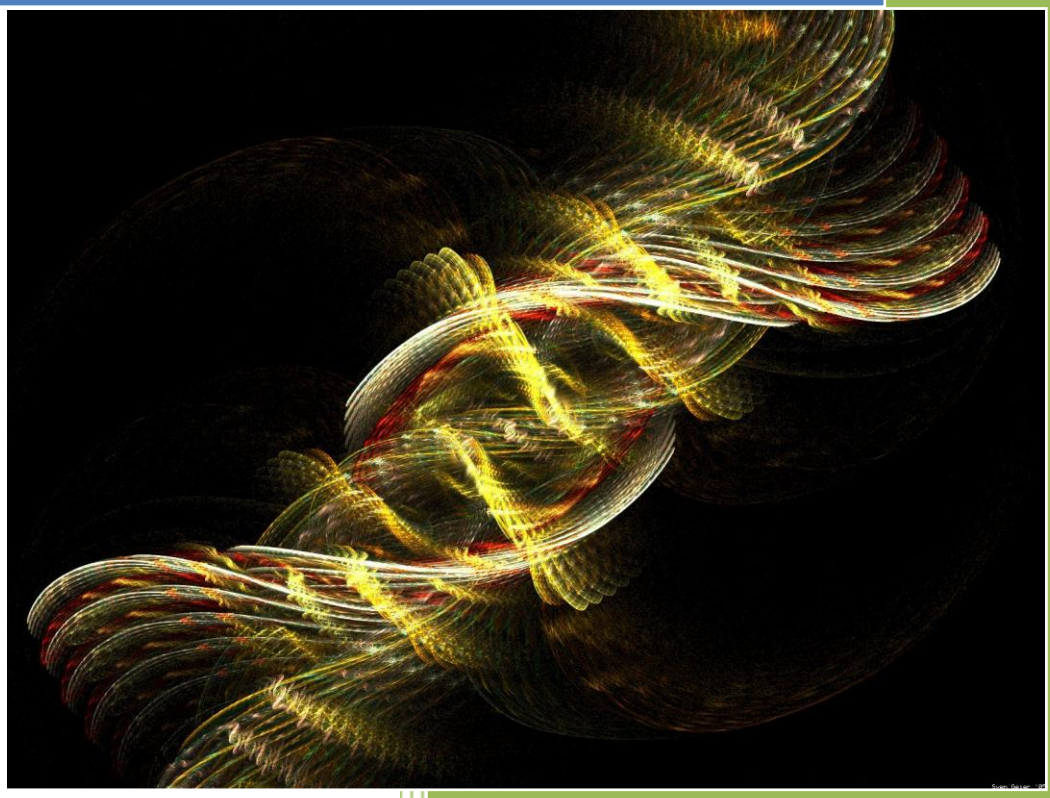
2010-2011

NATIONAL DNA DATA BANK ADVISORY COMMITTEE ANNUAL REPORT



NDDB AC

2010-2011

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Introduction

The National DNA Data Bank (NDDB) which commenced operations in June 2000 was established pursuant to *DNA Identification Act*, 1998, c.37. The DNA Data Bank Advisory Committee was formed as annexed through the *Data Bank Advisory Committee Regulations, P.C. 2000-635 May 4, 2000*. Following the recommendations made by the Standing Senate Committee on Legal and Constitutional Affairs (Sixteenth Report, December 8, 1998) the Committee functions as an independent body to assist the Commissioner of the Royal Canadian Mounted Police (RCMP) in ensuring that the NDDB operates in compliance with the legislation and regulations.

The NDDB reviews the methods used to obtain and store DNA profile data from convicted offenders, issue notifications, transmit information and convey and store the original biological samples collected from convicted offenders. Other issues of interest include sample collection training, sample integrity, forensic science validity, genetic privacy, developments in technical/analytical processes, international information sharing protocols and legislative and legal considerations affecting the NDDB.

The NDDB is part of the Forensic Science and Identification Services which falls under the Policing Support Services Branch of the RCMP, and operates as a national service to all Canadian law enforcement agencies.

By the end of the 2010 – 2011 fiscal year, the NDDB contained more than 280,000 DNA profiles, had a staff complement of 23 specialists and an operational budget of $4.3 M. When fully staffed, the NDDB operates with a staff of 31 employees.

The National DNA Data Bank is responsible for two principal indices:

1. The **Convicted Offenders Index** (**COI**) is an electronic index that has been developed from DNA profiles collected and processed by the NDDB from offenders convicted of primary and secondary designated offences identified in section 487.04 of the *Canadian Criminal Code*; and,

2. The **Crime Scene Index** (**CSI)** is a separate electronic index composed of DNA profiles developed by Canadian operational forensic laboratories from crime scene investigations of the same designated offences addressed in the *Act*.

Biological samples collected from convicted offenders are processed by the NDDB and resulting DNA profiles are entered into the Convicted Offender's Index.

