2015-2016

NATIONAL DNA DATA BANK Advisory Committee

ANNUAL REPORT



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Introduction

The National DNA Data Bank (NDDB) was established pursuant to the *DNA Identification Act* (*DNAIA*), 1998, c.37 and commenced operations in June 2000 under the stewardship of the Royal Canadian Mounted Police (RCMP) on behalf of the Government of Canada. The DNA Data Bank Advisory Committee (NDDB AC) was created pursuant to the *DNA Data Bank Advisory Committee Regulations;* P.C. 2000-635 May 4, 2000 and functions as an independent body to assist the Commissioner of the RCMP in ensuring the NDDB operates in compliance with legislation and regulations. The Advisory Committee's role is also to provide the NDDB with strategic guidance and direction concerning scientific advancements, matters of law, legislative changes, privacy issues, and ethical practices.

The NDDB operates as a national police service available to all Canadian law enforcement agencies and is a component of Forensic Science and Identification Services (FS&IS) under the Specialized Policing Services (SPS) Business Line of the RCMP. The NDDB contributes to the administration of justice and safety of Canadians by assisting in the early identification of those who commit serious crimes across all police jurisdictions in Canada while protecting innocent persons by eliminating suspicion and helping prevent wrongful conviction.

The NDDB is currently comprised of two indices which include the Convicted Offenders Index and the Crime Scene Index:

- The Convicted Offenders Index (COI) is an electronic index that has been developed from DNA profiles collected from offenders convicted of designated primary and secondary offences identified in Section 487.04 of the *Criminal Code of Canada*, which includes certain offences in the *Controlled Drugs and Substances Act;* and,
- The Crime Scene Index (CSI) is a separate electronic index composed of DNA profiles developed by Canada's operational forensic laboratories from crime scene investigations of the same designated offences addressed in the *Criminal Code*.

A snapshot of the activities of the NDDB as noted in the table below demonstrates the contribution the NDDB has made to public safety in Canada since its inception.

Quick Facts

444,152 DNA profiles contained in the NDDB ¹	326,989 DNA profiles contained in the	117,163 DNA profiles contained in the
	21,794	11,556
	Convicted Offender Samples Received in 2015/16 ²	Increase in Crime Scene Index DNA Profiles in 2015/16
5,622	5,044	578
Investigations Assisted by the NDDB in 2015/16 (Offender and Forensic Hits)	Offender Hits (Convicted Offender to Crime Scene) in 2015/16	Forensic Hits (Crime Scene to Crime Scene) in 2015/16
44,016	39,539	4,477
Investigations assisted by the	Offender Hits since June 30, 2000	Forensic Hits Since June 30, 2015
NDDB since June 30, 2000 (Offender and Forensic Hits)		

¹If no date range is specified the data refers to the period from June 30, 2000 through March 31, 2016

²2015/16 refers to the NDDB's fiscal year from April 1, 2015 through March 31, 2016

As of March 31, 2016, the NDDB contained 444,152 DNA profiles which include 326,989 in the Convicted Offender Index and 117,163 in the Crime Scene Index. The following graph demonstrates the significant growth in entries to the NDDB since its inception.



Samples Received in the NDDB

The NDDB assists law enforcement agencies in solving crimes by:

- Linking crimes together where there are no suspects (CSI to CSI match)
- Helping to identify suspects (CSI to COI match and/or CSI to CSI match)
- Eliminating/exonerating suspects (no match between crime scene DNA (CSI) and COI profile in the NDDB)
- Determining whether a serial offender is involved

In the 2015/16 fiscal year, there were 5,044 Offender hits (Convicted Offender to Crime Scene) and 578 Forensic Hits (Crime Scene to Crime Scene) for a total of 5,622 hits that assisted police investigations. The overall growth in both Offender and Forensic hits since the NDDB's creation, as shown below, has contributed significantly to public safety over the years.



Growth in Offender and Forensic Hits

Crime scene samples are analyzed and the DNA profiles are uploaded to the NDDB by the three Canadian forensic laboratory systems:

- The RCMP Forensic Science and Identification Services (FS&IS) has sites in Ottawa, Edmonton, and Vancouver
- The Centre of Forensic Sciences (CFS) in Toronto and Sault Ste. Marie
- The Laboratoire de sciences judiciaires et de médicine légale (LSJML) in Montréal

With respect to CSI samples, the NDDB retains the electronic DNA profile information as well as basic details such as the date, location of the submitting laboratory and a unique number identifier that allows information to be compared by the submitting laboratory in the event of a future match.

