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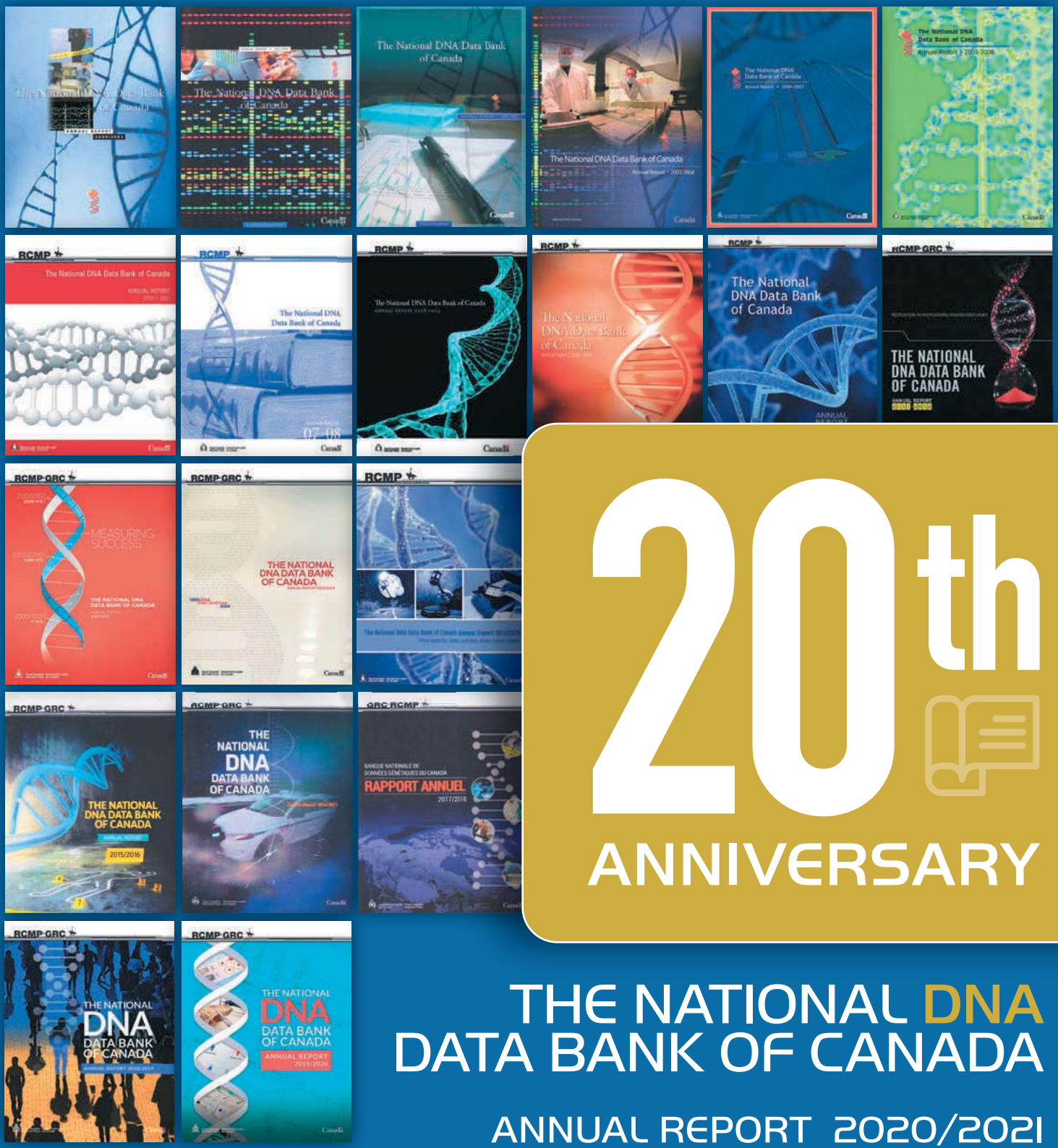

THE NATIONAL DNA DATA BANK OF CANADA

ANNUAL REPORT 2020/2021

Royal Canadian Mounted Police | Gendarmerie royale du Canada

Canada

20th ANNIVERSARY

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MESSAGE FROM THE COMMISSIONER ROYAL CANADIAN MOUNTED POLICE

I am pleased to present the 2020-2021 National DNA Data Bank (NDDB) annual report and to acknowledge the incredible work of the NDDB as it celebrates its 20th anniversary this year. This would have not been possible without 20 years of employee dedication as well as the support of numerous partners in government, law enforcement, forensic and justice communities who have continued working together to provide a safe community for all Canadians.

Since building the National DNA Data Bank from scratch 20 years ago, the NDDB has continuously improved its operations and technology to ensure efficient processes are in place to better serve and protect Canadians. It now stores over half a million DNA profiles in the criminal indices, which have produced more than 73,000 matches to date and assisted law enforcement agencies in the identification of suspects and victims, link crime scenes, and solve active and cold cases.

In addition to the success of the NDDB, the National Missing Persons DNA Program also continues to grow — it now contains over 1,200 profiles in its database. As partner agencies submit more biological samples and DNA profiles to the program, we can work together to offer much-needed closure to the families and friends of missing persons.

The feature article and success stories in this report highlight the daily accomplishments of the NDDB. This is possible with the technology improvements made throughout the years to expand the DNA profile acceptance criteria, along with legislative changes that allow for the qualification of more designated offences,

leading to the increase in size of the data base. I am confident that the NDDB will continue to modernize, evolve and grow to meet the needs and expectations of all Canadians.

Congratulations on a remarkable 20 years!

Brenda Lucki
Commissioner

QUICK FACTS

Convicted Offender Samples Received in 2020/21[1, 2]	11,879
Increase in the Crime Scene Index in 2020/21	11,257
Offender Hits (Convicted Offender to Crime Scene) in 2020/21	3,971
Forensic Hits (Crime Scene to Crime Scene) in 2020/21	356
Associations made by the NDDB in 2020/21 (Number of Offender and Forensic Hits)	4,327
Associations made by the NDDB since June 30, 2000 (Number of Offender and Forensic Hits)	73,750
Human Remains Hits – Putative identifications made since March 6, 2018[3]	25

[1] 2020/21 refers to the NDDB's fiscal year from April 1, 2020 through March 31, 2021.

[2] The decrease in numbers this reporting period is attributed to the global pandemic, which impacted the volume of submissions throughout 2020 and significantly disrupted partner contributions and the NDDB's ability to provide services at full capacity.

[3] The date the humanitarian indices came into force.

ABBREVIATIONS

NDDB	National DNA Data Bank
CCRTIS	Canadian Criminal Real Time Identification Services
CPIC	Canadian Police Information Center
CODIS	Combined DNA Index System
COI	Convicted Offenders Index
CSI	Crime Scene Index
DNA	Deoxyribonucleic acid
HRI	Human Remains Index
MPI	Missing Persons Index
NCMPUR	National Centre for Missing Persons and Unidentified Remains
NMPDP	National Missing Persons DNA Program
RMI	Relatives of Missing Persons Index
STaCS	Sample Tracking and Control System
VI	Victims Index
VDI	Voluntary Donors Index

20 YEAR

DNA evidence was used to support criminal investigations in Canada as early as 1989 but it was not until June 30, 2000 that a national index containing the DNA profiles of criminal offenders would be created.

The origins of the National DNA Data Bank (NDDB) started in 1995 when Parliament unanimously passed former Bill C-104, an Act to amend the *Criminal Code* and the *Young Offenders Act* (forensic DNA analysis). It amended the *Criminal Code* to allow a judge to issue a warrant authorizing a police officer to obtain a biological sample from a suspect for the purpose of forensic DNA analysis in a criminal investigation. Five years later, on June 30, 2000, the *DNA Identification Act* was enacted and the NDDB program was launched.

Dr. Ron Fourney a founding member of the NDDB.

When the NDDB first started its operations, it had the slow and steady task of collecting DNA profiles for two separate indices: one for the genetic profiles of known convicted offenders and the other for the DNA profiles processed from crime scenes across the country. The larger each of these indices grows, the more value they provide to criminal investigations. By 2006, the NDDB achieved a milestone of 100,000 convicted offender profiles, with close to 7,000 matches between crime scenes and convicted offenders.

The value and relevance of indexing DNA profiles in support of the law enforcement and criminal justice communities continues to evolve. A few years ago, the role of the NDDB expanded when there was an amendment to the *DNA Identification Act* that allowed new indices to be created in support of humanitarian investigations involving missing persons and unidentified human remains.

Over the past 20 years, DNA technology and innovation has also evolved and shaped the way many investigations are conducted and used as a trusted form of identification in criminal proceedings.

ANNIVERSARY

THEN ...AND NOW

In 2000, the NDDB was developing DNA profiles with 14 markers.

In 2000, the NDDB only accepted DNA profiles for two indices in support of criminal investigations.

