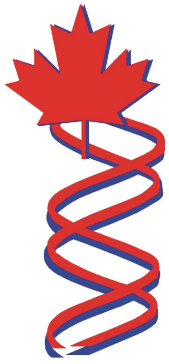
National DNA Data Bank Advisory Committee Annual Report



2007-2008

This report covers the period from June, 2007 to June, 2008. During this period, the National DNA Data Bank Advisory Committee met twice in Ottawa during October 2007 and April 2008.

Governance

The National DNA Data Bank, located in Ottawa, is structured under the National Police Services Branch of the RCMP on behalf of all Canadian Law Enforcement Agencies. The Data Bank with a present staff complement of 23 specialists operates on an annual budget of approximately $2.6M. When fully staffed, the Data bank operates with 31 staff members. After the completion of an organizational change during 2006/2007, the governance structure of the National DNA Data Bank has remained unchanged during the period covered by this report. Under the present structure, the National DNA Data Bank now reports to the Director General Forensic Science and Identification Services (FS&IS) through the Director of National Services and Research Branch, a reporting relationship separate and distinct from the that of the six operational RCMP Regional Forensic Laboratories. The Committee concurred with the governance changes and is of the opinion that separating the Data Bank governance from forensic operations was timely and consistent with the unique national responsibilities of the NDDB.

Data Bank Growth

As of June, 2008, the Convicted Offenders Index (COI) had received almost 147,000 samples over a 7 ½ year period. Of that total, 136,500 were analyzed and their profiles actually entered into the COI itself. Duplicates, no court orders, non-designated offences, inappropriate kits, inadequate samples and authorized removals account for the differences between samples received and profiles entered into the Data Bank. During the same period, approximately 43,000 DNA Profiles have been uploaded to the Crime Scene Index (CSI) from the three contributing Forensic Laboratory organizations; RCMP (6 Labs), Centre of Forensic Science (Toronto) and the Laboratoire de sciences judiciaries et médicine légale (Montréal). In total, the Data Bank now contains approximately 180,000 DNA profiles. Searches of the CSI against the COI (crime scene to offender) have now produced over 9,000 Offender matches while searches of the CSI against itself (crime scene vs. crime scene) have produced over 1,500 Forensic hits. Matches have included over 600 murders, 1,300 sexual assaults, 250 attempted murders and over 1,100 armed robberies. Almost 5,500 Break & Enter with Intent investigations were also assisted through Data Bank matches. The information provided by the NDDB helps investigators to focus their investigations by identification of suspects when there is a match between the CSI and COI profiles and by eliminating as suspects anyone whose profile is in the COI when there is no match to the CSI.

Sample Volume

As reported previously, when the NDDB was planned and implemented, the anticipated capacity was based on projections provided by Consulting and Audit Canada. Based on an expected

18,700 submissions per year following convictions for Primary Designated Offences (100% of 18,700) and 9,500 submissions following Secondary Designated Offence convictions (10% of 95,000), the capacity was designed for at least 27,000 to 30,000 samples per year. For several years, there has been concern expressed with respect to the lower than expected contribution rate of COI samples following convictions for Primary Designated offences, (54% in 2006/07) although contributions for Secondary Designated offences have grown at an expected rate, (91% in 2007). Recent statistics indicate that there has been a significant increase in the contribution rate for Primary submissions, now approaching 23,000 for 2007/08, i.e., 75%, up over 20% from last year. Secondary submissions to the COI have also increased significantly during the past year, now approaching 12,000 submissions for 2007/08, some 26% higher than was originally projected during the planning process (9,500). Total input to the COI in 2007/08 will in all likelihood exceed 30,000 submissions. The rapid growth in Secondary submissions is in part due to a significant increase in Break & Entry sample submissions following the high match rates reported under this category of crime by Data Banks in both the United Kingdom and the U.S. several years ago. Following that trend, the NDDB, in partnership with the RCMP Forensic Laboratory System, created a dedicated Break & Entry analytical unit to fast track these submissions. Match rates have now exceeded 50% and have led to the solution of many other serious crimes committed by individuals involved in Break & Enters.
The submission growth rates have also been positively affected by amendments to the legislative scheme made by *An Act to amend the Criminal Code, the DNA Identification Act and the National Defence Act,* S.C. 2005 c.25 (former Bill C-13) and by *An Act to amend the Criminal Code, the DNA Identification Act and the National Defense Act.* S.C. 2007 c.22 (former Bill C-18) which came into full force on January 1, 2008.

