



**A Review of DNA Lab Requests from
Municipal Departments and RCMP Detachments
in the Lower Mainland of British Columbia (2006-2011)**

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The views expressed herein are solely those of the authors and do not necessarily reflect those of the Department of Justice Canada.



Contents

1. Background	3
2. Methodology.....	3
2.1 AUTHORIZED LAB SUBMISSIONS	4
3. General Sample Characteristics	5
4. Results from the DNA Lab	8
5. The Role of DNA in Criminal Investigations and Prosecutions	11
6. Interview Results	14
7. Conclusion	16
Appendix A.....	19
Appendix B.....	23

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Key Findings:

- Inclusive of all years under review (2006 – 2011), and including all authorized lab submissions, 24% of files resulted in a COI offender hit from a crime scene sample.
- Considering the current sample where DNA result information was available (n = 195), between 2006 – 2011, 27% of files resulted in a COI offender hit from a crime scene sample.
- The general time that it took for lab results to be provided to an investigator was between 116 and 126 days.
- Slightly more than one-third of files indicated that DNA helped to lay charges against an offender.
- In 91% of the cases where a Report to Crown Counsel was made, the charges were approved.
- In one-third of files, DNA analysis resulted in an application for a DNA warrant
- In one-fifth of files where court outcome information was present, two-thirds resulted in the offender being found guilty, 13% the offender plead guilty, and in 8% of files the offender plead guilty to a lesser or included offense. In less than 2% of files, the offender was found not-guilty, and in only 14% the charges were stayed.
- Results from investigator interviews reveal that DNA evidence is viewed as nearly always useful in an investigation in some form or another, and further, the NDDB is not only a great current criminal justice asset, it is also an important investment into the future.



1. Background

Over the past decade, the National DNA Data Bank (NDDB) in Canada has seen tremendous success. Its role has proven to be critical in many investigations resulting in convictions and offering some degree of closure to many families and victims. The use of DNA evidence in an investigation is considered to be a critical tool for investigators as it can provide unbiased information in the identification of a suspect, the development of a DNA profile, or eliminating a suspect. Moreover, DNA evidence can provide the justification to further an investigation in a particular direction and can provide scientific evidence of identity that solidly supports our criminal justice system's criminal burden of proof. Importantly, DNA evidence and the NDDB are not only viewed as an important asset in criminal investigations, but are a continuous investment into the future capability and capacity of our criminal justice system to respond to crime.

The purpose of this report is to describe the results from a review of DNA lab requests from police agencies within the Lower Mainland of British Columbia. Another purpose is to report on the results of investigator interviews conducted as part of the review. A primary focus of those interviews was to capture investigators' concerns and views regarding the overall usefulness of the NDDB.

The review of lab requests was focused on the nature of the police request, the nature of the lab results, and the effect of successful DNA "hits" on police investigations and charge approval. The request for the report, which came from the Department of Justice, has its roots in recommendations from the Senate Standing Committee on Legal and Constitutional Affairs, and the National DNA Data Bank (NDDB) Advisory Committee, to collect statistics to better understand the National DNA Data Bank of Canada's assistance in police investigations and NDDB effectiveness. The review was designed in consultation with the Research and Statistics Division of the Department of Justice Canada.

2. Methodology

There were two parts to the methodology associated with this review. The first part consisted of a review of Lower Mainland District (LMD) police files. In total, eight police agencies participated in the review. Two of these participating agencies were municipal police departments and six were RCMP detachments. These detachments and departments collectively represent most of the policing jurisdictions for the Lower Mainland of British Columbia. Specifically, the participating police departments and detachments were:

1. Vancouver PD
2. Abbotsford PD
3. Surrey RCMP
4. Richmond RCMP
5. Ridge Meadows RCMP
6. Burnaby RCMP
7. White Rock RCMP
8. Upper Fraser Valley Regional RCMP



For those participating police agencies, researchers requested the relevant DNA file information from the RCMP National Forensic Services Laboratory in Vancouver, British Columbia. Specifically, this data request included a list of all of the authorized biology case submissions received by the lab from the listed LMD detachments. Associated to the biology case submissions were the lab file numbers, name of the agencies, agency file numbers, and relevant criminal code sections associated to the offence(s) between 2006 and 2011. Also requested were the lists of all of the crime scene index (CSI) hit files obtained both nationally and locally between 2006 and 2011, as well as the convicted offender index (COI) hit files that were obtained during the same time period.

Each participating agency was provided a combined list of COI and CSI hit file numbers to “pull” for this review. The list provided to each agency was created by selecting every third DNA match file beginning in 2006 and ending in 2011 from each master agency list. This method resulted in 587 total DNA match or “hit” files being reviewed for this report. Researchers visited each agency to review the files, and the information in the files was coded using a coding manual designed for this project (see Appendix A). There was a wide range of offence types represented in the files and, in those cases where there were multiple charges, only the most serious offence (MSO) as indicated in the file was coded. Once all of the relevant data was coded, each manual was entered into a Statistical Package for the Social Science (SPSS) database for analysis. The analyses focused on the nature of the offence and the source of the DNA collected, the amount of time it took the DNA lab to analyze the sample, the outcome of the analysis, and the role that the DNA evidence played in the investigation and prosecution of the offence.¹

In addition to the file review, qualitative telephone interviews with at least one police investigator from each of the eight participating police agencies was conducted (see Appendix B). These interviews focused on the investigators’ experiences with DNA requests, how those experiences have changed over time, their views of the usefulness of the NDDDB, any concerns they may have regarding requests and subsequent action taken on “hits”, and any recommendations they had for NDDDB improvement. In total, 15 investigators were interviewed for this report.