In 2000, approximately 50 offences qualified as designated offences for which the court could issue a DNA order.

At the beginning, it took more than three years to get 1,000 DNA matches.

On November 10, 2000, the NDDB made its first match between two crime scene profiles, effectively linking two criminal investigations and providing new leads. Less than one month later, the NDDB made its first match between a convicted offender profile in the Convicted Offender Index and a crime scene profile collected from a murder investigation.

Within the first year, the NDDB implemented:

- the Combined DNA Index System (CODIS), which is a secure network and software program that allows DNA profile information to be compared
- first in the world electronic tracking systems, known as the Sample Tracking and Control System (STaCS)
- a fully automated workflow

Until 2018, the NDDB processed blood, buccal and hair samples types.

Today the NDDB is developing DNA profiles by examining 24 DNA markers. The amount of genetic information collected from an individual helps increase the discrimination power of each DNA profile.

Today the NDDB can accept DNA profiles for seven indices in support of criminal and humanitarian investigations.

After significant legislative changes in 2008, more than 350 offences now qualify as designated offences. This means that more DNA profiles from convicted offenders are collected and entered into the Convicted Offenders Index for a variety of offences, from less serious to more violent and serious offences.

Today 1,000 DNA matches are made on average every three months or less.

The NDDB has produced more than 73,000 DNA matches between offender hits[1] and forensic hits[2]. As the indices continue to grow, the number and frequency of DNA matches also increases. Today, the NDDB stores over half a million DNA profiles.

Regular updates to software and technology over the years has allowed the NDDB to process approximately 20,000 DNA submissions each year. Enhancements to CODIS has also resulted in more efficient search strategies and has reduced administrative time to review the DNA matches identified.

Today, the NDDB can process a variety of sample types, including bone and personal effects. The NDDB also provides Y chromosome and mitochondrial DNA analysis.

THE FUTURE

With DNA indices continuing to grow and gain relevance, the NDDB continues to be successful thanks to partnerships with the public forensic laboratories, police investigators, peace officers, and members of the criminal justice community.

The NDDB is assessing the potential use of familial DNA searching as a means to provide leads to criminal investigations. This type of searching would require a change in legislation before it could be implemented. The NDDB is also supporting efforts to examine expanding the collection of DNA samples to include all individuals convicted of a designated offence.

NDDB NOTABLES OVER THE LAST 20 YEARS

2000

JUNE 30, 2000
Launch of the National DNA Data Bank

July 6, 2000
First crime scene DNA profile received in CODIS

November 10, 2000
First forensic hit[1]

December 1, 2000
First offender hit[2]

2002

April 25, 2002
Signed agreement with INTERPOL to share DNA information with other countries

May 14, 2002
First international hit

2003

September 11, 2003
1,000 offender hits

2006

August 14, 2006
Over 100,000 convicted offender profiles contained in CODIS

2008

August 29, 2008
10,000 offender hits

2010

March 31, 2010
Over 200,000 convicted offender profiles contained in CODIS

2012

December 31, 2012
25,000 offender hits

2018

March 6, 2018
Launch of the National Missing Persons DNA Program

April 20, 2018
50,000 offender hits

May 24, 2018
First hit made to identify a victim of a designated offence

2019

October 25, 2019
First hit made to identify a human remain submitted through the National Missing Persons DNA Program

2020

February 29, 2020
Over 400,000 convicted offender profiles contained in CODIS

October 31, 2020
Over 1,000 humanitarian profiles contained in CODIS

[1] Offender hit: match between crime scenes and offenders

[2] Forensic hit: match between two crime scenes

THE NATIONAL DNA DATA BANK

The NDDB is a centralized collection of over half a million DNA profiles that help investigators across the country solve a range of crimes. The main goals are simple:

- link crime scenes across jurisdictional boundaries;
- help identify or eliminate suspects;
- determine whether a serial offender has been involved in certain crimes; and
- assist investigators, coroners and medical examiners to find missing persons and identify human remains.

On behalf of the Government of Canada, the Royal Canadian Mounted Police (RCMP) is the steward of the NDDB, which operates for the benefit of Canada's entire law enforcement community.

The *DNA Identification Act* allows the NDDB to maintain the following indices (databases):

- Convicted Offenders Index (COI)
- Crime Scene Index (CSI)
- Victims Index (VI)
- Voluntary Donors Index (VDI)
- Missing Persons Index (MPI)
- Relatives of Missing Persons Index (RMI)
- Human Remains Index (HRI)

The COI, CSI, VI and VDI provide assistance to criminal investigations as follows:

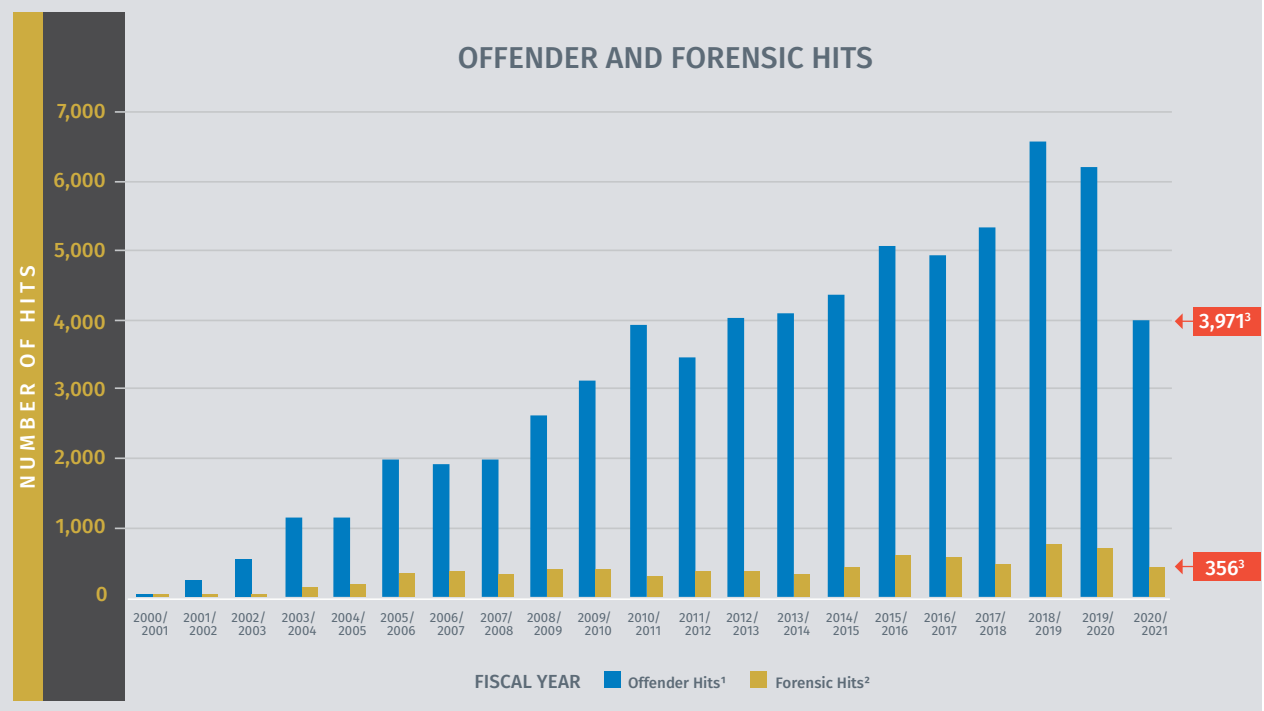
- Comparing DNA profiles found at crime scenes against the DNA profiles of convicted offenders (CSI to COI). When a match is made, it can help identify a suspect. An "offender hit" is the term used to describe this type of DNA match. If no match is made, that information can also help eliminate suspects.
- Comparing DNA profiles found at different crime scenes (CSI to CSI). When a match is made between DNA profiles found at separate crime scenes, it can help link crimes for which no suspects have been identified. This determines whether a serial offender is involved in a number of cases. A "forensic hit" is the term used to describe this type of DNA match.
- Comparing DNA profiles contained in the VI and the VDI. This helps to identify unknown victims, link crime scenes together through victim and voluntary donor DNA profiles, or eliminate the voluntary donors from the focus of an investigation. The VDI can also be used for elimination purposes in humanitarian investigations.

As part of the National Missing Persons DNA Program (NMPDP), the NDDB maintains the MPI, RMI and HRI to support humanitarian investigations at the national level. These indices allow DNA profiles developed from biological samples and other items collected and submitted by police, coroners and medical examiners to be compared to other DNA profiles in the NDDB. The DNA profiles in the RMI are only compared to those in the MPI and the HRI.

Since the creation of the National Missing Persons DNA Program, the NDDB has reported 25 DNA associations that have assisted in the identification of unidentified human remains.

OFFENDER AND FORENSIC HITS

When the NDDB first began operating in 2000, it contained few DNA profiles. As more DNA profiles are added to the NDDB over the years, a greater number of matches are made in less time.



