- g. The DNA laboratory wanted to compare this Y-STR profile to Michael Sumpter, the convicted offender from the 2005 CODIS link. Since 2005, Sumpter had been connected through CODIS to two murders of young women in Boston, in 1972 and 1973. These crimes occurred within four miles of Jane Britton's murder. Since it was not possible to request a reference sample from him, the convicted offender card was typed with Y-filer™ and directly compared to the Y-STR profile from the vaginal smear. Michael Sumpter (including relatives of the same paternal lineage) was included as a possible contributor! This investigative lead was relayed to the District Attorney in a CODIS Hit Notification letter. Ultimately, investigators obtained a reference sample from a male relative of Michael Sumpter, which was used to compare against the STR and Y-STR profiles. The male relative was excluded from the three-locus STR profile, hence implicating Michael Sumpter.
- h. The Jane Britton case was impactful to those involved because it demonstrated the capabilities of DNA evidence and the power of CODIS. The MSPCL are hopeful that the surviving family members, friends and classmates of Jane Britton have some solace now that the case has been solved. Also the publicity surrounding solving this 50 year old case has created a renewed investigative interest in many other cold cases.

18. DNA Backlogs in Brazil

- a. Country/State: Goiás/Brazil
- b. Story: On September, 2016, a woman was raped in Catalão/Goiás/Brazil. At that time, a suspect was presented for DNA testing, which confirmed that he was the rapist. After that, he was convicted, and the profile obtained from the vaginal secretion collected from the victim was inserted into CODIS database.
- c. In 2018, a backlog-testing pioneer project was developed in the Laboratório de Biologia e DNA Forense of Superintendência de Polícia Técnico-Científica of Goiás State/Brazil, in which, sexual assault cases without suspects provided by the investigation, were processed, and the genetic profiles inserted into CODIS database. Fortunately, due to the project, we were able to assist various crime investigations. Among all cases, male DNA profiles were obtained from the vaginal secretion collected from six victims raped between June and August of 2016, in Goiânia and Aparecida de Goiânia/Goiás/Brazil. All the victims reported

having been threatened with firearms and raped by an unknown man. After the profiles' insertions, CODIS reported 6 forensic hits, between these six victims whose profiles were inserted during the development of the project and the first victim. Thus, we were able to show the importance of such projects, by helping, for example, to indicate a serial rapist to justice.

19. "Randy", not "Frank"

- a. Country/State: California
- b. Story: Around 8:00 pm on 11/6/18 in the city of Orange, California, a man looked outside his home and saw two men arguing in a red Mustang. The driver stepped out of the car, walked over to the passenger side and began hitting the passenger with an unknown object in the neck, head and chest. The passenger struggled out of the car and ran away from his assailant into a neighbor's home, dazed and asking for help. The victim was taken to a nearby hospital and treated for multiple serious stab wounds to the head and neck. When the victim was questioned by investigators at the hospital, he said he had been arguing with a friend, "Frank" from Fontana, California
- c. According to the witness, as the assailant ran to his car, he tripped and fell on the ground before speeding away. The witness showed police the area where he saw the assailant fall and Orange Police CSI collected apparent blood from that area. While investigators were focused on a suspect, "Frank from Fontana", blood swabs from the location on the ground where the suspect fell were transported from the active crime scene to the OCDA Rapid DNA program the morning of 11/7/18.
- d. Multiple crime scene blood swabs believed to be from the perpetrator were tested on the Thermo Fisher RapidHIT™ 200 instrument. Two hours later, complete profiles were generated from all samples tested, resulting in the same male profile. The male profile was immediately searched against the local OCDA DNA database, a consensual DNA database consisting of profiles collected as a condition of a misdemeanor's case disposition, and a suspect was identified. The hit was to a man named "Randy", a violent felon who was currently on parole and in the OCDA DNA database for misdemeanor resisting arrest, not "Frank from Fontana". Randy was not a person of interest and the focus of the investigation immediately pivoted away from the innocent "Frank from Fontana" to Randy.
- e. The same day, Orange Police, with the assistance of Randy's parole officer, located the suspect at a local motel in the city of Orange. The suspect's red Mustang was observed parked outside, and when Randy was arrested, the police found additional critical evidence: bloody bedding and clothing in the motel room. Furthermore, the suspect had fresh cuts on his hands, consistent with cuts he could have sustained during the stabbing
- f. After Orange Police detectives read the suspect his Miranda rights, he fully confessed to stabbing the victim, saying, "It's a crime, you got me, I'm caught, and I ain't never going home... I guess I'm just evil...Got to be the world's dumbest criminal.

- g. The victim viewed a photo lineup of the suspect and identified the arrestee as his assailant. On 11/9/18, just three days after the crime, Randy was formally charged with attempted murder for the vicious attack, promoting public safety and justice with the speed of Rapid DNA.

20. Copper Cable Cases

- a. Country/State: Abu Dhabi - UAE
- b. Links to Media
Coverage: https://translate.googleusercontent.com/translate_c?depth=1&hl=en&prev=search&url=translate.google.com&sl=ar&sp=nmt4&u=https://www.emaratallyoum.com/local-section/accidents/2016-01-22-1.862047&xid=17259,15700022,15700186,15700191,15700248,15700253&usg=ALkJrhAVgPc6RXLzUvGVgLdtQo2QOleNA
- c. Story: On the span of 2016 (26) cases of copper cable theft were logged by a police station in industrial areas. Those cases had not been linked to any suspect. By the end of 2016, a meeting was conducted between forensic biology section and CID to seek what services could be provided by the forensic department to get lead to find offenders with regards to copper cable cases and the possible benefits of using DNA database was brought into CID attention. Based on the meeting recommendations, CID department have sent (100) possible suspect samples to compare in DNA Database. This combined effort has led to solve almost 70% of cable theft cases. Due to this effort, second quarter of 2017 up till first quarter of 2018, had shown no cable theft cases had been sent to the Forensic evidence department. This due to the effectiveness of the approach to arrest the cable theft gang using DNA database results as a valuable add-on into CID work flow. Additional benefit: 6 months later from the time of the 100 reference samples analysis at the lab, a scattered human skeleton was found in a deserted area where it was completely flesh and eaten by wild animals. DNA tests were performed for the bone samples taken from the skeleton and hit was found. The hit was a reference sample of one of the suspects in cable theft cases. The story behind this skeleton has been discovered due to this hit.

21. Karaoke Murder Cases

- a. Country/State: Seoul
- b. Links to Media Coverage: Daegu
- c. In November 2017, there was an incident that a female was attacked by a male robbery suspect with a blunt club on the street in a sequestered town in Daegu. The male suspect was known to blow the victim's back head more than 33 times with the weapon, resulting in serious concussion and lacerations. Initially, the police investigators of local police station tried to find CCTV footage around the crime scene and retrieved a total of 5 cigarette butts presumed to be abandoned by the suspect. Fortunately, the victim was alive and could provide detailed descriptions on the suspect's appearance.
- d. The evidence package was referred to National Forensic Service (NFS) for analysis. After the analysis (extraction, amplification, profiling and reading), it has been confirmed the extracted DNA matches with the previous records stored

in the DNA database; the profiled DNA information was compared with pre-existing data collected from the other crime scenes. It has been confirmed that the extracted DNA profile matches with the suspect of two other murder cases occurred in the same city, named 'Karaoke murder cases'.

- e. These murder cases occurred in 2004 and 2008 respectively. In the case of 2004, the hostess of karaoke was brutally raped and murdered with a sharp knife. There were four punctured wounds on the body and a pierced wound into the left chest was the main cause of death. The victim was also strangled with a string of microphone during the rape attempt. After the suspect murdered the victim, he detached the breast part from the corpse and also cut genital part from below to the lower belly side. In 2008, the suspect murdered the owner of karaoke with knife, stabbing three times to the belly and chest, resulting in mass blood loss to death. He also tried to rape during brutally attacking the victim with a heavy maul. In these cases, DNA evidence was collected but investigators could not verify they were committed by the same suspect because the database was not established yet.
- f. After the 2017 incidents, police conducted extensive investigations to confirm the location of the suspect. The police investigators and forensic scientists conducted 1) CCTVs and vehicle installed black box footage analysis 2) vehicle tracking 3) DNA matching of similar murder cases in the database 4) DNA extraction from cigarette butts and clothes of the victim, etc. The success of this investigation attributes to the enthusiasm of police investigators, well-established DNA database, and good communication as well as collaboration between investigators and forensic scientists.

22. Burglary in Incheon

- a. Country/State: Seoul
- b. Links to Media Coverage: None provided.
- c. Story: During an investigation of a burglary case occurred in Incheon city conducted in 2016, investigators found out the modus operandi of the crime is similar with a series of unsolved serial rape cases occurred from 2004 to 2016. These consecutive rape cases had attracted national-level attention intimidating numerous female-only families but the suspect was remained at large. The direction of investigation has been expanded from a minor burglary to a serious serial rape case based on a reasonable suspicion of investigators.
- d. After confirming the moving route of the burglary perpetrator appearing on closed-circuit televisions (CCTVs) and vehicle installed black-boxes near the crime scene, investigators could narrow down the area of the suspect's residence. At the same time, the investigators requested DNA analysis of the unsolved rape cases with similar modus operandi occurred near the area and were notified that there is a high possibility that the suspect could have a specific family name relatively rare in proportion (approximately 0.9%) based on his genetic characteristics as a result of Short Tandem Repeat on the Y-chromosome (Y-STR) analysis.

- e. Considering the area of residence, the criminal records of possible suspects and the presumed family name, the investigators could specify a possible suspect and initiated surveillance on his residence to collect additional evidence. While the police investigators were on a stake-out near the residence of the suspect, they were able to film that the suspect was smoking near his house with digital camera and collected cigarette butts from the street. The evidence was referred to National Forensic Service (NFS) for autosomal Short Tandem Repeat (autosomal-STR) analysis. After the analysis (extraction, amplification, profiling and reading), it has been confirmed the newly extracted DNA matches with the previous records stored in the DNA database; the profiled DNA information was compared with 212,673 pre-existing data collected from the other crime scenes. Consequently, the investigators were able to arrest the suspect, clearing 12 unsolved rape cases.
- f. Best practices
- g. The success of this investigation attributes to the enthusiasm of police investigators, timely scientific analysis, and good communication as well as collaboration between investigators and forensic scientists.
- h. In this case, a two-phase DNA analysis has been conducted during the investigation. At the first phase, forensic scientists could provide plausible hypothesis to the investigators that the suspect could have a specific family name through Y-STR analysis utilizing DNA database. At the second phase, in reverse, the forensic scientist could assure that the suspect of burglary is the identical person committing rapes with autosomal-STR analysis using the physical evidence collected from the street near the suspect's residence. There was other corroborating evidence collected by investigators such as CCTV/Vehicle black box, photos and testimonies of victims to proceed to the prosecution of criminal cases yet to be solved.
- i. The factor critically affecting the success of investigation is primarily due to the development of advanced DNA analysis capacity and the DNA database established in 2010. However, this case demonstrates that scientific capacity should be reinforced by the effort of field investigators. In conclusion, it is imperative that a good cooperation and collaboration should exist between all actors of investigation procedures.

23. Brazilian Gang

- a. Country/State: Brazil
- b. Links to Media Coverage:
- c. <https://www.euronews.com/2017/04/25/robbery-of-the-century-in-paraguay><https://g1.globo.com/mundo/noticia/assaltantes-levam-us-40-milhoes-de-transportadora-de-valores-no-paraguai.ghtml>
- d. <http://g1.globo.com/fantastico/noticia/2018/04/imagens-ineditas-mostram-assalto-transportadora-de-valores-no-paraguai.html>
- e. Story: On 04/24/2017 a major assault took place in Ciudad del Este/Paraguay. It involved the explosion of a large center of the values company Prosegur, with the consequent theft of millions of dollars

- f. It was verified that it was a Brazilian gang and that several of its members returned immediately to Brazil. Being a transnational crime, the case was investigated by the Brazilian Federal Police. Brazilian forensic experts collected more than 300 traces related to the crime
- g. The investigation team was able to detain some suspected fugitives. However, the maintenance of their prisons depended on the attachment of these individuals to crime. Biological materials were collected from the investigated and forwarded to the DNA laboratory of the Federal Police. At the same time, the police authority asked the judicial authority for permission to insert their genetic profiles into the databases, which was granted.
- h. Some of the suspects were promptly related to the crime and kept in jail after the direct comparison of their profiles with the first traces analyzed in the DNA laboratory. However one of the suspects, Alcides Pereira da Silva Júnior, was not compatible with the traces initially analyzed and according to the Brazilian legislation could be released. However, when uploading its genetic profile to the National DNA Database it was verified a coincidence with a profile sent by the DNA laboratory of the state of São Paulo. It was a case that occurred in October of 2013. Criminals stole \$ 2 million from a car from the value carrier Protege. After an exchange of shots with the police and the escape of the assailants, the experts collected traces of blood that remained in one of the vehicles used by the gang
- i. Because of the linking of Alcides\' genetic profile to the car robbery that occurred in São Paulo (and not to the crime that occurred in Paraguay), that individual was kept in custody
- j. Only months later, after the analysis of the remaining traces, the genetic linkage of Alcides with the Prosegur case was discovered.
In addition to having served to solve a cold case in the state of São Paulo, it can be concluded that if it were not for the existence of DNA Databases, such a suspect could have been released for lack of evidence at the time of the initial investigation. The rapid coincidence in the National DNA Database brought enough justification to remain Alcides imprisoned, giving more time to the investigation
- k. This was an emblematic case of great international repercussion for dismantling a specialized squad to robberies and explosions to cars and values companies on a transnational level. The investigation at the end concluded that more than 30 people participated in the crime, with eight convicted based on DNA evidence. In addition, DNA has also made it possible to link this crime to assaults and murders in the states of Paraná, São Paulo, Piauí, Bahia and Mato Grosso do Sul, in locations that are more than 2,500 km apart.

