

APPENDIX

2021



Ministry of National Security
National Forensic DNA Databank Custodian Unit

Annual Report

Of the Custodian on the
operations of the DNA
Databank of Trinidad and
Tobago

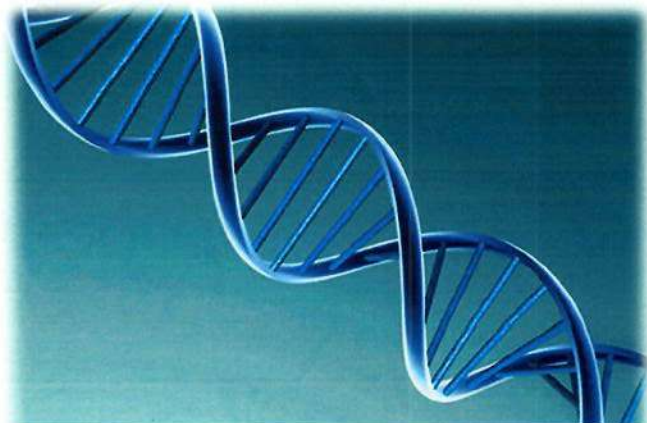


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Message from the Deputy Custodian Manager

The National Forensic DNA Databank (NFDD) – Custodian Unit of Trinidad and Tobago continues to face many challenges regarding the operationalisation of the Administration of Justice (Deoxyribonucleic Acid) Act, Chapter 5:34 and the Administration of Justice (Deoxyribonucleic Acid) Regulations 2018. Some of these challenges include a lack of cooperation from stakeholders and the low rate of population of the NFDD. Despite this, the Unit remains committed to exceeding international database standards and assisting the Trinidad and Tobago Police Service (TTPS) with its goal of increasing the nation’s crime detection rate.

Over the last twelve (12) months, the Custodian Unit reported its first final match, aided one (1) investigation, populated the databank with DNA profiles received from the Trinidad and Tobago Forensic Science Centre (TTFSC), certified officers of the Protective Services in buccal swab sample collection and ensured all NFDD critical software and infrastructure were routinely maintained.

In 2022, the Unit aims to complete buccal swab sample collection training with stakeholders and commence mass sampling of the prison population and other persons listed in the Administration of Justice (Deoxyribonucleic Acid) Act, Chapter 5:34. This mass sampling exercise will result in an increase in the upload of reference profiles leading to an increase in the number of probative matches and an increase in the number of investigations aided. Currently, the chance that a crime scene profile uploaded onto the NFDD matches the DNA profile of an offender (i.e. the match rate) is 5.41% and it is envisioned that this will gradually increase to approximately 65% within the next ten years – the match rate maintained by the United Kingdom National DNA Database.

Additionally, the Unit is working assiduously towards ISO/IEC 9001 (Quality Management) and ISO/IEC 27001 (Information Security Management) certification, which in turn will build public trust and confidence in our future database matches.


Deputy Custodian Manager

1. Glossary of Terms

Term	Definition
Approved Laboratory	A laboratory accredited by accrediting bodies listed in the First Schedule of the <i>DNA Act</i> which is accountable to the Government of Trinidad and Tobago by entering into an agreement with the Government of Trinidad and Tobago and is approved by the Minister by Notification.
Association	A search result that matches autosomal DNA profiles based on shared alleles and kinship algorithms; it does not reflect a direct identity match between profiles but shows a possible familial relation.
Buccal swab	An oral or mouth swab. Buccal cells are found inside the mouth/ lining the cheeks.
Candidate Match Report	A report generated and distributed to laboratories responsible for the matching profiles after database software determines that two or more DNA profiles match or are associated.
Databasing (For the purpose of the NFDD)	The uploading, storing, searching and cross referencing of eligible, accurate (presumed) and complete DNA profiles obtained from DNA analysis of samples (database, case work, reference samples) by a DNA testing laboratory following FBI QAS into CODIS or another database software.
Disclosure Request	An application made by a police officer, a person from whom a sample was taken or his representative, a government agency, an educational institution, the Central Authority (Attorney General) or the Courts of Trinidad & Tobago to have a DNA profile checked against the profiles stored on the NFDD.
DNA Act	The legislation for the National Forensic DNA Databank System that authorizes the establishment of a national DNA identification index for enumerated categories of records subject to privacy and quality control requirements.
DNA Profile	The genetic constitution of an individual at defined locations (also known as loci) in the DNA. A DNA Profile derived from nuclear DNA typically consists of one or two alleles at several loci (e.g., short tandem repeat loci).
Elimination Index/Database	A separate database index containing autosomal DNA profiles of persons who could inadvertently introduce their own DNA Profile as cross-contamination to investigated evidence. These

