

2016-2017

NATIONAL DNA DATA BANK
ADVISORY COMMITTEE

ANNUAL REPORT

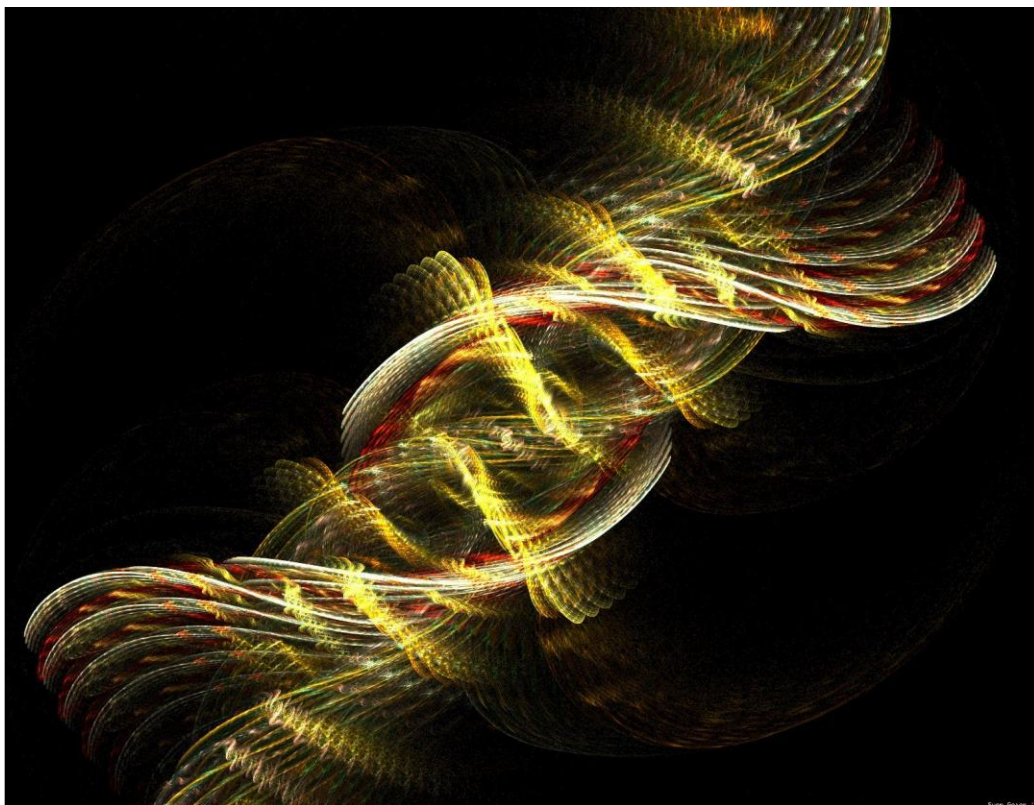


Table of Contents

Introduction	2
Quick Facts	3
Samples Received in the NDDB.....	3
Growth in Offender and Forensic Hits	4
National DNA Data Bank Advisory Committee	6
Contributors to the National DNA Data Bank Advisory Committee Meetings.....	7
NDDB Advisory Committee Report.....	8
Meeting Costs	9
NDDB Year End Summary	9
National Missing Persons DNA Program.....	11
Department of Justice.....	14
Canadian Scientific Working Group on DNA Analysis Methods (SWGDM).....	14
Centre of Forensic Sciences	14
Missing Persons and Unidentified Remains – Chief Coroner’s Office	15
Ethics and Consent in Genetics.....	15
Retraction Watch	15
Conclusions	16

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 NDDB 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 NDDB AC'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 NDDDB noted in the table below demonstrates the contribution the NDDDB has made to public safety in Canada since its inception.