These amendments:

- Added all indictable offences under the *Criminal Code* and sections 5,6 and 7 of the *Controlled Drugs and Substances Act (CDSA)* that are punishable by imprisonment for 5 years or more to the list of secondary designated offences and, for the purposes of making a DNA Data Bank Order, have been prosecuted by indictment;
- Eliminated judicial discretion not to make a DNA Data Bank Order for 16 offences involving grave violence including murder, kidnapping and aggravated sexual assault;
- Moved a number of offences from the list of secondary designated offences to the list of primary designated offences, e.g., robbery and break and enter a dwelling; and
- Expanded the retroactive provisions to include persons convicted of a single murder, attempted murder, manslaughter or a sexual offence and expanded the list of sexual offences to include “historical” offences.

While the growth rate of submissions to the COI is a very positive trend, offender matches ultimately depend upon matches made between profiles in the COI against those in the CSI. The increase in the COI will clearly produce some growth in the overall match rate, however, as reported in a 2007 study by Government Consulting Services (GCS), a significant enhancement of the match rate is also dependent upon an increase in the number of submissions to the CSI, i.e., uploading of unsolved scenes of crime profiles from the contributing forensic laboratories,

all of which are encountering service demands well above their throughput capacity. This issue has been the subject of comments by the Auditor General of Canada in her May 2007 audit report of the RCMP Forensic Laboratories and by the Auditor General of Ontario in the December 2007 report on the Centre of Forensic Sciences (Ontario). While resource increases could improve throughput to some extent, a significant increase in output to the CSI will also depend upon process and methodology improvements.

Contributing Provinces and Laboratories

Although uncorrected for provincial/regional crime and conviction rates, the following data illustrates the COI and CSI contribution rate comparisons by percentage from the three contributing forensic organizations and regions.

Regions	% of Canadian Population (%)	COI samples from Provinces/Regions (%)	CSI uploads from Labs (%)
Ontario	39	44	39
Quebec	23	17	33
RCMP Jurisdictions	38	39	28

While Ontario's contribution to the COI is slightly higher than its population percentage, Quebec's COI input is lower while its CSI contribution is significantly higher. RCMP jurisdictions follow the general population level in COI contributions but are significantly lower in CSI uploads to the NDDB. This data is empirical in nature and has remained relatively constant over the past several years.

NDDB Effectiveness

In conjunction with this concern and the Advisory Committee's interest in measuring the overall effectiveness of the NDDB, funding by the Department of Justice (DOJ) was approved in 2006 to support a joint study to be led by DOJ and supported by Public Safety Canada (PSC) and the RCMP. The main goal of the study is to assess effectiveness by researching the outcome of matches and eliminations made by the NDDB. It is anticipated that the study will also provide current and perhaps, more accurate data in relation to the number of Primary and Secondary designated convictions and resulting DNA orders that are made across Canada. Part I of the study was completed in 2007. Part II involves a study of data involving Primary designated offences that did not result in the addition of DNA profiles to the NDDB. Completion of Part II and release of the results is expected in late summer to the fall of 2008.

Retroactive Sample Collection

The retroactive sample collection project (which began in 2000) was reconstituted in the spring of 2006, shortly after the passage and Royal Assent of the expanded retroactive provisions contained in Bill C-13. 4,012 offenders were found to qualify for inclusion in the retroactive

category at that time. This number grew to 4,142 when 130 more offenders qualified for inclusion after the passage and Royal Assent of Bill C-18 in January 2008. As of April 2008, over 3,700 criminal history files were reviewed and documented, with applications having been directed to Provincial Attorneys General for processing through the courts and subsequent DNA collection. 2,158 collections are complete with 1,656 still in process. 328 applications were concluded because of refusals to proceed by Attorneys General or because of offender deaths. Approximately 25 files involving offenders convicted outside of Canada and returned by prisoner exchange are still in process. The staff level in the Retroactive Collections Unit has been reduced as the process proceeds to its likely conclusion in early 2009.