¹An offender hit is a match between DNA found at a crime scene and DNA of a convicted offender.
²A forensic hit is a match of DNA profiles found at separate crime scenes.

³The decrease in numbers this reporting period is attributed to the global pandemic, which impacted the volume of submissions throughout 2020 and significantly disrupted partner contributions and the NDDB's ability to provide services at full capacity.

CONVICTED OFFENDER SUBMISSIONS

Every year, the NDDB processes all convicted offender submissions consisting of:

- biological samples (used to generate DNA profiles that are entered into the Convicted Offenders Index (COI)); or
- Endorsement submissions (fingerprints and documentation for convicted offenders whose DNA profiles are already in the COI).

Before executing a new DNA order or authorization, a police officer must query the Canadian Police Information Centre (CPIC) to determine whether a convicted offender's DNA profile is already in the NDDB. Endorsements therefore consist only of fingerprints and documentation. The endorsement process ensures that a convicted offender's DNA profile remains in the NDDB if the endorsement is received prior to:

- the conviction for which the original DNA order was made being quashed on appeal;
- the original DNA order/authorization being quashed on appeal; or
- the retention period expiring because the person was either:
  - convicted as a young person; or
  - previously discharged under Section 730 of the *Criminal Code* of a designated offence. (**Note**: this condition was removed as of March 6, 2018 when amendments to the *DNA Identification Act* came into force).

When the NDDB receives either a biological sample or an endorsement submission, the documentation is reviewed to ensure that the DNA order was issued for a criminal offence for which DNA can legally be collected and that the offender's personal information required for the submission is complete and accurate.

All convicted offender submissions are recorded in the NDDB's internal tracking system without any of the offender's personal information. Documentation for convicted offender biological sample and endorsement submissions are sent to the RCMP's Canadian Criminal Real Time Identification Services so they can be certified; associated with an individual by fingerprint comparison; and recorded in the individual's criminal record.

PROCESSING OF BIOLOGICAL SAMPLES

CONVICTED OFFENDER SAMPLES

When someone is found guilty of committing a designated offence for which a biological sample can be obtained, the judge has the choice to issue a DNA order. However, for some designated offences, such as murder, the judge must issue an order. A trained peace officer will then collect a biological sample from that person by taking a blood, buccal or hair sample. The NDDB is responsible for processing all convicted offender biological samples and entering the DNA profiles derived from these samples into the Convicted Offenders Index (COI).

Kits designed specifically for the NDDB are used for collecting biological samples from offenders. There are three types of kits available:

- **Blood:** The sample is obtained by using a sterile lancet to prick the fingertip
- **Buccal:** The inside of the mouth is rubbed with a foam applicator to obtain skin cells
- **Hair:** Six to eight hairs are pulled out with the root sheath attached

Although all three types of biological samples have been legally approved for collection, more than 98% of samples taken from convicted offenders are blood samples. The NDDB encourages the collection of blood samples because blood has proven to be more reliable than hair or buccal samples in generating high-quality DNA profiles.

CRIME SCENE AND VICTIM SAMPLES

Crime scene DNA evidence is collected by police investigators and examined by forensic laboratories across Canada to generate DNA profiles. Only a DNA profile derived from a designated offence can be added to the NDDB's Crime Scene Index (CSI) or the Victims Index (VI). The NDDB is also responsible for removing victims' DNA profiles in accordance with the *DNA Identification Act*. The following public forensic laboratories are authorized to add DNA profiles to the CSI and VI:

- The RCMP National Forensic Laboratory Services in Ottawa, Edmonton and Surrey;
- The Centre of Forensic Sciences in Toronto and Sault Ste. Marie, Ontario; and
- The Laboratoire de sciences judiciaires et de médecine légale in Montréal, Quebec.

VOLUNTARY DONOR SAMPLES

Samples collected from voluntary donors during the course of a criminal investigation of a designated offence are processed by a public forensic laboratory. If the resulting DNA profile provides a potential benefit to the investigation, it is added to the NDDB's Voluntary Donors Index (VDI). Voluntary donor samples collected as part of a humanitarian investigation are provided to the NDDB for processing and added to the VDI. The NDDB is responsible for removing voluntary donors' DNA profiles in accordance with the *DNA Identification Act*.

MISSING PERSONS, RELATIVES OF MISSING PERSONS OR HUMAN REMAINS SAMPLES

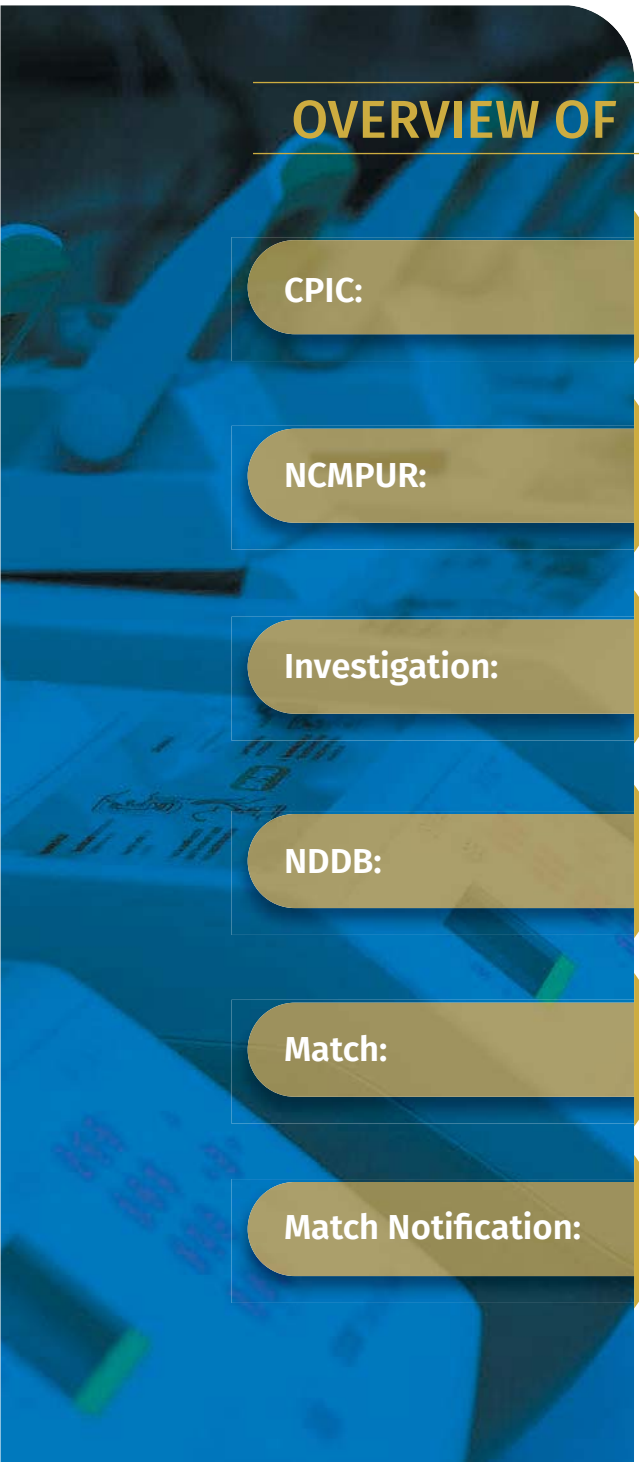
Processing of samples from missing persons, relatives of missing persons and found human remains falls within the National Missing Persons DNA Program (NMPDP). This program is a partnership between the National Centre for Missing Persons and Unidentified Remains (NCMPUR) and the NDDB. The role of NCMPUR is to act as a single point of contact for investigators. As such, NCMPUR authorizes the submissions to the NDDB for missing persons and human remains investigations.

Under the *DNA Identification Act,* the NDDB is responsible for maintaining the humanitarian indices and also for:

- receiving biological samples from submitting agencies and developing DNA profiles;
- receiving DNA profiles from approved laboratories for technical review;
- interpreting and comparing DNA profiles from human remains, relatives of missing

persons and personal belongings from missing persons;
- adding and removing DNA profiles in the Human Remains Index, Relatives of Missing Persons Index and Missing Persons Index in accordance with the legislation;
- issuing and explaining kinship and identity association reports; and
- providing scientific advice and support to NCMPUR and investigators, as required.

To better serve the NMPDP, the NDDB introduced technologies for the isolation and characterization of DNA. Specifically, it introduced procedures for the development of DNA profiles from personal effects and hard tissue samples, such as bone and teeth. In addition, the NDDB validated procedures to analyze the Y-chromosome and utilize an advanced technology using Next Generation Sequencing, which allows for mitochondrial DNA analysis.