2.1 Authorized Lab Submissions

Below is the total number of authorized lab submissions from 2006 to 2011 from each of the eight participating agencies. The %age of Offender “COI” and Forensic “CSI” hits are reflective of every case, and are not restricted to the sample used for the rest of this analysis as not all files included all of the information used for each analysis presented in this report. Importantly, an Offender “COI” hit results from a DNA profile being developed from crime scene evidence and entered into the NDDDB that then matches a DNA profile in the Convicted Offenders Index. A Forensic “CSI” hit results from a DNA profile being developed from crime scene evidence and

¹ It is important to keep in mind that British Columbia employs a pre-charge screening process whereby Crown Counsel is responsible for approving a charge.



entered in the Crime Scene Index of the NDDDB that then matches another crime scene DNA profile in the Crime Scene Index.

TABLE 1: TOTAL NUMBER OF AUTHORIZED LAB SUBMISSIONS & PERCENT OF OFFENDER “COI” AND FORENSIC “CSI” HITS FROM 2006 – 2011

Department/Detachment	Total Authorized Requests	COI Hits %	CSI Hits %	Total Hits %
Abbotsford PD	314	13%	16%	29%
Burnaby RCMP	785	17%	20%	38%
UFVRD RCMP	123	-	30%	-
Richmond RCMP	336	12%	25%	37%
Ridge Meadows RCMP	169	13%	9%	22%
Surrey RCMP	2,847	9%	7%	16%
Vancouver PD	2,630	17%	22%	39%
White Rock RCMP	40	25%	33%	58%
Total	7,244	13%	16%	29%

There were no COI hits for UFVRD provided in this sample.²

In terms of the requests authorized for analysis, a total percent age is given for each of those requests that resulted in an Offender “COI” or a Forensic “CSI” hit from each of the participating RCMP detachments or municipal departments in the study period (see Table 1). It should be noted that the number of total authorized requests refers to biological cases, such as saliva, blood, or hair. The combined total percent age of COI and CSI hits are also provided. No agency reported higher than 24% total COI hits for the years under review. Further, the CSI hits appeared to occur more often than COI hits. In this sample, five of the eight agencies showed a slightly higher proportion of CSI hits than their reported COI hits.

3. General Sample Characteristics

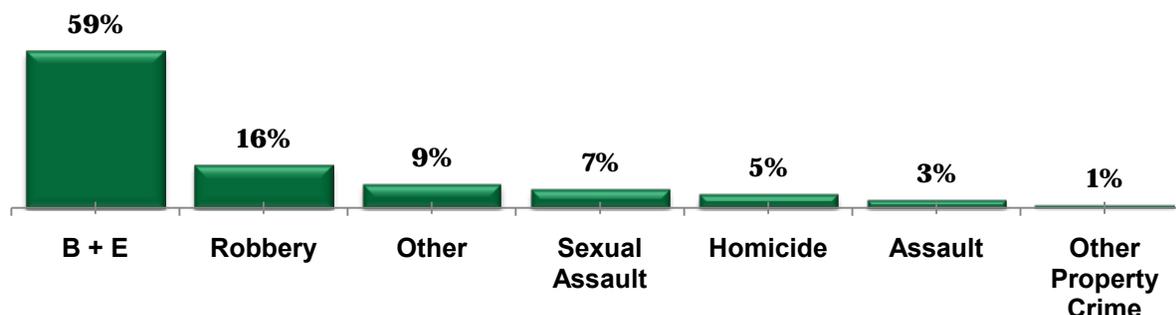
In terms of the nature of the offences associated to the files reviewed (n = 581), a little more than half (59%) were associated to Break and Enter offences. Less than one-fifth of files were associated to a robbery (16%) and a slightly smaller proportion was classified as ‘other’ (9%).³ Very few files were associated with a homicide (5%), an assault (3%), or a sexual assault (7%) (see Figure 1).

² The information provided to the researchers by the lab did not include any COI hit files for UFVRD. This does not mean that none existed for this regional detachment, but simply reflects the fact that none were provided to the researchers for analysis.

³ ‘Other’ refers to all offence types that were not classified in the files as a homicide, assault, sexual assault, Break and Enter, robbery, or other property offence.

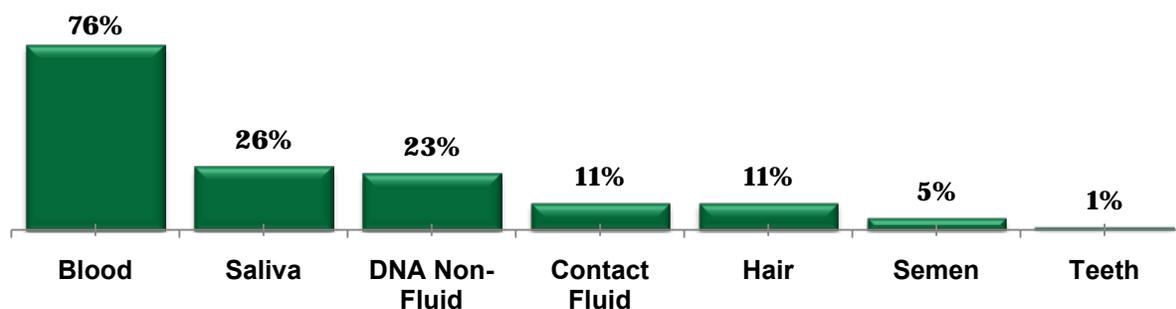


FIGURE 1: PRIMARY OFFENCE TYPE (N = 581)



In terms of the collection of DNA, there are a number of physical sources that are viable, such as blood or saliva. Of the files that contained information on the physical source of the DNA sample (n = 543), in total, there were 770 DNA samples, as more than one physical source of DNA could have been collected per file. As a result, the percentages provided in Figure 2 exceed 100%. The most common source of DNA was from blood (76%), followed by saliva (26%), and non-fluid DNA (23%) (see Figure 2).

