



**European Network of Forensic Science Institutes
DNA Working Group**

**Report on Criminal Cases in Europe solved by
ILS (DNA Mass Testing)**

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The following case examples were part of an ENFSI DNA WG survey on legislative, technical and practical aspects of performing DNA-ILS in order to solve severe crimes. The results of the study were presented at the 24th ENFSI DNA Working Group meeting in Bled, Slovenia in April 2006.

From 439 finished screens, 315 turned out to be successful in identifying the perpetrator, which gives a success rate of 72%. This high rate proves that ILS are a useful tool in solving severe crimes where no other investigation methods can be applied.

Furthermore, the study showed that effective testing does not depend on huge numbers of persons. In fact, quality of intelligence information is extremely valuable for a quick, efficient and successful testing.

Concerning legislative issues, some european countries have passed special laws or other regulations defining the quality of crime and the affected person subgroups in Intelligence-led-screens.



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Finland

Case 1: Murder of a teenage girl

Murder of a teenage girl in 1999 in a small town in Finland was solved by thorough police work and by applying DNA ILS. A partial male DNA profile was obtained from a sample taken under a nail of the victim. That profile did not match to any profiles in the National DNA Database, and because there were no real suspects for the case it was decided to start DNA ILS survey to find the perpetrator. About 250 reference samples were collected and analysed during one year, and finally police collected the right person, who was then convicted of the offence. DNA results and ILS played very important role in solving the case.

Germany

Case 2: Murder - a high volume ILS-

In March 1998, the body of a 11-year old missing girl was found in a forest in Northern Germany. She has been raped and killed by several stabs with a knife. The forensic analysis led to the identification of a sperm stain from the underwear of the victim which could be typed successfully by DNA analysis.

Police investigations gave no hints to the perpetrator. Since at that time the German DNA Database was just in the beginning, the prosecutor decided to perform an intelligence-led-screen.

In order to limit the person subgroup, a profiler analysis was conducted. The results showed that the offender should be of an age between 18 and 30 years. Furthermore, the area was also limited to a certain district. A total of about 18.000 male persons fulfilled these requirements. In the local press, a request for reference samples (buccal swabs) on a voluntary basis was published. Because of the rural structure of the region, there was a high degree of cooperation.



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A total number of **11.200** samples were analyzed in a cooperation of three police laboratories in Hannover, Berlin and Magdeburg. In May 1998, sample no. "3889" yielded a match in the analysed Marker system (D1S80). The counter analysis in a second lab as well as the typing of a second reference sample from the suspect confirmed the results. The complete DNA profile of the reference samples showed conformity with the one derived from the sperm stain. The suspect was 30 years old and lived in the predefined area.

The suspect was arrested and confessed not only the murder in question, but also the killing of another missing young girl. He was sentenced for life.

The case acted as an impulse to accelerate the setup of the German DNA Database.

Case 3: Serial rapes

Between 1998 and 2003, in the city of Bremerhaven 9 women were raped or abused in their homes. DNA analysis revealed that stains from four crimes were identical. Since the perpetrator wore a mask, few additional informations were available for the police. Profiling limited the geographical area of the perpetrator to a city quarter called Lehe. Within that area, about 2.300 young men between 24 and 46 years should be included in a mass testing.

One day after police decision, the State General Prosecutor considered the test as illegal and interdicted the ILS. This was overruled by a local court decision one month later. During the test, about 100 persons refused to give a sample. Within that group, police investigations led to a 36-year-old man who had no alibi for most of the times of crime. By court order, a sample was taken and the profile yielded a match to the crime scene stains.

The man confessed four rapes and was sentenced to nine years in prison in December 2005.



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Greece

Case 4: Abandonment

An abandoned baby was found under a bridge. The paediatrician believed that it was born the previous week. Since blood samples of all newborn babies are kept in file in the "Child Institute" of Athens, where the mothers' personal info are also filed, it was possible by examining/screening the blood samples of the babies born at that period of time to identify the mother. We were lucky that we matched the baby's profile with that of the blood sample of one of the babies born in the first day of the week in question.

Case 5: Rape and Murder

An old woman was found raped and struggled by an unknown person. The Police had no clue as to the perpetrator. Epithelial cells were found under the woman's right hand nail. Biological samples of 43 men were sent to the lab and a match was achieved. The perpetrator was identified as a young man who was helping the old lady with her shopping. The Police said there was no other way in locating the perpetrator, apart from the results of the DNA analysis.