OVERVIEW OF NMPDP SUBMISSION PROCESS

CPIC:
- Investigators ensure Canadian Police Information Center (CPIC) entries are complete for cases involving missing persons or human remains
- Investigators contact NCMPUR for submission authorization

NCMPUR:
- Assesses CPIC entries and cases
- Provides consultation and guidance to investigators
- Provides submission and consent forms
- Authorizes cases for NDDB submission

Investigation:
- Investigators collect biological samples, personal effects and/or human remains
- Investigators complete submission and consent forms and send the submission package to the NDDB

NDDB:
- Verifies all forms are completed
- Conducts DNA analysis
- Adds qualifying DNA profiles to the humanitarian indices
- Provides scientific support to NCMPUR and investigators

Match:
- NDDB generates a report for associations to a missing person or human remains DNA profile
- NDDB sends the report to NCMPUR

Match Notification:
- NCMPUR forwards the report to the investigating agency

COMPARING DNA PROFILES

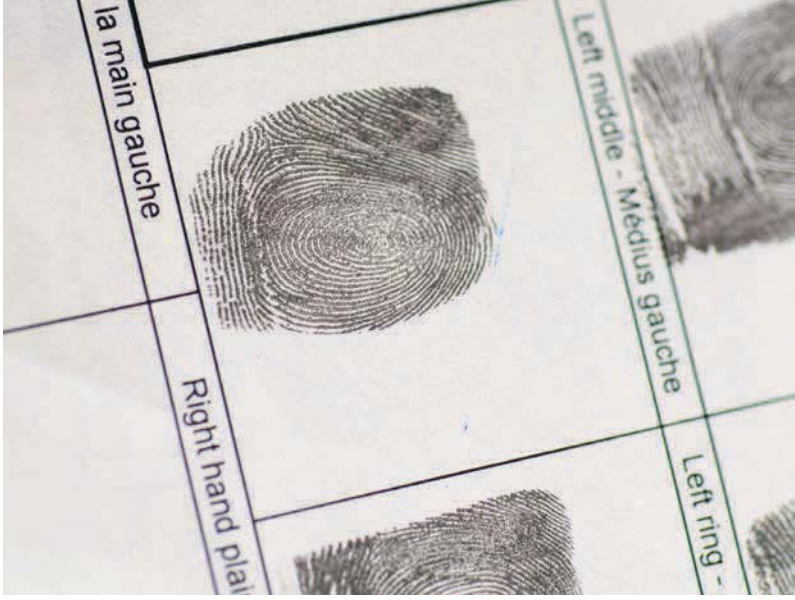
The DNA profiles in the NDDB are compared using the Combined DNA Index System (CODIS), which is a secure network and software program developed by the Federal Bureau of Investigation and the United States Department of Justice, and provided to the RCMP for use by the NDDB. CODIS has become an internationally accepted tool for many forensic laboratories, allowing DNA profile information to be compared using a standard, secure format. In Canada, the NDDB uses CODIS for daily comparisons of DNA profiles. Each new DNA profile entered into one of the NDDB's DNA indices is automatically compared against all existing profiles contained in other DNA indices as permitted by the *DNA Identification Act*.

INTERNATIONAL PARTICIPATION

The NDDB shares DNA information with international investigating authorities through an international DNA Information Sharing Agreement with INTERPOL. This agreement is approved by the Government of Canada and is limited to investigations and prosecutions of designated offences or investigations involving missing persons and unidentified human remains.

Since the first international agreement was signed in 2002, the NDDB has received 1,889 incoming international requests related to criminal investigations to search the Convicted Offenders Index (COI), the Crime Scene Index (CSI), the Missing Persons Index (MPI) and the Human Remains Index (HRI). These searches produced 7 offender hits and 11 forensic hits. Furthermore, the NDDB has sent 353 requests related to criminal investigations to other INTERPOL countries for comparison to DNA profiles developed from crime scene samples, resulting in 8 offender hits and 2 forensic hits.

In 2018, the agreement was updated to allow international comparisons of DNA profiles from missing persons and unidentified human remains. Since then, the NDDB has received 89 incoming



international requests to search missing persons and unidentified human remains profiles against the COI, the CSI, the MPI and the HRI. The NDDB has sent 26 requests to other INTERPOL countries for comparison of DNA profiles developed from missing persons and unidentified human remains. To date, none of these searches have resulted in an association.

PRIVACY OF INFORMATION

The *DNA Identification Act* specifies that DNA profiles in the NDDB's indices can only be used for law enforcement or humanitarian purposes. The Act also clearly states that the DNA profiles in the Relatives of Missing Persons Index can only be compared to DNA profiles in the Missing Persons Index and Human Remains Index.

As an additional safeguard to protect the privacy of an individual, when a convicted offender's DNA sample arrives at the NDDB, the donor's identity is separated from his or her genetic information, and the sample is identified by a numeric bar code. These bar codes are the only link connecting personal information, the biological sample and the DNA profile. The offender's personal information is kept in a separate registry maintained by the RCMP's Canadian Criminal Real Time Identification Services (CCRTIS), which NDDB employees cannot access. This process ensures that NDDB staff never know which convicted offender's DNA profile they are processing. Likewise, CCRTIS employees do not have access to the genetic information of an

offender. With the exception of biological sex, DNA profiles held within the indices of the NDDB do not reveal any medical or physical information about the donor.

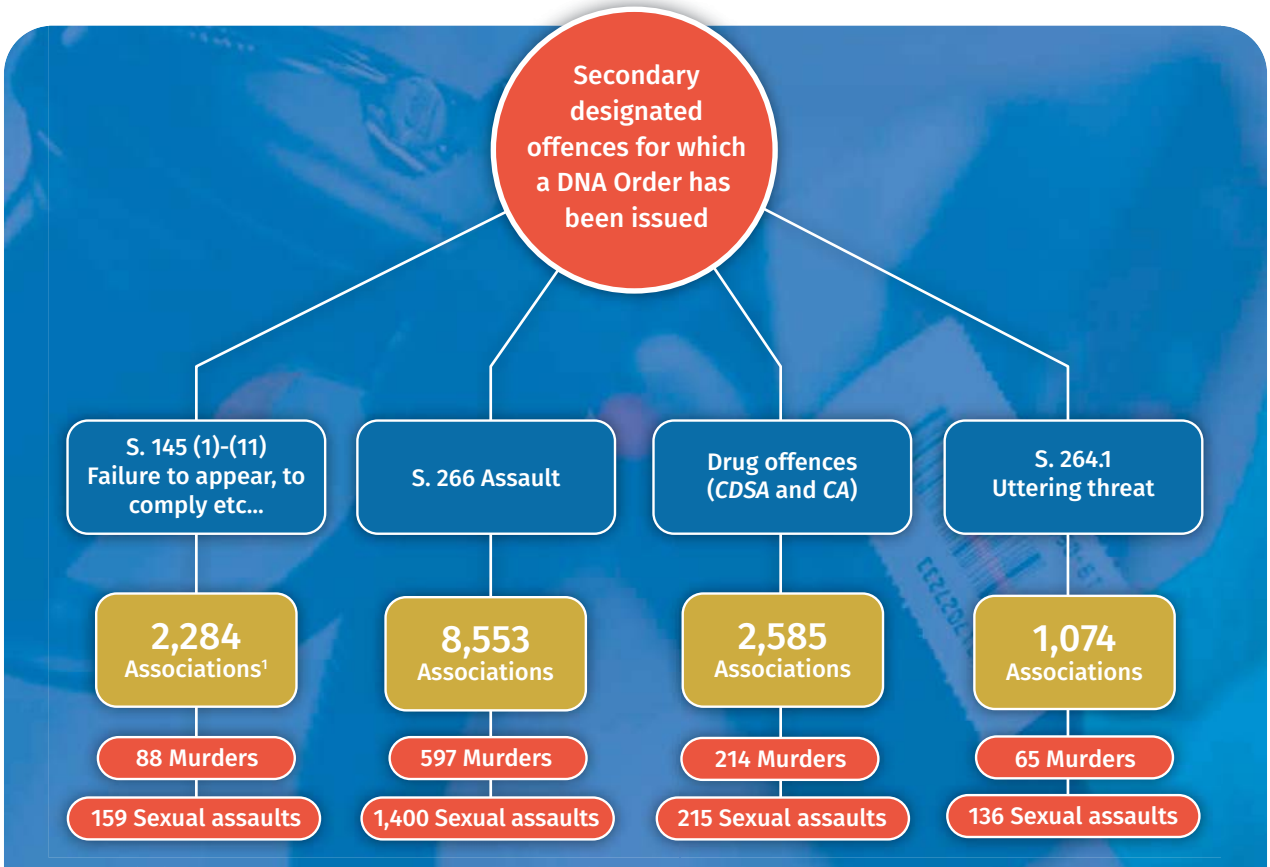
The Act further protects Canadians' privacy rights by requiring informed consent for submissions to the Relatives of Missing Persons Index, the Victims Index and the Voluntary Donors Index. This consent can be withdrawn at any time by the contributor. In addition, at least once every five years, the investigating agency is contacted about the case to ensure that the person from whom the DNA profile was obtained has not withdrawn their consent. Investigators are also asked whether they believe the DNA profile will continue to assist in the investigation for which it was obtained. If removal is requested or if the investigating agency fails to respond, then the DNA profile is removed from the appropriate DNA index and the biological sample is destroyed.