FIGURE 2: PHYSICAL SOURCES OF THE DNA SAMPLES (N = 543)



It is interesting to note that there were some variations when comparing the physical source of the DNA sample by the primary nature of the offence. As blood was the most common physical source of DNA overall in this sample, it was not surprising that it was the most common source of DNA for all offence types, with the exception of sexual assault files. Here, semen was the most common physical DNA source. In fact, approximately three-quarters of all the files that used semen as a physical source of DNA (76%) were sexual assault cases.⁴ While one might expect that a large proportion of personal offences, such as assaults or robbery, would include blood as a physical source of DNA; blood was also a common physical source of DNA in Break and Enter, and other property crime files⁵ (see Table 2).

⁴ While 76% of all cases that used semen as a physical source of the DNA sample were sexual assault cases, as demonstrated in Table 2, of the 38 sexual assault cases in the sample, 58% of them used semen as a source of the DNA sample.

⁵ Note that the sample size for “other” offences is small and should be interpreted with caution.



TABLE 2: PHYSICAL SOURCE OF THE DNA SAMPLE BY PRIMARY OFFENCE TYPE (N = 542)

	Hair	Saliva	Blood	Teeth	Bone	Semen	DNA Non-Fluid	Contact Fluid
Homicide (n = 25)	60%	64%	88%	8%	4%	8%	64%	20%
Assault (n = 17)	24%	29%	82%	0	0	0	53%	6%
Sexual Assault (n = 38)	13%	63%	50%	0	0	58%	29%	68%
Robbery (n = 76)	26%	32%	58%	0	0	4%	47%	18%
B & E (n = 333)	2%	17%	83%	0	0	1%	10%	3%
Other Property Crime (n = 5)	0	40%	80%	0	0	0	0	0
Other (n = 48)	21%	27%	58%	0	0	2%	38%	10%

Similar to the multiple sources of physical DNA, such as hair, blood, and saliva, DNA evidence can be collected from a variety of sources. Here, the sources were categorized as from the offender, the victim, and/or the crime scene. Of the 530 files with information on where the DNA sample came from, 657 sources of DNA were included. Overwhelmingly, the source of the DNA sample was from the crime scene (93%). The offender was the source of the DNA submission in 15% of files and the victim was the source of DNA in a very similar proportion of files (16%). When considering the source of DNA by the nature of the offence, only in cases of sexual assault was the crime scene not the main source of the DNA (see Table 3). For sexual assault files, the most common source of DNA was the victim (82%) followed by the offender (26%). Unsurprisingly, the victim's DNA was rarely present when the offence was property-related and the offender's DNA was present more often when the offence was violent in nature, such as a homicide or an assault.

TABLE 3: SOURCE OF THE DNA SAMPLE BY PRIMARY OFFENCE TYPE (N = 527)⁶

	Offender ⁷	Crime Scene	Victim
Homicide (n = 24)	38%	92%	80%
Assault (n = 13)	54%	85%	46%
Sexual Assault (n = 38)	29%	29%	82%
Robbery (n = 70)	27%	96%	17%

⁶ The % for each offence type exceeds 100% because multiple sources of DNA could be associated to one file. In other words, one assault might result in DNA taken from the crime scene and the victim.

⁷ The offender category refers to a determination that the DNA was provided by the offender once the results of the DNA analysis was known.



B & E (n = 331)	5%	99%	1%
Other Property Crime (n = 6)	17%	100%	0
Other (n = 45)	31%	98%	33%

Importantly, the time that each step takes in the overall process is critical for assessing the effectiveness of DNA evidence used in an investigation. The files contained several variables associated to time: Request for Approval referred to the date that the request was made of the lab for analysis by the investigator; Approval referred to the date that the request was approved by the lab for analysis; and Forwarded to the Lab referred to the date that the samples were forwarded to the lab to have the analysis completed. Specifically reviewed here is the length of time it took from the date of a Request for Approval to the Forwarded to the Lab date. Again, all these dates were derived from the files themselves. In total, 319 files had the necessary valid information to make the aforementioned calculation. While the maximum amount of time it took was 349 days and the minimum was only one day,⁸ the average amount of time was 43 days. Interestingly, the more “serious” the offence, the faster the DNA samples were received by the lab (see Table 4).⁹

TABLE 4: MEAN TIME IN DAYS FOR DNA SAMPLES TO BE FORWARDED TO THE LAB FOR ANALYSIS BY PRIMARY OFFENCE TYPE (N = 302)

	Avg. Number of Days
Homicide (n = 3)	2
Assault (n = 7)	17
Sexual Assault (n = 16)	20
Robbery (n = 20)	38
B & E (n = 235)	46
Other Property Crime (n = 3)	154
Other (n = 18)	18

In effect, an analysis of the files indicated that the most common offence in this sample was a Break and Enter, blood was the most common physical source of DNA, the crime scene was the most common source of the DNA, and it took, on average, 43 days from the Request for Approval date to the Forwarded to the Lab date; however, the more serious the offence, the faster the DNA sample was received by the lab.