24. Rape in a Dental Office

- a. Country/State: Brazil
- b. Links to Media
Coverage: <http://g1.globo.com/ro/rondonia/noticia/2015/09/preso-por-estupro-em-ro-e-suspeito-de-violentar-cerca-de-40-mulheres.html>

- c. https://www.apcf.org.br/horus/arquivos/revistas/revista_apcf_37_web.pdf
- d. <http://www.gazetadigital.com.br/editorias/cidades/banco-de-dna-identifica-suspeito-de-crimes-sexuais-em-serie/471940>
- e. Story: Between the years of 2012 and 2015, several women were raped in the states of Amazonas, Mato Grosso, Rondônia and Goiás. The aggressor acted in the same modus operandi: he attacked the victims at home after pretending to ask for some information or a glass of water. Although he acted always in the same way, he was constantly changing city and committing crimes in locations up to 2,000 km distant from each other.
- f. In September 2015, in the state of Rondônia, after committing robberies and a rape to a secretary of a dental office, Célio Roberto Rodrigues, 35, who also used the name of Herley Nascimento Santos, was arrested. At this time the state of Rondônia still did not have DNA laboratory. Despite this, the biological material of the suspect was collected and his profile was compared with cases investigated in the neighboring state of Mato Grosso. The comparison immediately confirmed the authorship of four rapes within that state. When the genetic profiles were uploaded to the National DNA Database, new compatibilities were found with three genetic profiles inserted by the database of the state of Amazonas.
- g. In February of 2018, analyzing samples collected from two victims of rapes in the city of Goiânia (in the state of Goiás), the Goiás' DNA laboratory obtained two similar genetic profiles. Both were inserted in the local database and uploaded to the National DNA Database, being detected coincidences with the genetic profiles of the traces of the crimes attributed to Célio Roberto Rodrigues. So far, the Brazilian National DNA Database already has 10 hits among genetic profiles of sexual crimes attributed to Célio Roberto Rodrigues. He is currently being investigated for the sexual abuse of more than 50 victims in the states of Amazonas, Rondônia, Mato Grosso and Goiás. 23 of them occurred in the city of Manaus (Amazonas), where he is accused of rape of children, adolescents and adult women
- h. This is the first case in Brazil in which the author of serial sexual crimes was identified through DNA examination, with the assistance of the National DNA Database. The large distance between crime sites and the lack of evidence linking the abuser to the crimes made it difficult to resolve them, which would probably be unsolvable if it were not for the existence of DNA Databases. As a serial rapist, we believe that it is still possible to elucidate other sexual crimes of this same perpetrator as sex crime backlog samples are being processed.

25. The Golden State Killer

- a. Name: Greg Totten and Anne Marie Schubert
- b. Agency: Ventura County District Attorney's Office and Sacramento County District Attorney's Office
- c. Country/State: Ventura and Sacramento County, California
- d. Links to Media Coverage:
- e. <https://www.nytimes.com/2018/04/25/us/golden-state-killer-serial.html>;

- f. <https://www.npr.org/sections/thetwo-way/2018/04/26/606060349/after-arrest-of-suspected-golden-state-killer-details-of-his-life-emerge>
- g. Story: On April 23, 2018, criminalists at the Sacramento County Laboratory of Forensic Science compared an abandoned DNA sample obtained from Joseph James DeAngelo to unknown samples collected from multiple crime scenes linked to the notorious Golden State Killer. The results indicated that it was at least 1.10×10^{10} more likely that Mr. DeAngelo was the contributor to crime scene unknown samples than a random unrelated individual. After forty-four years of exhaustive investigation, law enforcement agencies across the state of California had finally found the needle in the haystack.
- h. The scope of Joseph DeAngelo's alleged crime spree is staggering, encompassing 13 murders, more than 50 rapes and over 100 burglaries between 1974-1986. His monikers reflect the sweeping geographical impact of his crimes – the Visalia Ransacker, the East Area Rapist, the Original Night Stalker and the Golden State Killer. In total, 11 counties felt the brunt of his crimes: Sacramento, Yolo, Stanislaus, San Joaquin, Alameda, Contra Costa, Santa Clara, Tulare, Santa Barbara, Ventura and Orange County. Joseph DeAngelo is currently charged with 13 murders and 13 counts of kidnapping for robbery.
- i. Victims alleged to have been murdered by Mr. DeAngelo include Professor Claude Snelling in Visalia on September 11, 1975; Brian and Kattie Maggiore killed while walking their dog in Rancho Cordova on February 2, 1978; Dr. Robert Offerman and Debra Manning in Goleta on December 30, 1979; Lyman and Charlene Smith in Ventura between March 13-16, 1980; Patrice and Keith Harrington in Dana Point on August 21, 1980; Manuela Witthuhn in Irvine on February 6, 1981; Cheri Domingo and Greg Sanchez in Goleta on July 27, 1981; and Janelle Cruz in Irvine on May 5, 1986. Modus Operandi and DNA evidence from many of the crime scenes established a case-to-case link over the years.
- j. In early 2018, law enforcement turned to Investigative Genetic Genealogy to finally identify the individual responsible for these horrific crimes. Using genealogy websites to help identify the suspect through biological relatives, Joseph DeAngelo was developed as a suspect and ultimately arrested for these offenses. To our knowledge, this was the first successful law enforcement utilization of the genetic genealogy investigative technique in the United States. Since the arrest of DeAngelo, the technique has been used to solve approximately 40 additional cold case murders and rapes.
- k. The unanswered questions from a cold case murder linger on for years, haunting the victim's family and the investigators who work tirelessly to solve the crimes. Whatever the killer touched, wherever he walked, whatever he left behind will one day bear mute witness against him. Through investigative genetic genealogy justice will finally have its day in a court of law.

26. Police Commissar Murdered

- a. Country/State: TIRANA, ALBANIA
- b. Links to Media Coverage: <https://balkanweb.com/lajm-i-fundit-policia-zbulon-adn-ne-e-vrasesit-te-komisarit-artan-cuku/>

- c. Story: April 2017-a police commissar, ex-director of police was murdered in the elevator of his flat while he was going home. The author during escaping from the crime scene, throw in the trash bin a sportive blouse he had wear. A full DNA profile was obtained from swabbing the pockets of this blouse and no match was found in CODIS. The searches for this DNA profile went via the channels of exchanging data according to the agreements related the topics
- d. A match was found in the database of Switzerland and reported from Bern, where this person was arrested as suspect for drug trafficking. This person was arrested in Tirana some days later this DNA hit. The case was with high impact in Albania and was the "perfect" example of the strength of the database.

27. Train Ticket from Paris

- a. Country/State: Belgium
- b. Links to Media Coverage: <https://www.hln.be/nieuws/buitenland/lichaam-nederlandse-vermiste-van-der-vaik-telg-na-17-jaar-gevonden-corrie-nam-vanuit-parijs-de-trein-naar-omgeving-dinant~ad84c680/>
- c. Executive Summary: A Dutch woman goes missing. A body is found in Belgian on some train tracks. There is no match any active missing persons cases in either countries. In 2018, Belgium missing persons DNA database goes active, her body is exhumed and a DNA profile extracted. It matches not against Belgium's but against the Netherland database, leading to her database.
- d. Story: January 7, 2001 (AM) – Nederasselt, The Netherlands. Corrie Van der Valk (58) leaves her house after drinking a cup of coffee with her husband, Nico. He will report his wife missing three weeks later. She will never be heard of again. Being from a well-known family Corrie's disappearance attracts extensive press coverage.
- e. Did Nico kill his wife? Did Corrie commit suicide? Did she start a new life in India? None of these hypotheses can be substantiated. Only one single trace of Corrie is recovered: a train ticket bought at the Paris-Nord (France) railway station to travel to Brussels (Belgium) the same day. One year later the Dutch police closes the case. Six years later Corrie will be officially declared dead.
- f. January 7, 2001 (PM) – Lustin, Belgium. A train hits a person close to the station of the small village of Lustin (Namur, Southern Belgium). No official documents are found on the female remains. None of the persons reported missing to the Missing Persons Unit (Belgian Federal Police) matches the human remains. The potential link with France does not lead to an identification. The Belgian Police classifies the case as "sleeping" after a couple of months. The unknown Belgian Jane Doe is buried at a small local cemetery in Bois-de-Villers.
- g. July 1, 2018 – Brussels, Belgium. The Belgian DNA-database "Missing Persons" becomes operational. To render the new database operational as many DNA-profiles as possible are added. To do so the Missing Persons Unit and the DNA Index System service at the National Institute for Criminalistics and Criminology in Brussels join forces. Re-examining cold cases and establishing a useful DNA-profile becomes one of the biggest challenges. In this context, a police officer at

the Missing Persons Unit decides to dig up the 17-year old file of an unidentified woman killed by a train in Lustin. Within a couple of weeks, the local cemetery in Bois-de-Villers is paid a visit by the Missing Persons Unit accompanied by a coroner. The bones of the Belgian 17-year old Jane Doe are exhumed. Based on a sample from the femur a STR profile is established by the DNA-lab. Mid-November 2018 the STR profile is entered in the Belgian DNA-database "Missing Persons". National comparisons with other DNA-profiles do not return a hit. Overnight the DNA-profile is sent out internationally. Much to the excitement a perfect match is returned between the Belgian DNA-profile and a Dutch Missing Person profile. On the Dutch side the surprise is probably even greater as it turns out Corrie has finally been found.

- h. Although the exact sequence of events on January 7, 2001 remains largely a mystery – how did Corrie make it to Paris? Why did she decide to travel (back?) to Brussels? How did she end up in a small village in the south of Belgium? – at least she can be put to rest by her family. Moreover, Nico, her husband has definitively been cleared of any suspicion of killing his wife as the Belgian Jane Doe is known to have committed suicide.

28. Shawn Wendling

- a. Country/State: City of Ravenna, Portage County, Ohio, U.S.A.
- b. Links to Media Coverage: FOX8.com
- c. Story: On June 14, 2018, a female in her 70's was biking on a hike and bike trail in the south east portion of Portage County when an unknown male using blitz style tactics, attacked the victim throwing her into the wooded area off the trail. The victim was sexually assaulted and strangled to the point she felt she was going to die. The suspect stripped her of all her clothing and robbed her of all personal belongings. Evidence collected from the scene and the hospital was analyzed and a DNA profile was developed. There was no match to identify the suspect in CODIS. On August 13th 2018, a female in her late 40's was biking on the same hike and bike trail when she was tackled off her bike, thrown off the edge of the trail, stripped of her clothing, sexually assaulted and strangled. The suspect took all the victims clothing and personal items when he fled the scene. Evidence was again collected and analyzed. A DNA profile was developed, and it was determined that both sexual assaults were committed by the same person. On September 4th, 2018, a 30-year old female was jogging near a park in Poland Township, Mahoning County, Ohio. A male jumping from a wooded area grabbed the victim, dragging her off the road to a wooded area where she was stripped of her clothing, strangled, sexually assaulted and robbed of her personal items. On September 6, 2018 investigators received a familial DNA match and using that information, Shawn WENDLING was identified as a suspect. Within 14 hours of receiving this information SHAWN WENDLING was arrested leaving his residence located in PA. WENDLING just received a 30-year prison sentence in Portage County for his crimes committed in Portage County. WENDLING is still facing charges of rape and kidnapping in Mahoning

County. Each of the assaults showed a progression in the level of violence used during each incident.