Term	Definition
	persons are listed in the Third Schedule of the <i>DNA Act</i> as well as District Medical Officers (DMOs), Undertakers etc. Elimination Index profiles are automatically searched against other database indices and any resulting match shall be investigated by the Trinidad and Tobago Police Service or the Trinidad and Tobago Forensic Science Centre in order to determine if source of match was due to contamination or otherwise. Evidentiary DNA Profiles may be deleted from the NFDD if investigations conclude that the DNA profile in question was obtained due to inadvertent contamination from an individual included in the Elimination Index.
Expungement	The deletion of an uploaded DNA profile obtained from a reference sample pursuant to Section 26 of the <i>DNA Act</i> or a court order.
Final Match Report	A report generated by the NFDD Custodian Unit detailing all relevant information regarding matching or associating DNA profiles. A Final Match Report is submitted to relevant law enforcement agencies; and individuals or agencies requesting a search of, or disclosure of information from the NFDD.
Forensic Unknown	A biological sample originating from a crime scene or stain and whose source is attributable to a presently unknown individual. These are not reference samples from known individuals such as volunteers, suspects, offenders, etc.
File Transfer Protocol (FTP)	A standard network protocol used for the transfer of computer files between a client and server on a computer network.
Investigation Aided	A metric that tracks the number of criminal investigations where NFDD has added value to the investigative process.
Law Enforcement Agency	An agency or institution of the government which performs as part of its principal function, activities relating to the apprehension, investigation, incarceration of criminal offenders.
Match	A match occurs when database software links two or more DNA profiles and a confirmation process is started by laboratory personnel.
NFDD Participating Laboratory	A Forensic DNA Laboratory contracted by the Government of Trinidad and Tobago and approved by the Minister of National Security by Notification to submit DNA profiles for NFDD inclusion.

Term	Definition
Offender	This term is intended to include persons under suspicion such as accused, suspects, convicted offenders, detainees; as well as deportees, prisoners, juveniles and foreign nationals who breach <i>Immigration Act</i> .
Reference Sample	Biological material (e.g. buccal swab or sample of intravenous blood) taken from a verified individual.
Search Request	An application made by the Commissioner of Police, an investigating officer or the Central Authority (Attorney General) to have a DNA profile checked against the profiles stored on the NFDD.

2. Introduction

The DNA Custodian Unit was officially established in January 2017 pursuant to **Cabinet Minute No. 1752-2014/06/18**. This Unit, under the supervision of the Custodian Manager and Deputy Custodian Manager, manages and operates the National Forensic DNA Databank (NFDD) of Trinidad and Tobago.

The NFDD is a repository of electronic DNA profiles obtained from crime scenes and individuals mentioned in the *Administration of Justice Deoxyribonucleic Acid (DNA) Act, Chapter 5:34* hereinafter referred to as the *DNA Act*. These profiles are searched and compared to obtain matches and familial associations. The Custodian Unit aims to provide an uncompromised, secured and confidential DNA databank operating at international standards in order to increase convictions, improve the detection rate, solve cold cases, identify missing or unidentified persons and deter criminal activity.

The NFDD Custodian Unit operates according to the DNA legislation of Trinidad and Tobago and a Quality Management System enabling the NFDD to become a critical investigative resource for law enforcement. The use of DNA by the judicial system has become increasingly important in solving crimes and continues to be one of the most relied upon forms of evidence used by the court of justice to support their decisions.

The NFDD is an investigation tool for law enforcement, utilized to:

- i. determine potential perpetrators and suspects of unsolved crimes;
- ii. ascertain the source of crime related biological stains/materials; and
- iii. link crime scenes to other crime scenes

These functions are effected once DNA profiles generated from collected crime scene evidence and specific individuals are entered and stored in a secured computerized databank (NFDD) using the **SmallPond™** DNA Profile Matching System database software (Diagram 1). **SmallPond™** enables the management and functionality of the NFDD's core functions. Stored DNA profiles are automatically searched, compared and cross-referenced amongst each other in order to find matches, familial

associations and contamination. The Custodian Unit is the steward of the NFDD and establishes, oversees, maintains and manages all operations related to it in accordance with international best practice.