Biological samples collected from convicted offenders across Canada are processed by the NDDB and the resulting DNA profiles are entered into the COI. It is important to note that convicted offender samples are identified simply by a bar code number. The donor identity of a convicted offender is separated from the genetic information when the biological sample arrives at the NDDB. The bar code is the only link between personal information, the biological sample, and the DNA profile. The personal information is not available to the NDDB staff and is kept in a separate registry by the RCMP's Canadian Criminal Real Time Identification Services.

The procedures and policies at the NDDB demonstrate its commitment to scientific rigour and protecting the privacy rights of individuals as required by the DNA Identification Act.

National DNA Data Bank Advisory Committee

The National DNA Data Bank Advisory Committee (NDDB AC) was formalized under the authority of the *DNA Data Bank Advisory Committee Regulations*. The Committee members are recommended by the Commissioner of the RCMP and appointed by the Minister of Public Safety for a five year term that can be renewed. There are currently eight members of the Committee who have varied backgrounds including law, science, privacy, law enforcement, and ethics. Members of the 2015-2016 Committee are:

Garry LOEPPKY, O.O.M. (Chairperson) Deputy Commissioner (Rtd), served with the RCMP for 34 years. Throughout his career, D/Commr. Loeppky was responsible for coordinating and leading major investigations on both domestic and international levels. He worked with numerous foreign law enforcement organizations and has lectured in Europe and a number of other countries including Canada, Australia and the United States.

Gisèle CÔTÉ-HARPER, O.C., Q.C. (Vice-chairperson) Barrister and Emeritus Professor at the Faculty of Law, University of Laval, Sainte-Foy, Quebec. Madame Coté-Harper is recognized nationally and internationally as a legal expert on Human Rights issues and is a graduate of Harvard Law School.

Dr. Frederick BIEBER, Associate Professor of Pathology at Harvard University, Boston, Massachusetts. Dr. Bieber is a medical geneticist and specialist in bio-medical ethics. He has an extensive background in genetics research and has been involved in DNA related projects with academic and law enforcement agencies throughout his career. **Dr. William S. DAVIDSON,** Medical Genetics Specialist and Professor of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, B.C., Dr. Davidson has published widely in the area of molecular evolution, population genetics, genomics, and human genetics.

Dr. Ron FOURNEY, O.O.M. Director, Science and Strategic Partnerships, Forensic Science and Identification Services, RCMP. Dr. Fourney is a research scientist and a founding member of Canada's forensic DNA program. He has been instrumental in the development and implementation of forensic DNA typing for Canada.

Dr. Anjali MAZUMDER, Research Fellow in the Department of Statistics at the University of Warwick. Dr. Mazumder has published widely in the fields of forensic DNA identification and value of evidence analysis using probabilistic expert systems and best practices in forensic science. She holds a Doctorate in Statistics from the University of Oxford.

Derrill PREVETT, Q.C. J.D (University of British Columbia), Retired Crown Counsel, Criminal Justice Branch of the British Columbia Ministry of the Attorney General. Mr. Prevett has 37 years legal experience and has prosecuted complex homicide cases where DNA was used as the sole evidence identifying the perpetrators. He also served on national committees where he was responsible for ensuring consistent implementation of DNA legislation and making recommendations to Parliament regarding the NDDB.

Patricia KOSSEIM, Senior General Counsel and Director-General, Legal Services, Policy, Research and Technology Analysis Branch, Office of the Privacy Commissioner of Canada. Ms. Kosseim is responsible for providing strategic legal and policy advice on privacy issues and represents the Privacy Commissioner before courts and Parliamentary Committees.

All seats on the Committee are now occupied and are not set to expire before the end of 2016.