4. Results from the DNA Lab

Data was available in 117 cases to determine how long it took the lab to provide the results of the DNA analysis.¹⁰ On average, in this sample of cases, it took the lab 107 days to confirm results from the date that the lab received the DNA sample with a range of six to 399 days.¹¹ As demonstrated in Table 5, while the number of cases was very small for each offence type, which

⁸ In order to avoid the effect of outliers, only the top 95% of files were included in this analysis.

⁹ Note for several offence categories the sample size is small and should be interpreted with caution.

¹⁰ Dates provided in the lab analysis outcome reports in the files were used.

¹¹ In order to avoid the effect of outliers, only the top 95% of files were included in this analysis.



does not allow for the results to be representative, for the most part, there was little variation in the amount of time it took to get results based on the nature of the offence. While the fastest turnaround time in this sample was for sexual assault files (80 days), the offence type with the longest turnaround time was ‘other’ at 126 days.

TABLE 5: MEAN TIME IN DAYS FOR DNA LAB TO CONFIRM THEIR RESULTS BY PRIMARY OFFENCE TYPE (N = 111)

	Avg. Number of Days
Homicide (n = 0) ¹²	-
Assault (n = 3)	114
Sexual Assault (n = 8)	80
Robbery (n = 14)	101
B & E (n = 67)	92
Other Property Crime (n = 3)	100
Other (n = 10)	126

Importantly, the average amount of time for the lab to confirm their results from the date they received the DNA sample for all files in our sample decreased substantially since 2010. Specifically, in 2009, the average length of time it took the lab to respond with results was 117 days (n = 22). While this increased slightly to 122 days in 2010 (n = 36), the length of time dropped substantially in 2011 to just 75 days (n = 35).

In our sample of files, the result of the lab’s analysis was recorded in 195 files. In less than two-thirds of the files (61%), a DNA profile was developed. In more than one-quarter of files (27%), a match was made to a convicted offender, but it was rare (9%) that a crime scene to crime scene match was the result of the DNA analysis.

Table 6 presents the breakdown of the lab’s results by the nature of the offence. So, for example, with respect to the 16 sexual assault files in our sample, a suspect was identified as a result of the DNA analysis in almost half of files (44%).¹³ When considering other offence types, a suspect was identified in more than one-third (39%) of robbery files and in a similar proportion of ‘other’ offence files (37%). Crime scene matches occurred in a few Break and Enter files. Again, when considering these results, it is important to keep in mind that the sample sizes are extremely small.

¹² While the police treat homicides with the highest priority, our sample did not include any files in which the offence was a homicide and both the date the lab received the DNA sample and the date the lab had the result was present.

¹³ Of note, the forensic lab determines the approved and rejected status of sample submissions. If the sample is approved by the lab, the process of analysis begins; however, if it sample is rejected, there could be a request from the lab of the investigator to provide further information or more sample evidence to the lab before they would accept it.



TABLE 6: LAB RESULT BY PRIMARY OFFENCE TYPE (N = 193)

	No DNA	DNA Profile Developed	Convicted Offender Match	Crime Scene/Crime Scene Match
Homicide (n = 5)	0	60%	40%	0
Assault (n = 7)	0	86%	14%	0
Sexual Assault (n = 16)	6%	50%	44%	0
Robbery (n = 28)	11%	50%	39%	0
B & E (n = 116)	1%	64%	20%	16%
Other Property Crime (n = 2)	0	100%	0	0
Other (n = 19)	5%	58%	37%	0

In terms of the average amount of time it took the lab to report results based on the outcome of the analysis, as demonstrated in Table 7, it took 110 days for a result of a DNA profile to be produced compared to, on average, 98 days for a result of a convicted offender match to be completed.¹⁴

TABLE 7: MEAN NUMBER OF DAY FOR LAB RESULTS

	Mean # of Days
No DNA (n = 2)	137 Days
DNA Profile Developed (n = 37)	110 Days
Convicted Offender Match (n = 17)	98 Days
Crime Scene/Crime Scene Match (n = 10)	61 Days

In considering the mean amount of time it took for the results of the lab to be provided to the investigator based on the outcome of the analysis, as demonstrated in Table 8, there was very little variation. In effect, it took, on average, 111 days for the result of a convicted offender match to be provided to the investigator and 126 days for a DNA profile.¹⁵ Again, caution is needed in interpreting this data as the sample sizes are very small.

TABLE 8: MEAN NUMBER OF DAYS FOR LAB RESULTS TO BE PROVIDED TO THE INVESTIGATOR BASED ON THE DNA RESULT

	Mean # of Days
No DNA (n = 2)	120 Days
DNA Profile Developed (n = 38)	126 Days
Convicted Offender Match (n = 34)	111 Days
Crime Scene/Crime Scene Match (n = 27)	116 Days

¹⁴ In order to avoid the effect of outliers, only the top 95% of files were included in this analysis.

¹⁵ In order to avoid the effect of outliers, only the top 95% of files were included in this analysis.



In summary, based on the information in this sample of files, it took the lab approximately 107 days to report the results of the DNA analysis. Most commonly, the analysis resulted in the development of a DNA profile and, to a lesser extent, the identification of a suspect.