Quick Facts

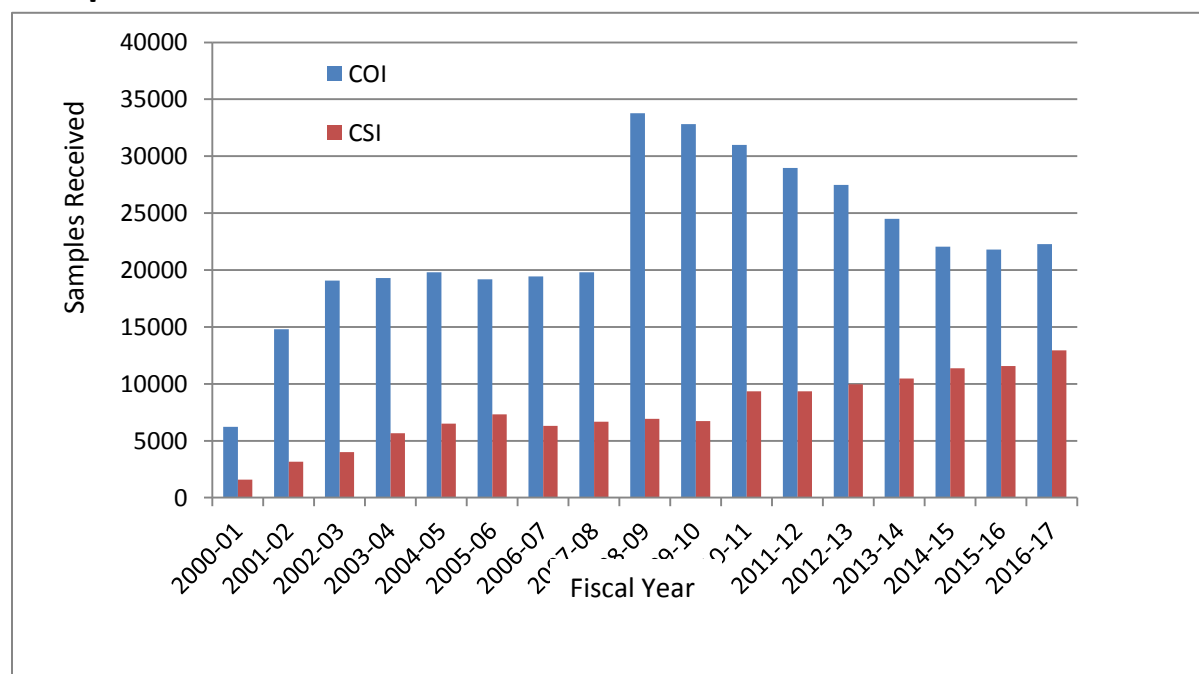
476,260 DNA profiles contained in the NDDB ¹	346,160 DNA profiles contained in the Convicted Offenders Index	130,100 DNA profiles contained in the Crime Scene Index
	22,388 Convicted Offender Samples Received in 2016/17 ²	12,937 Increase in Crime Scene Index DNA Profiles in 2016/17
5,508 Investigations Assisted by the NDDB in 2016/17 (Offender and Forensic Hits)	4,946 Offender Hits (Convicted Offender to Crime Scene) in 2016/17	562 Forensic Hits (Crime Scene to Crime Scene) in 2016/17
49,524 Investigations assisted by the NDDB since June 30, 2000 (Offender and Forensic Hits)	44,485 Offender Hits since June 30, 2000	5,039 Forensic Hits Since June 30, 2000

¹If no date range is specified the data refers to the period from June 30, 2000 through March 31, 2017

²2016//17 refers to the NDDB's fiscal year from April 1, 2016 through March 31, 2017

As of March 31, 2017, the NDDB contained 476,260 DNA profiles which include 346,160 in the Convicted Offender Index and 130,100 in the Crime Scene Index. The following graph demonstrates the significant growth in samples submitted and crime scene DNA profiles developed for the NDDB since its inception.