Lastly, the NDDB will only share DNA information with other investigative authorities as permitted by legislation.

THE VALUE OF SECONDARY DESIGNATED OFFENCE SUBMISSIONS

The *Criminal Code* classifies those offences that may be the subject of a DNA order as either primary or secondary designated offences. When the NDDB first started its operations in 2000, the number of secondary designated offences was limited. In 2008, the *Criminal Code* was amended and the list of secondary designated offences was expanded to include a wider range of offences (e.g., failure to appear and drug offences). While usually less violent, these offences can help solve more serious criminal offences.

To illustrate the value of these offences, offender hit data was selected from the NDDB for a few common secondary designated offences. The figure below provides the number of offender hits to ongoing investigations (including murders and sexual assaults) that were the outcome of DNA orders being issued for offenders convicted of secondary designated offences.



[1] Associations refers to the number of Offender Hits.

PROCESS FOR REPORTING A DNA MATCH

Criminal Investigations

NDDB processes biological samples from convicted offenders and enters the resulting DNA profiles into the Convicted Offenders Index.

Forensic laboratories process biological samples left at the crime scenes and enter the resulting DNA profiles into the Crime Scene Index.

NDDB runs a search between the Crime Scene Index and the Convicted Offenders Index.

DNA match between a convicted offender's DNA profile and a crime scene DNA profile.

The offender, the crime scene and the laboratory identifiers are brought to the Canadian Criminal Real Time Identification Services (CCRTIS).

CCRTIS forwards the convicted offender data to the forensic laboratory.

Forensic laboratory passes the convicted offender identity information to the investigator.

PROCESS FOR CONFIRMING A DNA MATCH

Criminal Investigations

The investigator assesses the case evidence to determine if further investigation of the suspect is required.

If evidence of a match between the convicted offender and the crime scene DNA profiles is required for court purposes, the investigator must apply to a provincial court judge for a DNA warrant. If the DNA warrant is ordered, a biological sample can be collected from the suspect under that authority.

The biological sample is submitted to a forensic laboratory for analysis.
The forensic laboratory compares the suspect's DNA profile to that of the crime scene evidence.

The forensic laboratory issues a report confirming a DNA match between the suspect's DNA profile and that of the crime scene evidence.

Based on the laboratory report and other investigative information, the investigator considers whether charges should be laid or recommended against the suspect.

SUCCESS STORIES

For the past 20 years, the NDDB has provided vital support to over 73,000 criminal investigations and court proceedings at the local, national and international levels. The index of convicted offenders DNA profiles has been crucial in helping to solve numerous cold cases. Some of the more high profile of these investigations include the sexual assault and brutal murder in 1984 of a popular Quebec actress, Denise Morelle; the 1992 murder of Marie Lorraine Dupe, a convenience store clerk in Nova Scotia who was stabbed repeatedly; the 1987 murder of Lilian Berube who was beaten to death during a break and enter; the 1995 attempted murder of a Quebec correctional officer; and the violent murders of two children in two separate cases, six-year-old Corrine Gustavson in Alberta in 1992 and nine-year-old Joleil Campeau in Quebec in 1995. The offenders left behind no leads other than DNA and it was this that eventually helped identify them and link them to their heinous crimes.

In other cases, quick identification was possible because the offender's DNA was already in the NDDB. This was the case in 2016 when a suspect was arrested six days after the sexual assault of a young woman on New Year's Day in Newmarket and in the case of 2 sexual assaults in Montréal in 2018 where the serial offender was identified within a few weeks. The NDDB has also provided valuable information across Canada's borders. One example was a disturbing Ohio murder in 2002 when a known offender in Canada was identified following the airing of an episode of America's Most Wanted.

All these and countless other cases have been supported by the NDDB in accordance with the *DNA Identification Act*. A few other stories are provided here in more detail and have been randomly selected to help showcase the value of DNA databases in support of public safety. Due to cases still being in the courts and other considerations, the following true stories represent only a sample of the numerous cases where DNA analysis has been instrumental in shaping the course of an investigation.

CALGARY HIT AND RUN

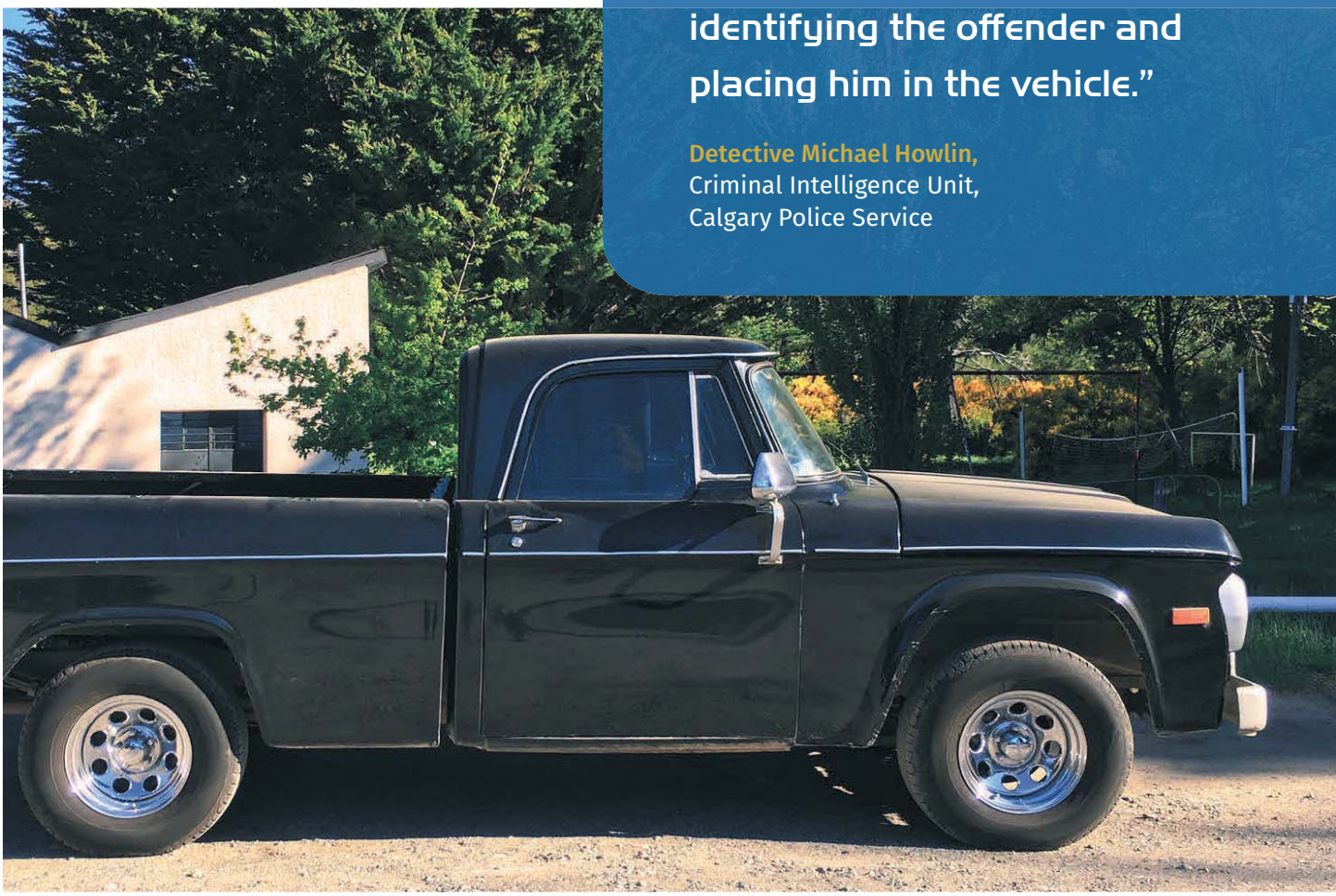
In August 2018, a Calgary police officer responded to a call about a suspicious vehicle. As the officer approached the vehicle, he was knocked down and run over as the driver fled the scene. The officer suffered multiple serious injuries requiring surgery, and spent four days in the intensive care unit on a ventilator.