Training Program

The Training Unit of the NDDB continues to provide training to police officers and other justice personnel on DNA Legislation and procedures for the proper use of DNA kits for the collection of DNA samples. During the past year, 75 training sessions were held in Manitoba, Saskatchewan, Prince Edward Island, British Columbia, the Yukon and Northwest Territories. Organizations included 11 municipal police services and 64 RCMP Detachments. Crown Prosecutors were also trained in several sessions. Training in the coming years is targeted to include police officers and other justice officials in 7 provinces; Newfoundland & Labrador, Nova Scotia, Nunavut, Saskatchewan, Alberta, Ontario and Quebec. Continued training in the evidence gathering process is extremely important in view of the number of promotions and transfers which routinely occur in police agencies across Canada. As well, the quality of the collection process is becoming more important as DNA analytical procedures become increasingly more sensitive to minute traces of DNA contained in exhibits collected at scenes of crime. Training is also required in relation to the many changes to the *DNA Identification Act, the Criminal Code and the National Defense Act*, all included in Bill C-18, which received Royal Assent in January 2008.

Missing Persons Index

The Advisory Committee continues to follow the progress of discussions between Public Safety Canada (PSC) and the Federal Provincial Territorial (FPT) Working Group in relation to the establishment of a National Missing Persons Index (MPI). It has been and continues to be the Committee's view that an MPI should be national in nature and associated with the NDDB. The Committee is aware that an extensive Process Mapping exercise involving representatives from a number of Federal and Provincial government agencies occurred in 2007, however, there has been very little progress reported to the Committee since that time. It is the Committee's understanding that the issue is still being considered by members of the FPT Working Group.

Biology Casework Analysis Agreements

The Advisory Committee has followed this issue for a number of years and has reviewed both the first and second evaluations of the Biology Casework Analysis Agreements (BCAA's) conducted

in 2002 and 2006 by Consulting and Audit Canada and Government Consulting Services respectively. The latter report identified a number of problems associated with the BCAA's and ultimately recommended that based on the obvious relevance and continuing success of the NDDB, the NDDB should receive permanent allocated funding. Upon expiry March 31, 2007, the BCAA's were extended on an interim basis while the Ministry (PSC) and Provincial/Territorial officials are engaging in ongoing discussions of the BCAA's. The agreements have since been extended again on an interim basis to March 31, 2009. The AC is concerned that permanent allocated funding has not yet been provided to the NDDB. While the RCMP is committed to supporting the NDDB, it would be advantageous to provide permanent funding in order to ensure that this important national service continues with the best opportunity for success based on many competing priorities. Until the funding support is resolved, it is the Advisory Committee's view that the present arrangement is neither progressive nor effective in terms of providing long term stability to an organization which requires the ability to plan for rapid changes in technology and methodology over the coming years. The NDDB must be able to look forward and prepare to research and evaluate new technologies and methodologies which some contributing laboratories are now examining with the expectation that the data generated will be compatible with systems within the NDDB.

DNA Analytical Methodology

At the present time, the NDDB is processing incoming biological samples through the use of two DNA kits; Co-Filer™ (6 loci) and Profiler Plus™ (9 loci, two shared with Co-Filer™). This involves two analyses per sample. Since the kits have two overlapping loci, the net result is a 13 locus DNA profile. The overlapping loci are used as a quality control indicator. At present, the RCMP Laboratories and the Centre of Forensic Science are using only one kit, Profiler Plus™, on casework. Uploads to the CSI therefore consist of 9 locus profiles. The Laboratoire de sciences judiciaries et médicine légale (Montréal) applies both kits to all samples to produce 13 locus profiles, which are then uploaded to the CSI. As DNA data bases continue to grow throughout the world and as countries are moving toward increased international searching of DNA Data Banks, it will become increasingly important to produce DNA profiles with a larger number of loci to allow for more specificity in searching against extremely large data banks, e.g., presently over 5M in the UK and 6M in the USA. In addition, the use of more markers in routine casework, when possible, will provide analysts with a greater degree of certainty when comparing profiles in complex cases. Fifteen locus systems are now being used by The Forensic Science Service in the UK and many US Laboratories have now converted to the same systems. In Canada, both the Laboratoire de sciences judiciaries et médicine légale (Montreal) and the Centre of Forensic Science (Toronto) are nearing the completion of validation testing on the Identifiler™ and Powerplex™ 16 kits. These kits produce 15 locus profiles plus a gender marker. While they do not provide for the 2 locus overlap produced by the dual system above, it is the Committee's opinion after careful consideration, that from a quality assurance perspective, there is really no difference
between Co-Filer™/Profiler Plus™ and Identifiler™ or Powerplex™. At present, the RCMP Laboratories have not yet commenced a formal validation of these analytical systems. As well,