The NDDB is also the custodian of the Crime Scene Index, a separate electronic database comprising DNA profiles obtained from crime scene evidence. Crime scene samples are analysed and the DNA profiles are uploaded into the NDDB by the three Canadian forensic laboratory systems:

- The RCMP Forensic Science and Identification Services (RCMP, FS&IS with sites in Halifax, Ottawa, Winnipeg, Regina, 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) de Montréal.

The NDDB contributes to the administration of justice and the safety of Canadians by assisting in the early identification of those who commit serious crimes across all police jurisdictions in Canada while protecting innocent people by elimination of suspicion and wrongful conviction. It 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 suspects; (no match between the crime scene DNA profile (CSI) and COI profiles in the NDDB)
- Determining whether a serial offender is involved.

National DNA Data Bank Advisory Committee

The National DNA Data Bank Advisory Committee was formalized under 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 of Canada for a five year term that can be renewed. Members of the 2010-2011 Committee are:

RICHARD A. BERGMAN * (Chairperson) Deputy Commissioner (Rtd), Police Community Representative. Among his many significant career accomplishments, it was under his direction as the Director of Forensic Laboratories, that the RCMP initiated their DNA program in 1988.

DR. FREDERICK R. BIEBER, Canadian-born Associate Professor of Pathology, Faculty of Medicine, Harvard University, Boston, Massachusetts. Dr. Bieber is a medical geneticist and a specialist in bio-medical ethics.

CHANTAL BERNIER, Assistant Commissioner, Office of the Privacy Commissioner of Canada, Ottawa, Ontario.

DR. GEORGE R. CARMODY*, (Vice Chairperson) Population Biology Specialist and Emeritus Adjunct Research Professor of Biology, Carleton University, Ottawa, Ontario, expert in population genetics and statistics as applied to forensic DNA applications.

THE HON. PETER CORY, C.C., C.D., Q.C. Representing the Law, retired Justice of the Supreme Court of Canada, Chancellor Emeritus of York University and Special Advisor to the Federal Department of Justice.

DR. WILLIAM S. DAVIDSON, Medical Genetics Specialist and Professor of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, B.C.

DR. RON FOURNEY, Director, National Services and Research, Forensic Science and Identification Services, RCMP, a founding member of the RCMP DNA program and instrumental in the development and implementation of forensic DNA typing in Canada.

GISÈLE CÔTE-HARPÉR, O.C., Q.C., Legal expert on Human Rights issues, Barrister and Emeritus Professor, Faculty of Law, University of Laval, Sainte-Foy, Quebec.

*Richard Bergman served 35 years of distinguished service with the RCMP (retired from active police service in 1997) and eleven years as one of the original members and chairperson of the NDDB Advisory Committee (appointed in 2000), retired from the NDDB committee in September 2011.

*Dr. George Carmody died suddenly of natural causes on June 13, 2011. Dr. Carmody was the co-chairperson of the NDDB Committee since its inception in 2000 and was recognized as one of the world's most preeminent forensic population statistics and genetics expert. His contributions included working with the NDDB Committee, assisting in mass disaster identification, as well as DNA casework analysis on some of the most important cases in North America. His passion for science as a teacher and mentor will remain his legacy for all those who had the privilege of knowing him as student, colleague or friend.

Guests of the National DNA Data Bank Advisory Committee

January 31 – February 2, 2011 Meeting

Jack Laird	Wyndham Forensic Group Inc.
Valerie Blackmore	Wyndham Forensic Group Inc.
Dr. Amarjit Chahal	Warnex
Dr. Yvan Côté	Warnex
Wayne Murray	Maxxam
Martin Westecott	Maxxam
Yves Dufour	Laboratoire de science judiciaires et de médecine légale, Québec
Frederick Laberge	Laboratoire de science judiciaires et de médecine légale, Québec
Diane Séguin	Laboratoire de science judiciaires et de médecine légale, Québec
Tony Tessarolo	Centre of Forensic Sciences, Ontario
Jonathan Newman	Centre of Forensic Sciences, Ontario
Dave Quigley	Ontario Provincial Police
Ms. Jennifer Luttman	U.S. Federal Bureau of Investigation
David Coffman	Florida Department Law Enforcement, Tallahassee
Tony Yaacoub	Royal Canadian Mounted Police (FS&IS)
Gary Verret	Royal Canadian Mounted Police (FS&IS)
Julie Mugford	Public Safety Canada
Justin Ducette	Public Safety Canada
David Bird	Royal Canadian Mounted Police, Legal Counsel
Greg Yost	Department of Justice
Jeff Modler	Royal Canadian Mounted Police (FS&IS), Biology Services – Chair of Canadian SWGDAM
Isabelle Trudel	Royal Canadian Mounted Police, National DNA Data Bank (FS&IS)
Lynda Iwanoff	Royal Canadian Mounted Police (FS&IS), Client Services

Recorder:

Geneviève Desfossés	Coordinator National DNA Data Bank Advisory Committee (FS&IS), Client Services