29. A WAVE Movement leads to a Match

- a. Country/State: Mississippi
- b. Links to Media
Coverage: https://www.gulfive.com/news/index.ssf/2015/12/ocean_springs...,
<https://www.sunherald.com/news/local/crime/article221665855.html>,
- c. www.wlox.com/.../suspect-arrested-four-years-after-rape-biloxi-bridge
- d. Story: In 2014, our victim reported she was sexually assaulted on the walking path of the Ocean Springs bridge during a nighttime walk. A sexual assault kit was done at the local hospital and submitted with DNA. Numerous possible suspects had given DNA samples but none matched. A WAVE (Woman Against Violence Everywhere) movement was started in our area to help other victims of other violent crimes come forward and give support to them. Four years later a match was found after the suspect was arrested across the United States. The Case is still open and awaiting presentation to a Grand Jury.

30. Candyman

- a. Country/State: Canada (Quebec)
- b. Links to Media Coverage: <https://www.cbc.ca/news/canada/montreal/police-seeking-other-victims-of-man-arrested-sex-assaults-1.4525921>
- c. Story: Serial rapist betrayed by his candy.
- d. In January 2018, the Montreal police force (Canada) is on alert: a dangerous sexual predator is believed to have made three victims in the last month. There is an escalation in the frequency of attacks and the degree of violence. The investigators have no suspect in sight. Their hopes rest on DNA.
- e. The first assault occurred on December 9, 2017. A man followed a young female, grabbed her from behind and threaten her with a knife to her throat. While trying to escape, the victim was stabbed in the neck but managed to run for her life. From the evaluation of the surroundings, investigators speculate that the suspect may have been waiting for a potential victim in a nearby bus shelter and followed her from there. Thus, in addition to the victim's clothing, litter items collected from the bus shelter are submitted for DNA analysis at the forensic lab (LSJML). No relevant genetic data is obtained from the clothing, but three different male profiles are obtained from the litter: one from a candy, one from a tissue paper and another one from a cigarette butt. All three profiles are submitted to the Canadian National DNA Data Bank for comparison with the convicted offender index. A single match is returned for the profile obtained from the candy, identifying a suspect hereafter named Candyman. Unfortunately, the investigators find no other evidence to link Candyman to the attacks.
- f. A month following the initial event, another assault is perpetrated with a similar modus operandi. Investigators rapidly link the event to the December attack but no items are sent for DNA analysis

- g. On January 11, 2018, only two days after the second event, another very violent sexual assault takes place. A third victim is attacked from behind, punched repeatedly in the face, then strangled with bare hands. While the suspect tries to undress the victim, her screams alert neighbors whose shouts drive the suspect away. The victim is found agonizing. Her clothing, although very bloody, are submitted for DNA analysis. Given the urgent need to identify the perpetrator to prevent further assaults, the LSJML activates its 24-hour emergency protocol to obtain DNA results from the evidence.
- h. On the complainant's coat, a complex DNA mixture from four contributors is obtained. Up to the end of 2017, this type of result would have been deemed "unsuitable for comparison" because of its complexity. However, in early 2018, after validation, a probabilistic genotyping software is made available to LSJML biologists thus allowing interpretation of such results. The analysis turns out to support very strongly the inclusion of Candyman's profile to the four-contributor DNA mixture (LR > 1015). This association is therefore a critical element linking Candyman to two assaults.
- i. If it had not been for the identification of the suspect through a match of the DNA profile on the discarded candy to the convicted offender index, Candyman would most likely have made other victims. He is now awaiting trial.

31. Murder in an Engine Factory

- a. Country/State: China
- b. Links to Media Coverage:
- c. <http://legal.people.com.cn/n/2015/1211/c188502-27915106.html>
- d. http://www.sdnews.com.cn/sd/jinan/201506/t20150618_1922599.htm
- e. <http://www.jiangxia.cc/news/newsshow-37111.html>
- f. Story: On March 23, 1992, a woman was brutally murdered in the engine factory of Sinotruk group in Jinan city, Shandong province. The victim, surnamed Wang, was stabbed multiple times and died at the scene. After investigation, local police identified Li, the victim's ex-husband, as the suspect. Li had been on the run since 1992 and kept changing his locations. In 2012, the Ministry of Public Security of China began a major effort to track down fugitives. Jinan police collected blood samples of Li's immediate family members with permits. After examining of DNA from the blood samples of Li's parents, Jinan police promptly uploaded the test results into the national DNA database.
- g. In June 2015, the DNA laboratory of Dongcheng Forensic Science Service of the Beijing Public Security Bureau received a blood sample of "Liu" which was collected by Shiyan police as a sample of a drug abuser. After testing, the DNA profile was submitted into the national DNA database for comparison. The results support a familial match between "Liu" and the suspect Li's parents. However, "Liu" was 18/19 on the locus of D6S1043STR, while Li's father was 13/20 and his mother was 17/18.
- h. On this basis, the DNA laboratory of Beijing worked in close cooperation with the Jinan DNA laboratory. They re-examined the DNA samples of "Liu" and the suspect Li's parents. Furthermore, a familial searching on Y chromosome was

conducted immediately with Yfiler Plus (AB) kit. The DNA typing of “Liu” and Li’s father was all consistent, and the genetic mutation of Liu's D6S1043STR locus was confirmed. “Liu” was confirmed as a fake identity, and he was most likely to be the suspect on the run of the intentional homicide case in 1992.

- i. On June 11, 2015, Jinan police successfully captured “Liu” in Shiyan city, Hubei province. After questioning, the suspect quickly confessed that his true identity is Li and owned up the crime. Eventually, with the help of DNA database, the 23-year-old cold case was solved.

32. A Body Found in a Sack

- a. Country: Ulaanbaatar, Mongolia
- b. Story: Unknown man’s body made in sack was found in coulee near at private house. DNA analyst worked to obtain DNA profile from his body and he was identified by familial searching in 2018.
- c. On June 10, 2011 about 25 to 30 years old and decayed unknown man’s body made in sack was found in coulee near at privet house. During the investigation body was not identified by facial reconstruction and oral applications and the case renamed cold.
- d. In 2017, criminal law has updated and police investigating on this case restarted to made post mortem analysis and sample were collected from corpse. DNA profile of unknown male was obtained from these samples. A combination of autosomal and Y chromosomal DNA profile was used to compared with family members and relative’s database of missing person which considered police agency but match wasn’t found.
- e. Investigation was eliminated to find a kid of unknown man and his DNA profile was matched with another case that solved by criminal investigation except DNA analysis.
- f. Scientific Importance
 - i. DNA technology proven the case solved in 2011 was wrong and found right person who related with known man’s body.
- g. Investigative Importance
 - i. This case serves a reminder that DNA evidence, like any other evidence, must be critically analyzed.

33. Alex Christopher Ewing

- a. Country/State: Colorado USA
- b. Links to Media Coverage: <https://www.denverpost.com/2018/08/11/aurora-lakewood-hammer-killer-dna-testing/>
- c. Story: In 1984, two quiet Denver neighborhoods were rocked by unthinkable violence: On January 10, 50-year-old Patricia Smith was at her Lakewood home when she was startled by an intruder. She was sexually assaulted and then bludgeoned to death with a hammer. Less than a week later on January 16, the entire Bennett family, father Bruce and mother Debra as well as their 7-year-old daughter Melissa and 3-year-old daughter Vanessa were violently bludgeoned with a hammer in their Aurora home. Melissa and Debra were sexually assaulted, and the only survivor of the ordeal was little Vanessa who suffered

from life-threatening injuries. The depravity of the cases haunted Aurora and Lakewood PD detectives for 34 years.

- d. Forensic testing for both cases began in 1984 but due to technology limitations, DNA testing resulting in CODIS entries (both from perpetrator semen) did not take place until 2001 in the Bennett case and 2010 in the Smith case. In 2010 after the CODIS profile was entered for the Smith case, the DNA profiles from both cases hit to each other in the DNA database, connecting the 2 cases together. The Aurora and Lakewood Police Departments began collaborating with one another to try and identify their suspect but the best they could come up with was an arrest warrant for a person with the perpetrator genetic profile under the name John Doe. A familial search was conducted on the Patricia Smith case evidence in 2013 and in 2018 with no investigative leads generated. Aurora PD went on to incorporate more progressive types of investigative tools to include phenotypic testing and a genealogy database search using a YSTR DNA profile which identified a surname, but no suspect.
- e. Finally, in July 2018 there was a match in the DNA database: Alex Christopher Ewing! Ewing had been incarcerated in Nevada since 1984 after being arrested in Arizona 11 days after the Bennett family homicide for breaking into a home and beating a man with a slab of granite. Then, in August 1984, Ewing was being transported from Utah back to Arizona for a court hearing when he escaped. That night, Ewing broke into a home in Henderson, Nevada and attacked a couple with an ax handle. He was arrested two days later, convicted of multiple charges and has been in Nevada's prison system ever since.
- f. In 2013, Nevada enacted a law mandating DNA collection for people convicted of certain crimes. In 2016, three years after the passing of the law, the Nevada Attorney General issued an opinion declaring that the statute applied retroactively to long-term prisoners. Ewing's DNA was tested and uploaded to the national database in 2018, it immediately hit to the two Colorado cases!
- g. Ewing has been charged with multiple counts of murder and attempted murder, sexual assault, sexual assault on a child, assault, burglary, and five violent crime counts in Colorado. He is currently appealing his extradition to Colorado within the Nevada State Supreme Court system.

34. Chandler, Mr. X

- a. Country/State: Ohio
- b. Links to Media Coverage:
- c. <https://www.wkyc.com/video/news/mystery-of-joseph-newton-chandler-iiis-true-identity-to-be-revealed/95-8166292>;
- d. <https://www.wkyc.com/article/news/crime/authorities-reveal-true-identity-of-joseph-newton-chandler/95-565963729>;
- e. <https://www.youtube.com/watch?v=bomuPyO8jos>;
- f. <https://melmagazine.com/en-us/story/the-man-who-woke-up-as-an-8-year-old-boy>;
- g. <https://www.forensicmag.com/news/2018/06/dna-doe-project-names-another-giving-major-piece-infamous-ohio-mystery>;

- h. <https://www.youtube.com/watch?v=1FdVPZQrdn4>
- i. Story: The use of genetic genealogy to solve the Joseph Newton Chandler III identity theft case represents a breakthrough in forensic identification – a cold case solved with autosomal SNP testing and GEDmatch, six weeks prior to the arrest of the Golden State Killer. It not only demonstrated the feasibility of genetic genealogy for forensic identification, the case pushed the limits of the technology, producing a successful identification based on minimal, highly degraded DNA.
- j. When “Chandler” (Mr. X) committed suicide in July 2002 in Eastlake, OH, authorities discovered his was an assumed name; the real Chandler was an eight-year-old boy killed in a 1945 car accident in Texas. In 1978, Mr. X had obtained a social security number in Chandler’s name while living in Rapid City, SD. Thereafter X moved to Cleveland, where he resided until his death.
- k. In 2015, with no CODIS hit, the investigation into X’s possible criminal activities stalled pending his identification. The US Marshal for Northern Ohio consulted a forensic genealogist hoping that Y-STR analysis would generate leads to X’s identity. A match between Mr. X’s Y-profile and a Y-profile in a genetic genealogy database indicated that his surname might be Nicholas.
- l. In mid-2017, the Marshal authorized autosomal SNP testing by a genetic genealogy research group. To circumvent direct-to-consumer DNA companies’ prohibition on forensic casework, an independent lab was used to perform 30x whole genome sequencing (WGS) on DNA extracted from X’s cancer biopsy tissue from the 1990s. Bioinformatics then produced autosomal SNP data that was uploaded to GEDmatch, but only third cousin and more distant matches were found.
- m. Prolonged exposure to paraffin had destroyed most of X’s genome. Because GEDmatch is not constructed to operate on highly degraded DNA, the team uploaded electronically degraded versions of their own GEDmatch data to assess the possible appearance of “ghost” matches producing false leads. After six months, the team had created a family tree with ~16,000 people, based on genealogies of two dozen matches. The tree included several Nichols but no Nicholas’. A second WGS exhausted the remaining DNA, with similar results. Combining the two 30x datasets to produce a 60x dataset introduced a new match connected to the wife of a Mr. Nichols already in the composite tree. The identification of their son Robert Nichols as “Chandler” was supported by Gedmatch relationship estimates and by a clue on a 1985 rental agreement. Nichols’ childhood home in the 1920s was 1823 Center St., New Albany IN; on the rental application “Chandler” referenced a fake sister living at 1823 Center St., Columbus, OH.
- n. This landmark case involved efforts of 15 volunteer genetic genealogists devoting >3000 hours over six months. Its success depended on finding genetic genealogy Y-STR and autosomal SNP matches to distant relatives; it proved that GEDmatch can be used with highly degraded DNA where only a fraction of the genome has survived. The identification of Robert Nichols as Chandler has

allowed the investigation of his possible criminal activities to move forward; otherwise the case would have remained unsolved forever.