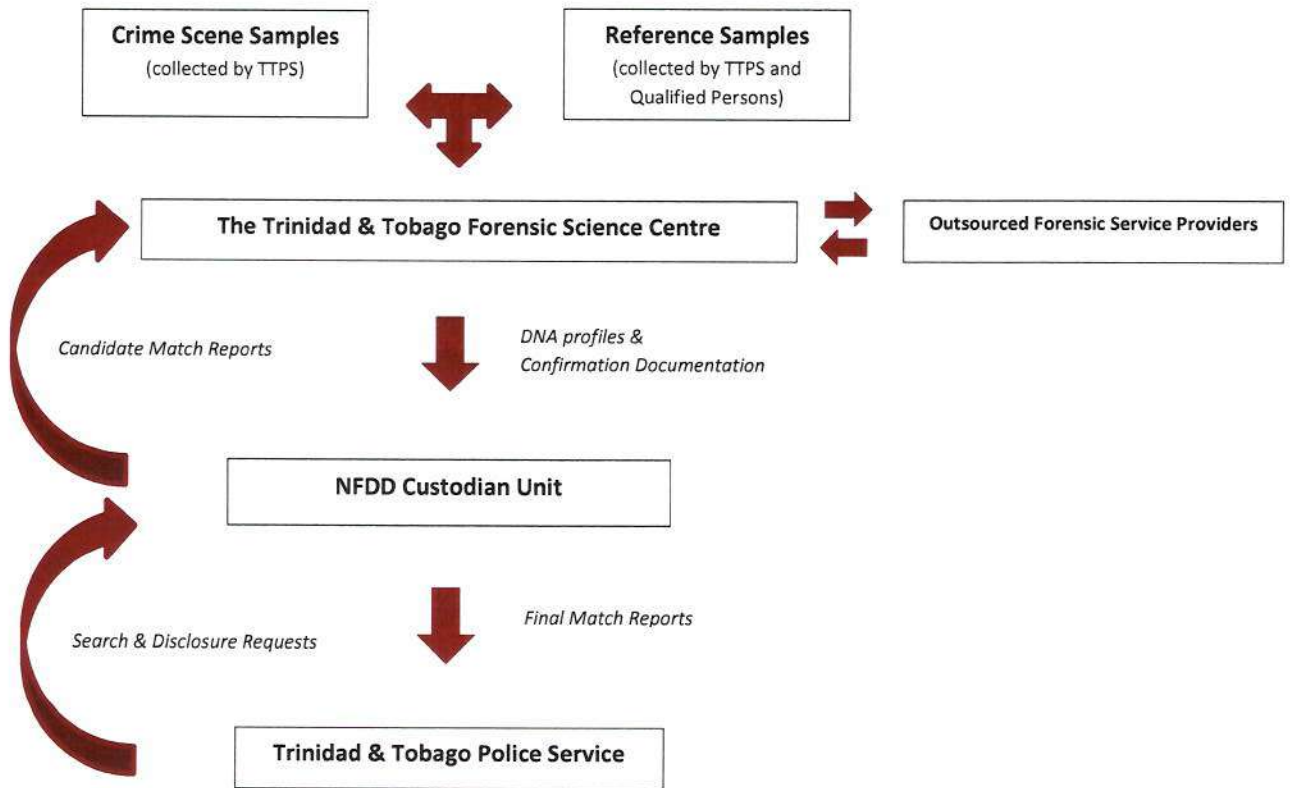


Diagram 1: Flow Chart Illustrating How Trinidad and Tobago's National Forensic DNA Databank Works

3. Organisational Structure of Custodian Unit

By Minute No. 1752 dated June 18, 2014 a Custodian Unit was established to oversee, manage and maintain the NFDD.

The organisational structure of the Unit comprises one (1) Custodian Manager, one (1) Deputy Custodian Manager, one (1) Database Specialist, one (1) Databank Analyst, one (1) Information and Communication Technology (ICT) Support Officer, four (4) Business Operations Assistants (BOAs), one (1) driver and one (1) hospitality attendant.

At present, the Deputy Custodian Manager performs the duties of the Custodian Manager as prescribed in Section 8 (2) of the *DNA Act* and Information and Communication Technology (ICT) Support is provided on an as-needed basis by the Cyber Security and Incident Response Team and the ICT Unit of the Ministry of National Security. Courier services and hospitality support are provided by the General Administration of the Ministry of National Security on an as-needed basis. Efforts continue to be made to fill all vacant posts.

The NFDD Custodian Unit is located at:

Level 4 - ABMA Investments
55-57 St. Vincent Street
Port of Spain, Trinidad and Tobago

4. Legislative Parameters

Sections 7 and 8 of the *DNA Act* provides for the establishment of a DNA databank and the appointment of a Custodian. Section 34 (1) of the *DNA Act*, provides that **DNA Regulations** must be created by the Minister in order to give effect to this Act.

All standards and procedures of the Custodian Unit are therefore in compliance with the DNA Regulations and the *DNA Act*.

The current DNA Regulations authorized under **Legal Notice No. 81** detailed in **Legal Supplement Part B - Vol. 57, No. 74, 7th June, 2018** allows for:

- commencement of Custodian Unit operations;
- commencement of buccal swab sampling of specific persons mentioned in the *DNA Act* by Police Officers and Medical Practitioners;
- adherence to internationally accepted Storage and Transportation Guidelines for physical evidence collection by authorised persons; and
- development and adherence to minimum standards for entry onto and removal of DNA data from the NFDD

5. Functions of the Custodian Unit

The Custodian Unit is a stand-alone facility and is independent of the Trinidad and Tobago Police Service (TTPS) and the Trinidad and Tobago Forensic Science Centre (TTFSC). The Custodian Unit performs the following comparisons to assist the TTPS with their investigations:

- DNA profiles developed from crime scene material (forensic unknowns or stains) are compared against DNA profiles from other crime scenes to identify potential links between different investigations. "**Forensic-to-Forensic Match** (or stain-to-stain)" is the term used to indicate a DNA match between these profiles.
- DNA profiles developed from crime scene material (forensic unknowns or stains) are compared against DNA profiles from accused, suspects, arrestees, detainees, convicted offenders, identified deceased victims, suspected missing persons, unidentified human remains and individuals mentioned in the Third (3rd) Schedule (of *DNA Act*) to link a subject with a particular crime. "**Forensic-to-Person Match** (or stain-to-person)" is the term used to indicate a DNA match between these profiles.
- DNA profiles developed from unidentified human remains are compared against DNA profiles from family members of suspected missing persons to determine whether there is a **familial association** between these DNA profiles.