Contributors to the National DNA Data Bank Advisory Committee Meetings April 30/May 1 2015 Meeting:

D/Commr. Peter Henschel	RCMP, Specialized Policing Services (SPS)
A/Commr. François Bidal	RCMP, Forensic Science & Identification Services (FS&IS)
Dave Morissette	RCMP, FS&IS
Justin Ducette	RCMP, Strategic Policy and Integration (SP&I)
Jeremy DeMan	RCMP, Legal Services
Greg Yost	Department of Justice
Angela Bressan	Department of Justice
Derek Pongray	Public Safety Canada

Carole Bird	RCMP, National Centre for Missing Persons and Unidentified
	Remains (NCMPUR)
Kevin O'Shea	RCMP (NCMPUR)
Candace Stewart	RCMP, Integrated Forensic Identification Services (IFIS)
Christine Jolicoeur	Laboratoire de sciences judiciaires et de médecine légale (LSJML) and Canadian Scientific Working Group on DNA Analysis Methods (SWGDAM) Chair

October 1-2, 2015 Meeting:

D/Commr. Peter Henschel	RCMP Specialized Policing Services
A/Commr. François Bidal	RCMP, FS&IS
Dave Morissette	RCMP, FS&IS
Jeff Modler	RCMP, FS&IS
Jane Boissoneault	RCMP, NCMPUR
Kevin O'Shea	RCMP, NCMPUR
Candace Stewart	RCMP, IFIS
Justin Ducette	RCMP, SP&I
Jeremy DeMan	RCMP, Legal Services
Sarah Hagen	RCMP, Legal Services
Greg Yost	Department of Justice
Derek Pongray	Public Safety Canada
Director Tony Tessarolo	Centre of Forensic Science, Toronto

February 25-26, 2016 Meeting:

D/Commr. Peter Henschel	RCMP Specialized Policing Services
A/Commr. François Bidal	RCMP, FS&IS
Dave Morissette	RCMP, FS&IS
Jeff Modler	RCMP, FS&IS
Michael Holmes	Public Safety Canada
Greg Yost	Department of Justice
Roland Gosselin	RCMP (NCMPUR)
Kevin O'Shea	RCMP (NCMPUR)
Dean Hamel	RCMP (SP&I)
Heather J MacDonald	RCMP (Procurement and Contracting Branch)
Christine Jolicoeur	Laboratoire de sciences judiciaires et de médecine légale
	(LSJML) and Canadian Scientific Working Group on DNA Analysis
	Methods (SWGDAM) Chair
Mark Wilson	(Battelle) By teleconference
Richard Guerrieri	(Battelle) By teleconference

NDDB Advisory Committee Report

This report covers the period from April 2015 to March 2016. During this period of time, the NDDB AC held three meetings in Ottawa on dates and with participants as noted above. The Committee also held a teleconference on July 13, 2015. The meetings included updates on the operations and performance of the Data Bank covering statistical updates, ongoing activities and initiatives. The committee also received updates from the Canadian Scientific Working Group on DNA Analysis Methods (SWGDAM), Public Safety Canada, and the Department of Justice on initiatives and research in their respective areas impacting the NDDB. The Office of the Privacy Commissioner of Canada gave a presentation at one of the meetings which provided the Committee with a broad overview of genetic privacy in Canada and its implications for the NDDB, especially with regard to legislation related to missing persons. Presentations and discussions at each meeting focused on providing guidance and input on the new National Missing Persons DNA Program which is scheduled to be operational by April 01, 2017. The Committee also heard presentations on the evolving technology related to DNA in terms of analytical response times and increased efficiency from a leading edge private research corporation, and updates from the Centre of Forensic Science with respect to implementation of Rapid Hit DNA Technology and research on the new rapid DNA screening of crime scene samples.

Key issues and highlights of the presentations and their potential impact to the NDDB are further elaborated in this report.

Meeting Cost

The total expense for the meetings held in fiscal year 2014/15 was \$52,045.81

NDDB Year End Summary

The NDDB AC was created under the authority of the *DNA Data Bank Advisory Committee Regulations* sixteen years ago, and since that time has closely monitored the operations of the NDDB and provided advice and guidance when and where appropriate. The science of DNA and the technology related to its use continues to evolve at an unprecedented pace, and the involvement of Committee members in international forums, conferences, and the knowledge which they impart to the Committee from their own careers continue to enlighten the Advisory Committee as a whole to remain current with the evolving science and related technology. Members have been invited to present professional papers or facilitate DNA working groups at national and international meetings or conferences and this information is shared with the NDDB AC. In July 2015, several members attended the Green Mountain DNA Conference in Vermont. New technologies focusing on innovations in the field of DNA were presented and discussed such as Next Generation Sequencing (NGS), which resulted in a presentation to our Committee by the company involved in its development at our February 2016 meeting. This technology allows scientists to sequence DNA much more quickly and at a reduced cost than previously used methods, and will impact the NDDB as it evolves. Another of our Committee members was appointed to the United States National Commission on Forensic Science which was created pursuant to a report by US National Academy of Science to review forensic science practices, policies, and procedures related to the criminal justice system. Participation in forums such as these ensures the Advisory Committee maintains a leading edge approach with respect to international developments in DNA.