Guests of the National DNA Data Bank Advisory Committee
May 5-6, 2011 Meeting

Tony Yaacoub	Royal Canadian Mounted Police (FS&IS)
Julie Mugford	Public Safety Canada
Justin Ducette	Public Safety Canada
David Bird	Royal Canadian Mounted Police, Legal Counsel
Greg Yost	Department of Justice
Dan Moore	Department of Justice
Jeff Modler	Royal Canadian Mounted Police (FS&IS), Biology Services – Chair of Canadian SWGDAM
Isabelle Trudel	Royal Canadian Mounted Police, (FS&IS), National DNA Data Bank

By Phone:

Dr. Robert Green	Head Science and Technology Section, Police and Partnership Standards Unit, Home Office (Retired)
Dr. C. N. Maguire	Reader in Forensic Science, Northumbria University Centre for Forensic Science

Recorder:

Renée Deland	Client Services, Royal Canadian Mounted Police (FS&IS)

This report covers the period from April 2010 to May 2011. During that period, the National DNA Data Bank Advisory Committee met twice in Ottawa during Jan/Feb 2011 and May 2011. The Jan/Feb 2011 meeting involved the full committee and was devoted to the review of the access to the National DNA Data Bank Crime Scene Index by private forensic laboratories.

NDDB Year End Summary

The NDDB is in the process of staffing five positions. This includes three DNA Analysts as well as two positions in the NDDB training and collections group.

The NDDB is undergoing changes in technology to enhance the effectiveness of the DNA typing processes. Instrumentation and associated software have been purchased to replace aging robotics and DNA analysis equipment which will also require modification of the NDDB laboratory information management system (STaCs , Sample Tracking and Control System). The National Services and Research team has completed validation of two 16 multiplex loci DNA STR kits which will be integrated into the NDDB process, operational tracking system and new instrumentation.

Validation has also been completed on the Genemapper ID™, software that will be used for DNA profile analysis and uploading to the next version of the Combined DNA Index System (CODIS version 7.0) which conducts the searching and match declaration of DNA profiles. Computer servers and training of staff will commence with the installation of the new processes and equipment.

A total of 6,116 qualifying offenders had been identified in the retroactive sample collection project. Of these, 5,456 files have been concluded leaving 660 open files awaiting biological sample acquisition.

The NDDB has received 779 international Interpol search requests resulting in one Offender hit and one Forensic hit. In addition, there have been 129 outgoing international Interpol search requests resulting in one Offender hit and one Forensic hit.

Training was provided to a total of 273 police officers in British Columbia, Ontario and Quebec. The sessions included discussions on the role of the NDDB and the *DNA Identification Act*, as well as hands-on training in biological sample collection using the NDDB's Convicted Offender sample collection kit.

The success of the NDDB can be measured in various ways. A questionnaire is sent out after each hit (offender or crime scene hit) is made in the NDDB and the questions are targeted towards whether the NDDB contributed towards identification of a suspect and/or whether the NDDB added value to a criminal investigation. The positive responses received from police investigators in a quality of service questionnaire (requested after each hit is made in the NDDB) has overall indicated the important role the NDDB plays in criminal investigations.

Another means of assessing the success of the NDDB can be noted in the number of samples added to the two data bank indices. Changes in legislation have contributed significantly to the list of designated offences that will allow samples to be obtained from Convicted Offenders for entry in the NDDB.

These changes have also expanded the number of offence types for which the Canadian forensic laboratories can accept casework and enter DNA profiles into the Crime Scene Index. As a result, the number of Crime Scene samples and Convicted Offender samples in the NDDB continue to rise.

In the first three years of operation, the NDDB averaged approximately one Offender hit per day. In the past year, the NDDB has averaged in excess of ten Offender hits per day. A summary of NDDB statistics are noted in the following:

DNA Profiles Contained in CODIS as of April 26, 2011

Index	Total
Convicted Offenders Index	217,687
Crime Scene Index	65,037
Total	282,724

Submissions from Convicted Offenders

Fiscal Year (April 1 to March 31)	COI Samples Received	Endorsements Received	TOTAL Received	Percent Increase Over Previous Year
2006/07	19,613	0	19,613	
2007/08	19,302	520	19,820	1.1%
2008/09	34,017	6,756	40,849	106.1%
2009/10	32,516	10,363	42,875	5.0%
2010/11	31,504	12,226	43,727	2.0%

DNA Profiles Contained in the Crime Scene Index as of April 26, 2011

Contributor	Total
CFS	24,178 (37.2%)
LSJML	20,662 (31.8%)
RCMP	20,197 (31.0 %)
Total	**65,037**

Crime Scene Index Entries

Fiscal Year	CFS	LSJML	RCMP	Total
2006/07	2,307	2,289	1,724	**6,320**
2007/08	2,697	2,255	1,750	**6,702**
2008/09	2,490	2,559	2,272	**7,321**
2009/10	2,413	1,561	2,876	**6,850**
2010/11	2,638	3,267	3,481	**9,386**

CFS - The Centre of Forensic Sciences
LSJML - The Laboratoire de sciences judiciaires et de médicine légale
RCMP – Forensic Science and Identification Services

