G30 DNA Databank Hits: Identification of the Perpetrator?

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Participants attending this presentation will learn of a variety of case scenarios where a convicted offender hit provided investigative information that was not a direct link to the perpetrator of a crime. This will further demonstrate the utility of DNA data banks as an investigative tool.

As a result of the DNA Identification Act of 1998, the Canadian National DNA Data Bank (NDDB) became operational in June of 2000. The Data Bank consists of two indices. The Convicted Offender Index (COI) is the electronic index that has been developed from DNA profiles collected from offenders convicted of designated primary and secondary offences as defined in section 487.04 of the Criminal Code of Canada. The Crime Scene Index (CSI) is a separate electronic index comprising DNA profiles obtained from crime scene investigations of designated offences. COI profiles are generated centrally at the Data Bank lab facility, while CSI profiles are generated at the various forensic laboratories throughout Canada. The Centre of Forensic Sciences (CFS) provides Forensic Science services for Ontario, a province with a population of approximately 10 million people.

Over the first two years of operation of the NDDB, the CFS submitted 1,803 (31%) of the Crime Scene Index profiles to the Data Bank. Of the nearly 25,000 convicted offenders profiled, 53% were from the province of Ontario.

To complement the national legislation that established legal requirements for entering profiles onto the Data Bank using CODIS software, the CFS has developed a Standard Operating Procedure, which includes the criteria for a profile to be uploaded, the format and content of reporting statements, a process for communicating and dealing with the disposition (once followed up with investigators), and the criteria and procedures for deleting profiles from the NDDB. The potential dispositions include the following categories:

Offender hit: Indicating one or more forensic samples are linked to a convicted offender sample at SDIS. This provides investigators with the identity of a known offender and thereby provides an investigative lead that may ultimately link the crime scene DNA profile to the perpetrator. Alternatively the hit may provide investigative information that subsequently eliminates the crime scene profile as having originated from the perpetrator.

Conviction Match: Indicates that a DNA profile developed from crime scene evidence match a DNA profile from an offender, but the crime from which the evidence was collected has already been solved and linked with the offender. This match serves as a form of blind external testing as the offender should match the evidence for which s/he was convicted.

The DNA profiles eligible for upload to the CSI are subject to both legal and scientific restrictions. The DNA identification act outlines the legal criteria as follows. In order to enter a DNA profile into the data bank, a designated offence (e.g. murder, sexual assault, robbery, break and enter) must have occurred. There must also be a sample of a bodily substance from an "unsolved" crime that was found at a place, on or within the body of a victim, on anything worn or carried by the victim, or on or within the body of a person, thing or place associated with the commission of a designated offence. The scientific criteria were agreed upon by a working group of scientists from the three government laboratory systems in Canada (CFS, Royal Canadian Mounted Police Forensic Laboratories, and Laboratoire de sciences judiciaires et de médecine légale). The criteria were designed to limit the frequency of adventitious matches to the databank. In contrast to similar criteria from the U.S., for an unknown profile to be uploaded to the national CSI, a result for at least 7 Profiler Plus loci is necessary, in addition, a CSI sub index is used to capture profiles derived from mixtures. To be eligible for the forensic mixture index, a result at all 9 Profiler Plus loci is required with no more than three of the loci with up to five alleles entered.

Any DNA profile, generated during the scientific examination of items submitted in connection with an investigation, that cannot be attributed to the victim or a person who has been excluded as the perpetrator is automatically uploaded to the CSI.

Over the first two years of the Data Bank's operation CFS has been notified of 287 CSI to COI hits and 72 CSI to CSI hits. Of the crime scene to convicted offender hits, 62% have been conviction matches and 32% of the hits have been classified as offender hits. Of the 32% of investigations aided a number of the offenders have been ruled out as the perpetrator, however in these instances the identification of an offender as the source of a crime scene DNA profile has nonetheless aided the investigation. Some examples of this include:

Homicide investigation where a bloodstain on the victim hit to a convicted offender who ended up being a witness to the crime, who was ultimately able to aid in the identification of the true perpetrator.

Sexual assault investigation in which the first suspect was excluded as the source of semen recovered from complainant. The profile was entered onto the CSI and hit to an offender, the complainant was interviewed further and it was determined that the person identified by the hit was actually the boyfriend. This

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information allowed the police to account for the semen and to re-investigate the original suspect.

Investigation of an attempted murder in which a DNA profile from the tape wrapping around a pipe bomb hit to an offender. The offender was identified as the police officer who originally collected the pipe bomb for submission to the laboratory. Upon investigation, it was found that he had been convicted of a designated offence some time after his involvement in this case.

This presentation will outline other such cases in order to emphasize how important it is for the scientist to critically evaluate all samples being uploaded to a data bank and the need to keep an open mind when dealing with data bank hits. A hit to a convicted offender does not necessarily equal a hit to the perpetrator.

DNA Databank, Offender Hit, Conviction Match

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