In 2014, Dr. Tom Callaghan, Senior Chief Scientist with the FBI Laboratory updated the Committee with respect to Rapid DNA (RDNA) research by the FBI and the potential of processing DNA samples at time of arrest for direct searching with the US national DNA database. This project was in its early stages, but the Advisory Committee has continued to follow the development of RDNA and received a presentation from the Centre of Forensic Science in 2015 outlining its research, validation, and implementation plans for RDNA technology. It will be important to monitor the progress and assess the impact from both an efficiency and privacy perspective.

The Advisory Committee is pleased to note the continued commitment to training by the NDDB. This ensures that the collection of biological samples from convicted offenders is done professionally and in compliance with standards and legal parameters. It also reduces submission errors which result in rejections and reduced efficiency. In the 2015/16 fiscal year, training was provided in Ottawa to DNA Coordinators from Ontario, Alberta, and British Columbia. On-site training was delivered in Quebec, New Brunswick, Prince Edward Island and Alberta. An online training program is also being developed for both RCMP and non-RCMP clients to enhance knowledge in DNA collection. It is anticipated that this program will be ready for testing in the 2016/17 fiscal year.

During the 2015/2016 timeframe covered by this report, the NDDB adopted and implemented new processes and technologies that will position it to meet future demands, especially with the passage of legislation which will create additional DNA indices related to missing persons and unidentified human remains investigations. New robotics workstations, coupled with a sophisticated Sample Tracking and Control System (STaCSTM) DB Enterprise that was upgraded in 2014, allow the NDDB to rapidly and efficiently process DNA samples while ensuring the integrity of the process is maintained. STaCSTM provides for enhanced kit reception, increased flexibility for developing reports and future technology changes. This system will also accommodate the requirements necessitated by the new DNA indices related to missing persons and unidentified human remains investigations. The NDDB also introduced the AmpFLSTR[®] Identifiler[®] Direct PCR Amplification kit which increases discriminating power of DNA analysis, reduces processing time per sample and improves the quality of DNA profiles.

Implementation of this kit has reduced the rate of sample re-work to obtain profiles from 6.7% down to 1.8%. It should also be noted that the PowerPlex[®] 16 HS kit has been validated and is used as a quality control check at this time. The NDDB has also upgraded the Combined DNA Index System (CODIS) a software package that stores and compares profiles and is a universally accepted tool for forensic laboratories. This upgrade will allow for the enhancement of information exchange between by the three Canadian forensic laboratory systems and the NDDB.

Following significant consultation and dialogue, Canadian SWGDAM developed and submitted the technical requirements for NDDB DNA Data Acceptance Standards. The Advisory Committee was consulted throughout and supported the development of the Standard, which was recently approved by the Officer in Charge of FS&IS, Assistant Commissioner François Bidal. This document defines the upload requirements for single source and mixed DNA profiles and ensures the reliability, accuracy and compatibility of DNA records in the CSI and COI of the NDDB. The technical components have been accepted by all three CODIS participating laboratories and took effect on April 1, 2016. It is recognized that as the five new DNA indices are implemented in support of both the Missing Persons legislation and current operations, the Standard will require amendments to define the requirements for DNA profile entry into the new DNA indices; including profiles developed using other technologies.

In 2014, a memorandum of agreement was signed for the International Search Request Network for enhanced electronic sharing of DNA information between the United Kingdom, United States and Canada as part of a G8 sponsored country to country initiative. In 2015, Australia also signed this memorandum of agreement. This protocol requires the same privacy safeguards internationally as respected by Canada and reduces the time to report a DNA match. The NDDB also shares DNA information through an international agreement with INTERPOL which was approved by the Government of Canada in 2002. The INTERPOL DNA Sharing Agreement respects the privacy and security of the individual by closely monitoring the exchange of the DNA information and strictly limits the use of that information to the investigation and prosecution of criminal offences. Since 2002 when the first international DNA exchange agreement was signed, the NDDB has received 1500 incoming requests to search its DNA indices resulting in 5 Offender Hits and 9 Forensic Hits. In the same time frame, the NDDB has sent 236 requests to other countries for comparison of DNA profiles developed from crime scene samples resulting in 4 Offender Hits and 2 Forensic Hits.