the Toronto and Montreal laboratories are also validating a new system to produce Y-STR profiles. The Y chromosome is passed directly from father to son, so analysis of genetic markers on the Y chromosome is especially useful for tracing relationships among males or for analyzing biological evidence involving multiple male contributors, e.g., mixtures and sexual assault cases. As well, since criminal data banks are generally masculine biased, this technology is now being utilized by many forensic laboratories throughout the world. It is the opinion of the Advisory Committee that the RCMP Laboratories and the NDDB should commence discussions with both the Toronto and Montreal Laboratories through the Canadian Scientific Working Group on DNA Analysis Methodology (CSWGDAM) with a view to establishing a coordinated methodology development and validation plan so as to ensure that the NDDB methodology is consistent and compatible with that being utilized by the three contributing forensic organizations. Several advantages would flow from conversion to a 15 locus system:

- It would provide more data points for comparison and therefore, more discrimination,
- It would allow for comparison of profiles between the NDDB COI and 15 locus crime scene profiles expected to arrive from the Toronto and Montreal laboratories in the near future,
- The analysis would be more cost and time effective by at least 50%, i.e., a single rather than a duplicate analysis,
- It would be more effective when Canada starts to increase its international searching against very large data banks,
- It would free up some staff resources in the NDDB to be utilized on quality assurance, new methodology development and retro conversion of the old data base to the new standard and
- It would provide incentive to the RCMP's regional forensic laboratories to move toward the use of a 15 locus system.

Kinship Analysis (Familial Searching)

As noted in last year's Annual Report, it has been shown that novel searching methods could allow for the expanded use of the NDDB to aid in the identification of possible criminal suspects who may be closely related to known offenders in the COI. This type of analysis has been offered by the Forensic Science Service in the United Kingdom for several years and has led to the successful identification and conviction of several offenders who would have otherwise remained unknown had familial searching not been pursued. This technique has also been used by some States in the USA, e.g., California and Colorado, and has resulted in the highly publicized exoneration of an innocent man who was convicted, sentenced and served 19 years in prison prior to a brother being identified as the guilty party after a kinship analysis was completed. However, it is not presently being used by the FBI. The Advisory Committee is aware that the next major upgrade to the CODIS system now being developed by the FBI will include a software component designed to permit kinship analysis primarily targeted to assist in identifying missing persons. However the same approach could be used for familial searching if the user organization wished to pursue this particular strategy in casework investigations. The use of familial searching against the NDDB is presently not authorized by DNA Legislation in

Canada and was not considered by Parliament during the debates leading up to the passage of the *DNA Identification Act* since the technique was not fully developed at that time. In Canada, the technique was used regionally to solve the 2002 rape and murder of a restaurateur in Alberta. After the victim was found half naked, bloodied, stabbed more than 30 times and strangled, the police obtained a suspect biological sample from the body of the victim from which a DNA profile was developed. There was no other substantial physical evidence. Police collected DNA from a random group of males in the community and scientists found two partial matches, advising the investigators that a male relative of two local men might be linked to the DNA profile removed from the victim. Upon request, the son of one of the two volunteers provided a DNA sample which was then positively matched to the DNA retrieved from the victim. The individual was convicted before a jury in 2005 and sentenced to 25 years without possibility of parole. After being denied a new trial by The Alberta Court of Appeal, the offender has applied to the Supreme Court of Canada for a further hearing.

Since the DNA Identification Act applies only to the NDDB, the use of the partial match technique was available to regional scientists. The NDDB can not release DNA information on an individual who has been eliminated as the source of a DNA sample. From a kinship perspective, this could only currently occur at the NDDB level if a complete match of a CSI profile is made against a twin sibling in the COI, since both siblings have identical DNA profiles.

The FBI recently sponsored a two-day *Familial Searching and Genetic Privacy Symposium* in Arlington, Virginia. DNA, legal and ethics experts from USA, Canada and other countries made presentations in support of and against the use of this technique. Dr. Frederick Bieber, a member of the National DNA Data Bank Advisory Committee, provided an introductory overview of the technology. Those favouring its use outlined many examples of serious crimes which would not have been solved and suspects who would not have been exonerated had the technique not been applied.