Match Inventory Report as of April 26, 2011

Offender Hits	18,710
Forensic Hits	2,496
Total	**21,206**

Match Inventory Report

Fiscal Year	Offender Hits	Forensic Hits
2006/07	1,941	372
2007/08	1,976	324
2008/09	2,608	381
2009/10	3,095	381
2010/11	3,941	298

Biological Samples Destroyed or Relocated from June 2000 to March 31, 2011

Reason	Adult	Young Offender	Total
Absolute Discharge	148	28	176
Conditional Discharge	2,552	335	2,887
Conviction Quashed on Appeal	291	9	300
Young Offender – Retention Period Expired	67	892	959
Pardon	980	33	1,013
Other	228	35	263
Total	4,266	1,332	5,598

Financial Highlights

Financial Report from May 2010 to May 2011

National DNA Data Bank Advisory Committee Meetings

Dates	Expenses
January 31 – February 2, 2011	$23,336.00
May 5 – 6, 2011	$14,867.62
Total	**$38,203.62**

Canadian Scientific Working Group on DNA Analysis Methods Update

Over the past few years, the NDDB Advisory Committee has been encouraged with the close cooperation and excellent partnership demonstrated amongst the members of the adhoc forensic working group known as Canadian Scientific Working Group on DNA Analysis Methods (SWGDAM).

Composed of forensic DNA experts from all three public forensic laboratories, processes and the resultant DNA profile results have been developed to meet a national standard of acceptance for operational casework as well as for potential inclusion into the NDDB Crime Scene Index.

It was particularly noteworthy, that a memorandum of understanding was signed on January 31, 2011, between the Centre of Forensic Sciences, Laboratoire de science judiciaires et de médicine légale and the RCMP to make SWGDAM a recognized government working group for forensic DNA analysis in Canada.

In their first order of official business, the Canadian SWGDAM tasked their Technology Committee (Working Group) with the development of an audit/review procedure for recommending to the NDDB and NDDB Advisory Committee a process for the acceptance of new technologies.

Canadian SWGDAM also tasked their CODIS Committee (Working Group) with the development of guidelines for the acceptance of DNA profiles generated from crime scene samples using the Applied Biosystems Identifiler™ and Identifiler Plus™ STR typing system into the forensic mixture index of NDDB.

The Committee agreed that the NDDB AC should look at the Canadian SWGDAM Technology Committee's report and evaluate its recommendations prior to advising the Commissioner of potential proposed changes.

It was noted that new government programs involved with databases policy or development or change, must undergo a Privacy Impact Assessment (PIA). Discussion with the Office of the Privacy

Commissioner should occur to find out if a PIA is required for the introduction of new forensic DNA techniques in Canada.

Familial Searching and the NDDB

Familial searching may be defined as the deliberate targeting and evaluation of DNA profiles within a database that does not include the DNA profile from the individual of interest, but may include a relative which can be identified by looking at close but not perfect "matches".

Typically this involves the interrogation of a large forensic DNA profile data base composed of known individuals with an unknown DNA profile developed from a crime scene.

Canada and the NDDB currently do not engage in familial searching and would require a change in legislation in order to perform this analysis. In addition, to a legislative change, the NDDB would also require significant modification of their searching parameters and CODIS assisted software, since the current DNA matching algorithms are not capable of performing this sophisticated analysis. Appropriate software using a combined method of identity by state (shared alleles) and likelihood ratio (true kinship comparisons with statistical approximations) to establish best candidate familial matches, has been demonstrated in other jurisdictions.

The Committee continues to be updated on the issue of familial searching and this year both Drs. Frederick Bieber and Chris Maguire provided overviews on the level of success this approach has had on old and/or highly challenging police investigations.

In particular, the California Attorney General's approved familial searching in April 2008, and on July 7, 2010 had their first success solving a series of sexual assault homicides using the DNA profile from a son to identify the father who later proved to have a perfect match to numerous crime scene DNA profiles extending over two decades.

California had their second major familial search DNA profile match in March of 2011. Dr. Maguire indicated that the United Kingdom has had an approximately 30% success rate on more than 200 familial searches performed over the past few years.

The Committee recognizes the power of familial searching for police investigations but emphasizes that the process has significant privacy and security issues associated with searching a prescribed legislated DNA database by proxy and potentially identifying a family member who is not in the database. The association of a family member to a criminal investigation through inherited similarities in their DNA patterns will require a comprehensive and careful review from a privacy, legal as well as ethical consideration. As noted in other countries, familial searching implications have been explored in a consultation process with stakeholders, police clients and interested parties. Potential legislation would need to respect the privacy and security of individuals with appropriate checks and balances.

Canada has a very clear distinction between the NDDB and other investigative databases such as the Canadian Police Information Centre (CPIC) or Canadian Criminal Real Time Identification Services

(CCRTIS). This serves as a major safeguard with respect to data acquisition, personal information retention and dissemination of candidate DNA matches.