To address recent changes in DNA technology, a Privacy Impact Assessment (PIA) for the National DNA Data Bank was completed and submitted to the Office of the Privacy Commissioner. The Privacy Commissioner completed its review of the PIA and issued formal recommendations in 2015. It is recognized, however, that amendments will be required to address issues that arise with the creation of new DNA indices pursuant to the passage of new legislation (Bill C-43, *Economic Action Plan, No.2*) with respect to the DNA profiles of missing persons and unidentified human remains.

The Advisory Committee has carefully monitored the progress of the NDDB as it prepares to implement legislation created by Bill C-43 relating to the expanded use of DNA profiles in Canada. We are confident that the NDDB has identified the various technical, scientific, training, policy and ethical issues that need to be addressed, and are actively working on them as they prepare for the implementation date of April 1, 2017.

National Missing Persons DNA Program

The NDDB AC had advocated for a Missing Persons DNA Program since 2003 when it thoroughly examined the humanitarian, scientific, privacy and law enforcement principles (including legal, ethical, governance and policy issues) relating to the creation of the Program. As noted in previous annual reports, the NDDB is a proven facility with an exemplary track record and the Committee did not see any privacy or security obstacles with the NDDB taking on the additional responsibilities of a Missing Persons DNA Program, should such a program be established.

On October 23, 2014, amendments to the *DNA Identification Act (DNAIA)* were tabled in Parliament in Bill C-43, *Economic Action Plan, and No.2*. The new legislation supports investigations of missing persons and unidentified human remains through the creation of a DNA-Based Missing Persons Program, now known as the National Missing Persons DNA Program (NMPDP). The legislation amended the *DNA Identification Act* to expand the number of DNA indices in the NDDB. In addition to the existing Crime Scene and the Convicted Offenders indices, the legislation created three new humanitarian DNA indices (Missing Persons Index, Relatives of Missing Persons Index, and Human Remains Index) and two DNA indices to strengthen support provided to criminal investigations (Victims Index and Voluntary Donors Index). Legislation and Regulations (which are currently being drafted) governing the National Missing Persons DNA Program are designed to protect Canadians' privacy interests through safeguards that aim to ensure that DNA profiles contained in the NDDB are used only for their intended purpose.

Bill C-43 received royal assent on December 16, 2014, and leverages the expertise and coordination of the RCMP National Centre for Missing Persons and Unidentified Remains (NCMPUR) for missing person investigations and the scientific and technical expertise of the NDDB for the forensic application of DNA analysis. The NMPDP represents a collaboration interaction of both RCMP programs and is anticipated to become operational in the spring of 2017 following the drafting of regulations in consultation with representatives from the RCMP, Public Safety, and the Department of Justice.

The Advisory Committee dedicated considerable time and effort during each meeting to assess progress on the development of regulations, policies, technology, privacy implications, and level of readiness by the NDDB for a start-up date of the NMPDP on April 1, 2017.

Sections 5.4 (*Written Consent*) and 8.1(3) (*Periodic Removal*) of the *DNA Identification Act* (DNAIA) require that regulations be drafted to mitigate legal and privacy concerns associated with the expanded use of DNA. Two new regulations will be required to address these concerns. The first regulatory amendment will outline the essential elements of informed consent that must be met before a DNA profile can be voluntarily added to the NDDB to support either criminal or humanitarian investigations. The Advisory Committee provided advice and guidance with respect to what constituted informed consent, opportunities for withdrawal of consent, DNA sample and profile destruction following withdrawal of consent and management of incidental findings. Additional advice was also provided regarding the need for a new consent in past missing persons investigations where the original sample was provided prior to the amended legislation coming in to force."

The Committee also offered guidance with respect to the need for specialized training for investigators involved in dealing with families of missing persons to ensure a clear understanding of informed consent and potential implications of DNA analysis such as the determination of incidental findings. It was also pointed out that, when DNA profiles created as a result of the new DNA indices are shared internationally pursuant to international agreements, new provisions must be developed to ensure the privacy and security of the missing person DNA information respects the requirements of the new amended legislation.