The DNA profiles obtained and generated for NFDD inclusion are provided by **Forensic Service Providers** (FSPs) such as NFDD Participating Laboratories. These laboratories are:

- i. The Trinidad and Tobago Forensic Science Centre
- ii. ISO 17025 accredited Forensic Laboratories approved by the Minister of National Security
- iii. ISO 17025 accredited Forensic Laboratories contracted by the Ministry of National Security to perform forensic DNA analysis services under the repealed ***Deoxyribonucleic Acid Act of 2007***

DNA profiles contain sensitive, confidential information and must be retained indefinitely on the NFDD except when profiles qualify for: (i) expunction in accordance with Section 26 of ***DNA Act*** and (ii) data deletion as stipulated by Section 9.2 of the **NFDD Minimum Standards of Operations**. Each DNA profile entered into the NFDD includes a Unique Identifier (i.e. Specimen ID#) and is securely submitted to the Custodian Unit by or on behalf of NFDD Participating Laboratories using data transfer methods such as, but not limited to, a secured **File Transfer Protocol (FTP)** on an ICT network.

DNA Profiles:

- i. in relation to the investigation or prosecution of offenses committed before, on or after the coming into operation of the ***DNA Act***;
- ii. generated from NFDD Participating Laboratories; and
- iii. obtained from the individuals (itemised under separate database indices) and sources outlined in Table 1;

are eligible for NFDD inclusion.

NFDD Database Index	Autosomal DNA Profiles	Y-STR DNA Profiles
Crime Scene Material – Forensic Unknown/ Stain	Scene of Crime Evidence (i.e. blood, semen, etc.)	Scene of Crime Evidence (i.e. blood, semen, etc.)
Offender – Person Under Suspicion	<ul style="list-style-type: none"> - Accused/Defendant - Suspects - Detainees/ Arrestees - Convicted Offenders - Prisoners - Deportees 	

NFDD Database Index	Autosomal DNA Profiles	Y-STR DNA Profiles
	<ul style="list-style-type: none"> - Juveniles - Foreign Nationals who breach <i>Immigration Act</i> 	
Victims	<ul style="list-style-type: none"> - Identified deceased - Direct Comparative Evidence allegedly taken from missing persons (e.g. toothbrush etc.) 	<ul style="list-style-type: none"> - Identified deceased - Direct Comparative Evidence allegedly taken from missing persons (e.g. toothbrush etc.)
Family Members	<ul style="list-style-type: none"> - Biological Mother/Father - Biological Offspring - Sibling/ Half-Sibling - Maternal and Paternal Relative 	<ul style="list-style-type: none"> - Biological Father - Biological Offspring - Sibling/ Half-Sibling - Paternal Relative
Unidentified Human Remains	<ul style="list-style-type: none"> - Unidentified Deceased 	<ul style="list-style-type: none"> - Unidentified Deceased
Elimination	<ul style="list-style-type: none"> - Officers of the Protective Services (<i>DNA Act</i> Third Schedule) - Members of the Municipal Police Service - Members of the Special Reserve Police - Members of the Defence Force - Customs Officers - Immigration Officers - TTFSC DNA and Serology Laboratory Staff - Supporting Agency Members (i.e. person who attend crime scenes such as District Medical Officers, Undertakers) 	

Table 1: Sources and individuals whose DNA profiles are eligible for NFDD inclusion

The NFDD can only be used for law enforcement purposes and profiles must be used for the purpose for which they were collected. The NFDD does not prove guilt or innocence and all DNA profile matches and associations must be confirmed by NFDD Participating Laboratories before a final match report is engendered and submitted to authorised personnel.

6. Privacy of Information

The NFDD does not store personal identifiable information on individuals such as name, age, address or date of birth and all uploaded DNA profiles are anonymous. This anonymity protects the privacy of individuals allowing for the impartial analysis of matches and associations. Additionally, a balance between privacy rights (i.e. enforcement of the *Data Protection Act, 2011*) and the need for law enforcement (i.e. enforcement of the *DNA Act*) must be made. This balance speaks to the state's ability to identify suspects and retain 'personal information' on individuals for a specific length of time. According to Section 2 of the *Data Protection Act, 2011*, "personal information" means information about an identifiable individual that is recorded in any form including deoxyribonucleic acid (DNA). Therefore this balance, among other things, will allow:

- i. individuals, whose data is stored on the NFDD, access to their information via an official disclosure request;
- ii. the expunction of DNA data after a given period of time or under specific circumstances;
- iii. DNA profiles to be used strictly for the purpose they were generated.

Stringent operational procedures governing the submission, storage, access, security and use of DNA profiles will ensure that the privacy rights of individuals are protected. The NFDD can only be used for law enforcement purposes and the Custodian Unit does not share the NFDD data with anyone other than authorised agencies and persons listed in Section 29 (1) of the *DNA Act*; and Regulations 15(2) and 28 of the *DNA Regulations*.