35. Attacked while Jogging

- a. Country/State: Hungary
- b. Links to Media Coverage: See links in text
- c. Story: A 36-year old woman (named Krisztina KGy, a wife and mother of a child) was found naked, possibly raped and strangled in a forest area of the 23rd district called Soroksár of Budapest, Hungary on 25 September 2013. The victim (V) was attacked during her regular evening jogging at the location of the crime. The case became soon and remained for long breaking news shocking the whole society of Hungary (see in Hungarian: https://index.hu/belfold/2013/09/30/terrorrol_szo_se_volt_soroksar_on/). As a result of the CSI, autopsy and the subsequent DNA analysis, two male DNA profiles could be determined, one of them (P1) from faint bloodstains recovered on V's body. The other male DNA profile (P2) was genotyped from touch samples and larger biological stains found on and near the body and on the offence tools (ropes). Based on the genetic evidence the police set up an investigation theory for two perpetrators (see in Hungarian: <http://www.blikk.hu/aktualis/krimi/egy-ferfi-lefogta-tarsa-megfojtotta-a-soroksari-not/vwvq5yp>).
- d. The DNA profiles did not give direct matches either in the Hungarian or foreign DNA databases. During the subsequent years in different areas of Hungary DNA mass screening of altogether 1,770 individuals was performed without producing any investigative leads. In August 2014, in the framework of a scientific research project, familial DNA database searching was initiated using the two unknown DNA profiles. The search was repeated among the newly added reference profiles on a monthly basis. In September 2015 the familial database search yielded a promising candidate as being the possible sister (S) of P1. The police found and sampled the father (F) and two nephews of S. However, the mother (M) and the only known full brother (B) of S were already dead. By supposed coincidence, B had passed away in a car accident only a week earlier than the murder date. The additional police investigation brought to light that autopsy of B had been carried out just before that of the victim on the same dissection table on the same day by the same personnel. Thus during the autopsies a contamination from B to the victim had likely occurred and therefore P1 may be B. Tissue block samples from M were found and her DNA profile was managed to be genotyped. The parenthood of M and F toward S and P1 was proved by autosomal, Y-chromosomal STR and mitochondrial control region DNA analyses. The admission of the two-perpetrator misconception of the police was a breaking news again in Hungary in 2017 (see in Hungarian: <https://zoom.hu/hir/2017/07/24/hanyagsag-miatt-kerestek-kettetest-a-negy-eve-meggyilkolt-sorosari-futo-no-ugyeben/>). In September 2018 a database cold hit (direct match) gave rise to the final breakthrough in the case when P2 matched with the DNA profile of a convicted offender, named

Szilveszter R in the Hungarian DNA database. Szilveszter R immediately became the suspect of the case (see in Hungarian: <http://www.origo.hu/itthon/20180908-ezt-mondtak-el-a-rendorok-a-soroksari-no-gyilkosarol.html>). He is a homeless male with criminal records of burglaries and he's had local knowledge of the crime scene due to his childhood spent in Soroksár. As of March 2019 the case is being closed by the police before the prosecution process.

36. A Trafficked Woman is Returned Home

- a. Country/State: China
- b. Story: In February 25th of 2019, a homeless woman who called herself Wu Rangxia, reported to the police that she had been abducted by a man and a woman in Guangdong Province in 1993. Then she had been trafficked to a man called Zhang Xiyuan in Wuwei City, Gansu Province. After eight years, the poor woman escaped and roamed to Ningxia, but she has forgotten her identification and been insanity. That's why she sought help from the police.
- c. Wu has been trafficked for 26 years, and the distance among these places is more than 2,000 kilometers. And most importantly, the poor woman has been hurt deeply by these things that she suffered, the information she provided is limited. After these years, the related intelligences also have changed, so the case is really a big challenge for the investigation.
- d. Changde PSB received the request from Ningxia police and Wu, depending on the local population profiles and the reports of missing persons, they investigated and interview the suspected parents who have immigrated to another city. After the approval of the suspected parents, the technical collected and analyzed their blood samples, and they found there was genetic variation in FGA locus. Then they loaded the samples to the DNA database, and matched Wu's DNA profile, finally confirmed Wu is the biological daughter of the suspected parents. After 26 years, Wu has returned to her own parents and the sweet home.

37. Rong

- a. Country/State: China
- b. Links to Media Coverage: <https://www.jqknews.com/news/118531-After-24-years-of-sexual-assault-and-murder-of-girls-six-police-chiefs-finally-came-to-light.html>
- c. Story: A 5-year-old girl was found raped and murdered in rural area of Huzhou by an inter-province freeway in 1994. Police found several evidences at the scene, but no witness found as the crime happened on the morning of the day.
- d. It remained unsolved until 2018 when Huzhou Police reopened investigation during cold case review. As the evidences were under good preservation, even mud stain on the girl's clothes remained as originally.
- e. It was sent to forensic laboratory for further investigation. Under laser source, 21 stains of DNA on it were identified. Then from extraction, they managed to isolate DNA from 7 of them, by matching with victim's parent, 5 confirmed from the girl, the other 2 were mixture of the victim and an unknown male.

- f. After 2 weeks of analysis and cross-check, 23 STR loci of the male were successfully mapped. Cross-checks confirmed 100% genotyping concordance.
- g. The profile was immediately submitted to DNA profile to National Database, 1 offender, Rong, matched. Further investigation along facial composite evidence, Rong, who has 5 offender records filed and was then serving in Jiangsu Prison, was identified the criminal.
- h. On Nov of 2018, Rong confessed his crime.

38. Michael Henslick

- a. Country/State: Champaign County, Illinois
- b. Links to Media Coverage: <http://www.news-gazette.com/news/local/2018-08-29/arrest-made-2009-murder-mahomet-woman.html>
- c. Story: Lt. Apperson and Sgt. Sherrick would like to nominate Investigator Dwayne Roelfs for the Champaign County Sheriff's Office 2018 Deputy of the Year. Investigator Roelfs has been assigned to the Investigation Division since 2000 and has played an important role in many cases over the last 18 years. With that being said, the 2009 case involving the murder of Holly Cassano stands out the most.
- d. In the last couple of years, Investigator Roelfs has shown an interest in ongoing education related to the improvements in DNA technology. As part of the ongoing DNA training Investigator Roelfs has attended, he learned about the services of Parabon Nanolabs. Investigator Roelfs learned Parabon Nanolabs could possibly assist in developing a suspect in the Holly Cassano case by utilizing their DNA Phenotyping Service. Investigator Roelfs made a request to CCSO Command for approval to use Parabon Nanolabs to assist in developing a "Snapshot" of the suspect, who's DNA was collected at the scene of Holly's death. Investigator Roelfs was given approval to contract with Parabon Nanolabs to develop a Snapshot of what the suspect possibly looked like. Following the presentation Parabon Nanolabs gave regarding the Snapshot of the suspect, they talked about a Genealogy Service they can also provide. Parabon Nanolabs explained the Genealogy Service they offer uses public Genealogy websites to attempt to identify victims and suspects in unsolved cases. Investigator Roelfs was also given approval to communicate, and eventually contract with Parabon Nanolabs regarding their Genealogy Service to attempt to locate the suspect in Holly's death.
- e. Investigator Roelfs continued contact with Parabon Nanolabs and they eventually developed suspect, Michael Henslick. CCSO Investigators eventually located discarded DNA from Henslick, which matched the unknown suspect DNA left behind at the scene of Holly's death. Henslick was arrested by CCSO within four days of his name surfacing as a possible suspect. Following Henslick's arrest, Investigator Roelfs and other CCSO personnel interviewed Henslick for several hours. Investigator Roelfs' hard work during Henslick's interview, resulted in Henslick confessing to Holly's murder

- f. Due to Investigator Roelfs' consistent work to further his knowledge on DNA technology developments, CCSO was able to finally solve the nearly 9 year old homicide of Holly Cassano.

39. From Saanich to Seattle – two Canadians murdered *en route*

- a. Country/State: Snohomish County, Washington
- b. Links to Media Coverage: <https://www.heraldnet.com/news/suspect-arrested-in-1987-deaths-of-young-couple-from-bc/>
- c. Story: On November 18, 1987 Jay Cook and Tanya Van Cuylenborg left Saanich, British Columbia on Vancouver Island, Canada to run an errand for Jay's father. They were to go to Seattle, Washington in the Cook van to pick up furnace parts. They did not make it to their destination. On November 24th 1987, the partially clothed body of Tanya Van Cuylenborg was found in a ditch in Skagit County. Her autopsy revealed that she had been shot with a .380 gun to the back of her head. She had been restrained with zip-tie fasteners and was sexually assaulted. DNA evidence of the suspect was recovered from her body. On November 25th 1987, Tanya's wallet, ID, keys for the van, a pair of surgical gloves and a partial box of .380 ammo were located under the back porch of "Essie's" Tavern in Bellingham, WA. Jay Cook's van was located about 1 block east of Essie's. Tanya's pants were recovered from the van with DNA evidence on them from the suspect. On November 26th 1987, Jay Cook's body was found by the "High Bridge" south of Monroe, Washington in Snohomish County. He had been strangled with a ligature and zip ties were found at the scene. DNA recovered in the case was entered into CODIS and the equivalent database in Canada, but no matches were ever made. The case went unsolved for over 30 years.
- d. After working on a genealogy DNA case with Barbara Rae-Venter to try to identify a Jane Doe homicide victim from a 1977 case, Detective Jim Scharf talked to Parabon Nanolabs on 04-24-18, about doing genetic genealogy with the suspect DNA file that Parabon previously used to generate a Phenotype report in this case. On 04-26-18, Steve Armentrout, who is the founder and CEO of Parabon Nanolabs, contacted Detective Scharf and offered to upload the DNA file to a public database called GEDmatch. This is the first time Parabon used this Genetic Genealogy technique to attempt to identify a suspect. The file report came back on 04-27-18 naming possible relatives to the suspect sample. Parabon enlisted the help of CeCe Moore to build a family tree around the matching relatives. One relative was linked to the suspect's mother and one was linked to the suspect's father. Their only son is William Earl Talbott II. Talbott grew up seven miles away from where Jay Cook's body was found. Detectives followed William Talbott and recovered a paper coffee cup that fell from his work truck when he opened his door while stopped at a traffic light. DNA from the cup matched the STR-DNA profile from the rape of Tanya and her pants in Jay's van. Talbott was arrested on 05-17-18 and his palm prints were taken by Detective Scharf. The WSP Crime Lab matched Talbott's palm

print to one latent print taken from the back door of the victim's van when it was recovered. William Talbott is scheduled to go to trial on April 1st, 2019.

40. Upper Austria

- a. Country/State: Austria
- b. Links to Media
Coverage: <https://www.heute.at/oesterreich/oberoesterreich/story/Sexualmord-in-Steyr-nach-25-Jahren-geklaert-10178706>, <https://derstandard.at/2000008378284/Oberoesterreicher-25-Jahre-nach-Mord-in-Steyr-verurteilt>, <https://www.nachrichten.at/oberoesterreich/Sex-Mord-nach-25-Jahren-geklaert-U-Haft-verhaengt;art4,1319764>
- c. Story: On June 15th, 1989, the 80-year-old Angela F. was found murdered in her apartment in Steyr, Upper Austria. She was lying in supine position in her living room with bare lower body and pieces of clothes wrapped around her head. An autopsy revealed the following injuries:
 - Eyeglasses hematoma
 - Multiple bloodshot bounce marks in the area of the chin
 - Hematoma in the area of the rear skull rind
 - Blood in sphenoid sinus and in both eye sockets
 - Subarachnoid hemorrhage around the cerebellum
 - Massive stagnation bleeding
 - Extended string mark around the neck
 - Fracture hyoid bone, thyroid cartilage, cricoid cartilage
 - Massive hemorrhage around the neck muscles
 - Neck muscles partially torn
 - Rib fractures: 1st-5th Rib right , 1.-3. Rib left, sometimes twice broken
 - Vaginal injuries with hemorrhage
- d. Around her neck there was a strangulation tool knotted from a belt, a tights and a crocheted blanket.
- e. The victim got punches in her face, followed by a fall on the back of the head as well as an attack against the neck. Semen was detected in the vaginal swabs.
- f. In summary, death was caused by strangulation with multiple blunt force impact to the face and falling on the back of the head. The victim was raped, no defense violations were found. After the crime, the perpetrator ransacked the apartment for cash and stole 1,000 shillings from the victim's purse.
- g. More than 40 potential suspects were intensively interrogated. With very strong suspicion against two persons from the close environment of the victim, however, no evidence could be provided.
- h. In 1999, the case was reinvestigated as a "cold case". Unfortunately, the sperm traces sampled during the autopsy were no longer findable. The further investigation of the presence of sperm on the garments was negative. On several contact traces only the victim's DNA could be found.
- i. In December 2013, the case was again reinvestigated as a "cold case". Upon a close inspection of the crime scene photos, potential further trace carriers could

be identified in a joint work between the DNA laboratory and the investigating officers. For example, it could be seen that the bra has been pushed up by the perpetrator. After the public prosecutor's office was initially opposed to another investigation due to a lack of prospects for success, it could be persuaded in several discussions that currently much better investigation methods are available than during the first investigations. Thus, another examination was arranged, in which in particular the bra and the strangulation tool should be examined.