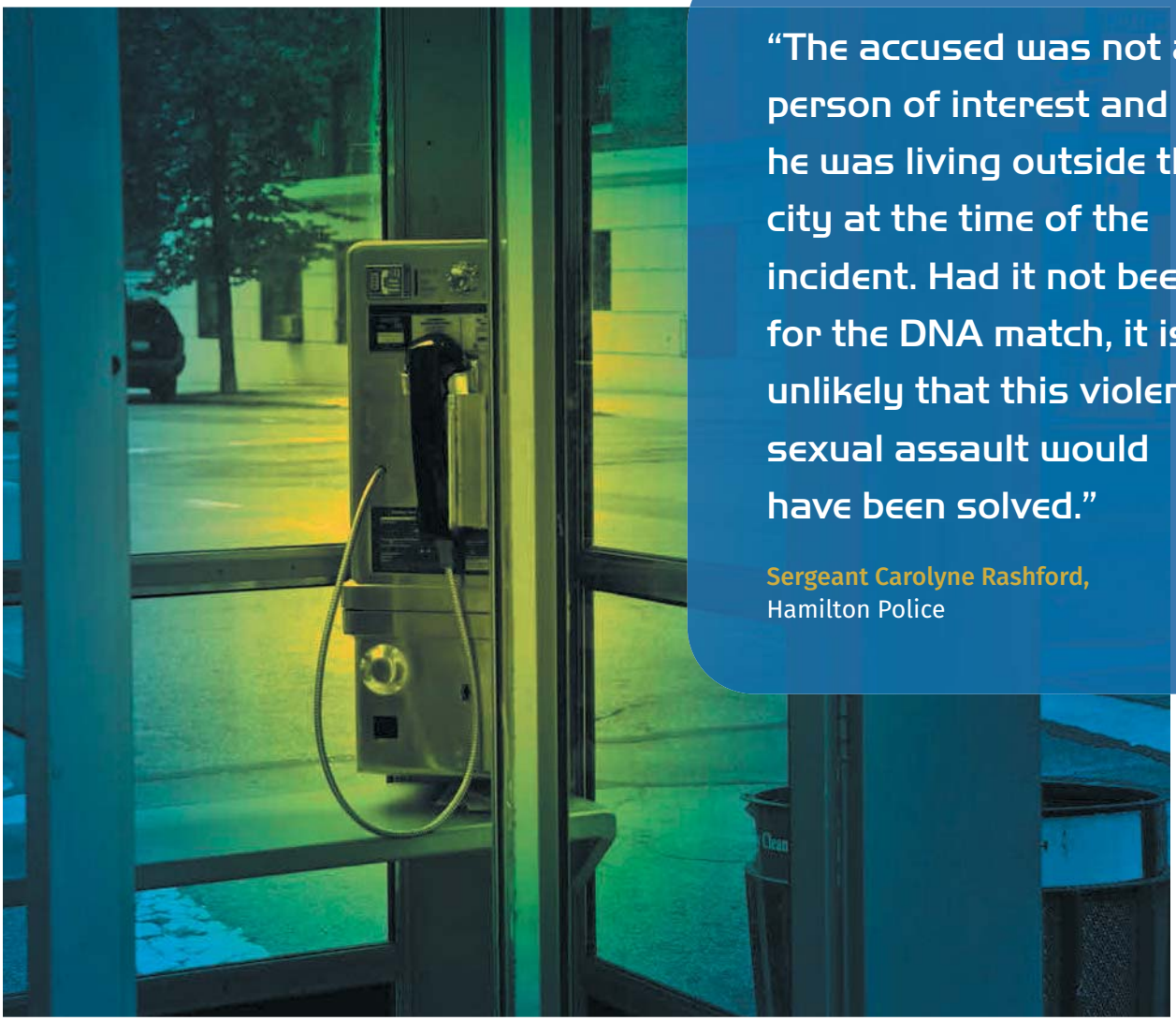
The suspect's vehicle had been stolen and was found abandoned later that day in another part of the city. Police collected fingerprints and DNA from the vehicle. This case was given high priority by the RCMP National Forensic Laboratory to conduct DNA analysis and, one week after the incident, a DNA match was made with a convicted offender in the NDDB. Fingerprints were also used to identify and link the individual to the stolen car.

On the first day of his trial, the offender pled guilty to criminal negligence causing bodily harm and failure to stop at an accident. He was given a five-year sentence and was prohibited from driving for seven years.

"The laboratory was able to assist with this urgent request and provided a profile for the offender in a very short period of time. The DNA profile provided key evidence in identifying the offender and placing him in the vehicle."

Detective Michael Howlin,
Criminal Intelligence Unit,
Calgary Police Service





> "The accused was not a person of interest and he was living outside the city at the time of the incident. Had it not been for the DNA match, it is unlikely that this violent sexual assault would have been solved."
>
> **Sergeant Carolyne Rashford,**
> Hamilton Police

DNA HELPS CATCH A VIOLENT OFFENDER

In August 2018 in southern Ontario, a woman was violently sexually assaulted. After the assault, her assailant told her that he was going to kill her and chop her up. She believed him because the area where she had been assaulted was covered in plastic. The man had her forcibly pinned down but as he was getting dressed, she managed to escape and call 911 from a nearby pay phone while her aggressor left the scene.

Laboratory examination and analysis of samples collected from the victim's body led to the development of a suspect profile, but there was no hit in the National DNA Data Bank at the time.

Police searched the area and analyzed video footage from the scene. The one viable suspect was eliminated by a photo line-up and the investigation soon stalled.

Three months later, a hit between the suspect DNA profile found on the victim to an individual who had been recently convicted of a secondary designated offence was reported. The assailant was arrested and charged in December 2018. In May 2020, he was convicted for sexual assault and is scheduled to be deported once his sentence is served.

"What's interesting is that some of the files dated back more than a decade. DNA had been collected at the time and linked to the other cases, but the individual remained unknown. Once the suspect's DNA profile was fed into the Convicted Offenders Index, we were able to solve all of them."

Eric Léonard, Detective Sergeant,
Vice and Drugs Unit, Laval Police Service

NEEDED A FIX

In 2003, Laval police began investigating a string of home break and enters. In each case, the suspect entered through either the patio door or a back window and left behind something that could be used to develop a DNA profile. Sometimes it was blood recovered from the broken window, other times it was a clothing item, such as a tuque, gloves or jacket. The DNA profile from each crime scene matched to the same individual, linking over 19 break and enter incidents over 13 years, but the identity of the individual remained unknown.

In December 2016, police received a 911 call. The caller said she was witnessing someone break into her neighbours' house while they were away. She kept the 911 operator on the phone as she followed the suspect after he left the house. The man was arrested for the break and enter. Upon conviction for that single offence, a DNA order was issued and a biological sample was submitted to the NDDB. It is important to note that in 2008, the legislation changed mandating a DNA order upon conviction of break and entering a residential house. The DNA profile developed from this convicted offender matched the DNA profile obtained from the 19 previous unsolved break and enter cases. It was later discovered that the individual was addicted to drugs and was breaking into homes to get money to feed his habit.

SWEATER AND BLUEBERRIES

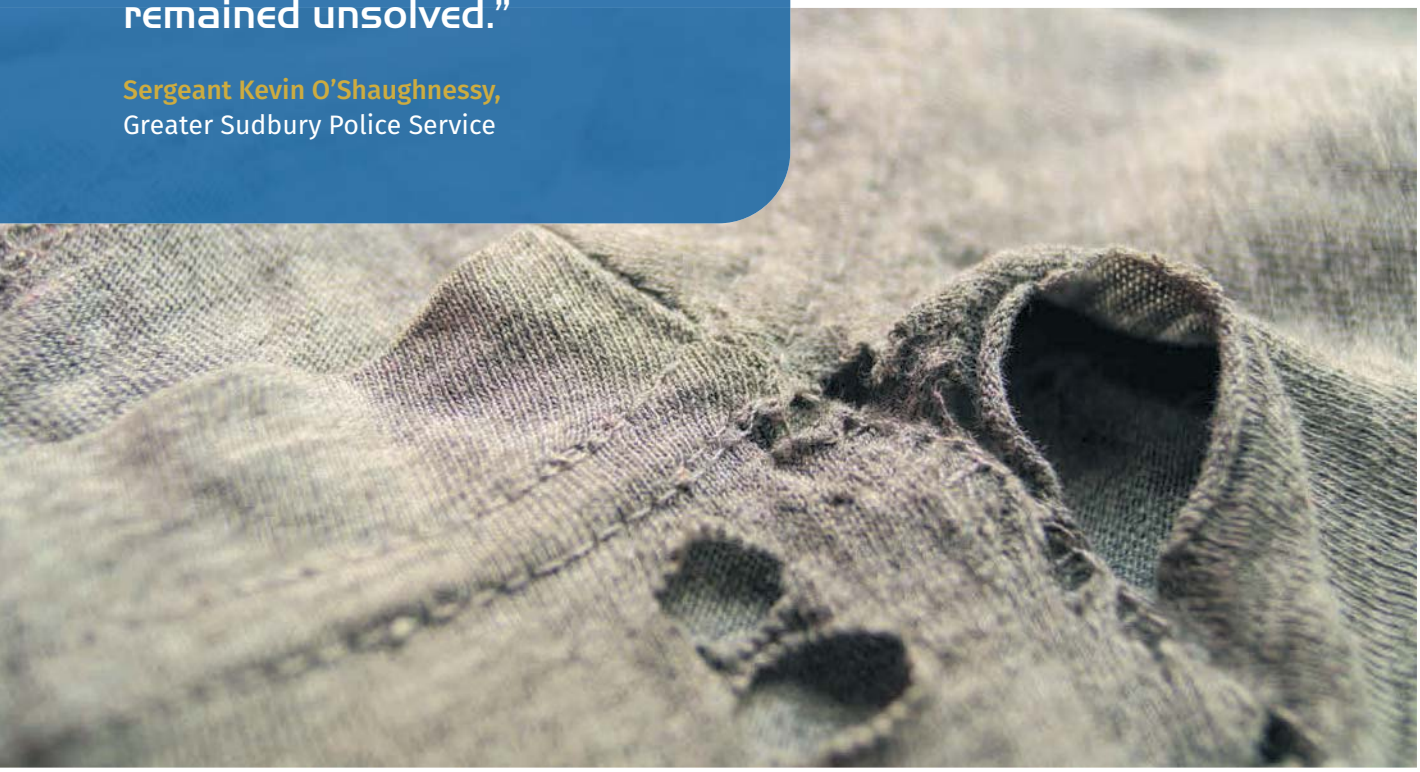
In the afternoon of July 30, 2013, an employee of a roadside blueberry business in the area of Sudbury was robbed by an armed suspect. The suspect used a hammer to threaten the employee and then fled the scene on foot. Shortly after, the police canine unit found a discarded sweater nearby. The employee identified the sweater as the one worn by the suspect who had threatened her with bodily injury and robbed her. Later, the victim could not identify the suspect in a photo line up, making the physical evidence collected at the scene even more critical.