Changing Environment of Forensic Science Delivery

Over the past year, the committee has heard from a number of forensic and police experts on different approaches used to deliver forensic science. After discussion in late January on DNA profile submissions to the NDDB CSI and the role that private laboratories may have in this endeavour, two experts from the United Kingdom presented their views on recent changes in forensic science service delivery.

Dr. Bob Green former Head of the Forensic Section in the Police Standards Unit, Home Office and main author of the 2007 Scientific Work Improvement Model (SWIM) for performance enhancement of police scientific support processes, provided an overview of the current United Kingdom move toward privatization of their forensic laboratories.

In addition, Dr. Chris Maguire, Reader in Forensic Science, Northumbria University Centre for Forensic Science and a retired senior forensic scientist and manager from the UK Forensic Science Service also discussed some practical considerations for forensic science requirements and its delivery.

The UK Forensic Science Service (FSS) originally was the main provider of forensic services in England and Wales. It was funded by government grants and levied charges on the police through the Common Police Services fund.

There was a concern in 1990s that the true cost of forensic support was not transparent enough to the end-users and the general public, and impacted the ability to accurately forecast the demand and supply of forensic service. This led to the recommendation that the police client should be made fully aware of the cost and that they should directly pay for the services they request.

Over the past decade the FSS reorganized to accommodate a charging mechanism or fee-for-service, and moved to be more independent of the Government by becoming a non-departmental public body or what is called an Executive Agency. This eventually evolved further into a "Government-owned Company" in 2008, which shares some similarities to the Treasury Board of Canada's separate operating agency models.

The UK National Police Improvement Agency (NPIA) introduced a National Forensic Framework Agreement policy to advise police forces on the procurement of forensic services. Forensic service providers which include FSS and several private companies bid on forensic contracts in a competitive manner according to the procurement policies set by the NPIA.

On December 10, 2010, the Home Office announced the Government's decision to remove themselves as a forensic service provider and to close the FSS effective March 2012. The net result will be all UK forensic services will be provided by private forensic laboratories with some work potentially conducted through internal programs within the larger UK police organizations.

In the last few years radical program reform has occurred in the delivery of forensic service in the UK, converting the structure from regional laboratories supplying a local service to full corporate infrastructures, capable of providing a "product based" fee-for-service approach within a national service line. This approach to privatization of forensic science has attracted the attention of numerous countries including Canada.

A current review of different forensic models including the UK and the private monopoly model of New Zealand are being studied as potential alternatives to the public service forensic laboratory models.

Dr. Maguire indicated to the committee that his group has been contracted by Public Service Canada to review the current forensic service delivery system and discuss possible alternatives for service delivery that will be feasible and sustainable in Canada. Although the NDDB is not part of the review, the committee is fully aware that changes to the forensic structure could have an impact on the population of the Crime Scene Index with DNA profiles developed and uploaded by Canadian public forensic laboratories.

The ongoing review should prove to be a rich source of forensic metrics defined by a common set of definitions using the "Foresight" process (University of West Virginia business directed forensic review process) and should highlight many of the best practices of different business directed forensic management models. The committee looks forward to reviewing the report when it is completed in 2012.

NDDB Review by the Auditor General of Canada to the House of Commons

The National DNA Data Bank was one of four groups reviewed in 2010 by the Auditor General of Canada as part of their ongoing commitment to review the RCMP national police services. The audit work was substantially completed on November 1, 2011 and reported as part of Chapter 5 National Police Services – Royal Canadian Mounted Police, 2011 Status Report of the Auditor General of Canada to the House of Commons (Chapter 5). The National DNA Data Bank was noted along with six other national police services for their active partnership representation and engagement with advisory bodies.

The Auditor General review team tested a sample of files and found that a convicted offender DNA sample is processed on average in 9.2 working days which was consistent with the turnaround times reported by the RCMP. The sample is then searched against existing profiles in the CSI and can take much longer in order to obtain a match.

A match between the CSI DNA profile and COI profile is dependent on factors that are beyond the NDDB 's control. For example the wait time for a match could be years, or that a match may never be identified if the crime scene does not yield a DNA profile or is delayed prior to uploading the profile into the NDDB. Once a match is made, CCRTIS has reported an average turnaround time of 12.3 days to return results to police clients.

Private Laboratory Access to CODIS and the NDDB CSI

The Assistant Commissioner of FS&IS requested advice and comments from the National DNA Data Bank Advisory Committee (NDDB AC) regarding access (i.e., uploading DNA profiles) by private forensic laboratories to the NDDB Crime Scene Index (CSI).

It was noted that the NDDB utilizes the Combined DNA Identification System (CODIS) software provided to the RCMP by the FBI and US Department of Justice to conduct DNA profile comparisons and report matches to the three public forensic laboratories in Canada.

Through a letter of agreement, CODIS use is restricted to law enforcement or government laboratories such that uploading CSI profiles into the NDDB must be done by one of the three Canadian public forensic laboratory systems who have access to CODIS.

