

Cases Solved by DNA Analysis

Local Cases

Case of Murder at Mandai Tekong Park, 2010, solved in 2010

On 22 September 2010, a mother of two was fatally stabbed by a male subject at Mandai Tekong Park. The male subject was believed to have come up behind her, covered her mouth to stop her from screaming, and stabbed her in the lower back with a knife. He continued stabbing her even after she had fallen to the ground. The knife with a plastic sheath was recovered at the scene. A partial DNA profile was developed from a swab taken from the knife sheath, and used to search against the DNA database. Through extensive ground enquiries and investigations, aided by forensics, the Police identified the suspect behind the attack, Soh Wee Kian.

Through further investigation, Soh was also found to be involved in three other stabbing incidents between January and May 2010 – two committed in the Yishun area and one committed in the Sembawang area.

Case of Rape, 2002, solved in 2014

In 2002, a 23-year-old Malaysian man, Lee Ah Choy, abducted and raped a 12-year-old girl near her home in Singapore. The case went cold until 2014 when Lee was arrested in Singapore for an alleged theft and a blood sample was taken from him and sent for DNA analysis. The DNA analysis established that his DNA profile matched the one taken from the rape scene and the victim's body. Lee was finally brought to justice and sentenced to 16 ½ years of jail and 18 strokes of the cane.

Case of Murder at Gardens by the Bay, 2016, solved in 2016

In July 2016, a 31-year-old engineer, Cui Yajie, was reported missing by her colleague. The Police found out from her colleague that Cui had a boyfriend called "Leslie", and she had a heated argument with him over the phone, on the last night that she was seen in the office. After carefully trawling through CCTV footages from the MRT stations near her residence, officers discovered that Cui had alighted at Joo Koon MRT station and boarded a car with a licence plate that was registered to Leslie Khoo Kwee Hock. When interviewed, Khoo denied knowing her whereabouts. His statements were subsequently found to be incongruent, which prompted the Police to probe further.

After reviewing more CCTV footages, the Police noticed that Khoo appeared to be alone in the car when he drove into Marina Bay Gardens. His vehicle was processed by HSA's Forensic Chemistry and Physics Laboratory, where traces of blood were found. After examining the blood, HSA discovered that the blood had matching DNA with objects Cui had used at her home. Khoo finally admitted that he had killed her in a fit of rage.

Even though there was no physical body, the Police managed to collect traces of evidence, including a piece of burnt clothing and some human hair. However, HSA could not determine that the human hair was matched to the victim as it was missing the roots, which possessed DNA used in conventional DNA profiling methods. HSA requested the Police to obtain some body samples from the victim's mother to proceed with Mitochondrial DNA sequencing. This was the first time Mitochondrial DNA

sequencing was used in Singapore to establish the identity of the deceased even though there was no longer a physical body. Mitochondrial DNA is exclusively carried on the offspring from the mother, and a match between the victim's mother's body samples and the hair sample would help uncover if the hair found at the scene belonged to the victim. The victim was also an only child, which helped the Police establish that it was indeed Cui's hair that was found at the crime scene. Khoo was eventually convicted of murder and sentenced to life imprisonment.

Mischief by Fire (Molotov Cocktail), 2016, solved in 2016

On 13 September 2016, the Police attended to a case of mischief by fire at St James Power Station, where Molotov cocktails were thrown at the entrance of "Bounce" Club. Items such as burnt fabric, broken glass fragments, a plastic bag and a lighter were found after a detailed crime scene search. The subject was identified by matching DNA samples from a lighter found at the scene against the DNA database.

Criminal Intimidation by Anonymous Means – bomb threat to Parliament House & other key installations, 2018, solved in 2018

On 12 April 2018, a 7-Eleven employee received a letter with a bomb threat and informed the Police. There were a few other similar cases reported by Government buildings, as they also received envelopes containing anonymous bomb threats. DNA swabs were obtained from the adhesive side of the stamp pasted on the envelope and a subject was identified based on a match against the DNA database. The subject confessed when confronted with the forensic evidence. Investigations revealed that the subject had sent at least five envelopes containing such bomb threats, but he had no intention or means to carry out his threats. Eventually, he was sentenced to six months' imprisonment.