7. Data Security and Quality Management System

The Custodian Unit is responsible for data security, availability and integrity. Data security is enabled through the implementation and maintenance of a framework that includes 24-hr armed security, Biometric Door Access Control, data servers, firewalls, encrypted storage devices and the **SmallPond™** DNA Profile Matching System. Additional security and preventive measures such as Data Centers with Netbotz monitoring, CCTV monitoring and a Fire Suppression System shall be implemented in the financial year 2022/2023. Data Security is also enabled due to the isolated nature of the Custodian Unit. The NFDD operates on its own ICT network and incoming electronic data is transferred using an

encrypted process. Continuous operability of the Information Systems (IS) is monitored by the Database Specialist and compiled in quarterly and annual IS reports.

Additionally, data security, availability and integrity is regulated by the **NFDD Quality Management System** (QMS) which includes but not limited to the Quality Assurance Manual, the Health and Safety Manual, Standard Operating Procedures, the Risk Management program, Information Systems (IS) Control Policy and the Minimum Standards of NFDD Operations. According to **DNA Regulation 4(1)**, the Custodian shall, from time to time, set the Minimum Standards, in accordance with international best practices, for entry onto and removal of data from the Databank, which shall be published in the Gazette. These Minimum Standards of NFDD Operations were approved by the **Trinidad and Tobago Bureau of Standards (TTBS) in September 2019** and published in **Gazette No. 93 of 2020 (June)**.

Strict adherence to the QMS ensures compliance with DNA Legislation and international best practice resulting in secured, confidential and accurately loaded data. Data integrity is also maintained as Forensic Service Providers that submit DNA profiles for databank loading are subject to quality assurance assessments.

Direct access to DNA profiles stored on the NFDD is limited to Custodian Management and authorised members of staff. The Trinidad and Tobago Police Service, the Commissioner of Police, personnel from the Ministry of Attorney General and Legal Affairs (AGLA) and the Judiciary may submit to Custodian Management, a request for an official Search or Disclosure of NFDD information. Correspondence detailing instructions on how these agencies may make an official request was submitted to the Commissioner of Police, the Permanent Secretary of the Ministry of the AGLA and the Administrative Secretary to the Chief Justice.

8. Populating the Databank

The success of a Forensic DNA Databank is measured in terms of matches, familial associations and investigations aided. In 2021, the Trinidad and Tobago Forensic Science Centre submitted a total of five (5) DNA profiles to the NFDD Custodian Unit. Three (3) of those five (5) profiles were uploaded to the databank.

It should be noted that in accordance with Regulation 3, 4 and 5 of the Administration of Justice (Deoxyribonucleic Acid) Regulations, 2018, in order for the NFDD Custodian Unit to accept and upload DNA profiles onto the NFDD, the TTFSC must satisfy the following requirements:

- i. Have protocols and procedures which are specific to DNA analysis which demonstrate that the TTFSC is competent and able to produce DNA profiles that are compatible with those on the NFDD, has adopted internal handling processes and procedures that conform to the rules of continuity and preservation of evidence, and is carrying out an internal quality assurance program in accordance with identified specifications;
- ii. Meet minimum FBI Quality Assurance Standards (QAS) for DNA testing and databasing laboratories or similar internationally accepted quality assurance standards, and provide a statement of compliance to the NFDD Custodian Unit upon request. Request shall be made once every two (2) years for Approved Laboratories;
- iii. Provide a copy of the External Quality Assurance Standard (QAS) Audit documentation for review including the audit report, clarifications, responses and corrective action plans to NFDD Custodian Unit within twenty (20) to thirty (30) working days of a request from the NFDD Custodian Unit. This request will be made once every two (2) years and the NFDD Custodian Unit shall document review using NFDD External Quality Assurance Standard (QAS) Audit Document Review Record;
- iv. Adhere to the Scientific Working Group on DNA Analysis Methods (SWGDM) Recommendations and Interpretation Guidelines; or similar internationally accepted recommendations and guidelines, and provide a statement of compliance to the NFDD

Custodian Unit upon request. Request shall be made once every two (2) years for Approved Laboratories;

- v. Accept annual on-site visits by NFDD Custodian Unit management for inspection of DNA analysis facilities to verify facilities have ability to perform the requisite services; and
- vi. Enable a secured communication channel with the NFDD Custodian Unit to exchange documentation, alert Custodian Unit when DNA profiles have been submitted for upload, provide notifications and any other information pertaining to the DNA analysis of the samples.

For the reporting period, the TTFSC did not meet all the requirements above and therefore the NFDD Custodian Unit was unable to accept and upload any further profiles.

As of **December 2021**, six hundred and seven (607) eligible profiles have been uploaded to the NFDD.

The rate of submission from the TTFSC to the NFDD for the year 2021 was approximately one DNA profile every three (3) months. While this rate is below industry standard/best practice, it is important to note that the DNA Unit of the Trinidad and Tobago Forensic Science Centre was not in operation from February 2018 to September 2021.