This challenging and complex issue was discussed at a meeting held in Ottawa on January 31-February 2, 2011. The NDDB AC heard from representatives of the three private companies now performing forensic DNA testing in Canada, Maxxam Analytics (Mississauga), Wyndham Forensic Group Inc. (Guelph), and Warnex PRO-DNA Services Inc. (Montréal) and from the three public forensic laboratory organizations (Center of Forensic Sciences (CFS)/Toronto, Laboratoire de science judiciaires et médecine légale de Montréal (LSJML), and the Forensic Science and Identification Services of the RCMP (six laboratories).

In order to consider the police perspective and the experience of other forensic groups who have been involved with private laboratory analysis of DNA casework, the committee invited presentations from the Deputy Director, Criminal Investigations Branch, Ontario Provincial Police; the Unit Chief and National CODIS Manager, Federal Bureau of Investigation (FBI), Laboratory Division; and the Chief of Forensic Services, Florida Department of Law Enforcement (FDLE).

Private laboratory representatives recommended that DNA profiles they produce could be uploaded into the CSI of the NDDB. Although discussion amongst the private vendors varied in how this could be done either directly or through a CODIS public forensic laboratory, the consensus suggested that the creation of a separate oversight board could help develop an objective quality standard for forensic DNA profiles.

This standard would be reviewed and evaluated on a regular basis such that a laboratory's successful compliance with the standard would enable uploading their DNA profiles into the NDDB. Private laboratories were concerned that profiles generated by their laboratories currently require a supplemental technical review by Canadian public laboratories prior to an upload into the CSI of the NDDB.

The three public laboratories some of whom questioned the role of and need for private vendors, expressed concerns in relation to the extra work load that would potentially be created with the inclusion of private laboratory CSI profiles into the NDDB.

The need for on-site audits, technical reviews of DNA profiles to assure the validity and integrity of the data and interpretations generated by private laboratories, and follow-through on case management all the way to trial and beyond were discussed.

Representatives from the FBI and the FDLE explained the parallel situation in the U.S. and the challenges faced with the incorporation of DNA profiles generated by private laboratories into the state and national DNA Data Banks.

The Committee is pleased that Canadian public laboratories have made substantial progress in providing the timely analysis of DNA extracted from crime scene samples for upload to the CSI of the NDDB in recent years. Turnaround time continues to be carefully monitored with special practices available for urgent cases. Further improvements will continue as additional funds were committed in the 2010 federal budget to increase the analysis of crime scene DNA samples by public laboratories and thus increase the flow of profiles into the CSI of the NDDB.

The Committee recognizes that the private sector has been and can be an important contributor in all areas of science and technology, including forensic DNA testing. The more DNA sample profiles that are uploaded into the CSI, the more potentially useful is the NDDB in aiding criminal investigations and enhancing public safety.

In Canada, the responsibility for control and operations of the NDDB has been placed under the RCMP as a government operation. DNA analysis and criminal investigation information associated with a case involves highly sensitive and confidential information. Privacy considerations are therefore paramount and must be respected.

In the recent statutory review of the DNA Identification Act by the Standing Senate Committee on Legal and Constitutional Affairs, June 2010, Recommendation 19 stated ‘‘*That the Government of Canada explore the possibility of entering into public/private partnerships with qualified and reliable private forensic laboratories which would allow such labs to conduct DNA forensic analysis for police agencies and upload DNA samples and profiles to the crime scene index (CSI) at the National DNA Data Bank ...’’*.

The above notwithstanding, the Advisory Committee notes by an agreement between the RCMP and the FBI governing the use of CODIS, full access to and use of CODIS is limited to public safety organizations. Accordingly, it is not possible for a private laboratory to have direct access to the NDDB. All profiles generated by a private laboratory must be reviewed and uploaded by a CODIS participating public laboratory.

Since direct access to the NDDB is not possible for private laboratories under the existing CODIS license agreement with the FBI and US Department of Justice, they may however be contracted to generate DNA profiles from crime scene evidence if the public laboratories face exceptional circumstances. In such circumstances substantial public resources are needed for oversight, auditing, and reviewing the private laboratories’ work.

The Committee does not consider it to be in the best public interest for limited financial resources to be diverted for such oversight activities in the absence of urgent or exceptional circumstances. It was noted that the RCMP has contracted for several years with a private sector laboratory (Maxxam Analytics) to absorb unanticipated capacity challenges and provide flexibility to meet higher than expected demands for nuclear DNA analysis of crime scene samples. The RCMP laboratories have not however outsourced to that laboratory for some considerable time since turn-around times in their laboratories have been improving. If future renewals are put out to bid, any qualified Canadian private laboratory would be free to apply and compete in the open bidding process for this contract. Currently, neither the Quebec nor the Ontario public laboratories have entered into similar contracts with private forensic laboratories for nuclear DNA analysis.