5. The Role of DNA in Criminal Investigations and Prosecutions

Given the challenges, cost, and time to properly collect and analyze DNA samples, it is critical that these exhibits contribute to the successful investigation and conviction of offenders. In this sample, 25% of files indicated that the DNA results changed the nature, direction, or scope of the investigation, and nearly two-thirds of the files (63%) indicated that the result of the DNA analysis helped identify a suspect.¹⁶ Of note, when considering specific offence types, DNA was most successful in robbery and Break and Enter files in identifying a suspect, and was also successful in a majority of homicide, assault, sexual assault, and other files (see Table 9). Importantly, in 4% of cases DNA results helped eliminate a suspect.

TABLE 9: PROPORTION OF OFFENCE TYPES IN WHICH DNA RESULT HELPED IDENTIFY A SUSPECT (N = 482)

	Percent Yes
Homicide (n = 16)	56%
Assault (n = 12)	58%
Sexual Assault (n = 32)	50%
Robbery (n = 61)	62%
B & E (n = 322)	67%
Other Property Crime (n = 4)	25%
Other (n = 34)	53%

In terms of the role of DNA analysis on prosecution, slightly more than one-third of files (36%) indicated that DNA helped to lay charges against an offender.¹⁷ Interestingly, as demonstrated in Table 10, there was some variation by offence type. While the sample sizes were small, DNA helped lay charges in six (55%) of our sample's 11 assault cases. DNA also played a role in the laying of charges for almost half of our sample's 32 sexual assault (47%) and 57 robbery (47%) files. Conversely, in this sample, DNA played no role in the laying of charges for a large majority of Break and Enter files (67%), homicide files (79%) and 'other' offence types (62%).

TABLE 10: PROPORTION OF OFFENCE TYPES IN WHICH DNA HELPED LAY CHARGES (N = 466)

	Percent Yes
Homicide (n = 14)	21%
Assault (n = 11)	55%

¹⁶ This analysis was based on the same questions from the standard post assessment/survey for investigators in which the word suspect is used.

¹⁷ Given that, in British Columbia, Crown approves charges, rather than the police, while DNA may have identified a suspect, Crown may not have approved charges for a variety of reasons, such as it not being in the best interest of the public or because there was still not a substantial likelihood of conviction.



Sexual Assault (n = 32)	47%
Robbery (n = 57)	47%
B & E (n = 316)	33%
Other Property Crime (n = 3)	0
Other (n = 32)	38%

Another important contribution that DNA collection and analysis can play is in linking previously unrelated occurrences. In this sample, 42% of files indicated that the DNA analysed provided a link to previously unrelated occurrences. In just over one-third of files (37%), the DNA analysis resulted in an application for a DNA warrant. When considering these applications by offence type, a just over half of assault and ‘other’ offence files (54% each) had the DNA result in an application for a DNA warrant (see Table 11). This was less common for sexual assault (47%), robbery (39%), and Break and Enters (33%).

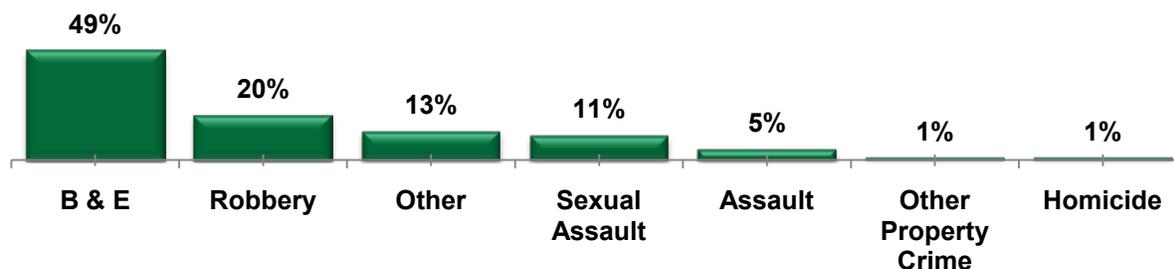
TABLE 11: PROPORTION OF OFFENCE TYPES IN WHICH DNA RESULTED IN AN APPLICATION FOR A DNA WARRANT (N = 484)

	Percent Yes
Homicide (n = 16)	25%
Assault (n = 13)	54%
Sexual Assault (n = 34)	47%
Robbery (n = 62)	39%
B & E (n = 320)	33%
Other Property Crime (n = 4)	25%
Other (n = 35)	54%

In just over half of files (52%), a report to Crown Counsel was submitted. The most common reasons for not submitting a report to Crown Counsel were that the investigation and DNA analysis resulted in an inability to identify a suspect or there simply was not enough evidence to proceed. However, in virtually all of the cases (91%) where a report to Crown Counsel was submitted, the charges were approved. In those very rare cases (n = 22) where charges were not approved, the main reasons were that too much time had passed since the commission of the offence or a determination that it was unlikely that prosecution would result in a conviction. As demonstrated in Figure 3, the most common offence type in which charges were approved was Break and Enter (49%) followed by robbery (20%), ‘other’ (13%), and sexual assault (11%).



FIGURE 3: DISTRIBUTION OF PRIMARY OFFENCE TYPE WHEN CHARGES WERE APPROVED (N = 213)



It should be noted that for all of the homicide, assault, sexual assault, and other property crime the charges were approved. Moreover, in 90% of the robbery, 86% of the Break and Enter, and 90% of the “other” offence files charges were also approved.

While not all cases go to trial, information was available about the court outcome in 155 files. As coded in the police files, nearly two-thirds of the files with the relevant information indicated that the result of the process was that the offender was found guilty (63%), in 13% of the files (n = 20) it indicated that the offender plead guilty, and in another 8% of the files (n = 13) the offender plead guilty to a lesser or included offence. In fact, only 2% of files indicated that the offender was found not guilty and only 14% had the charges stayed.