To resume participation in the NFDD, the TTFSC is required to provide the NFDD Custodian Unit with Quality Assurance documentation. Additionally, TTFSC must permit the Custodian to perform an on-site visit.

In January 2021, the accredited local forensic laboratory, Caribbean Forensic Services Limited (CFSL) was given approval for the purpose of providing forensic DNA services. Discussions are in train toward the engagement of the services of this laboratory and the submission of previously generated DNA profiles to the NFDD Custodian Unit.

9. NFDD Performance and Statistics

Performance of the NFDD is measured in terms of **matches**, **associations** and **investigations aided**.

The definition of these terms are as follows:

Match	A match occurs when database software links two or more DNA profiles and a confirmation process is started by laboratory personnel.
Association	A search result that matches DNA profiles based on shared alleles and kinship algorithms; it does not reflect a direct identity match between profiles but shows possible familial relation.

The following table details the current size of each database index:

NFDD Database Index	Autosomal size	Y-STR size
Crime Scene Material – Forensic Unknown/ Stain	107	0
Offender – Person Under Suspicion	185	
Victims	283	0
Family Members (including Volunteers)	18	0
Unidentified Human Remains	14	0
Elimination	0	
TOTAL	607	0

Table 2: Number of database entries per database index

The following table details the number of **'rejected'** profiles from FSPs and general reasons.

Forensic Service Provider	Rejected	General Reasons
Trinidad and Tobago Forensic Science Centre	2	Non-compliance with the NFDD CU Minimum Standards of Operations, the NFDD CU Technical Requirements and Regulation 3 (2) of the Administration of Justice (Deoxyribonucleic Acid) Regulations, 2018.
TOTAL	2	

Table 3: Number of rejected DNA profiles

The following table details the number of '**modifications**' made to NFDD entries in 2021:

Modification	Count	Comments
Suspended	0	
Amended	0	
Deleted	0	
Reinstated	0	
Transferred	0	
Expunged	2	In accordance with Section 26 (10) of the <i>DNA Act</i> , DNA profiles derived from children's samples, must be expunged from the NFDD, after the expiration of ten years from the date on which the profile was generated.

Table 4: Number of profile modifications

DNA profile '**duplications**' occur within the database if DNA profiles from at least two (2) different reference samples match within the same database index. Duplications usually indicate (i) an error in profile submission i.e. double submission of two (2) reference sample from the same individual; (ii) an error during evidence collection or DNA analysis; or (iii) if DNA profiles from monozygotic or identical twins are entered into the same database index. For 2021, **no duplications** were detected.

Annual Match Data (2021)

For 2021 there were **zero (0) matches** and therefore no investigations were aided.

Cumulative Match Data (2019-2021)

Of the **607** DNA profiles uploaded onto the National Forensic DNA Databank, there has been:

- thirteen (**13**) forensic-to-forensic matches (i.e. scene of crime to **scene of crime**)
- seven (**7**) forensic-to-victim matches (i.e. scene of crime to identified deceased **victims**)
- ten (**10**) forensic-to-offender matches (i.e. scene of crime to suspects or accused **offenders**)
- one (**1**) investigation aided resulting from one (**1**) **final match**

Based on the number of observed matches, the efficiency of the NFDD can be calculated. It must be noted that matches are based on many factors not constrained to the NFDD and its capabilities. These factors include investigation techniques of law enforcement, quality of evidence submitted to testing laboratories, analytical methods of testing laboratories and quality of data originating from testing laboratories. Notwithstanding these factors, **NFDD Efficiency** is assessed on the following parameters:

- Number of 'stain-to-person' matches relative to number of persons in a database index
- Number of 'stain-to-stain' matches relative to number of forensic unknowns (stains)
- Number of 'stain-to-person' matches relative to number of forensic unknowns (stains)

Therefore for the seven (**7**) **forensic-to-victim matches**, NFDD efficiency relative to the number of **victims** is calculated as:

$$7/283 \times 100 = 2.47\%$$

For the ten (**10**) **forensic-to-offender matches**, NFDD efficiency relative to the number of **offenders** is calculated as:

$$10/185 \times 100 = 5.41\%$$

For the thirteen (13) **forensic-to-forensic matches**, NFDD efficiency relative to the number of **forensic unknown** samples or scene of crime samples is calculated as:

$$13/107 \times 100 = 12.15\%$$

For the seven (7) **forensic-to-victim matches**, NFDD efficiency relative to the number of **forensic unknown** samples or scene of crime samples is calculated as:

$$7/107 \times 100 = 6.54\%$$

For the ten (10) **forensic-to-offender matches**, NFDD efficiency relative to the number of **forensic unknown** samples or scene of crime samples is calculated as:

$$10/107 \times 100 = 9.35\%$$

These parameters express the chance that a **crime scene material** or **forensic unknown** DNA profile included in the database will match a reference sample profile from a **Victim** (2.47%) and or **Offender** (5.41%); as well as whether the right people have been sampled for inclusion in the database. These parameters illustrate the crime-solving capacity of the NFDD after two years and seven months of operations.