A second regulatory amendment associated with the new legislation will establish timeframes for the periodic removal of DNA profiles from certain DNA indices within the NDDB. The Committee provided advice with respect to timeframes for the removal of profiles for the five new DNA indices, always bearing in mind the privacy impact and rights of the individual and the ongoing investigational needs. The Committee also offered guidance in dealing with issues such as renewing consent or the removal of DNA profiles when individuals reached the age of majority if the DNA sample had been obtained from a youth.

The Committee understands that Provinces and Territories will be responsible for the collection and processing of DNA samples related to the new humanitarian DNA indices, and that they will have the option of using their own procurement process or using the procurement vehicle that is currently being developed by the RCMP. The Advisory Committee has expressed its concern with respect to issues such as protection of personal information and privacy implications with biological samples and subsequent DNA information if the analytical service is conducted outside of Canada. Should samples be sent abroad for analysis, it will also be important to ensure that the DNA profiles, remaining biological samples and associated information are destroyed if consent is withdrawn. It is also acknowledged that technical audits will be required to ensure that the service provided by private laboratories must meet an acceptable standard prior to entry in to the NDDB.

The Advisory Committee reviewed the current DNA *Data Bank Advisory Committee Regulations* (SOR/2000-81) and the changes to the *DNAIA* to ensure that there was sufficient direction and clarity for the Committee to provide advice with respect to the role of the NDDB and the new indices that have been created. It is clear that Section 5. *Duties of the Advisory Committee* of the *Regulations* provides that authority, but the Advisory Committee will re-examine their Terms of Reference and propose amendments if necessary.

Department of Justice / Ontario Provincial Police Research Project

In May 2014, the Advisory Committee was advised by the Department of Justice (DOJ) officials that Support had been received for a research project to be undertaken to demonstrate the probative value of forensic DNA and the role it played in promoting public safety. The Advisory Committee had identified this as a priority for several years while also acknowledging the challenges associated with such a project. The Ontario Provincial Police (OPP) was very supportive and offered their full cooperation to the DOJ in this endeavour. The Committee was solicited for input into the research questionnaire at the commencement of the study.

The study examined the impact of DNA COI offender hits on 286 OPP investigations from 2009-2011. The COI hit helped confirm the identity of a known suspect in one half the cases and an unknown person in one third of the cases. In 1% of the cases, the hit disproved the involvement of a person of interest, thereby exonerating the individual. In 87% of the cases where charges were laid after a DNA hit, a conviction resulted with 66% pleading guilty before trial and another 12% pleading guilty at trial and 9% being found guilty following trial. Most investigators were of the view that DNA evidence was essential in solving the case by focusing investigations and identifying suspects in a more expeditious manner which resulted in laying charges earlier in the process, eliminating lengthy trials, and enhancing public safety.

The Advisory Committee applauds the work of the Department of Justice and the OPP in undertaking a project which demonstrates the significant contribution of Canada's DNA program in enhancing public safety and promoting efficiency within the justice system.

Familial Searching

Familial Searching involves the additional search of forensic DNA databases for purpose of identifying close biological relatives to the individual who contributed an unknown forensic sample associated with a crime scene profile. In jurisdictions that permit it, the familial search

process is only used after a routine search of a DNA database has been completed and no exact profile matches are identified during the process. The DNA profile found at a crime scene is compared against a forensic DNA database such as the convicted offenders DNA index to identify DNA profiles that share close genetic DNA similarities to an existing offender DNA profile. In practical terms, familial searching may provide investigative leads to parents, children or siblings that would not have been possible through other investigative practices.

Familial searching has been utilized in some jurisdictions in the United States and the United Kingdom to create new investigative leads for heinous crimes where all other leads have been exhausted. Over 80 of the most serious cases have been solved through the use of familial searching in these countries¹. The Advisory Committee has studied and deliberated the potential use of familial searching from a Canadian perspective. In 2010 the Standing Senate Committee on Legal and Constitutional Affairs recommended that the Department of Justice study the matter to determine how to craft a provision that would balance the need to protect society, the need to protect privacy rights and the need to protect the presumption of innocence as it relates to familial searching.