Foreign Cases

US – Rape and Robbery case, 1979, solved in 2010

On 23 November 1979, a 26-year-old woman and a male companion became the victims of carjacking. The abductors drove the woman to a park nearby, where they raped her. They did not kill her but kept her rabbit fur coat. About two days later, two men were seen trying to sell the coat at a grocery store nearby. The victims' car was also found in the parking lot of the grocery store.

In the following month, Cornelius Dupree Jr. and Anthony Massingill were arrested because they resembled suspects from another sexual assault and robbery case. However, Dupree did not match the description of the perpetrators of the November carjacking. Dupree was charged with armed robbery and rape but was never tried on the rape charge. In 1980, he was convicted and sentenced to 75 years in prison for aggravated robbery.

In 2006, the Innocence Project took Dupree's case and carried out a forensic examination of the November carjacking crime scene evidence in 2010. He was paroled in July 2010 after serving 30 years of his 75-year prison sentence in Texas. Prosecutors cleared him of the crime after a test of his DNA profile did not match traces of semen evidence from the November carjacking case.

US – Murder of Allison Feldman in Scottsdale, Arizona, 2015, solved in 2018

Allison Feldman, a 31-year-old saleswoman, was sexually assaulted and beaten to death in Scottsdale, Arizona. The Police ran out of options in the murder investigation. They interviewed more than 500 people, catalogued dozens of pieces of evidence and canvassed every house within a half mile of Feldman's home. DNA found in Feldman's dining room and on a beer bottle had been the detectives' best lead. But despite repeated queries, the crime scene database failed to match the DNA to a suspect.

Scottsdale Police appealed to the Arizona officials to widen the parameters of the DNA search in a way the state had never done before. More than three years after the murder, familial DNA search was conducted, and the crime lab technicians found a near match with an Arizona prison inmate. For this case, there was only one familial DNA "hit" and it pointed to Mark Mitcham, who had been convicted in the early 1990s of child molestation and sentenced to 40 years in prison. The brother of Mark Mitcham was arrested subsequently and charged with Feldman's murder. This was the first case Arizona Police solved using familial search technique.

US – Grim-Sleeper case, 1980s, solved in 2016

There was a serial killer who stalked women of South Central Los Angeles for more than two decades beginning in the 1980s. The Los Angeles Police Department (LAPD) collected saliva at numerous crime scenes, but was unable to match the DNA to any suspect in the database until they expanded the search to include anyone who might be related to the suspect (i.e. familial search). With the use of familial search technique, there was a hit to Christopher Franklin, the son of the suspect, who was arrested for felony weapons charge. DNA of the suspect was obtained via pizza crusts and utensils that the suspect had used and it matched perfectly with crime scene DNA. After years of delay and long trial – the suspect (Lonnie Franklin who was known as Grim Sleeper) was finally convicted in 2016 of killing nine women in the 1980s.

US – Double Homicide, 1956, solved in 2019

The murders of Lloyd Duane Bogle and Patricia Kalitzke in 1956 went cold until 2019 when investigators announced they had cracked the case with DNA and forensic genealogy. For years, investigators followed numerous leads but none of them panned out. They eventually used DNA testing to solve the case. During Kalitzke's autopsy in 1956, coroners had taken a vaginal swab, which had been preserved on a microscopic slide in the years since. In 2001, investigators sent that sample to a local lab for testing and the team identified sperm that did not belong to Bogle.

Further investigations led investigators to a man named Kenneth Gould, who had passed away in 2007. The only way to prove his guilt or innocence was to test the DNA of his remaining relatives. The test results proved that Gould was guilty.

US – Homicide cold cases, 1978 – 1981, solved in 2022

Between 1978 and 1981, three women and a teenage girl were stabbed to death in the Denver area. The killings had initially been investigated as separate cases. The deaths were tied together between 2013 and 2018 through DNA evidence. In 2021, the Denver Police Crime Laboratory got a match of someone close to the then unidentified suspect while doing a search in Texas records for biological relatives of the killer's DNA profile.