Finally, an analysis was conducted examining what other types of evidence were included for those offences in which charges were approved (see Table 12). Of the 185 files that indicated that additional evidence was provided, 431 additional kinds of evidence were noted, as more than one type of evidence could have been collected. For those offences in which charges were approved, nearly half (48%) indicated ‘other’, while a similar proportion of files (47%) indicated that at least one photograph was included as evidence, and a slightly smaller proportion of files included fingerprints (44%) and clothing (40%) as evidence. Very rarely was physical matching (6%), a tire impression (1%), or a tool mark impression (1%) indicated in the files. It should be noted that in 41% of files it indicated that a warned statement was included in the evidence.

TABLE 12: OTHER TYPES OF EVIDENCE IN THOSE CASES IN WHICH A CHARGE WAS APPROVED (N = 185)

	% Yes
Footwear (n = 32)	17%
Clothing (n = 73)	40%
Fingerprints (n = 82)	44%
Video (n = 56)	30%
Photograph (n = 87)	47%
Tire Impression (n = 1)	1%
Tool Mark Impression (n = 1)	1%
Physical Matching (n = 11)	6%



'Other' (n = 88) ¹⁸	48%
Warned Statement (n = 76)	41%

6. Interview Results

As noted in the methodology section, investigators who worked with DNA submissions were interviewed to capture their views on the current DNA request for authorization process, the usefulness of DNA evidence to investigations, and the overall effectiveness of the NDDB. Most of the 15 investigators were working in a serious crime unit that investigated homicides, sexual assaults, serious assaults, and robbery cases. The participants had, on average, 11 years of service and had spent half of that service conducting investigations. Moreover, each investigator stated that they made, on average, five DNA lab requests per year.

While not the first priority of this study, the first issue discussed was the role that DNA plays in the charge approval process. Commonly, the investigators claimed that DNA was critical to the process in the majority of cases. However, the investigators also suggested that the value of the DNA evidence depended on whether there was other incriminating evidence, as it may be insufficient on its own. More specifically, it was mentioned that DNA evidence requires a context. For example, investigators spoke of cases where DNA was found on a crime scene sample and successfully matched the sample to a suspect, but it was necessary for the police to demonstrate that the DNA found was not the result of the suspect previously visiting the offence site.

In considering the usefulness of DNA evidence in an investigation, rather than its role in charge approval, most investigators commented that, although DNA evidence may not be critical in all cases, it was almost always useful in some way, especially in cases where there was little other evidence. Investigators also suggested that DNA evidence can be used to eliminate a suspect thus redirecting an investigation. In terms of the usefulness of DNA by the nature of the offence, all but two investigators indicated that sexual assault cases were the offence type where DNA evidence was most critical to laying a charge. This was followed by homicides and “stranger” offences.¹⁹ Importantly, this was explained as a “placement” issue in that the suspect had no lawful reason to be in the location that the DNA evidence placed them in.

Overwhelmingly, investigators stated that it was rare for Crown Counsel to not approve a charge that was supported by DNA evidence. In those cases where charges were not approved with DNA evidence, the main explanations provided by the investigators were that DNA evidence only provides “one part of the puzzle,” and that DNA evidence alone is insufficient, but requires a context to apply it to. Nonetheless, investigators felt that Crown Counsel were overwhelmingly receptive to DNA evidence. The general consensus among the investigators’ comments was that

¹⁸ Examples of ‘other’ might include a rock being thrown through a window or some tools being left at the scene or in a car.

¹⁹ A stranger offence was the term used by the investigators. Its meaning indicates that the offender had no reasonable or lawful reason to be at the location (scene of the crime) that their DNA placed them in. If the scene of the crime was at a public place, they could argue that their DNA was there because they had previously visited the public site. In those cases where a person’s DNA was in a residence, for example, and they had no reason to have been in there, the DNA evidence would be very helpful to establish that they were evidently unlawfully at the scene.



Crown Counsel viewed DNA evidence as providing a measure of unbiased certainty in that it offered proof beyond a reasonable doubt without interference or human error. Still, it was clear that Crown Counsel were focused on the context of the DNA evidence, particularly concrete support for why the DNA evidence at a scene should be considered incriminating.

In terms of any improvements over the past few years with respect to the process and the time it takes for results, the responses varied; however, two main themes emerged. First, while investigators acknowledged that there have been significant improvements in the last two years, the current estimate of three to four months for lab results was considered by them to be too long. One of the reasons provided for why this amount of time was too long was related to pending court dates where results coming after a court date would not be helpful. While it appears that there is a process in place to deal with the time lag, some investigators suggested that a system should be in place to prioritize submissions. Interestingly, some of the recommendations were not exclusively to prioritize by the severity or seriousness of the offence, but by pending court dates.

In terms of improvements over the last five years, there appeared to be consensus that there was less DNA material required now to develop a profile than in the past, and that the physical sources of DNA had expanded. There was also the specific comment that there was now the ability to accept the Request for Forensic Lab Analysis form (C414) through email, and that the C414 fillable form has a dropdown list which provides specific options making it easier. The comment also suggested that the response to this was immediate. Another specific comment was that the change to allow a sheriff to take a sample from a convicted offender was a significant improvement and a better use of resources as a police officer was no longer required and the sheriff would be readily available at the court house.