Netherlands

Case 6: Rape and Murder

On December 7 2002, an old woman was found murdered and sexually abused in St. Philipsland a small community in the Southwest of the country. In the next days after the crime, a DNA-profile was obtained from semen that had been retrieved from the corpus delicti. A search with the seminal DNA-profile in the national DNA-database was without success.



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From the situation and other intelligence information, it became clear that the perpetrator most probable lived in the geographical vicinity of the victim. The attorney general gave permission for a small scale mass screen among the male population of St. Philipsland. 80 males (14 years old) from the proximity of where the victim lived were contacted and volunteered without exceptions to give their DNA for this mass screen.

The presumed donor of the semen was identified in the first batch of reference samples. The reference sample that matched the semen DNA-profile was from an 18 year old boy that lived with his parents one street away from the victim. He confessed the crime immediately after being faced with the results of the DNA test.

Poland

Case 7: First Polish DNA “manhunt” – an application of Y-chromosome STRs

In a period of 6 years 14 young girls and women in the age range of 9–26 years were brutally raped and one was murdered in the Swinoujscie area (a town located in northwest Poland very close to the German border). Information about the offender was very scanty. His face had never been seen because he wore a mask. The victims described him as a tall athletic man armed with a pistol and using very primitive language. DNA profiles obtained from semen stains left at the scenes of crime gave information that one and the same man had committed all the rapes.

Three months after the homicide of the 22-year-old girl, a special police group consisting of 8 highly experienced policemen was established who decided that all young men in the age range between 22 and 38 years living in Swinoujscie area had to be investigated. The number of theoretical checks was estimated to ca. 12,000. During 15 months of intensive work 714 suspects including known rapists, pedophiles etc. were interrogated and 421 men were asked to submit mouth swabs or blood samples for elimination by DNA typing.

The Y-chromosome haplotype (9 loci) obtained was used for the elimination process. One man, who lived 3 km away from the place of the first reported rape, was found



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who had an identical DNA profile in all Y-chromosome STR loci analysed and possessed common alleles in 9 out of 10 autosomal loci, strongly suggesting that the real rapist and the typed man were closely related males. Analysis of reference DNA obtained from the man's brother revealed an identical DNA STR profile to that identified at the crime scenes.

A few days after this information was sent to the public prosecutor, the brother of the analysed man was arrested and accused of committing 14 rapes and 1 homicide.

To the best of our knowledge this is the first case in Poland and probably in Eastern Europe where DNA typing of a large population was used to identify the offender.

Literature: Int J Legal Med (2002) 116 :289–291

Scotland

Case 8: Rape and Murder

A mass screen was carried out in a specific area of a major town (Paisley) based on personal items belonging to the rape/murder victim being found leading into this area. A DNA match was found with semen on the victim's vaginal swabs. He was convicted.

Case 9: Murder

A blood spot found on a murdered prostitute's clothing matched a sample taken from a man who initially denied being with her. He was convicted, then had a re-trial (nothing to do with DNA evidence) and was again convicted.



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United Kingdom (England and Wales)

Case 10: ORB

Operation Orb triggered “the largest nation-wide manhunt since the Yorkshire Ripper.” It related to a series of sexual assaults and rapes on girls and women. The victims ranged from ten to fifty three years old and the offender was dubbed “The Trophy Rapist” as he took items of clothing from his victims as souvenirs. He became more bold and brutal with each offence, attacking his victims from behind in broad daylight. In one case he used the victim’s mobile phone to call her mother and tell her what he had done.

Operations Viscount, Vocation and Scramble were linked in to this investigation along with several other cases.

About 3500 samples were sent in during this screen, a match was finally produced following an appeal on Crimewatch. (a TV programme that seeks the assistance of the public).

Case 11: REDBOURNE

The rape of a 68 year old woman on her way home. This is an excellent example of how a well-targeted screen can produce results in a very short period of time.

The first batch of samples was received on the 10th of April 2002. A match was generated of this on the 12th of April, with the confirmed result being given to the police on the 13th of April. A 23-year-old suspect was then arrested, charged and later convicted of the offence.



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Case 12: PRIMA

This operation related to a series of attempted rapes of women in the same geographical area. All of the victims managed to struggle and escape before being physically raped. All of the victims gave the same description of their attacker, wearing a hooded dark coloured top and the same facial features.

A DNA profile was obtained from a bloodstain on the inside back of jeans worn by one of the victims. The jeans were clean on and the victim assured police that it could not have come from a legitimate source.

Again this was a well-targeted screen, with only one batch of samples being processed. On being confronted with the screen match the suspect immediately confessed to the crimes.