It is acknowledged that the *DNAIA* legislation currently does not permit familial searching in the NDDB. Without amendments to the *Act*, the NDDB cannot report on complex DNA match comparisons associated with a CSI DNA profile that has excluded all members of a large forensic DNA database but has a likelihood of a similar DNA profile matching a family member. The Advisory Committee is keenly aware of achieving the proper balance between protecting the privacy of the individual and the overall protection of society when investigating the most serious offences. The Committee supports the concept of familial searching where all other investigative steps have been tried and failed but notes that safeguards must be developed to ensure that each request meets the criteria for a familial search.

Canadian Scientific Working Group on DNA Analysis Methods (SWGDAM)

Canadian SWGDAM, comprised of scientists from all three Canadian forensic laboratory systems, is responsible for researching, reviewing, and providing recommendations on issues related to evolving DNA science, policy, and technology. One significant accomplishment of Canadian SWGDAM was the completion and acceptance of the Canadian DNA Data Acceptance Standards for the addition of DNA profiles to the NDDB. Canadian SWGDAM is an important resource for the AC in terms of evolving issues and challenges as it relates to the science and technological developments in the world of forensic DNA.

¹ C.N. Maguire, L.A. McCallum. C. Storey and J.P. Whitaker. Familial Searching: A specialist forensic DNA profiling service utilising the National DNA Data Base to identify unknown offenders via their relatives - The UK Experience. For. Sci. Int. Gen. 2014 (8): 1-9.

Biology Casework Analysis Agreements (BCAAs)

Public Safety officials, in conjunction with the RCMP worked collaboratively with RCMP Contract jurisdiction representatives to ensure the sustainability of forensic DNA services. The affected provinces and territories have agreed to new ten year agreements, which will ensure an appropriate and stable funding structure for the next decade as it relates to forensic DNA analysis provided by National Forensic Laboratory Services. Public Safety officials worked with Ontario and Quebec officials resulting in five year agreements being signed with those Provinces which will result in stable funding for DNA services providing by their laboratories.

Centre of Forensic Sciences (CFS)

The Director of the CFS provided an overview of recent initiatives which will reduce turn-around times for high profile, time-dependent DNA casework. The validation of RapidHIT technology in 2015 to allow rapid DNA profiling has resulted in same day results for specific types of evidence samples. He outlined plans for deployment and implementation of Rapid DNA as validations take place.

In a similar manner to LSJML, the CFS has also created a Voluntary DNA Index for police officers to more readily detect instances of contamination which may occur with the handling of evidence prior to its submission to the forensic laboratory. The CFS and LSJML should be commended for establishing this program since contamination can inadvertently take place even with the best mitigation policies and procedures in place, and eliminating a profile as a result of contamination eliminates that particular profile and allows a clearer focus in the investigation.

Next Generation Sequencing (NGS, also called massive parallel sequencing)

A presentation by representatives on NGS from Battelle Corporation, a leading research and development company in the field of science and innovation, provided a window into the future of DNA analysis. While NGS is not yet used in a forensic environment, the advantages are significant in terms of turn-around times, greater sensitivity with degraded samples, deconvolution of mixtures, and a variety of tests that can be conducted on a sample in one run rather than conducting individual tests. It is critical that Committee members have an understanding of technological and scientific changes that will impact on Canada's DNA program which allows it to give due consideration to the legal, ethical, and privacy issues involved.

Conclusions for 2015-16

The Advisory Committee has had considerable interaction with representatives of the NDDB over the past year, both in terms of exposure to advancements and changes in technology, as well as development of policies and procedures that will support the legislation creating the National Missing Persons DNA Program. It is evident that a great deal of cooperation and effort has been put forward by the NDDB and NCMPUR to achieve the intended purpose of the legislation in supporting investigations of missing persons and unidentified human remains while remaining highly sensitive to the privacy of individuals.

Since its creation in 2000, the NDDB has played a vital role in solving crime and contributing to the safety of Canadians. Clear evidence of the contribution of DNA to resolution of crime through the DOJ/OPP study demonstrates the importance and value of a professional forensic science program, and the Committee has full confidence in the dedication and contribution of the NDDB staff to that objective.

The Committee would like to acknowledge and thank employees of the NDDB, Public Safety, the Department of Justice, forensic and police partners as well as other contributors to the Advisory Committee for their outstanding support and cooperation which greatly enhance deliberations and provides the basis for our discussions, deliberations, and recommendations.

G.J. Loeppky Chairperson National DNA Data Bank Advisory Committee