In terms of recommendations for further improvements, many investigators again mentioned the amount of time it took to receive any kind of result from the lab as a result of lab process time, rather than any process or procedures external to the lab. Several investigators also commented that the discretion of the lab to dictate what could be submitted was too stringent. For example, investigators commented that they were limited to three pieces of evidence per submission. While they acknowledged that this was most likely an acceptable quality control issue, it did, at times, lead to frustration on the part of the investigator. In addition, investigators commented that they perceived a general lack of understanding or education on how the overall NDDB process worked. While the NDDB has a national training program administered almost every year in British Columbia, the majority of investigators recommended that more education regarding the entire process would be useful, and that this might serve to alleviate any misperceptions or misunderstandings held by police agencies. Finally, a few comments were made regarding the data stored in the NDDB indicating that the Data Bank was only as useful as the data stored within it. Here, it was believed that as more data is stored, the Data Bank will become a better asset to investigators. As such, the majority of investigators viewed the Data Bank as having great potential to assist investigations.

When asked what immediate changes they would make to the DNA forensic process, investigators most often mentioned prioritizing the work of the DNA lab by the severity of the offence. Additionally, it was mentioned that the discretion of what samples would qualify for



processing should be shared between the investigators and those who have the current authority to authorize the submission, as this would increase the potential of retrieving useful DNA evidence for the investigation. It was also recommended that there should be an increase in the amount of resources that the lab receives, such as more technicians, funds, and the procurement of the most current technology available. Another theme mentioned was a disconnect between the investigators and the lab that could be remedied by increasing the understanding of the process the lab is required to follow and communicating with and educating investigators about that process. It was also recommended that all *Criminal Code* convictions should require a DNA sample to be provided as this would not only assist in the investigation of cases, but would increase the rate at which the DNA Data Bank was populated, thus increasing the Data Bank's usefulness. In sum, from the investigator's perspective, the main issues were a reduction in the amount of time it took for them to receive results, an increase in DNA lab resources, and greater education about the entire DNA collection and analysis process.

To confirm and clarify some of the issues that surfaced during the interviews, several questions were asked of the forensic lab with respect to turn-around time, prioritizing, and specific sample submissions. From the perspective of the forensic lab, cases were assigned a turnaround of 40 days for the average case, and the clock started when the lab received all of the authorized exhibits. The lab also confirmed that there was no real formal prioritizing policy in place, although informally, a case priority could be negotiated based on the specifics of the case.²⁰ With respect to the issue of sample submission and acceptance, the lab confirmed that there are parameters for the number of actual submissions made; however, what receives authorization depends on the forensic significance of the evidence and whether there is other evidence that has already been obtained. In essence, the acceptance or authorization of a submission is considered in context with the other components of the case. Importantly, there is no "listing" of specific sample types that would automatically be rejected for processing. In effect, there was general agreement between what the investigators were reporting and the information obtained from the forensic lab.

7. Conclusion

In comparison with the national distribution of cases that the NDDDB assisted with, according to the National DNA Data Bank of Canada's Annual Report 2009 – 2010, the resulting distribution of specific offence types in our review were fairly similar, given that the predominant offence type for both was Break and Enter. However, considering the national distribution of offence types that the NDDDB deals with in any given year, ideally, there would have been at least twice the number of cases included in our sample of specific types of offences, such as homicide. Regardless of the small sample for some specific offences, our analyses indicated that the usefulness of DNA evidence in an investigation should not be underestimated. The assistance of the NDDDB and DNA evidence in general is a valuable investigative asset. Investigators commented that DNA evidence was greatly useful to an investigation in some form. However, it

²⁰ While this statement may not accurately reflect the fact that the RCMP has a specific process for labs to follow regarding acceptance and the priority of case acceptance, this was the information provided to the researchers during the interviews.



was commonly noted that DNA evidence also requires context. In effect, in many cases, DNA only provides one piece of the puzzle, and it is up to the investigator to explain or prove why the particular DNA evidence found at the crime scene should be considered incriminating.

In terms of its prosecutorial usefulness, of the 155 files in this sample in which information was present about the outcome of the court process, 84% resulted in an offender being found guilty, pleading guilty, or pleading guilty to a lesser or included offence. Moreover, in just over 50% of files, a report to Crown Counsel was submitted. The most common reasons for not submitting a report to Crown Counsel were that the investigation and DNA analysis resulted in an inability to identify a suspect or there simply was not enough evidence to proceed. However, in virtually all of the cases where a report to Crown Counsel was submitted, the charges were approved. In those very rare cases where charges were not approved, the main reasons were that too much time had passed since the commission of the offence or a determination was made that it was unlikely that prosecution would result in a conviction.

The issue of time that the process takes for the lab to analyze and provide a result is one that is important to consider in the assessment of overall effectiveness of DNA evidence used in an investigation. While the empirical data suggested that it took between three to four months for a DNA result from the time a sample was sent to the lab, during the interviews, investigators felt that the average turn-around time was simply too long, and that it could be improved upon. The main reason provided for this opinion was that the length of time it took to receive a result, in the past, resulted in the prosecution not being permitted the use of the DNA evidence. The suggestion to alleviate this issue was to prioritize offences first, based on pending court dates, and perhaps based on the severity of the offence.

In fact, the results of this review indicated that, on average, it took the lab 107 days from the time they received a DNA sample to provide a result. This was about the length of time it took for a result of a convicted offender match to be completed (98 days), which was less time than it took for a DNA profile to be produced (110 days). Moreover, it took, on average, 111 days for the result of a convicted offender match to be provided to the investigator and 126 days for a DNA profile. Importantly, these results are inclusive of all years under review (2006 – 2011), and may not totally reflect the most current changes made to the process of analyzing DNA evidence.