Biological samples were taken from the sweater and a DNA profile for an unknown male was generated and entered into the NDDB; no match was returned. Officers exhausted all other possible leads but the suspect remained unknown and at large. There was an increased risk to public safety as the suspect committed the robbery in broad daylight and had a propensity towards violence.

Two years after the robbery, the NDDB got a hit. A biological sample had been taken from an individual and submitted to the NDDB for a recent conviction. When his DNA profile was entered into the convicted offender's index, it matched the DNA profile from the suspect involved in the armed robbery. The offender was convicted of robbery and received a 20-month sentence. No matter where the crime takes place, the NDDB provides highly specialized services to all law enforcement agencies across the country for any designated offence investigation.

"This investigation was ongoing for several years. Without the assistance of the National DNA Data Bank this investigation would have remained unsolved."

Sergeant Kevin O'Shaughnessy,
Greater Sudbury Police Service



JUSTICE FOR A CHILD VICTIM

In 2006, in Ottawa, a teenage girl was sexually assaulted while she was out walking. The girl was alone and frightened but bravely fought off her attacker, scratching him on the face. She managed to escape and went to police where biological material from her attacker was taken from her fingernails. A DNA profile of an unknown male was generated and added to the NDDB. Unfortunately, without a DNA match to a known offender and no other leads, the case remained unsolved for the next 13 years.

In 2019, a man was convicted of voyeurism, a secondary designated offence. Once his DNA profile was added to the NDDB, it matched the profile of the unknown male from the attack on the young girl back in 2006. Faced with the evidence, the man pled guilty in May 2020 to the 2006 sexual assault and is currently serving his sentence.

The victim in this case said that her faith in the criminal justice system was renewed when her case was finally solved after all these years. The fact that it was DNA that led to the identification, arrest and eventual conviction of the offender gave the victim confidence that the police had the right suspect.

"Victims in historical cases often express a huge weight has been lifted and they finally have closure when the offender is brought to justice. I suspect there are likely many unsolved cases that will be solved as DNA testing improves. This is a very good thing for the victims who seek, and still don't have, the closure they need to deal with the trauma of the offence and try to move on with their lives."

Detective Renee Stewart,
Sexual Assault/ Child Abuse,
Ottawa Police Service

NATIONAL DNA DATA BANK ADVISORY COMMITTEE

Established in 2000 under the mandate of the *DNA Identification Act*, the NDDB Advisory Committee provides the NDDB with strategic guidance and direction on scientific advancements, matters of law, legislative changes, privacy issues and ethical practices. In addition, the Advisory Committee reports to the Commissioner of the RCMP on matters related to the NDDB operations and advises the Commissioner on a range of issues related to DNA ethics, scientific advancements and legislative changes. The members of the Advisory Committee are appointed by the Minister of Public Safety and Emergency Preparedness and collectively represent a diverse spectrum of expertise. The current members of the Advisory Committee are:

BRENDAN HEFFERNAN, (CHAIRPERSON)
RCMP Chief Superintendent (retired), representing the police community.

DERRILL PREVETT, Q.C. (VICECHAIR)
Attorney and legal expert, with over thirty seven years experience in high profile cases involving DNA evidence.

DR. FREDERICK R. BIEBER, PH. D.
Bio-Medical Ethics, Specialist and Associate Professor of Pathology at Harvard Medical School. Dr. Bieber is a medical geneticist at the Brigham and Women's Hospital in Boston, Massachusetts.

DR. RON FOURNEY, PH. D., O.O.M.
Director of Science and Strategic Partnerships, RCMP, and a founding member of the NDDB.

SUE O'SULLIVAN, B.A., O.O.M.
Human Rights Specialist, with extensive experience in advocacy for victims of crime.

DR. MICHAEL SZEGO, PH. D., MHSc.
Clinical Ethicist and Director of the Centre for Clinical Ethics. Dr. Szego is an Assistant Professor, Department of Family and Community Medicine and Dalla Lana School of Public Health at the University of Toronto.

DR. BEN KOOP, PH. D.
Medical Genetics Expert and Professor of Biology at the University of Victoria.

LACEY BATALOV (REPRESENTED BY SOFIA SCICHILONE)
Representing the Privacy Commissioner of Canada.

For more information about the Advisory Committee's role, please visit the NDDB Advisory Committee website: **http://www.rcmp-grc.gc.ca/dnaac-adncc/index-eng.htm.**

KEY STATISTICS

Biological samples: June 30, 2000 through March 31, 2021
Endorsements: January 1, 2008 through March 31, 2021

The decrease in numbers this reporting period is attributed to the global pandemic, which impacted the volume of submissions throughout 2020 and significantly disrupted partner contributions and the NDDB's ability to provide services at full capacity.

TABLE 1 – DNA Profiles Contained in the Criminal Indices	
Convicted Offenders Index (COI)	411,999
Crime Scene Index (CSI)	184,549
Victims Index (VI)	61
Voluntary Donors Index (VDI)	0
TOTAL	**596,609**

TABLE 2 – DNA Profiles Contained in the Humanitarian Indices	
Missing Persons Index (MPI)	109
Relatives of Missing Persons Index (RMI)	864
Human Remains Index (HRI)	264
TOTAL	**1,237**

Biological Samples Received versus DNA Profiles Contained in the Convicted Offenders Index:

As of March 31, 2021, the NDDB received 456,810 biological samples, of which 411,999 DNA profiles were contained in the COI. The difference of 9.8 % can be attributed to rejected samples, duplicate samples, biological samples in the process of being analyzed and DNA profiles removed from the COI because of an absolute or conditional discharge, expired retention period, or because the conviction or the DNA order/authorization was quashed on appeal.

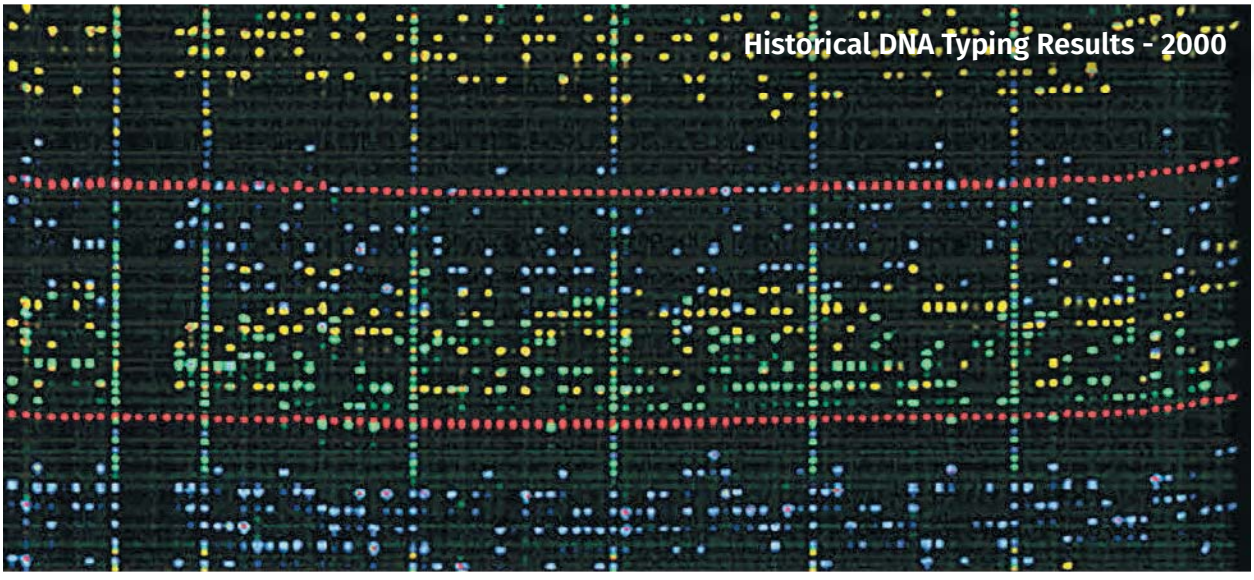


TABLE 3 – Breakdown of DNA Profiles Contained in the Crime Scene Index	
Centre of Forensic Sciences	71,853
Laboratoire de sciences judiciaires et de médecine légale	50,149
RCMP National Forensic Laboratory Services	62,547
TOTAL	**184,549**

