

Special Reports

Forensic Science

Killer convicted thanks to relative's DNA

The first criminal conviction based on a new DNA technique which uses relatives' DNA to track a suspect was made in the UK on Monday.

Craig Harman of Frimley, Surrey was convicted of manslaughter and jailed for six years on the basis of "familial DNA searching", which linked him to the crime scene via a close relative's DNA profile.

Harman threw a brick from a bridge over a motorway which crashed through the windscreen of Michael Little's lorry in March 2003. As the brick hit his chest, 53-year-old Little suffered a heart attack, though he still managed to steer his vehicle out of harm's way before dying.

Police obtained a DNA profile of the assailant from blood on the brick but could not match it to anything on the UK's national DNA database because Harman had no criminal convictions. The database holds about 2.5 million profiles of charged criminals and, since 4 April 2004, suspects who are arrested but not charged.

"It is another tool for police officers," says Jonathan Whitaker, of the UK's Forensic Science Service (FSS), which developed the technique. "It's really reserved for those cases where you have got a DNA profile and no match on the database. The whole idea is to keep the momentum going and identify the offender before he does anything else. This case illustrates that really, really well."

"There is no doubt in my mind that without this groundbreaking technique this crime would have remained undetected," says Detective Chief Inspector Graham Hill of Surrey police.

Drunken act

The FSS and police used familial searching to uncover a close relative of Harman's, who had a criminal conviction and was on the DNA database. The relative's profile matched the DNA on the brick by 16 out of 20 points. This lead police to Harman, whose DNA gave a perfect match, and he eventually confessed to the drunken act of violence.

Familial searching comprises of two tests, Whitaker, told **New Scientist**. The first matches parents to children. Standard DNA profiles examine 10 markers in the DNA. Each marker has two sequences - one inherited from the mother, and one from the father. The database can be trawled to match potential parents which gives the police "a manageable list" to investigate.

Potential siblings can also be matched via the database by comparing markers. "On average, two people would probably have six or seven DNA markers in common out of 20, simply by chance," explains Whitaker, but "with over 12 bands in common, you very, very rarely see unrelated people with that degree of similarity".

The system was only launched for police investigations in September 2003, so data on the probability of a correct match is not yet available.

False matches

Alec Jeffreys at the University of Leicester, who pioneered DNA profiling techniques, told **New Scientist** that the high point score in the Harman case "suggests quite a high level of matching".

But he cautions that close relations could show a 10 out of 20 point match or lower - particularly if their markers are common in the population. "Even unrelated people start to show these sorts of matches," he says. "If you are lucky it could give you a very strong lead straight away. If you are unlucky, you could wind up with lots of false matches."

Jeffreys believes that if familial searching is to be used more in such criminal investigations "this would be a compelling argument to increase the number of DNA markers used".

He says using familial searching to track people who have never been involved with the law raises "potentially rather thorny" civil liberty issues. For a serious crime such as Harman's, the benefits are clear, he says, but for lesser crimes the balance between an individual's civil rights and the need to identify a perpetrator may be less obvious.

However, Whitaker says the new technique is compliant with the UK's Human Rights, Police and Criminal Evidence and Data Protection Acts. It can only be used for serious offences like murder or serious sexual assault with high level police authorisation.

<http://technology.newscientist.com/channel/tech/forensic-science/dn4908>