Samples Received in the NDDB

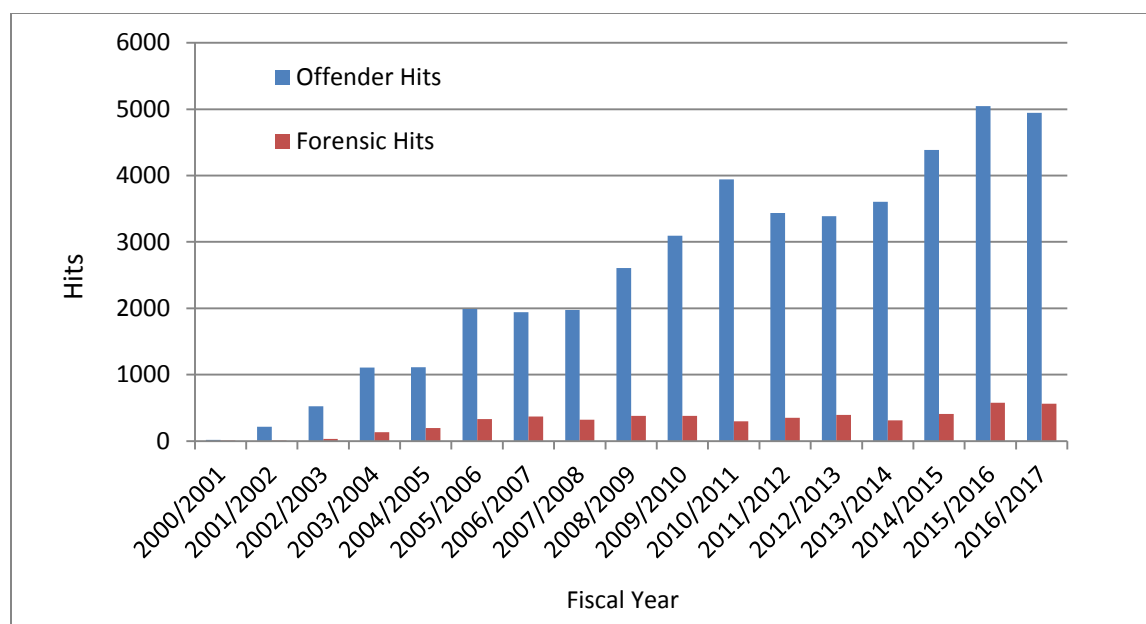


The NDDDB assists law enforcement agencies in solving crimes by:

- 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 NDDDB); and,
- Determining whether a serial offender is involved.

In the 2016/17 fiscal year, there were 4,946 Offender hits (Convicted Offender to Crime Scene) and 562 Forensic Hits (Crime Scene to Crime Scene) for a total of 5,508 hits that assisted police investigations. Unfortunately, what cannot be measured is the number of suspects that were eliminated or police investigations refocused when no match took place. 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, Ontario.
- The Laboratoire de sciences judiciaires et de médecine légale (LSJML) in Montréal, Québec.

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 sample unique number (SUN) specified by a bar code. The donor identity of a convicted offender is separated from the genetic information when the biological sample arrives at the NDDB. The SUN (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 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, human rights, statistics, and ethics. Members of the 2016/2017 Committee are:

Garry LOEPPKY, O.O.M. (Chairperson) Deputy Commissioner (Rtd), served with the RCMP for 34 years. Throughout his career, D/Commr. Loepky 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 Côté-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, Assistant Research Professor, Statistics Department, Carnegie Mellon University. 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, Office of the Privacy Commissioner of Canada (OPC). Ms. Kosseim specializes in privacy, health law and ethics. Prior to OPC, she worked at Canadian Institutes for Health Research and Genome Canada, as well as in private law practice. She is a graduate of McGill University and King's College, University of London, UK.

All seats on the Committee are now occupied and are not set to expire before the end of 2017.

Contributors to the NDDB AC Meetings

July 20, 2017 Teleconference

Dean Hamel	RCMP, Specialized Policing Services
Dave Morissette	RCMP, Forensic Science and Identification Services
Jeff Modler	RCMP, Forensic Science and Identification Services
Roland Gosselin	RCMP, National Centre for Missing Persons and Unidentified Remains
Kevin O'Shea	RCMP, National Centre for Missing Persons and Unidentified Remains

October 20/21, 2016 Meeting:

Mr. Tony Tessarolo	Director, Centre of Forensic Sciences
Jonathon Newman	Centre of Forensic Sciences
Neil Fernandopulle	Centre of Forensic Sciences
Jack Liard	Centre of Forensic Sciences
Dr. Kathy Gruspier	Forensic Anthropologist, Ontario Forensic Pathology Services,
Dr. Michael Szego	Centre of Clinical Ethics, University of Toronto
Dave Morissette	RCMP, Forensic Science and Identification Services
Jeff Modler	RCMP, Forensic Science and Identification Services
Roland Gosselin	RCMP, National Centre for Missing Persons and Unidentified Remains
Greg Yost	Department of Justice
Mr. Andrew Patrick	Office of the Privacy Commissioner