Police departments themselves in RCMP contract provinces, however do have the option in exceptional circumstances, with pre-approval from the RCMP Forensic Laboratory servicing their jurisdiction, to submit crime scene exhibits direct to the contracted private laboratory for analysis if they wish. In such cases, the police department pays for the analysis and the crime scene profile is then transferred to a previously designated RCMP Laboratory. Technical and administrative reviews of the analysis details and interpretation results are conducted. Following a positive review, the DNA profile is then uploaded to the CSI of the NDDB by the reviewing RCMP Laboratory. At this time, neither the Ontario nor the Quebec public laboratories are prepared to review nuclear DNA submissions from private laboratories in their jurisdictions and upload them to the NDDB.

The Advisory Committee supports the House of Commons Standing Committee on Public Safety and National Security Recommendation #1 of June 2009 that states ‘‘*...that the Government of Canada maintain the NDDB and all associated facilities as a public service and authorize the use of private facilities solely in exceptional overflow circumstances’’.*

Should such exceptional overflow circumstances occur, the Advisory Committee supports the remainder of Recommendation #19 of the Standing Senate Committee on Legal and Constitutional Affairs of June, 2010 which states ‘‘*…that appropriate terms and conditions, such as independent auditing mechanisms, recognized accreditation, confidentiality agreements, encryption technologies, arrangements ensuring government ownership of the DNA samples, and security clearances for employees should be components of such partnerships’’.*

In addition to the above comments, the Committee reached consensus on the following;

The scientific, administrative, technical, and financial challenges necessary to allow uploading of DNA profiles from private laboratories on a routine basis would be onerous, inefficient, and costly;

> Among the principal challenges associated with making greater use of private forensic laboratories, is the need to derive the most probative value from forensic evidence and the subsequent DNA results, while maintaining the integrity and future continuity of such evidence, fully recognizing that police agencies must make the best use of their limited investigational and financial resources. Processing exhibits through a private laboratory may be a fiscal challenge to many police departments. Concerns also exist over the longer

period, especially if a private laboratory decides to close its operations and additional analysis is required in the future. The continuity of evidential results as well as privacy issues and court testimony could be problematic in such cases; and,

Should government forensic laboratories choose to make greater use of private forensic laboratories with a view to uploading results into the CSI, then:

- The private laboratory would need to be accredited and subject to external inspections, and audit procedures to ensure accountability for the DNA results. Technical and administrative reviews of each DNA profile and associated documentation by one of the Canadian public laboratories is required to assure that approved protocols and procedures are in place to:
  - Verify results prior to uploading results into the CSI; and
  - Establish continuity should a CSI sample be required to be removed from the NDDB; or
  - To document action taken following a match to a DNA profile in the NDDB.

- DNA profiles generated by private laboratories would be eligible for upload to the CSI of the NDDB only under contract between the private laboratory and a public forensic laboratory.

The Committee also noted that local police agencies may seek forensic DNA analytical services from private laboratories, to assist in their ongoing criminal investigations. However, these police agencies must recognize that, unless they have made prior arrangements for the results to be reviewed by a public laboratory that has direct access to CODIS, the results of such DNA analyses of crime scene samples are not eligible to be uploaded to the CSI of the NDDB.

FS&IS Transformation Project

Over the past two years, the committee has received updates on the FS&IS transformation project from the project Director Mr. Tony Yaccoub. The transformation project involved the review and revitalization of FS&IS forensic service delivery with a primary initial focus on improving police client interaction with the front end forensic science reception and case acceptance experts housed within a centralized national Forensic Assessment Centre (FAC).

Essentially the strategy was to ensure the best forensic science is employed to answer the questions and requirements of the police investigators through the development of a purpose directed strategy for both complex and simple casework. This has been highly successful and will enter a sustainability phase with an appropriate transition strategy to allow the Forensic Investigative Process (FIP) to be implemented at a national level, including clients in British Columbia and Yukon Territory during the summer of 2011.

Work will continue to fully implement all components of the transformation objectives including a second phase which will comprise the implementation of newly validated science and technology. Diary dates for completion of casework have been significantly reduced and more cases have been accepted since the transformation project has identified and implemented best practices.

Mr. Yaacoub recounted several examples of success including elimination of a 650-700 firearms backlog within the past 18 months. This success is related to the accountability (ownership), expectation-setting and workflow changes implemented in each forensic discipline.

The Committee looks forward to the continuous progress made with transformation objectives and the implementation of best practices. Biology casework files indicate that more samples are being uploaded into the CSI of the NDDB and in a much shorter period of time.

Y-STRs and Forensic Science

A review of Y-STR analysis was conducted by Dr. George Carmody to prepare the Committee for potential changes in technology that may affect the National DNA Data Bank. Currently, both the Ontario and Quebec provincial forensic laboratories have begun using Y-STRs for some of their casework analysis.

The RCMP is evaluating a Y-STR system that would enable the use of 17 markers on the Y-chromosome which would enhance the potential discrimination by an average 1/400. Y chromosome analysis has become routine in many forensic laboratories in the US and Europe. It is the male specificity and special inheritance features (paternally inherited) that has made Y-STRs initially an important marker for evolutionary and population genetics and then in forensic applications.