Further, the only other issue that surfaced was that many of the investigators felt as though they did not fully understand the process of DNA analysis, and the over-all functioning of the NDDDB. Given this, it was suggested that more education be provided, and that investigators be kept abreast of policy changes in the current process to alleviate this concern. Nonetheless, from the viewpoint of the investigators, the NDDDB process is viewed as a highly valuable contribution. Further, our review of the data indicates that when DNA evidence is available for an investigation, it successfully provides an investigative direction and, in nearly all cases, provides a satisfactory outcome for the prosecution.

We would recommend that information regarding court outcomes as a result of DNA evidence be more thoroughly collected and stored. For example, in this sample of files, less than one-fifth of files had any court outcome information available for review. While information was available in most cases pertaining to offence specifics and the subsequent results of the DNA analysis, it



would be beneficial for any future review to have available files that were more comprehensive. Still, as it is fairly clear the DNA evidence is highly valued by investigators and Crown Counsel, acting as a vehicle for this information, the National DNA Data Bank, in its relative infancy, has proven to assist in many successful case outcomes and is considered an excellent investment for the criminal justice system.



Appendix A

A Review of DNA Lab Requests from Municipal Departments and
 RCMP Detachments in the Lower Mainland of British Columbia
 (2006 – 2011)

Coding Manual

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	DATA	VARIABLE	VALUES
1.		Case ID #	Anonymized sequential numbering
A. Police Request			
2.		Municipal department/RCMP detachment	String
3.		Originating unit	1=FIS 2=Patrol 3=Major Crime 4=Other
4.		Primary offence type involved	1=Homicide 2=Assault 3=Sexual Assault 4=Other Person Crime 5=Robbery 6=B&E 7=Other Property Crime 8=Other
5.		DNA physical source (check all that apply)	1=Hair 2=Saliva 3=Blood 4=Teeth 5=Bone 6=Other Contact Fluid



6.		Source of DNA sample	1=Offender 2=Crime Scene 3=Victim
7.		Request for approval submission date *C414	YY/MM/DD
8.		Approved/Rejected sample submission?	1=Approved 2=Rejected 3=Other
9.		Date of approval/rejection response	YY/MM/DD
10.		Date exhibit forwarded to lab	YY/MM/DD
B. Lab Section (Response & Results) *Memo			
11.		Date of lab response	YY/MM/DD
12.		Lab response/results	1=No DNA 2=DNA Profile Developed 3=Identified Subject (CO match) 4=Crime-scene/crime-scene
13.		Lab response/results of crime-scene to crime-scene linkage	1=Unknown Subject 2=Identified Subject
14.		Number of locations identified (crime scene to crime scene)	N=
15.		Number of agencies/jurisdictions identified (crime scene to crime scene)	N=
16.		Time span of first to last offence identified on crime scene to crime scene hit	# of Months=
17.		Number of different offence types identified	N=
18.		Primary offence type involved	1=Homicide 2=Assault 3=Sexual Assault



			4=Other Person Crime 5=Robbery 6=B&E 7=Other Property Crime 8=Other CCC
C. Investigator/Investigation			
19.		Date results received by investigator	YY/MM/DD
20.		Other physical evidence on hand pre-results (circle all that apply)	1=Footwear 2=Clothing 3=Finger Prints 4=Video 5=Photograph 6=Tire Impression 7=Tool Mark Impressions 8=Physical Matching 9=Other
21.		Other evidence on hand pre-results (circle all that apply)	1=Witness Statement 2=Accused Statement Warned 3=Accused Statement Not Warned
22.		Did DNA results change the nature, direction or scope of the investigation?	1=Yes 2=No
23.		Did DNA results help identify a suspect?	1=Yes 2=No
24.		Did DNA result help eliminate a suspect?	1=Yes 2=No
25.		Did DNA result in an application for a DNA warrant?	1=Yes 2=No
26.		Did DNA help to lay charges?	1=Yes 2=No
27.		Did DNA provide link to previously unrelated occurrences?	1=Yes 2=No
28.		Was this Data Bank of value in other ways?	String
29.		Was RTCC submitted	1=Yes 2=No
30.		Reason for not submitting RTCC	String



31.		Date RTCC submitted	YY/MM/DD
32.		Charge approved/not approved	1=Approved 2=Not approved
33.		Primary offence involved	1=Homicide 2=Assault 3=Sexual Assault 4=Other Person Crime 5=Robbery 6=B&E 7=Other Property Crime 8=Other
34.		Reason if not approved	String
35.		Date of approval/non-approval	YY/MM/DD
36.		Court outcome	1=Found Guilty 2=Not-Guilty 3=Plead Guilty 4=Stayed

Notes:



Appendix B

Interview questions

1. Investigator / FIS role
2. How many requests do you think you have made in the last 5 years?
3. Of those cases where DNA was collected, what % of the time was it critical to charge approval?
4. What % of the time was it useful (understanding the multiplicity of other factors).
5. Is there any one type of offence where DNA evidence is considered critical to lay a charge?
6. From your experience, has there ever been a case where there was confirmed DNA evidence, and crown did not approve a charge?
7. From your experience, what is the level of receptivity of Crown?
8. Why do you think this?
9. Have you seen any improvements over the years, or does it appear to be the same (process, timely results, and assist with charge approval)?
10. From your perspective, is there a shared attitude towards any part of the lab request process, or functionality of the national Data Bank?
11. If you could be in “charge” for a day, and could change any part of the process (from beginning to end) what would it be and why?