For comparison, in December 2018, Germany, Spain and the Netherlands had population sizes of 83 000 000, 46 570 000 and 17 000 000 respectively and their National Forensic DNA Databases had a **forensic-to-offender** parameter of efficiency (relative to the number of offenders) of **24%**, **16%** and **23%** respectively¹. Trinidad and Tobago's NFDD's comparable parameter of efficiency is **5.41%**. While this is lower than the aforementioned European territories, the small population size of Trinidad and Tobago's DNA databank (607), its length of operation and the suspension of forensic DNA services at the Forensic Science Centre must be taken into consideration. Germany, Spain and the Netherlands have had their databases operational since 1998², 2007³ and 2001⁴ respectively.

It is evident and historical statistics suggest that more forensic unknowns will be matched to an

individual as more ‘offenders’ are included in a DNA database. As such, the sampling of the Trinidad and Tobago prison population and the subsequent upload of these DNA profiles onto the NFDD, must be prioritized.

Additionally, Germany, Spain and the Netherlands’ DNA Database have a **forensic-to-offender** parameter of efficiency (relative to the number of forensic unknowns) of **64%**, **54%** and **86%** respectively¹. Trinidad and Tobago’s NFDD’s comparable parameter of efficiency is **9.35%**. Again, these European databases are currently more efficient due to their large size, stringent law enforcement policies and their ability to exchange DNA profiles with each other facilitated by the INTERPOL DNA database and the EU Prüm Decisions¹. Therefore, in order to increase the efficiency of the NFDD, large volumes of high-quality DNA profiles from crime scenes and offenders must be provided for upload.

To date, no familial associations have been detected; and no search or disclosure requests have been made by the TTPS/authorized agencies. Therefore **no statistics are available** to indicate the number of:

- search and disclosure requests
- familial associations
- familial searches
- elimination database matches
- ‘forensic-human remains’ matches (i.e. scene of crime to unidentified deceased victims)

¹DNA Database Management Review and Recommendations, ENFSI DNA Working Group April 2019

² https://www.researchgate.net/figure/Development-of-the-German-forensic-DNA-database_tbl1_345942199

³ <http://dnapolicyinitiative.org/wiki/index.php?title=Spain>

⁴Dutch DNA-Law and DNA-Database, Dr. Ir. C.P. (Kees) van der Beek MBA Netherlands Forensic Institute, Rijswijk

10. Accomplishments and Challenges

Below are activities, achievements, outcomes, challenges and remarks related to NFDD operations:

▪ **Organizational Structure of NFDD Custodian Unit**

Task/ Activity	Achievements and Outcomes	Risks or Comments
Contract renewal of the following positions: <ul style="list-style-type: none"> ▪ Database Specialist ▪ Databank Analyst 	Contracts for the Database Specialist and Databank Analyst were renewed for a three year period on July 26, 2021 .	Previous contracts held by the Database Specialist and Databank Analyst expired in March 2021 and April 2021 respectively.

▪ **NFDD Budget and Finance Management**

Task/ Activity	Achievements and Outcomes			Risks or Comments
	Fiscal Year	Allocation (TTD)	Expenditure (TTD)	
Budget and Expenditure	2018/2019	\$366 350.00	\$ 325 650.65	Completed purchases for 2021 included: <ul style="list-style-type: none"> ▪ ICT equipment ▪ SmallPond™ annual license fee ▪ Renewal of Broadband and dedicated internet services
	2019/2020	\$420 000.00	\$400 534.74	
	2020/2021	\$280 000.00	\$259 771.83	

▪ **NFDD Custodian Unit Establishment**

Task/ Activity	Achievements and Outcomes	Risks or Comments
Establishment of NFDDCU at ABMA building	<ul style="list-style-type: none"> ▪ Items purchased include a multifunction printer with consumables, UPS devices and thirteen (13) desktop computers. ▪ High security access control system serviced. 	<ul style="list-style-type: none"> ▪ Additional items to be purchased include a CCTV Monitoring System, file transfer protocol software, a complete server rack solution and a fire suppression system.

- **NFDD Quality Management System**

Task/ Activity	Achievements and Outcomes	Risks or Comments
NFDD Quality Management System	<ul style="list-style-type: none"> ▪ NFDD Internal Audit- In August 2021 the annual NFDD Internal Audit was performed and completed satisfactorily. This audit showed that the NFDD Custodian operations are in alignment with international best practice. ▪ HSE Audit and Risk Assessment- Health & Safety Manual and Risk Assessment document was reviewed and revised. Additionally, the annual Health & Safety audit was satisfactorily completed in September 2021. For the period under review, there were no reported accidents or incidents. ▪ NFDD Risk Assessment Report (ICT) - In January 2021 a risk assessment of the NFDD CU operations was conducted where security risks were identified, the impact of the risk materialising was measured and an action plan for the mitigation of these risks outlined. The assessment revealed that majority of the potential threats at the Unit are low. 	<ul style="list-style-type: none"> ▪ NFDD Quality Management System is dynamic and revised annually therefore amendments are expected as new equipment and software are acquired.