By Teleconference:

Dr. Thomas Callaghan	Federal Bureau of Investigations, US Department of Justice
Reama Khayat	RCMP, Specialized Policing Services
Chris Lynam	RCMP, Specialized Policing Services

March 2/3, 2017 Meeting:

D/Commr. Peter Henschel	RCMP, Specialized Policing Services
A/Commr. François Bidal	RCMP, Forensic Science and Identification Services
Jeff Modler	RCMP, Forensic Science and Identification Services
Roland Gosselin	RCMP, National Centre for Missing Persons and Unidentified Remains
Jeremy DeMan	RCMP, Legal Services
Greg Yost	Department of Justice
Reama Khayat	RCMP, Specialized Policing Services

By Teleconference:

Neil Fernandopulle	Canadian SWGDAM Chair
Dr. Ivan Oransky	Co-Founder, Retraction Watch

NDDB AC Report

This report covers the period from April 2016 to March 2017 during which the NDDB AC met three times. The first meeting was by teleconference on July 20, 2016, the second meeting was hosted by the Centre of Forensic Science (CFS) in Toronto on October 20/21, 2016, and our third meeting was held in Ottawa on March 2-3, 2017. At each meeting the NDDB AC was briefed on the operations and performance of the NDDB including statistical updates, ongoing activities, initiatives and challenges. The committee also received updates from the Canadian Scientific Working Group on DNA Analysis Methods (SWGDAM) and the Department of Justice on initiatives and research in their respective areas impacting the NDDB as well as potential legislative amendments which would enhance the effectiveness of the NDDB.

Presentations and discussions at each meeting focused on providing guidance and input on the new National Missing Persons DNA Program (NMPDP) which had a previously reported planned implementation date of April 2017. The Government of Canada over the past year undertook a review of the service delivery model to ensure the most effective and optimal use of this new program and plans to implement in 2018. This has allowed an in-depth review and a greater opportunity for the NDDB AC to provide guidance and feedback as policies and procedures are developed. The NDDB AC also benefited from a presentation outlining ethical challenges and consent issues in genetics which have been the subject of discussions at our meetings as it relates to the NMPDP.

Evolving technology related to DNA in terms of Rapid Hit DNA and Next Generation Sequencing provided the Committee with insight into the future applications and utilization of the science. The NDDB AC also received a presentation highlighting the Retraction Watch program tracking fraudulent publications and how this impacts on the credibility and legitimacy of scientific research and the potential credibility of science and expert testimony. Key issues and highlights

of the presentations and their potential impact on the NDDB are further elaborated in this report.

Meeting Cost

The total expense for the meetings held in fiscal year 2016/2017 was \$27,416.14.

NDDB Year End Summary

The NDDB AC was created under the authority of the *DNA Data Bank Advisory Committee Regulations* seventeen years ago and since that time has closely monitored the operations of the NDDB, provided advice and guidance when and where appropriate, and advanced recommendations to enhance the effectiveness and efficiency of the NDDB. 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 NDDB AC 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. Reports from scientific and professional conferences such as the Green Mountain DNA Conference in 2016 focused on evolving technologies and applications in the field of forensic DNA which directly impact the knowledge level and awareness of all NDDB AC members. One 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, and charged with the review of forensic science practices, policies, and procedures related to the criminal justice system. Participation in forums such as these ensures the NDDB AC maintains a leading edge with respect to international and national developments in DNA and its forensic applications as well as associated issues concerning genetics, ethics and privacy.

The NDDB AC 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 scientific and quality standards as well as legal parameters. It also reduces submission errors which result in rejections and reduced efficiency. In the 2016/17 fiscal year, training was provided in Manitoba, Saskatchewan, British Columbia, Yukon, North West Territories, several sessions in both Ontario and Quebec, as well as the Military Police and to court representatives in Joliette, Quebec. 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 the implantation of this initiative will take place during the 2018 fiscal year