The use of conventional autosomal STRs is still the preferred DNA system for most criminal investigations due to its higher power of discrimination. In some instances, involving a mixed sample composed of both a male and female donor, Y-STR analysis can detect and potentially discriminate a male individual in the presence of an overabundance of female DNA. In addition, Y-STRs has application for kinship analysis and the determination of identity in closely related individuals (siblings) and also works well on difficult samples such as evidence from aspermic males or fingernail scrapings collected as sexual assault evidence.

Access to large publicly available Y-STR data bases allows for determination of the potential discrimination estimation. It was also noted that the low discrimination potential of Y-STRs would lead to some unrelated males sharing Y-STR profiles in some of the common Y-DNA markers. This is not typically an issue with standard STR DNA kits due to its high discrimination potential.

The NDDB Committee was advised that Y-STRs are a potentially expensive addition to a forensic program if used for every sample on a routine basis. However a comprehensive implementation and operational plan for Y-STRs could be developed for select casework which would enhance sexual assault investigations or any case involving complex DNA mixtures of female and male biological samples.

It is unlikely that the NDDB would promote the development of Y-STR profiles for all offender samples in the NDDB. The cost would be prohibitive and estimated to be approximately $1.2 million without providing a significant search advantage based on small increase in discrimination potential.

The Committee was advised that there are ways to mitigate cost, such as doing the Y-STRs for only the new offender profiles. Further discussion is warranted following the review of additional data and newly derived experiences of Canadian forensic laboratories. In addition, before the acceptance of results from new DNA technologies, recommendations would be required from the Canadian Scientific Working Group of DNA Analysis Methods.

Biology Casework Analysis Agreements and CSI Submissions

The Biology Casework Analysis Agreements (BCAA) was originally set up in 2000, as a funding mechanism to support the operations of the NDDB and encourage the submissions of crime scene profiles to the CSI of the NDDB.

Under the BCAAs, the RCMP contract jurisdictions agree to share, with the Federal Government, some of the cost of biology casework analysis associated with criminal investigations of offences designated within the *DNA Identification Act*. In total, the contract jurisdictions pay a total of $3.8 million per year to the Consolidated Revenue Fund to partially offset the costs of forensic analysis. The Biology Casework Analysis Agreements have been signed with all contract jurisdictions. These agreements are in effect until March 31, 2012, and may be extended annually until 2015.

Public Safety has also implemented a new contribution program (the Biology Casework Analysis Contribution Program), which was approved by Treasury Board of Canada in September 2010. Under this agreement, Ontario and Quebec receive $3.45 million per year to assist the provincial laboratories and increase their contributions to the NDDB. These contribution funds were identified in the 2010 Federal Budget, which allocated $14 million over two years, to increase the ability to process DNA samples so that the DNA results could be added to the CSI of the National DNA Data Bank.

Review of Forensic Service Delivery in Canada

The Federal Government indicated in Budget 2010 that "In order to improve the effective processing of forensic materials and help law enforcement more efficiently tackle crime, the Government will explore options for different delivery models, including potential privatization of the RCMP Forensic Laboratory Services".

In response, Public Safety Canada commissioned a research project to determine which forensic service options are feasible. Alternative forensic service options must be supportable in the Canadian legislative, regulatory, operational and political context.

The contract was awarded in spring 2011 to Northumbria University Centre of Forensic Service (UK) which has a partnership with West Virginia University's Departments of Forensic Science and Finance. Key to this study will be the use of the University of West Virginia's economic forensic modeling

system called “Foresight” which is a business-guided evaluation of forensic laboratories that links financial and business information to work tasks and functions to determine resource allocation and effectiveness.

The NDDB Advisory Committee was clearly advised that this study is focused on the forensic laboratories and the forensic service market in Canada. The study does not include NDDB or other supporting national police services such as CCRTIS, CPIC or sections within FS&IS that are involved with the international sharing of forensic and identification information.

It is expected that an initial draft report will be developed in late of 2011, and a final document is due in March 2012. Forensic service delivery is a fundamental component of most police investigations and is required to solve crimes, reduce investigational time and cost and overall support the justice system to secure successful convictions and exonerate the innocent or falsely accused.

Missing Person DNA Index

Public Safety met with representatives from the FBI Missing Persons Registry in Washington in early April 2011 regarding the use of DNA in the FBI missing person system. The NDDB Advisory Committee inquired about the establishment of a Missing Persons Index but was advised that there is still no funding for this endeavour and those outstanding issues are still being considered through a Federal/Provincial/Territorial working group.

Conclusions for 2010 - 2011

The Advisory Committee has monitored the operations of the NDDB and the provisions of the *DNA Identification Act* for more than eleven years. Advances in science and changes in technology have been the hallmark of the NDDB from the very beginning and will continue to do so as the NDDB responds to new police investigative requirements while ensuring that the interpretation of our legislation respects the intent of Parliament.

The NDDB is a reflection of our best use of science to service justice. It is the view of the NDDB Advisory Committee that it plays a role in this process and shares in its success as we note that the first 1000 hits between the COI and the CSI took more than three years. A milestone was passed recently with 1000 hits being realized in less than 100 days.