DNA was sampled from a total of 38 different areas, and a mixture of victim's DNA and male DNA was detected in 5 areas. It was the DNA of two different men (person 1, person 2). DNA of person 1 was detected in four areas, DNA of person 2 in only one area (bra, bottom of the cups). After sending the mixed DNA profiles to the Austrian DNA database on February 6th 2014, the mixed profile with person 1 did not give a match. However, the mixed profile with person 2 matched the DNA of a convicted offender.

- j. The person in question was 20 years old at the time of the crime, has 22 criminal records, has just served a 4-year prison sentence for rape, was a so-called "temporary releaser" and was due to be released in February 2014. He was interrogated on February 10th 2014 when coming back from temporary release and confessed three hours later. He had never been considered as a potential suspect, there was no relation to the victim. According to the perpetrator, it was a chance meeting. He watched the victim unlock the front door, asked if he could help her, escorted her to the apartment, raped her, and murdered her.

41. Sikhangele Mki – Sentenced for 15 life terms

- a. Country/State: CAPE TOWN, SOUTH AFRICA
- b. Links to Media
Coverage: <https://www.iol.co.za/capetimes/news/monster-serial-rapist-mki-gets-15-life-terms-extra-20-years-11218652>
- c. Story: The accused conducted a reign of terror over a four-year period. His Modus Operandi, described as "the signature of a person who is cruel, vicious and lacking any sense of empathy", was as follows: During the evenings, or early mornings of his attacks, he would follow his victims, grab hold of them, threaten them at knifepoint by holding a knife to their necks and would demand money and cellular phones. He would then take them to an isolated place and rape them. Where a victim would resist or try to call for help, he either punched them or hit them with the back of the knife handle or in some cases he stabbed them to stop them from struggling or crying for help.
- d. Some of his victims were raped more than once. Nine of his 30 victims were under the age of 16, and the youngest victim was just 11. Some victims just happened to be walking in the area where Mki was lurking in the shadows, one was sent to the shop by her mother, one was waiting outside her house for her husband, one was walking home from church,

- one was returning from choir practice, another from netball practice. One victim was even dragged to a space behind a police station.
- e. The breakthrough in the investigation happened when Mki was arrested and convicted for an unrelated charge of assault with intent to cause grievous bodily harm in 2014 for which he subsequently served 11 months in prison. Whilst serving time in prison and in terms of the recently passed DNA Act in South Africa, police were mandated to collect DNA samples from all convicted offenders, retrospectively and run the resultant forensic DNA profile through their National Forensic DNA database for a comparative search against all other indices, including the crime scene index which in this case contained the forensic DNA profiles of an unknown male in 30 separate rape cases: this is what fortuitously linked Mki to the 30 unsolved rapes, albeit the DNA sample was obtained from Mki as result of an unrelated conviction for common assault.
 - f. The case was brought before the High Court of the Western Cape where Deputy Judge President Patricia Goliath compared the modus operandi of Mki to a monster lurking in the shadows, attacking, robbing and raping girls, exploiting the vulnerability of his unsuspecting victims. She went on to say that Mki derived pleasure in the degradation and pain inflicted his victims and his crimes “fell into the category of the most serious cases this court has ever dealt with” and that the crimes were “heinous in the extreme.”
 - g. All the victims were emotionally, physically and psychologically severely traumatized by the attacks and they verbalized their feelings eloquently in court: One stopped playing netball, because the incident happened after netball practice; one stopped going to church because the incident happened on her way home from church; another was attacked when she came from a group study and subsequently hated her books following the incident. The victim expressed feelings of being unable to trust and sustain meaningful relationships with men, fear of walking alone in public spaces. One of the victims attempted suicide. They experienced emotions ranging from shock, fear, grief, shame, embarrassment, anxiety, depression, anger and feelings of alienation and loss of control over their lives.
 - h. Victim impact assessments submitted to the Court described the devastating physical and psychological effects the attacks had on them: “They knew me as this sweet determined and goal orientated girl, but that is not anymore”; “I am damaged”; “The crime broke my spirit”; “My life changed from happiness to bitterness”; “It is a pain that can never be taken away - a pain that has taken my freedom”.
 - i. Due to the overwhelming DNA evidence against the accused, Mki pleaded guilty to 84 charges which included 30 counts of rape, 27 of kidnapping, 12 of robbery with aggravating circumstances, and four of assault with intent to cause grievous bodily harm.

- j. Captain Myburg, a police psychologist attached to the Investigative Psychology Unit of the South African Police Services with extensive experience in the investigation, research and analysis of the phenomenon of serial murders and serial rapists, compiled a report for the court for sentencing purposes. The report pointed to Mki's predilection for young girls, stating he should also be regarded as a paedophile. She stated that paedophiles and rapists have the highest rates of re-offending even after interventions aimed at addressing the issue and indicated that research has shown that serial rapists do not stop raping women by themselves and the only way they will stop is by arrest.
- k. DJP Goliath ultimately sentenced Mki to 15 life terms and an additional 120 years, to run concurrently.
- l. Without the power of the NFDD and the DNA legislation which allowed DNA samples to be collected from the accused whilst he was serving time in prison as a convicted offender, it is unquestionable that Mki would have continued his reign of terror.
- m. Who knows how many more vulnerable women and girls lives he would have violated and devastated in the future had he not been linked by the NFDD?
- n. By linking Mki to his crimes through the NFDD, who knows how many vulnerable lives have been saved in the future....

42. The Missing Frenchman – a tale of X, Y, and UHR

- a. Story: On July 7th 2014, a French citizen of Cameroonian descent (Mr. X) went missing in Montreal, Canada. He had told his new girlfriend that he was going to meet Mr. Y, a local man. He had also told her that he was worried because Mr. Y was angry at him, having realized that he had been ripped off by Mr. X through a black money scheme. When Mr. X did not return from the meeting, his girlfriend contacted the police. Mr. Y was rapidly traced by investigators and a search of his car was conducted in accordance with a warrant. A forensic biologist recovered small bloodstains (invisible to the naked eye) from the trunk and a male genetic profile derived from these. The profile corresponded to one obtained from personal belongings of Mr. X but without a body and no relatives of Mr. X to confirm his identity, the inquiry was slowed down. Then, in the fall of 2015, a match occurred between a DNA profile deposited in the local unidentified human remains (UHR) database and the bloodstain profile. The skeletonized remains had been found a few weeks before approximately 80 km from Montreal and showed evidence of kidnapping. After further investigation, Mr. Y and two other men were arrested and charged in connection with the kidnapping and death of Mr. X. They will soon stand trial. This case highlights the usefulness of a local UHR DNA database in solving crimes as well as missing person cases.
- b. Media Links/Articles:
- c. <http://www.cbc.ca/news/canada/montreal/montreal-police-arrest-3-men-in-connection-with-2014-homicide-1.3859206>

- d. <http://ici.radio-canada.ca/nouvelle/1001100/spvm-arrete-trois-hommes-homicide-2014-disparition-emenenguene>
- e. <http://www.lapresse.ca/actualites/justice-et-faits-divers/faits-divers/201610/20/01-5032331-fraude-en-ligne-un-escroc-tue-par-ses-victimes-potentielles-.php>
- f. <http://montrealgazette.com/news/local-news/montreal-police-seeking-tips-for-2014-disappearance-now-considered-a-homicide>
- g. <https://montreal.ctvnews.ca/police-look-for-missing-19-year-old-french-man-1.1915315>

43. Rape Kit Backlog Tests lead to DNA Hit

- a. Country/State: Pima County, Arizona
- b. Story: A Tucson man was convicted of raping seven women over a 12-year period after police received a grant to test rape kits and changed a “mindset” over which kits get tested.
- c. Full story: <https://abcnews.go.com/Technology/serial-rapist-nathan-loebe-convicted-pima-county-arizona/story?id=61355155>

44. Jack Doolittle

- a. Country/State: New York, USA
- b. Story: In February 1997, a 12 year-old girl in Onondaga County, NY was walking to school when a masked man appeared on the pathway. The man threatened her with a weapon, pulled her off in to a secluded area, and sexually assaulted her. Serology testing was performed on the shirt the girl was wearing at the time of the assault by an analyst at the Syracuse Police Crime Lab. Semen was detected on the shirt but not on other items tested such as vaginal/oral swabs, her jacket, pants, and underwear. From 1997 to 2016, 17 suspects were tested in various DNA tests and all excluded. A CODIS eligible profile obtained from the girl’s shirt was uploaded in 2002 by the Onondaga County Crime Lab. For the next 16 years the profile was being searched in CODIS which resulted in no state, national, or international hits. The case was being considered as a possible familial search candidate at the state level and also as a possible DISC profile (DNA Index of Special Concern) at the national level. On April 2nd, 2018 there was a CODIS offender hit with NYS DNA Databank Offender which had been collected from an offender, Jack Doolittle. The investigative lead led to Doolittle who was 53 years old at the time of the CODIS hit. He was a former Onondaga County Jail Deputy from 1988 until 2002 and was never considered a suspect prior to the CODIS hit. Jack Doolittle had been arrested for a drug crime in 2017 for which he then jumped bail. As part of his guilty plea for the bail jumping he was required by NYS law to submit his DNA sample to the NYS DNA Databank. His profile was entered into CODIS on Wednesday March 28th, 2018. Just 5 days later, on Monday April 2nd, 2018 there was a DNA match generated during the NYS DNA Databank State Search from the offender to the profile developed from the stain on the girl’s shirt. A portion of the DNA report following additional testing from the Onondaga County Crime Lab included the statement: “The DNA profile obtained from the sperm fraction of the semen stain from the shirt is at !

least 9.77 quadrillion times more likely if it originated from Jack Doolittle than if it originated from an unknown individual. This analysis provides support that Jack Doolittle is a contributor to the DNA profile obtained from the sperm fraction of the semen stain from the shirt.” There was a press conference on April 17, 2018 and at the time the victim, who was now 33 years old, attended the press conference. Doolittle was charged with 2 counts of 1st degree sodomy, 1st degree attempted rape, kidnapping, 4th degree criminal possession of a weapon, child endangerment, and 1st degree sex abuse. Following a plea deal, Doolittle was sentenced to 10 to 20 years in prison.

45. Ji Mouxuan

- a. Country/State: Henan, China
- b. Links to Media
Coverage: http://hn.cnr.cn/hngd/20180103/t20180103_524085941.shtml <http://henan.qq.com/a/20180104/013469.htm> <https://news.dahe.cn/2018/01-04/247496.html> <http://zzga.zhengzhou.gov.cn/jwzx/669088.jhtml> http://news.ifeng.com/a/20180103/54778947_0.shtml <http://www.chinanews.com/sh/2018/01-03/8415509.shtml> http://news.hangzhou.com.cn/shxw/content/2018-01/03/content_6763949.htm
- c. Story: One afternoon in August 2003, in a rural area of a city in Henan province, China, a 16-year-old middle school female student was walking on a field trail and was raped and killed. Same year in September, on a field path in an adjacent village, a 60-year-old woman was raped after being dragged into the cornfield on her way to a village. In two cases, the DNA of a small number of sperm spot samples was consistent. But no other evidence was obtained due to the remote location of the crime, As a result, the cases remained unsolved for a long time, creating great panic in the local area.
- d. 1 am on a day in August of 2011, a young woman in another city was alone at home. She was raped after being stunned by a man who sneaked into her apartment. The criminal’s DNA was revealed from exfoliated cell on the masks left at the scene. This case was compared with the above mentioned two cases in Henan through the DNA database. The three cases were combined, yet no match found with anyone in the database.
- e. With all other material evidence of the first two cases exhausted, only the masks taken from the scene remain. At the end of 2017, technicians inspected a Y-STR typing on the masks. Fortunately, after comparing with the Y-STR of the Personnel with Criminal Record, it had two matches with the surname Ji and surname Wang in two cities in Henan. The investigation confirms that the two both migrated from the same city. Problem is that more than 1,000 men need to be investigated in three cities, still too difficult to tackle. The task force then conducted a family survey of the three places, and the first batch of 47 samples were collected for inspection. Genotypes of these samples were compared in the Consanguinity DNA Code Investigative Model For Puzzled Cases. Through analysis of close-relatives, it found that a person may have uncles-nephews relationship with the possible suspect. This man’s nephew Ji Mouxuan was

suspected of committing the crimes. Because Ji Mouxuan's whereabouts are unknown, and through Ji Mouxuan's nephew and grandson DNA analysis further clarified the possibility of Ji Mouxuan as a suspect. On December 1, 2017, Ji Mouxuan was arrested in a city. The suspect's DNA is completely consistent with the evidence DNA. The 50-year-old Ji Mouxuan confessed to four cases. After the case was solved, the victims' family members burst into tears and the local people raised their hands to celebrate. It was widely reported by numerous news outlets.