In 2014, Dr. Tom Callaghan, a Senior Chief Scientist with the FBI Laboratory provided an update and overview to the Committee on the FBI led Rapid DNA (RDNA) research and implementation project. The project team composed of several government departments plans to introduce the capability of processing biological samples to DNA profiles in real time (70-90 minutes) using a single scientific instrument at time of arrest at the booking station, for direct searching in CODIS (Combined DNA Index System) which is the US national DNA forensic database. During our October 2016 meeting, Dr. Callaghan provided an update on the progress of their program. The science and technology have been closely evaluated and the FBI is confident that the program can develop valid and reliable DNA profiles. Currently the US is waiting for legislative amendments to their DNA identification Act that will enable DNA profiles generated by a Centre outside of the forensic accredited laboratory system by the Rapid Hit Program to be uploaded into CODIS. The Centre of Forensic Science (CFS) presented their research with respect to Rapid DNA, Next Generation Sequencing (NGS) and Probabilistic Genotyping which is further elaborated in this report. The Committee will continue to monitor the progress on these research projects and assess the potential impact from both an efficiency and privacy perspective with respect to forensic DNA in general and on the operations of the NDDB.

During the 2016/2017 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 created additional DNA indices related to the NMPDP. The latest version of CODIS (version 7.0), a software package developed by the US Department of Justice and the FBI which is used to store and compare the DNA profiles in the NDDB and report matches to Canadian public forensic laboratories, has been updated at all three public Canadian forensic laboratories. The new CODIS will improve and optimize the exchange of CSI uploads and DNA matching information between Canadian forensic laboratories and the NDDB. In addition the NDDB laboratory management program, Sample Tracking and Control System Data Base Version, (STaCS™) DB, has been enhanced to accommodate the receipt and tracking of DNA profiles related to the NMPDP. It will allow the NDDB to rapidly and efficiently store and compare DNA profiles while ensuring the integrity and privacy of the process is maintained. STaCS™ also provides for more optimized NDDB operational requirements such as kit reception, increased flexibility for developing reports and future technology changes as well as monitoring and tracking quality assurance.

The Canadian Scientific Working Group on DNA Analysis Methods (CAN SWGDAM), comprised of scientists from each of the three forensic laboratories in Canada and the NDDB, provided an update at the Committee meetings on issues of importance to the DNA community. One area of discussion and procedural development relates to processes and technical requirements resulting from the passage of legislation creating five new DNA indices related to the NMPDP. It is recognized that as the new DNA indices are implemented in support of both the Missing Persons legislation and current operations, the NDDB DNA Data Acceptance Standards will

require amendments to define the requirements for DNA profile entry in to the new DNA indices.

To address changes in DNA technology, a Privacy Impact Assessment (PIA) for the NDDDB was completed and submitted to the Office of the Privacy Commissioner in 2015. The Privacy Commissioner's Office completed its review of the PIA and issued formal recommendations in 2016 which were addressed. With the creation of new DNA indices pursuant to the passage of legislation (Bill C-43) and the NMPDP, amendments to the PIA will be required to address issues that arise with the creation of the five new DNA indices.

The NDDDB AC is carefully monitoring the progress of the NDDDB as it prepares to implement legislation created by Bill C-43 relating to the expanded use of DNA profiles in Canada. A significant portion of each meeting has focused on the many issues, such as consent, arising from the new legislation and the NDDDB AC has provided considerable feedback on these topics. We are confident that the NDDDB has identified the various technical, scientific, training, policy and ethical issues and has considered the NDDDB AC's feedback, to prepare for a NDMPD operational implementation date in 2018.

One issue that has been researched, reviewed, and debated by the Advisory Committee since 2005 pertains to the topic of familial searching. Familial searching is an additional search of a law enforcement DNA data base conducted after a routine search has been completed and no exact profile match has been identified in the process. It should be noted that the Standing Senate Committee on Legal and Constitutional Affairs debated the issue of familial searching in 2010 and recommended that the Department of Justice study the matter to determine how to appropriately craft a provision that would balance the need to protect society, the need to ensure privacy rights, and the need to preserve the presumption of innocence as it relates to familial searching. In 2015, the Advisory Committee confirmed its position in a letter to the Commissioner that the use of familial searching in Canada outweighs the risk associated to its use, but restated its view that there must be a proper balance between protecting the privacy of an individual while allowing certain forensic privileges to investigate the most serious offences considering the overall protection of the public. The Advisory Committee continues to have a significant interest in this issue since research and utilization of familial searching in other jurisdictions has demonstrated the effectiveness of familial searching and its role in enhancing public safety.