Others suggested that the United States have a moral and ethical obligation to utilize data in their criminal data banks to its best advantage in order to solve serious crimes against citizens living within their jurisdictions. Those opposing the use of this technology suggested that the technique was in a fact, a form of genetic surveillance of innocent citizens and that use of the DNA Data Banks for a technique that was neither understood nor authorized by the legislative bodies which passed their original DNA legislation, was unethical if not illegal.

Considerable opposition was also expressed in relation to the apparent over-representation of certain racial minorities within the DNA Data Banks; especially the African-American and Hispanic population in the USA, the suggestion being that both minority groups would be overly exposed to a higher degree of genetic surveillance than the Caucasian population. Although the majority of the symposium attendees supported the use of familial searching to varying degrees, the majority were also of the opinion that legislative bodies should study the issue and authorize a formal process for the use of the technology within their jurisdictions.

The Advisory Committee has followed this issue for several years and is of the general opinion that familial searching could be of benefit to the Canadian justice system if implemented through a controlled process with full recognition of the privacy rights of Canadian Citizens. Parliamentarians may wish to consider authorizing the use of this technology only in unsolved cases falling within the 16 most grave Criminal Code offences for which DNA orders are now automatic upon conviction. Authorization requests for individual cases might therefore be channelled through to Provincial Attorneys General for approval or through a warrant process similar to the existing Criminal Code DNA warrant provisions.

While the Advisory Committee will continue to follow the development of this science throughout the world, it is the Committee's view that this issue should be discussed in a public forum where both the privacy rights of citizens versus the right of the state to utilize this technology in the interests of the justice system can be discussed in some depth. It is the Advisory Committee's understanding that many justice interest groups in Canada would be interested in participating in such a discussion. As well, Parliament may wish to consider the issue during the upcoming DNA Identification Act Parliamentary Review.

International Agreements – Interpol DNA Gateway

On January 1, 2008, new amendments to the DNA Identification Act were proclaimed that enabled the more effective exchange of DNA profiles between the NDDB and foreign police agencies involved in the investigation of criminal offences. The AC has been advised that the technical forensic DNA working group (CSWGDAM) which has representation from all Canadian forensic laboratories will be reviewing changes to international DNA match comparison practices, to ensure conformance with Canadian standards. This work is required to ensure that the Canadian international DNA sharing agreement maintains a high level of genetic and personal privacy protection while affording a common technical standard to permit comparisons to be made between different countries and their respective variations in DNA processes as new technologies evolve. It is noted that potential recommended revisions to the Canadian international DNA sharing agreement would require the support of the Commissioner of the RCMP and the careful review and acceptance of Public Safety Canada and the Department of Justice. Until a technical review is completed on these matters by CSWGDAM, the NDDB advises that it will continue to use the existing reporting process and international agreements to exchange DNA information internationally.

The AC has also been advised by the NDDB that progress on a system to allow electronic exchanges of DNA profiles between G-8 countries has been achieved. This prototype process has a secure channel for direct electronic access between several national DNA data banks and utilizes the Interpol I/24 communication network. Further work is required to ensure that the ease of transmission of DNA investigative data is balanced with a respect for the legislation variations in different countries while maintaining the privacy and security of Canadian DNA information. It is recognized that the electronic submission and comparison of DNA profiles is a significant advantage due to the development of a common accepted standard and the potential

decrease of transcription errors. It is also noted that technical and logistic processes still need to be resolved. Issues such as multiple sample matching searches and the development of an interface to permit CODIS user countries to exchange data with countries that respect the Prüm Agreement represent some of the challenges facing this process.

The AC encourages the additional work on the international exchange of DNA information and that the NDDB's participation in the project should be continued with the expectation of updates to the committee.

Conclusion

The AC has now been monitoring the operations of the NDDB for more than eight years and has met routinely with many representatives of the NDDB, the users of the system and the judicial community. It is the Committee's view that while the NDDB is fulfilling its role effectively and operating appropriately within the provisions of the DNA Identification Act and associated Regulations, the NDDB should commence an evaluation of newer 15 locus DNA analytical systems and Y-STR technology in order to increase the analytical efficiency of the Data Bank as well as the discriminatory power of the DNA profile comparison process. This will equip the NDDB to deal effectively with 15 locus profiles expected to be uploaded from some contributing laboratories in the near future.

FINANCIAL REPORT 2007 - 2008

Financial Report June 2006 - June 2007			
Dates	Expenses	Budget	Balance
2007 October	$12,648.46		
2008 April	$12,401.65		
Total	$25,050.11	$50,000.00	$24,949.89