- f. The database of " Consanguinity DNA Code Investigative Model for Puzzled Cases " uses all-different loci counting method and the number of shared alleles counting method to analyze close relatives such as uncles and nephews to investigate cases. This is a new technical method developed by the laboratory in the past four years and has played a key role in the solution of many cold or murder cases. The new method provides guidance and functions as a great investigative tool.

46. The Case of Anna Marie Hlavka

- a. Country/State: Oregon, USA
- b. Links to Media
Coverage: https://www.washingtonpost.com/nation/2019/02/04/her-murder-went-unsolved-nearly-years-then-dna-pointed-serial-rapist-killer-named-animal/?noredirect=on&utm_term=.237f782af0b4
- c. Story:
- d. Anna Marie Hlavka Homicide
On July 24, 1979, 20-year-old Anna Marie Hlavka, was murdered in her apartment located at 1811 NW Couch Street. Hlavka was discovered by her sister, Rose Ann, upon returning from work. Hlavka was found lying on her bed, nude from the waist down, posed in a provocative manner, and strangled with the electric cord from her clock radio. Original Detectives followed up many leads and cleared several suspects, but the case eventually went cold.
- e. In 2009, retired Detective volunteers submitted numerous items of evidence to the Oregon State Police Crime Lab for forensic testing. In 2011, an unknown male DNA profile was discovered under the left-hand fingernail scrapings from Hlavka. Due to prior investigation three subjects were cleared of involvement due to previously submitted DNA standards. In 2012, the case began to be actively investigated by the Cold Case Homicide Detail. From 2012 to 2016, Detectives collected and submitted eight different subjects' DNA profiles in an attempt to identify the killer; all came back negative. In 2016, Detectives met with the Hlavka family to notify them of the efforts to solve the case and the ongoing efforts to research new avenues to identify the killer. In May 2018, Detectives researched forensic genealogy using unidentified DNA profiles from homicides scenes. Detectives contacted Parabon NanoLabs and the OSP Crime Lab in order to determine if the Hlavka

evidence was a good candidate for this type of innovative testing. Both Parabon NanoLabs and OSP Crime Lab agreed it met the criteria for this type of work and the DNA evidence was submitted.

- f. In October 2018, Detectives were briefed by Parabon NanoLabs staff and the forensic genealogist who worked on the case. The forensic genealogist was able to map three of the four familial lines of the killer and identified the killer as Jerry Walter McFadden. McFadden was a convicted murderer and was executed by the State of Texas in October 1999. Due to McFadden's execution date his DNA profile was never entered into the FBI CODIS database for comparison. Detectives travelled to Texas to interview McFadden's family members and obtain a confirmatory DNA standard to compare with the DNA evidence in the Hlavka murder. Detectives obtained McFadden's two children's DNA standards by their consent. Detectives submitted McFadden's children's DNA standards to the OSP Crime Lab and received confirmatory results that Jerry Walter McFadden was the killer.

Detectives utilized the technology available from a span of almost 40 years in order to solve this murder. This murder would have never been solved without the original discovery of the DNA profile, the investigative efforts by decades of detectives, and the new genetic genealogy testing. McFadden had absolutely no documented connection to Portland, Oregon or anywhere else outside of the State of Texas. The fact McFadden had been executed prior to the full institution of mandatory DNA collection from all convicted felons reinforces the fact the case would have remained cold forever, if not for genetic genealogy.

- g. The discovery of DNA changed forensic science forever, the discovery and implementation of genetic genealogy gives life to previously unsolved cases and hope where there otherwise is none. The Hlavka investigation illustrates the need for forensic scientists and law enforcement to continue to forge ahead with new scientific techniques to solve these difficult cases.

This case demonstrates the impactful collaborative effort between scientists and investigators who never gave up.

47. Benjamin Whitehead and Recreating the DNA laboratory from 1988

- a. Country/State: United Kingdom
- b. Links to Media Coverage: <https://www.nottinghampost.com/news/nottingham-news/rapist-brought-justice-30-years-2264229> <https://www.bbc.co.uk/news/uk-england-nottinghamshire-46361749><https://www.dailymail.co.uk/news/article-6434651/Rapist-brought-justice-30-years-terrifying-knifepoint-attack-woman-bedroom.html> <http://www.7br.co.uk/2018/11/gordon-aspden-secures-conviction-in-historic-rape-case/><https://westbridfordwire.com/groundbreaking-investigation-convicts-nottingham-rapist-after-30-years/><https://le.ac.uk/news/2018/november/28-university-of-leicester-helps-bring-justice-after-30->

[yearshttps://www.eurofins.co.uk/forensic-services/case-studies/new-and-old-forensic-techniques-bring-rapist-to-justice-after-30-years/](https://www.eurofins.co.uk/forensic-services/case-studies/new-and-old-forensic-techniques-bring-rapist-to-justice-after-30-years/)

- c. In 1988 a young woman, whilst asleep at her home in Nottingham, UK, was awoken by a youth wearing a mask. The youth raped her at knifepoint and stole a number of items.
- d. At that time, forensic samples from the victim were examined and subjected to RFLP Multi Locus Probe (MLP) profiling - the very first DNA technology pioneered by Professor Sir Alec Jeffreys at Leicester University. A weak MLP-DNA profile was obtained and several suspects were eliminated at the time, however, with no further investigative leads the case went cold.
- e. In 2014 the case was forensically reviewed by a collaborative team comprising specialist cold case scientists from Eurofins Forensic Services (EFS) and police review officers from the East Midlands (EMSOU).
- f. Two microscope slides bearing biological material had been retained from the original forensic examination; Eurofins' scientists therefore had to plan and execute their examinations meticulously in order to maximize the forensic potential in this case. During the early review process, and using more up-to-date DNA technology, a partial SGM+ profile was obtained and, following a search of the UK's National DNA Database®, Benjamin Whitehead was identified as a potential suspect for the first time.
- g. To progress this initial forensic lead, further scientific work was required and a bilateral approach was adopted: Eurofins' scientists firstly advised retaining the remains of the microscope slides pending more advanced DNA techniques which were in development at Eurofins. In the meantime, steps were made to recreate the very first DNA profiling technique ever used, in order to generate a new reference MLP-DNA profile from the suspect to compare with the original 1988 DNA results.
- h. In conjunction with the police and Eurofins, scientists at Leicester University painstakingly rebuilt, tested and validated the original DNA process; including locating the original scientist from 30 years previously whose samples had been used as an internal control, to ensure reproducibility of the results. By the time the University had completed their testing of the newly resurrected historic MLP process, Eurofins too, were ready to use their latest DNA technology (which included LiRa - their specialist statistical tool, and Y-STR analysis) on the previously retained microscope slides.
- i. In 2017 officers from Nottinghamshire Police visited the victim, who by now was living in Florida, USA, to update her on the case, take a new statement from her, provide support and care, and take new reference samples; Whitehead was arrested a week later.
- j. The final sets of forensic tests were subsequently undertaken by scientists at both Eurofins Forensic Services and Leicester University, the results of which provided compelling scientific evidence.
- k. Whitehead pleaded guilty on the first day of his trial in November 2018 and was sentenced to nearly ten years for rape and aggravated burglary.

48. April Tinsley

- a. Country/State: IN
- b. Links to Media Coverage: <https://www.cnn.com/2018/07/16/us/cold-case-april-tinsley-dna-trnd/index.html>; <https://www.nbcnews.com/news/us-news/indiana-man-arrested-decades-old-murder-april-tinsley-n891676>
- c. Story: This case study will detail how Genetic Genealogy was instrumental in solving the abduction and murder of eight-year old April Tinsley that happened in 1988. April's killer remained unknown for years. After the murder, the killer left letters, notes, pictures and used condoms taunting law enforcement. In 2018 April's killer was identified using Genetic Genealogy when The Ft. Wayne Police Dept. began working with Parabon NanoLabs. DNA left at the scene and on April's body was the key to breaking the case, bringing her killer to justice, and sentencing him to 65 years in prison. Throughout the 30-year investigation law enforcement had investigated and interviewed over a thousand persons of interest, as a result of the landslide of tips received on the case. It turned out that April's killer was never on the suspect list and his DNA was not in the CODIS database. This murder may have never been solved without Genetic Genealogy.

49. Victor Serrano

- a. Country/State: Dallas, Texas
- b. Links to Media Coverage: <https://www.dallasnews.com/news/crime/2017/05/30/facebook-helps-girl-find-just-mom-murder-playpen>
- c. <https://www.abc4.com/news/local-news/utah-man-who-raped-and-murdered-sister-in-law-in-1996-was-found-through-use-of-facebook/1431894065>
- d. <https://www.dallasnews.com/news/courts/2018/09/06/familys-facebook-link-helps-solve-1996-murder-dallas-mother-raped-next-babys-playpen>
- e. Story: 23-year-old Manuela Dominguez was raped and strangled in the apartment she shared with her husband and 6-month-old baby girl, Daisy, on Jan. 29, 1996. Her husband came home from work to find his wife's body in the same room as their 6-month-old baby, who was still alive. Police focused in on the husband's brother, who had recently come to the United States to flee from his own criminal issue he had back in Mexico. However, with no psychical evidence to link the brother to the crime, police couldn't file a case. The brother then fled back to Mexico and was never seen in Dallas again.
- f. Daisy was 10 years old when she found out the woman she thought was her mother wasn't. She was in her early teens when her father explained that her mom had been killed. He died before he could share the details: Manuela Dominguez was raped and strangled in the same room where baby Daisy slept in her playpen.
- g. Over the years, she figured out that her father's family had a darker secret to hide. Her uncle was suspected of being the killer — a man who occasionally talked to her on the phone and called her "sweetie" Daisy never knew her mother's family, but a long-lost cousin was determined to change that.

- h. For years, Daisy's cousin Dulce Dominguez searched Facebook hoping to find her cousin — knowing only what she looked like as a baby. As she scrolled through search results last May, she spotted a profile with an old photo of a man wearing a cowboy hat holding a familiar-looking baby with big ears. Dulce reached out to Daisy and the two long lost cousins connected.
- i. After getting to know each other, Dulce and Daisy contacted the Dallas Police Department's Cold Case Homicide Squad and convinced detectives to take another look at her mother's case. DNA evidence ruled out the husband but also identified that the suspect was most likely a relative. Through the use of social media, detectives were able to track down the Serrano family and a man by the name of Juan Serrano-Reyes, which turned out to be an alias for Victor Serrano with a matching birth date. He was located by federal authorities and arrested in Utah in May 2017. Justice finally caught up to Serrano-Reyes 21 years after he raped and murdered his brother's wife.
- j. The Fall of 2018, Juan Serrano-Reyes (aka Victor Serrano) pled guilty to the murder of Manuela Dominguez and was sentenced to 30 years in prison. A key reason for the State offering the guilty plea, was that Manuela's daughter wanted to be able to ask her Uncle some questions about the murder and have him give answers. This is not typical during a sentencing hearing or impact statement. Prosecutors worked with Serrano-Reyes attorney to include this question and answer session as part of the plea bargain. On the day that Serrano-Reyes pled guilty to the murder, Daisy asked her questions about the circumstances surrounding the murder and Serrano-Reyes answered them.

50. Buckskin Girl

- a. Country/State: Miami County, Ohio
- b. Links to Media Coverage: <https://abcnews.go.com/US/body-buckskin-girl-found-ohio-1981-identified-arkansas/story?id=54417156>
- c. Story: On April 24, 1981, the body of a female homicide victim was discovered on Greenlee Road, in Miami County, Ohio; she was fully clothed and was estimated to have been dead for only hours. She was wearing jeans and a fringed buckskin jacket with a Native American design.
- d. The autopsy, conducted at Montgomery County Coroner's Office, concluded the victim was killed by strangulation and blunt force trauma. The case has remained assigned to a detective as an active investigation since the victim was discovered. The female's identity was not able to be determined at the time, though fingerprints were obtained and later entered into the FBI's Automated Fingerprint Identification System (AFIS). The victim had no dental fillings, but had a crown on her upper right front tooth.
- e. As DNA technology came available, the Miami Valley Regional Crime Lab generated the victim's nuclear DNA profile in 2001. In December of 2008, the profile of "Buckskin Girl" as she became known was entered into the National Missing and Unidentified Persons System (NamUs). In 2009, her mitochondrial DNA profile was developed at the NamUs DNA lab at the University of North Texas. Both the nuclear and mitochondrial genetic profiles of the deceased were

entered into the FBI's Combined DNA Index System (CODIS). In January of 2010, NamUs case management was assigned to Dr. Elizabeth Murray, a forensic anthropologist and Professor of Biology at Mount St. Joseph University in Cincinnati, who has assisted in the investigation since then.