National Missing Persons DNA Program

The NDDDB 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 NDDDB 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 2014 Act, 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 NMPDP 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 and unidentified human remains investigations and the scientific and technical expertise of the NDDB for the forensic application of DNA analysis. The NMPDP represents a collaborative interaction of both RCMP programs and is anticipated to become operational in 2018 following the drafting of new regulations in consultation with representatives from the RCMP, Public Safety, and the Department of Justice.

Over the past year, the NDDB AC has dedicated considerable time and effort at 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 in 2018.

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 NDDB AC 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 in

dealing with issues such as renewing consent or the removal of DNA profiles when the individual reached the age of consent if the DNA sample had been provided by a youth.

The Committee offered suggestions 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 (unexpected genetic information associated with a family). As a result, the National Centre for Missing Persons and Unidentified Remains (NCMPUR) developed a best practices document for investigators. This draft document was then provided to the NDDB AC for feedback and input which was provided to NCMPUR.

The NDDB AC has also noted that before information and DNA profiles developed by the NMPDP can be shared internationally, current international DNA sharing agreements in the NDDB must be amended. Pursuant to legislative requirements, international agreements with new provisions must be developed to ensure the privacy and security of the missing person DNA information respects the requirements of the amended *DNAIA*.

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.

In summary, the NDDB AC has had significant engagement with the NDDB, strategic and operational policy development personnel and justice representatives involved in drafting Regulations. As a Committee, we have had the opportunity to provide input on a broad range of issues including, consent, withdrawal of consent, removal of profiles, disposal of profiles, operational guidelines and the various privacy issues associated to the new indices as they become populated.

The NDDB AC reviewed the current *DNA Data Bank Advisory Committee Regulations* (SOR/2000-81), and the amendments to Section 3 *DNA Identification Act*. The Committee was assured by RCMP Legal Services and Department of Justice officials that there was appropriate legislative authority for the Committee to provide advice with respect to the operations of the NDDB, NMPDP and specifically the new DNA indices that have been created. This authority stems from Section 5, *DNA Data Bank Advisory Committee Regulations*, which authorizes the NDDB AC to report on “any” issue in Section 3 of the *DNAIA*.

Department of Justice

Since its creation in 2000, the NDDB has been a valuable tool in enhancing public safety by solving crime, has led to the exoneration of suspects, and has demonstrated its obligation to respect privacy rights. Over the past seventeen years, several legislative amendments, primarily focused on expanding the number of offences eligible for sample collection following conviction, and increasing the number of potential DNA profiles in the COI. In 2009 and 2010, the House of Commons Standing Committee on Public Safety and National Security and the Senate Standing Committee on Legal and Constitutional Affairs conducted a Statutory Review of the DNAIA. A recommendation from both parliamentary committees was to amend the law to allow for the automatic collection of DNA from any adult offender who had been convicted in Canada of a designated offence as defined by Section 487.04 of the *Criminal Code*. NDDB AC representatives appeared before both Committees and were in support of the recommendation. Since that review, ongoing efforts by the NDDB to educate the judiciary, courts, the legal community and the police through training sessions, educational forums, conference presentations and information sessions have and continue to take place. Despite these efforts, research data indicates that the number of annual COI submissions to the NDDB falls well below the annual criminal convictions for DNA eligible offences that should be in the NDDB. The NDDB AC has, and continues to study this matter, and will be forwarding an official position on this in the forthcoming year.

Canadian Scientific Working Group on DNA Analysis Methods (CAN SWGDAM)

CAN SWGDAM, comprised of scientists from all three Canadian forensic laboratory systems and the NDDB, is responsible for researching, reviewing, and providing recommendations on issues related to the evolving DNA science, policy, and technology. Next Generation Sequencing (NGS), Rapid DNA, DNA mixture interpretation, kinship testing, and testing new technologies by the various laboratories to ensure the most advanced approaches in DNA testing are available in Canada have been some of the priorities of CAN SWGDAM. CAN SWGDAM has also been closely engaged in discussions related to historical DNA profiles of missing persons and unidentified human remains which are currently stored in provincial public government repositories (i.e. forensic and coroner or medical examiners programs) which may be eligible for uploading into the NDDB once the legislation comes into Force. CAN SWGDAM is an important resource for the NDDB AC in terms of evolving issues and challenges as it relates to the science and technological developments in the world of forensic DNA.