The Police used DNA evidence to identify the killer as Joe Ervin, who was arrested for the fatal shooting of an Aurora Police officer and died by suicide in jail in 1981. Authorities exhumed Ervin's remains in late 2021 and found his DNA matched those found at the crime scenes, confirming Ervin as the killer.

US – Sexual Assault, 2007, solved in 2022

In 2006, two teenage girls were sexually assaulted in Detroit. Within weeks, the Police arrested Terance Calhoun as he appeared to match the composite sketch the Police had produced, despite the fact that he did not have the identifiers (e.g. braids, puzzle tattoo) described by the victims. Calhoun was convicted of sexual assault in 2017. Less than three months after his conviction, DNA analysis of the second crime scene revealed that Calhoun's DNA did not match the crime scene DNA. However, it was only in 2019, during an audit of untested sexual assault kits, that this DNA evidence came to light. Following which, his attorneys worked to exonerate him, and he was finally exonerated in 2022. Subsequently, a Michigan State Police report linked the DNA to another person who was charged with other sexual assault cases in the Detroit area that happened between 2007 and 2014.

Netherlands – Rape and Murder of Nicky Verstappen, 1998, solved in 2018

Eleven-year-old Nicky Verstappen was found raped and murdered while attending a summer camp in southern Netherlands in 1998. DNA found on his body was of male origin, but there were no matches against Dutch or international databases. In 2013, Dutch prosecutors used provisions in the Dutch Criminal Procedure Code to order the voluntary taking of DNA from 21,500 persons, and obligatory taking of DNA from 1,500 persons of special interest.

One person of special interest, 55-year-old Jos Brech, was a missing person who failed to attend obligatory sampling. This gave investigators a lead. DNA samples from Brech's family members, Brech's old clothes left at his mother's house, and from a separate inquiry into his disappearance all matched DNA found on Nicky's pyjamas. Investigators also established Brech's presence near the camp site days after Nicky's body was found. After a wanted notice was put out, a tip-off led to a raid in 2018 on Brech's residence near Barcelona by Spanish Police, where Brech was finally arrested and extradited.

South Korea – Hwaseong Murders, 1986-1991, solved in 2019

A Korean serial killer raped and murdered women and young girls in the city of Hwaseong in Gyeonggi Province. The victims were found bound, gagged, raped and in most cases strangled to death with their own clothing. The murders sparked the largest criminal case in South Korea with over two million man-days spent on investigation and over 21,000 suspects investigated.

At that time, South Korea had no capacity to conduct a DNA test and only relied on blood type to find the criminal. With public pressure to find the killer, the Police arrested a young welder who spent two decades in jail, who was eventually found innocent using DNA technology.

In 2019, there was a technological breakthrough. Advances in DNA analysis allowed investigators to extract samples from evidence, and a match was detected for three of the cases. The Police eventually identified the real killer: a man, Lee Chun Jae, in his 50s serving a life sentence in Busan prison for sexual assault and murder of his wife's younger sister.

Australia – Claremont Serial Killings, 1996 – 1997, solved in 2016

The Claremont serial killings refer to the deaths of Jane Rimmer, 23, Clara Glennon, 27, and Sarah Spiers, 18, between 1996 and 1997. All three women went missing after a night out at the Claremont entertainment district in Perth's eponymous western suburb.

In the case of Rimmer and Glennon, it was said that the suspect took them from the street, drove them to the city's outskirts and used a knife or other sharp object to attack them. In both cases, the victims had defensive wounds, which showed that they tried to fight back against their attacker. Both were fatally wounded in the neck before their bodies were hidden in the bushes. They were discovered a few weeks after their disappearances. The body of Spiers, the first to go missing in 1996, was never found.

DNA samples were taken from under the fingernails of one of the victims. However, the cases went cold until 2016 when the accused, Bradley Edwards, was convicted of two rape cases, and later established as a suspect for the cold cases. He was eventually found guilty of the murder of Rimmer and Glennon and sentenced to life in prison with the possibility of parole after 40 years. He was not found guilty of the murder of Spiers as the judge ruled that there was not enough evidence to convince him beyond reasonable doubt.