- f. The victim remained unidentified for nearly 37 years, despite continued efforts. Identification efforts included a new facial image generated by the National Center for Missing and Exploited Children in February 2016; pollen studies on the victim's clothing by the U.S. Customs and Border Protection Agency in April 2016; and stable isotope studies on her hair in June 2016 in an effort to trace the victim's location and geographic movements in the last year of life.
- g. Marcia L. King of Arkansas has been identified as the Miami County Jane Doe who became known as the Buckskin Girl. She was twenty-one years of age at the time of her death. The DNA confirmation was made on Monday, April 9, 2018 by the Miami Valley Regional Crime Lab.
- h. The scientific assistance that finally led to the victim's identification was conducted by the DNA Doe Project, a nonprofit organization recently created to apply genetic genealogy tools to the identification of unknown persons. The victim's DNA was obtained from a blood sample that had been in storage since 1981; it was processed using advanced DNA techniques and uploaded to a public genealogy database. The DNA Doe Project was founded in 2017 by Colleen Fitzpatrick and Margaret Press. The Miami County Jane Doe case was accepted as one of the first cases for the project. The DNA Doe Project relies on genetic genealogy tools similar to those used by genealogists for analyzing DNA results normally provided by direct-to-consumer testing companies.
- i. The identification of the victim is critical in advancing the investigation towards finding the person or persons responsible for this crime.

51. In the Village of Cherepashyntsi

- a. Country: Ukraine
- b. Story: DNA database: sensational and operative detection of the gruesome murder of a man that has become a dramatic resonance.
- c. It has become possible to solve a crime that received dramatic resonance due to the DNA database and the operative work of forensic experts, who had been carrying out DNA testing.
- d. On the 6th February 2018, at 08:40 approximately, a corpse of a 57-year-old house-owner with markings of a violent death was found on the territory of his own house in the village of Cherepashyntsi of the Kalyniv district of Vinnytsia region [1, 2].
- e. The criminal proceeding № 1201802000000049 was opened on this crime in Vinnytsia region. On February 06, 2018, a fragment of a stick with hacked ends, one of which had traces of a brown substance, was found and seized in the area between neighbor's houses during the crime scene investigation [3]. The genetic traits of the human blood trace and nucleated cells, found on the stick surface, were identified during the DNA analysis, which coincide with each other and

with the genetic traits of the victim, as well as genetic traits of nucleated cells, found on the stick surface, that did not coincide with the genetic traits of the victim. The forensic expert of the Vinnytsia Scientific Research Forensic Center conducted the DNA analysis referred to this case. The information on the genetic traits of nucleated cells found on the surface of the stick was placed in an automated database of human genetic traits.

- f. Subsequently, during the pre-trial investigation, samples of the buccal epithelium were taken from persons who may be implicated in the murder. One of them was acting as an attesting witness among them. The DNA analysis didn't prove the involvement of this person in the crime. However, his genetic traits were compared with DNA profiles of biological material taken from unsolved crimes through automated database of human genetic traits. Moreover, there was established the coincidence of the Y-chromosome of genetic traits of the buccal epithelium's sample of the man (attesting witness), with the genetic traits of nucleated cells, found on the surface of the stick.
- g. This fact prompted the experts to the idea that a paternal close relative of the attesting witness were involved in the murder. It was reported to the pre-trial investigation bodies, which found out that the witness had a brother. A sample of the buccal epithelium of the attesting witness's brother was sent for a forensic DNA analysis to the Vinnytsia Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine. After establishing the genetic traits of the sample, information about attesting witness's brother was placed to an automated database of human genetic traits. As a result of examination of the DNA profiles of biological material taken from unsolved crimes, there was found a complete coincidence with the genetic traits of nucleated cells found on the surface of the stick. Therefore, the attesting witness's brother was indicated to be involved in the murder.
- h. This disclosure proves that the justice and the law have a great power [4]. Unfortunately, it will not return the lives of the victims, but will prevent the following crimes.
- i. Links:
- j. <https://vn.20minut.ua/Kryminal/vbiti-za-10-tisyach-griven-yak-na-vinnichchini-mati-pozbulasya-sina-10675467.html>
- k. <https://vn.20minut.ua/Kryminal/ne-podilili-budinok-na-vinnichchini-matir-zamovila-vbivstvo-ridnogo-si-10677513.html>
- l. <https://varta1.com.ua/motoroshnyj-vypadok-matir-za-10-tisyach-zamovyla-vbyvstvo-vlasnogo-syna-foto/>
- m. <https://www.youtube.com/watch?v=PdCS40Q0SWE>

52. Larry Dillion Jr.

- a. Country/State: USA
- b. Story: On September 18, 2017 a 54-year-old female victim was raped and robbed inside of her residence while she slept in LaPlace, Louisiana. Detectives and Crime Scene Technician Ryan Leblanc with the St. John Parish Sheriff's Office responded to the victim's residence and processed the residence for

evidence. The victim was attacked by an unknown assailant and he fled from the residence with an unspecified amount of US currency. Evidence from the residence was sent to the Louisiana State Crime Laboratory for processing. On November 1, 2017 the State Police Crime Laboratory concluded a report from the examination of a Hanes brand shirt collected from the scene inside the victim's residence where the attack occurred. Three stains tested on the shirt were matched to the DNA of a suspect Larry Dillion Jr. Dillion has since been arrested for First Degree Rape, Sexual Battery and Home Invasion and is awaiting trial.

53. Marlon M. Alexander

- a. Country/State: Montgomery County, Maryland
- b. Story: On August 11, 2007, during the nighttime hours, an unknown male entered a victim's residence in Gaithersburg, Maryland, and attempted to sexually assault her. The victim was able to defend herself and the suspect fled the scene. As he left, the suspect dropped an article of clothing that was later collected as evidence. A DNA profile was obtained from the clothing.
- c. On June 19, 2010, an elderly female was at her residence located in Germantown, Maryland. During the nighttime hours, a suspect entered her residence and sexually assaulted her and robbed her of her belongings before fleeing the scene. A DNA profile was obtained and was found to match the DNA profile of the suspect who attacked the victim in Gaithersburg in August 2007.
- d. This elderly rape and robbery was the first in a series of nighttime violent home invasion sexual assaults targeting elderly females within Montgomery County. Four separate incidents were subsequently linked by DNA evidence from 2007 through 2011. The suspect's DNA was entered into a national DNA database (Combined DNA Index System – CODIS) but there was no match. Despite extensive investigative efforts, these cases remained unsolved.
- e. These cases generated much fear in the community due to the violence involved, randomness, age of the victims, and the fact that one elderly victim was victimized twice. Officers and Cold Case detectives vigorously investigated these cases with the hope of identifying a suspect. At least a dozen potential suspects were identified throughout the years and their DNA was obtained. The Montgomery County Police Crime Lab was able to eliminate each of these individuals as a suspect.
- f. In 2017, Cold Case detectives obtained the assistance of Parabon NanoLabs to generate additional leads and further analyze the suspect DNA. Initially, Parabon was able to complete DNA Phenotyping and produce a "snapshot" composite predicting the suspects physical appearance. More recently, Parabon submitted a genetic data profile created from the unknown crime scene DNA to a public genetic genealogy database, in order to potentially find individuals who shared a significant amount of DNA with the unknown contributor.
- g. Detectives were able to use this new information to further a case that had no other investigate leads. Additional investigation, which included genealogy research, was then conducted by Cold Case investigators and led to the

identification of a suspect in these crimes. On September 13, 2018, his DNA was obtained through a Circuit Court search warrant and his buccal swab was entered into evidence at police headquarters. Within 6 hours, the sample was tested and analyzed by the Montgomery County Police Crime Lab Biology Unit and found to be a positive match to the crime scene DNA. An arrest warrant was obtained, charging the suspect with multiple counts of rape, robbery, burglary and assault. The suspect pleaded guilty and will be sentenced soon.

- h. These cases would have remained unsolved and the community, especially the elderly citizens of Montgomery County, would have remained in fear if not for the use of DNA analysis, DNA phenotyping and genetic genealogy.
- i. Links:
- j. <http://www.mymcpnews.com/2017/06/22/dna-evidence-left-at-scene-used-to-create-suspect-composite-in-series-of-unsolved-rapes/>
- k. <http://www.mymcpnews.com/2018/09/14/cold-case-detectives-arrest-suspect-for-series-of-rapes-press-conference-to-be-held-today/>
- l. https://www.washingtonpost.com/local/public-safety/md-detectives-say-theyve-solved-7-year-old-rapes-of-2-elderly-women/2018/09/14/98d0d914-b838-11e8-a2c5-3187f427e253_story.html?utm_term=.7270a5084efb
- m. <https://baltimore.cbslocal.com/2011/02/19/police-search-for-suspect-in-germantown-rapes/>
- n. <https://www.nbcwashington.com/news/local/Arrested-Made-in-Series-of-Rapes-in-Montgomery-County-Police-Say-493301721.html>

54. Darold Bowden

- a. Country/State: Fayetteville, North Carolina
- b. Story: From March 31, 2006 through January 26 2008, one Asian and five Caucasian females between the ages of 15 and 44 were sexually assaulted and/or raped by a Caucasian male offender. Each of the six victims described a suspect of similar age, height, build, facial hair and southern accent. The incidents occurred between the hours of 0215 and 0550 within a 2.4 mile corridor by 0.6 mile area along the north end of Ramsey Street, a four lane major roadway with residential neighborhoods, a university campus and a restaurant/retail shopping center in Fayetteville, NC.
- c. Sexual assault kits were submitted to the North Carolina State Crime Laboratory for all victims except for Victim 1. Victim 1 was sexually assaulted on March 31, 2006 via vaginal digital penetration with no suspect ejaculation. The rape of Victim 2 occurred five months later and unknown male DNA was recovered from oral swabs and entered into CODIS. Approximately seven months later, Victim 3 was raped and DNA was recovered from her vaginal and rectal swabs and entered into CODIS, which matched the DNA recovered from Victim 2; however, no suspect was identified. Victim 4 was raped one month later, but no DNA was recovered from her sexual assault kit; but, DNA from the bed sheet was recovered that matched the DNA recovered from Victim 2 and 3. Six months later, Victim 5 was raped, but no DNA was recovered from her sexual assault kit, though, DNA was recovered from her shorts that matched the unknown male

DNA from Victims 2, 3, and 4. Victim 6 was sexually assaulted four months later via digital penetration and forced oral sex; no suspect DNA was recovered from Victim 6's sexual assault kit. Although no suspect DNA was recovered for Victims 1 and 6, the unknown suspect was included for these cases due to similar aspects in suspect MO and signature.

- d. With no suspect identified and further investigation garnering no further leads, the case went unsolved. The case was later reopened with the establishment of a cold case sexual assault unit and the unknown male DNA in these cases was sent to Parabon Nano Labs for genealogy analysis. The analysis and genealogic research by Parabon Nano labs indicated Mr. Darold Bowden was a likely subject. After an undercover operation failed to obtain a suitable confirmatory DNA sample from Subject/Bowden, a second effort via search warrant executed in which buccal swabs were collected. The buccal swabs were submitted to the North Carolina State Crime Laboratory where it was confirmed that Subject/Bowden's DNA was a major contributor to the DNA found in Victim 3's sexual assault kit. Additionally, a cross reference was conducted with the DNA collected from Victims 2, 4 and 5, which revealed Subject/Bowden's DNA was a major contributor to their sexual assault kit evidence.
- e. Darold Bowden was subsequently arrested on August 22, 2018 and charged with numerous rape, burglary, kidnapping and sex offense charges. Mr. Bowden is presently incarcerated and awaiting trial for this case.
- f. Article Links:
- g. <https://www.youtube.com/watch?v=ejpEKVvrYnY>
- h. <https://www.wral.com/-ramsey-street-rapist-suspect-arrested-officials-say/17787213/>
- i. https://www.washingtonpost.com/news/morning-mix/wp/2018/08/23/the-ramsey-street-rapist-eluded-cops-for-12-years-genealogy-helped-make-an-arrest/?noredirect=on&utm_term=.606fa5b1f5b8

55. Robert Sheridan Haar

- a. Country/State: Daytona Beach, Florida
- b. "On behalf of the Volusia County Sheriff's Office, I'm submitting the attached summary in reference to a sexual battery that occurred in our jurisdiction in 1997. For nearly 20 years, the case went unsolved. However, with the advent of DNA technology, our agency was able to identify the perpetrator and ensure justice was served."
- c. Story: On October 16th, 1997, a fourteen year old girl, who found herself alone in the woods of Volusia County, was sexually battered by multiple perpetrators. At the time of the incident, none of her assailants could be identified and it remained that way for almost 20 years. As the investigation unfolded, leads were pursued and the help of the public was sought; however, the case turned cold. Then, by means of forensic technology and circumstance, the name of one of the perpetrators, who committed such a heinous crime of brutality, emerged. And that name, belonging to a man who had since relocated to a place over 1,300 miles away from the area where the crime was committed, would

subsequently become that of the defendant who would stand trial and be held accountable.