Centre of Forensic Sciences (CFS)

The NDDB AC's meeting in October 2016 took place at the Centre of Forensic Science in Toronto and provided an opportunity for Committee Members to view the new facility and the services they provide. An update was provided on their validation of RapidHIT DNA technology which is currently being pilot tested for the most critical, time sensitive public safety investigations. It should be noted that the analysis of samples and comparison of developed DNA profiles using

RapidHIT is being conducted at the local provincial laboratory level. Evaluation of the science, its validation for CSI use and the review of CODIS guidelines both in Canada and the US are currently ongoing before consideration can be given for the submission of RapidHit DNA profiles to a national forensic data base such as the NDDB. The CFS also provided an update on their NGS research, NGS which holds great promise for future forensic applications and DNA analysis in general. NGS enables additional DNA discrimination potential and permit simultaneous sequencing of thousands of DNA loci (discrete DNA markers) for the economical processing of multiple different samples at one time. Another presentation provided insight into Probabilistic Genotyping which is a software program designed to evaluate DNA evidence composed of numerous DNA profiles from multiple donors. Validation and implementation of probabilistic software should enable a more court acceptable standard for reporting complex DNA mixture evidence. While recognizing and supporting the enhancements that new technology will allow, the NDDB AC remains vigilant to ensure that legal, ethical, and privacy requirements are not compromised as advancements take place in the field of DNA analysis.

Missing Persons and Unidentified Human Remains – Chief Coroner’s Office

Dr. Kathy Gruspier from the Chief Coroner’s Office of Ontario provided an overview of an initiative by the Chief Coroner’s Office to identify unidentified human remains, both through DNA analysis and forensic pathology investigation. This project, involving the police, Forensic Pathology Service, and the Coroner’s Office has resulted in the identification of a significant number of previously unidentified remains and is of interest to the NDDB AC in view of its use of DNA for investigative and identification purposes.

Ethics and Consent in Genetics

Dr. Michael Szego from the Centre of Clinical Ethics and the University of Toronto gave an excellent presentation to the NDDB AC dealing with informed consent in the genomic era and the challenges involved when making ethical decisions where the protection of personal information is in conflict with broader public interest. The importance of the individual understanding the benefits versus the risks in providing a voluntary DNA sample is critical in ensuring informed consent. The challenges outlined by Dr. Szego in the field of clinical ethics closely parallel those that will be encountered as the NMPDP is introduced, and provided the NDDB AC with additional insight and background which will augment the Committee’s experience to provide advice to the NDDB and policy personnel involved in delivering the program.

Retraction Watch

Dr. Ivan Oransky , Co Founder of Retraction Watch, provided an overview of the focus of their organization and its objectives. In modern times, with the advancements in technology and instantaneous publication on social media, there has been a significant increase in publications

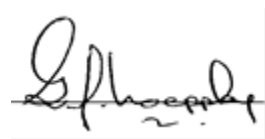
and scientific research papers that are without merit and not based on valid research, and yet may be relied upon by others in conducting scientific studies or making policy decisions. Retraction Watch attempts to identify and expose misleading or false research papers through its publication and notifications. As advances in the science and technology related to DNA is research based, it is important that NDDB personnel and the NDDB AC have full confidence in the authenticity and validity of research papers they may be relying on as well as provide a means to evaluate the scientific credibility of expert testimony in a court of law.

Conclusions for 2016-2017

The NDDB AC 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 NMPDP. We have had the opportunity, both during and following meetings, to provide verbal and written feedback on a number of issues where our input has been solicited. 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.

Over the past seventeen years, the NDDB has played a critical role in solving crime and enhancing public safety in Canada. It continues to enhance its capabilities through modernization of technology and training of personnel to ensure it is prepared for challenges when the NMPDP is implemented in 2018. The NDDB AC reiterates its confidence in the NDDB to continue to deliver a professional science program as it relates to the use of DNA for forensic and humanitarian purposes in Canada. The Committee appreciates the dedication and contribution of the NDDB staff in continuing to deliver a world class DNA program as it relates to public safety.

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 NDDB AC for their outstanding support and cooperation which greatly enhance deliberations and provides the basis for our discussions, deliberations, and recommendations.



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