EXPLANATORY NOTES

Offender "hit": A DNA profile developed from crime scene evidence and entered into the NDDB's Crime Scene Index matches a DNA profile in the Convicted Offenders Index.

Forensic "hit": A DNA profile developed from crime scene evidence and entered into the NDDB's Crime Scene Index matches another crime scene DNA profile in the Crime Scene Index.

Victim "hit": A DNA profile developed from a victim and entered into the NDDB's Victims Index matches a DNA profile in another index.

Human Remains "hit"- Putative identification: A DNA profile developed from a human remain and entered into the Human Remains Index matches or is associated to a DNA profile(s) in the Relative of Missing Persons Index, the Missing Persons Index or the Convicted Offenders Index.

Humanitarian Index "hit" - investigative lead: A DNA profile developed from a human remain and entered into the Human Remains Index or a DNA profile developed from a personal effect of a missing person and entered into the Missing Persons Index matches to a crime scene DNA profile in the Crime Scene Index.

Offender Duplicate: Cases where two biological samples from the same person were submitted to the NDDB.

Identical DNA Profiles: DNA profiles of identical twins.

Convicted Offender's Profile: A DNA profile from an offender convicted of a designated offence.

Crime Scene Profile: A DNA profile developed from biological evidence found at a crime scene.

TABLE 4 – Matches and Associations Reported	
Offender Hit	66,539
Forensic Hit	7,211
Victim Hit	9
Human Remains Hit - Putative identification	25
Humanitarian Index Hit - Investigative lead	9
Offender Duplicate[1]	14,773
Identical DNA Profiles	390

[1]Does not include duplicate samples identified prior to laboratory analysis.

TABLE 5 – Offender Hits by Case Type	
Break and Enters	29,477
Robberies	7,258
Sexual Offences	6,947
Assaults	5,225
Homicides	4,287
Attempted Murders	1,288
Other	12,057
TOTAL	**66,539**

TABLE 6 –Convicted Offender Submissions Received – Breakdown by Category of Offence		
	Biological Samples	**Endorsements**
Primary	241,832	82,117
Secondary	211,198	104,714
Other	3,780	1,151
TOTAL	**456,810**	**187,982**

NOTE: The "Other" category includes samples submitted following conviction for a non-designated offence or without a DNA court order. These submissions are not processed unless the NDDB receives a corrected order.

Primary and Secondary Offences: See section 487.04 of *Criminal Code* of Canada and section 196.11 of the *National Defence Act*.

TABLE 7 – Convicted Offender Submissions Received – Breakdown by Type of Offender		
	Biological Samples	**Endorsements**
Adult Offender	401,771	181,005
Young Offender	54,931	6,969
Military Offender[1]	108	8
TOTAL	**456,810**	**187,982**

[1] A member of the military convicted of a designated offence and had a biological sample/ endorsement submitted to the NDDB.

TABLE 8 – Convicted Offender Submissions Received – Breakdown by Type of Offence		
	Biological Samples	**Endorsements**
Assaults	278,261	122,992
Sexual Offences	95,788	13,574
Break and Enters	64,362	38,377
Robberies	52,293	21,327
Controlled Drugs and Substances Act and Cannabis Act	42,701	17,485
Homicides	10,299	2,253
Other	70,533	57,297
TOTAL	**614,237**	**273,305**

NOTE: More than one offence may be associated with a sample submission.

TABLE 9 – Convicted Offender Submissions Received by Province/Territory				
	April 1, 2020 to March 31, 2021		**June 30, 2000 to March 31, 2021**	
	Biological Samples	**Endorsements**	**Biological Samples**	**Endorsements (from Jan 1st, 2008)**
British Columbia	1,209	1,219	51,628	21,118
Alberta	1,531	1,406	49,281	19,647
Saskatchewan	718	438	19,541	4,359
Manitoba	648	907	27,924	10,786
Ontario	4,702	5,679	200,243	106,810
Quebec	2,168	1,111	77,229	18,264
New Brunswick	261	124	5,970	775
Nova Scotia	265	162	11,746	2,954
Prince Edward Island	63	14	1,255	131
Newfoundland & Labrador	151	109	6,353	1,415
Yukon	27	13	835	249
Northwest Territories	61	68	2,460	860
Nunavut	75	52	2,345	614
TOTAL	**11,879**	**11,302**	**456,810**	**187,982**

NOTE: The above information represents the convicted offender submissions received and is not reflective of the number of convictions eligible for a DNA order.

RETROACTIVE AUTHORIZATIONS

This is a biological sample taken from an offender who was found guilty of certain designated *Criminal Code* offences before June 30, 2000. The authorization is granted as per qualifying criteria set out in s.487.055 of the *Criminal Code*. Under this provision, the NDDB has received 5,035 submissions.

REJECTION OF NDDB SUBMISSIONS

The NDDB has rejected only 6,986 (1.5 %) of the biological samples and 2,786 (1.5 %) of the endorsements it has received to date. Reasons for rejection include: the offender was convicted of a non-designated offence, the biological sample was inadequate, the collection kit used was inappropriate (sample), the offender's DNA profile was not contained in the COI (endorsement), or the DNA order was missing or invalid.

COLLECTION OF ADDITIONAL BODILY SUBSTANCES

If a biological sample is rejected because the quality of the sample is deemed inadequate for DNA analysis, or if it was not submitted in accordance with the *DNA Identification Regulations*, an application for resampling can be authorized by a judge. Since June 30, 2000, the NDDB has received 1,830 samples taken under this provision.

TABLE 10 – Breakdown of Biological Samples Destroyed and DNA Profiles Removed from the Convicted Offenders Index

	ADULT	YOUNG PERSON
Conditional discharge (repealed for adults as of March 6, 2018)	11,231	1,833
Conviction quashed on appeal	843	31
Absolute discharge (repealed for adults as of March 6, 2018)	583	119
Duplicate sample (same order)	373	34
No suitable DNA profile obtained	138	19
Order/authorization quashed	45	8
Retention period expired	N/A	7,920
Other	73	11
TOTAL	**13,286**	**9,975**

N/A: Not applicable

TABLE 11 – Summary of NDDB Indices and Associations Made

	2016/17	2017/18	2018/19	2019/20	2020/21
Total Number of CSI DNA Profiles at Year-End	130,100	143,963	159,448	173,292	184,549
Increase in CSI DNA Profiles[1]	12,937	13,863	15,485	13,844	11,257
Total Number of COI DNA Profiles at Year-End	346,160	365,565	384,488	401,546	411,999
Increase in COI DNA Profiles[1]	19,171	19,405	18,923	17,058	10,453
Submissions received (biological samples and endorsements)	40,199	40,394	38,898	37,447	23,181
Associations made (Offender and Forensic Hits)	5,508	5,751	7,291	6,857	4,327

[1] Net increase after rejections and removals from indices.

FINANCIAL STATEMENT[1]

April 1, 2020 – March 31, 2021	
EXPENDITURE TYPE	**EXPENDITURE ($ thousands)**
Personnel	2,343
Internal Services	788
Employee Benefit Plan	422
Transport and Telecommunications	59
Development and Infrastructure Support	41
Rentals	182
Repair and Maintenance	6
Utilities, Materials, Supplies and Miscellaneous	1,055
Capital and Minor Equipment Purchases	595
Sub-total	**5,491**
Allocated Indirect Costs[2]	216
Total	**5,707**

[1] The financial statement includes costs for the National Missing Persons DNA Program as it applies within the National DNA Data Bank.

[2] Indirect Costs include: Forensic Science and Identification Services administrative and corporate support, recruitment, the Quality Assurance Program, IT support and the National DNA Data Bank Advisory Committee.