- d. The road to solving the case began in August 2015, when the Volusia County Sheriff's Office (VCSO) submitted DNA from their unresolved cold cases to a private lab for testing. Included amongst these kits was the DNA collected from the aforementioned 1997 sexual battery.
- e. In 2016, and in the state of Wisconsin, Robert Sheridan Haar, born in 1974, was found guilty after pleading no contest to a charge of Substantial Battery-Intend Bodily Harm and Battery. Haar was placed on probation and ordered to provide a DNA sample.
- f. Of significance, in 2011, Haar was convicted (also in the state of Wisconsin) for having sex with a child that was the age of 16 or older. According to Wisconsin court records, Haar was adjudicated guilty and placed on probation; however, there was no record that any collection of his DNA was conducted at that time.
- g. In the fall of 2016, and after Haar has submitted his DNA to authorities in Wisconsin, the Florida Department of Law Enforcement authored a lab report which stated that the same Robert Sheridan Haar, listed above, was a CODIS match to the foreign DNA collected from the victim in 1997.
- h. With a possible suspect now identified, VCSO detectives looked for any connection that Haar had to Florida. Haar's criminal history revealed that Haar had been in trouble in Florida in the 1990's. Specifically, in 1991, Harr served prison time for a car theft that he committed in Hillsborough County. He also subsequently served time behind bars for numerous drug convictions from cases he was involved within Volusia County.
- i. In 2017, Haar was arrested on an active Volusia County warrant for Sexual Battery. He was subsequently transported from the Columbia County Jail in Portage, Wisconsin, to the Volusia County Branch Jail in Florida.
- j. On January 24th, 2019, Haar was found guilty, via a jury trial, on a count of Sexual Battery Specific Circumstance Threat/Coerce (multiple perpetrators). After the conviction, State Attorney R.J. Larizza stated, "After 22 years, we were able to find and hold accountable a violent rapist using the developing technology available... The success of this case hinged on the marriage of forensic science, old fashioned investigation, passionate prosecution and the courage of a victim who confronted her brutal rapist to ensure he was held accountable."
- k. Haar's sentencing is scheduled for March 29th, 2019, and he is facing the possibility of life in prison.
- l. Media Links/Articles:
https://www.wiscnews.com/portagedailyregister/news/florida-seeks-extradition-of-endeavor-man-in-rape-after-dna/article_264af88b-b864-549e-8525-097ade16ab99.html
- m. <http://www.newsdaytonabeach.com/wndb-news/man-convicted-in-20-year-old-cold-case-rape/>

56. Abandoned Baby Boy

- a. Country/State: Ras Al Khaimah, United Arab Emirates
- b. Story: An abandoned baby boy was found wrapped in a piece of cloth and placed inside a tyre on the side of a quiet road on the suburbs of the city of Ras-Al-Khaimah (RAK), UAE in 2015. DNA profiles from the child was uploaded to the local DNA database along with DNA profile from a first degree female relative (assumed mother) found on the piece of cloth the baby with. The following year, a man was sampled in suspicion of burglary but was later released as his profile did not match any of the profiles obtained from the evidence submitted in that case. However, the Database search returned a 50% match with the abandoned baby indicating a first-degree relation between them, which prompted a Y-chromosome analysis. The Y-chromosome results were a full-match and the man was arrested as the alleged father. In spite of the matches, the accused denied the charges and the court ruled that the Y-chromosome results could've been generated from any of the alleged father's close male relatives (especially in a community where close relative intermarriages thrive). The alleged father was released
- c. In 2018 a second baby girl was found abandoned near a mosque in an area not far from where the first baby was found. DNA profiles were obtained from the baby and a close female relative of the baby who's DNA was collected from the cartoon box the baby was left inside. The returned search results from the local DNA database indicated with high probability that baby girl was a first degree relative to the earlier found abandoned boy. The girl also matched the same alleged father with probability of over 99.9999% as an alleged father. Interestingly, both children seemed to share the same mother. With this assumption, analysis attempted to reconstruct the alleged father's DNA profile by subtracting the mother's contribution from both children's DNA profiles. The remaining half-profiles of the children perfectly matched that of the alleged father with a match probability of (8.6×10^{-10}) and he was convicted of both cases. This case is a prime example of the power of DNA databases. The identification of the perpetrator would have been impossible without the hit generated from a suspect in an unrelated case albeit he was cleared of that particular crime. In addition to the ability to match stored data, the DNA database has shown in this case immense investigative value which was able to link the two siblings and confirm the identity of the father.

57. Gary Hartman

- a. Country/State: Tacoma, Washington, USA
- b. Story:
- c. Two young girls were sexually assaulted and murdered in Tacoma, WA. For 30 years investigators believed that there was only one killer for both cases. But advances in DNA technology allowed investigators to extract a DNA profile off of one of the girl's bathing suit, something previously thought to be impossible. This then revealed two different male DNA profiles and consequently two different killers. Detective Lindsey Wade continued to pursue the case, using

advanced DNA techniques, forensic genealogy, and collected DNA samples from 160 men. Eventually, both killers were found.

- d. <https://www.nbcnews.com/news/us-news/michella-welch-jenni-bastian-killings-tacoma-detectives-never-gave-cold-n991556>

Research Cases

1. Anthony Kitchenakow

- a. Name: Kyle
- b. Agency: State Crime Lab, Madison, Wisconsin
- c. Country/State: Madison (Brown County), Wisconsin
- d. Story: After a woman was found dead in her driver, investigators found the gun used to kill her nearby. A DNA profile was extracted from the gun and submitted to CODIS for a match. No matches were produced and the case went cold for two years. Then, in 2018 the DNA laboratory received a hit from CODIS on the gun DNA sample. It matched to a man named Anthony Kitchenakow whose DNA had been in CODIS the entire time. The match did not occur before because not enough genetic markers on the profile were being extracted by the state crime lab. Under an FBI mandate in 2017, the State Crime lab increased the genetic markers from 16 to 20. This led to a hit.
- e. <https://www.wsaw.com/content/news/New-DNA-search-helps-crack-a-Bellevue-murder-496792701.html>

2. Mitcham Brothers

- a. Name: Kyle
- b. Agency: Scottsdale Police Department
- c. Country/State: Scottsdale, Arizona, USA
- d. Story: Scottsdale, Arizona police find DNA from the crime scene of a brutal sexual assault and murder but fail to find a match on CODIS. They ask their local politicians to allow for familiar searching software to be used to widen the search on the state DNA database. This led to a match.
- e. <https://www.nbcnews.com/news/us-news/familial-dna-puts-elusive-killers-behind-bars-only-12-states-n869711>

3. John Arthur Getreu

- a. Name: Kyle
- b. Agency: Santa Clara County Sheriff's Office
- c. Country/State: Santa Clara, California
- d. Story: Authorities in Santa Clara County arrested a suspect in the 1973 killing of 21-year-old Leslie Perlov in Palo Alto. This case went cold after shortly after the killing. Investigators from three unrelated cases submitted DNA evidence into GEDmatch, an open-source genealogical website, which narrowed down the list of suspects down to possible relatives. This Bay Area cold case comes on the heels of the Golden State Killer case.

- e. After seeing the success of the Golden State Killer case, DNA from an unknown man was recovered from stored evidence in the case and submitted to Parabon NanoLabs, helped identify the eventual murderer as Getreu.
 - f. <https://www.sfchronicle.com/crime/article/Murder-suspect-in-1973-Palo-Alto-cold-case-caught-13412437.php>
 - g. <https://www.mercurynews.com/2018/11/26/i-still-miss-my-sister-family-of-slain-stanford-grad-grateful-for-arrest-in-1973-killing/>
- 4. Michael A. Soares**
- a. Name: Kyle
 - b. Agency: Warwick Police Department
 - c. Country/State: Warwick, Rhode Island
 - d. Story:
 - e. What detectives didn't have in the death of John "Jack" Fay was a suspect or a motive. So in 2018, they turned to a method that has solved some years-old cases, most famously the Golden State Killer case.
 - f. Using a forensics firm called IdentiFinders, they uploaded DNA from the crime scene to a public database, hoping to find a link to someone who'd uploaded their DNA. From there, they identified a suspect, Michael A. Soares, using genealogy and familial DNA linking. Although the method did not produce a direct match, it allowed police to deduce Soares as being the only male in the lineage who matched the DNA profile they'd found. This opened the door for a search warrant to get Soares' DNA from a cheek swab.
 - g. <https://www.providencejournal.com/news/20190206/warwick-police-used-dna-database-to-find-suspect-in-2013-murder>
- 5. Edward Woodbery**
- a. Name: Kyle
 - b. Agency: Green Bay Police Department
 - c. Country/State: Green Bay, Wisconsin
 - d. Story:
 - e. After a 56-year-old cab driver was charged with sexual assault in Wisconsin against one of his cab clients, his DNA was entered into CODIS. His profile then matched against an unsolved sexual assault in Chicago from 2011.
 - f. <https://www.wbay.com/content/news/DNA-links-Wisconsin-cab-driver-to-assaults-in-Green-Bay-Chicago-482760461.html>
- 6. Christopher Lynn McNear**
- a. Name: Kyle
 - b. Agency: Charlotte-Mecklenburg Police
 - c. Country/State: Charlotte, North Carolina
 - d. Story:
 - e. A girl was raped and kidnapped in 1995. A rape kit was performed upon her recovery. At the time, DNA database matching was not possible. Luckily, the evidence was preserved. Federal funds paid for retesting and submission to the DNA database, which led to a match in 2018.

- f. <https://www.usnews.com/news/best-states/north-carolina/articles/2018-11-30/police-dna-leads-to-arrest-of-sex-offender-in-cold-case>
- 7. Mr. Cho kills his wife and son**
 - a. Name: Kyle
 - b. Agency: Orange County Sheriff's Office
 - c. Country/State: Orange County, North Carolina
 - d. Story:
 - e. Decades after the unidentified bodies of a woman and a 10-year-old boy were found beside a highway, investigators were able to solve the case thanks to GEDmatch and an outside genetic consultant.
 - f. <https://www.freep.com/story/news/local/michigan/2019/02/06/cold-case-bobby-whitt-myyoung-hwa-cho/2777053002/>
- 8. South Lake Tahoe**
 - a. Name: Kyle
 - b. Agency: El Dorado Sheriff's Office and El Dorado Cold Case Task Force
 - c. Country/State: Lake Tahoe, California
 - d. Story:
 - e. Evidence from a public DNA database linked two South Lake Tahoe cold-case homicides from the 1970s to a suspect who died in 2014.
 - f. <https://www.sacbee.com/news/local/crime/article226747699.html>
- 9. D.C. Mansion Murders**
 - a. Name: Kyle
 - b. Agency: Washington, D.C. Metropolitan Police Department
 - c. Country/State: Washington, District of Columbia
 - d. Story:
 - e. Amy and Savvas Savopoulos, their son Philip, and housekeeper Veralica Figueroa were killed in May 2015 in the family's multimillion-dollar home in an elite neighborhood in Washington D.C. Their home was set on fire and their Porsche found burning in a nearby parking lot. The murderer, Darrell Wint, was linked to the scene after police found a sample of his DNA left on a half-eaten pizza in the burned home. He was later arrested and convicted for their murders and the accompanying arson.
 - f. <https://abcnews.go.com/US/dc-mansion-murders-evidence-helped-convict-killer/story?id=58775381>
- 10. Raymond Rowe**
 - a. Name: Kyle
 - b. Agency: Lancaster County Detectives under Lancaster County District Attorney
 - c. Country/State: Lancaster County, Pennsylvania
 - d. Story:
 - e. A Pennsylvania DJ admitted to murdering a 25-year-old woman in 1992 after his half-sister's DNA uploaded to a public genealogy database linked him to the murder.
 - f. <https://abcnews.go.com/US/dj-admits-cold-case-murder-linked-dna-technique/story?id=60234009>

11. Luke Flemming

- a. Name: Kyle
- b. Agency: Sarasota County Sheriff
- c. Country/State: Sarasota, Florida
- d. Story:
- e. Luke Fleming was arrested using DNA phenotyping and genetic genealogy. DNA found on the scene of the crime was used to create a picture of what the killer could possibly look like. Then genetic genealogy linked that same DNA from the scene to Fleming's family tree, ultimately connecting him to the murder.
- f. <http://www.mysuncoast.com/2018/12/18/dna-evidence-crucial-two-recently-solved-sarasota-cold-cases/>

12. 'Jos Brech'

- a. After an 11-year-old boy goes missing in Netherland, authorities ask to sample the DNA of 20,000 men, which leads to a suspect who was last seen in France but was arrested in Spain.
- b. <http://www.lefigaro.fr/flash-actu/2018/08/26/97001-20180826FILWWW00184-un-meurtrier-presume-rattrape-par-son-adn-vingt-ans-apres.php>