- **NFDD Access to information**

Task/ Activity	Achievements and Outcomes	Risks or Comments
Accessing information on NFDD	<ul style="list-style-type: none"> ▪ In April 2021, letters detailing the procedure to request a <u>search</u> or <u>disclosure</u> of DNA data stored on the NFDD were submitted to the Ministry of the AGLA and the Judiciary of Trinidad and Tobago. 	<ul style="list-style-type: none"> ▪ The DNA Act authorizes certain individuals to make search and disclosure requests utilizing Forms 1 and 2 of Schedule 1 of the DNA Regulations.

▪ **DNA Databank Software – SmallPond™**

Task/ Activity	Achievements and Outcomes	Risks or Comments
Annual renewal of SmallPond™ Software License	<ul style="list-style-type: none"> ▪ The license was renewed on January 05, 2021. 	

▪ **Databank Population and Forensic Service Providers participation in the DNA Databank**

Task/ Activity	Achievements and Outcomes	Risks or Comments
Databank Population	<ul style="list-style-type: none"> ▪ Three (3) DNA profiles were submitted in April 2021 and two (2) DNA profiles were submitted in November 2021. ▪ As of December 2021 the NFDD is populated with six-hundred and seven (607) DNA profiles. All of these profiles were submitted by the TTFSC. 	<ul style="list-style-type: none"> ▪ International best practice stipulates that DNA data uploaded to a Forensic DNA Database must originate from ISO 17025 accredited agencies. ▪ TTFSC is not yet ISO 17025 accredited. However, as a quality assurance measure, Technical Requirements for the Participation in the NFDD were drafted and agreed upon by both parties in April 2019. These requirements were issued in accordance with Regulation 4 (1) of the Administration of Justice (Deoxyribonucleic Acid) Regulations, 2018 and approved by the Trinidad and Tobago Bureau of Standards. ▪ The NFDD CU has requested quality assurance documentation and the authorisation to conduct an on-site visit in accordance with Regulation 3 (2) of the Administration of Justice (Deoxyribonucleic Acid) Regulations, 2018. The NFDD CU is awaiting a response from the TTFSC.

▪ **Buccal Swab Sample Collection Training for *DNA Act* Stakeholders**

Task/ Activity	Achievements and Outcomes	Risks or Comments
<p>Buccal Swab Sample Collection “train-the-trainer” training sessions for Stakeholders/ agencies mentioned in the <i>DNA Act</i></p>	<ul style="list-style-type: none"> ▪ Training of stakeholders began in June 2018 and is currently ongoing. See breakdown of ongoing training program below. ▪ In 2021, an additional thirty one (31 persons) from the TTFS were trained and certified. ▪ As of December 2021, the following agencies have <u>completed</u> Buccal Swab Sample Collection “train-the-trainer” training and a total of six hundred and sixteen (616) persons have been trained and certified: <ul style="list-style-type: none"> ▪ Police Service ▪ Prison Service ▪ Forensic Science Centre ▪ Municipal Police ▪ Customs and Excise Division ▪ Immigration Division ▪ Fire Service ▪ Ministry of Health (MOH) ▪ Tobago Regional Health Authority (TRHA) ▪ South-West Health Authority (SWRHA) ▪ North-Central Regional Health Authority (NCRHA) ▪ In July 2021, the Chief Fire Officer received an Outcome and Expectation Report detailing the training assessment and steps to be taken to operationalize <i>DNA Act</i>. 	<ul style="list-style-type: none"> ▪ Training for the following stakeholders is <u>incomplete</u> and should be completed in 2022: <ul style="list-style-type: none"> ▪ Defence Force ▪ North West Regional Health Authority (NWRHA) ▪ Eastern Regional Health Authority (ERHA) ▪ Completion of training is contingent upon the availability of personnel from agencies. ▪ Buccal Swab Kits are to be donated to remaining agencies following the completion of training.

Task/ Activity	Achievements and Outcomes	Risks or Comments
	<ul style="list-style-type: none"> ▪ As of December 2021, the following Agencies have received an allotment of Buccal Swab Kits for training and sample collection: <ul style="list-style-type: none"> ▪ Police Service <i>received 5 150</i> ▪ Prison Service <i>received 4000</i> ▪ Forensic Science Centre <i>received 50</i> ▪ Municipal Police <i>received 400</i> ▪ Ministry of Health <i>received 150</i> ▪ Tobago RHA <i>received 500</i> ▪ North-Central RHA <i>received 250</i> ▪ North-West RHA <i>received 300</i> ▪ Customs and Excise <i>received 300</i> ▪ Immigration Division <i>received 300</i> ▪ Fire Service <i>received 500</i> 	

- **DNA Reference Sample Collection** from **Protective Service Agency Members** listed in **Third Schedule of DNA Act**; and **Persons detained in institutions to which the Prison Act applies**

Task/ Activity	Achievements and Outcomes	Risks or Comments
DNA Sample Collection from persons listed in the Third Schedule of the DNA Act , prison population, deported citizens and non-nationals detained under the Immigration Act.	<ul style="list-style-type: none"> ▪ In December 2021 a meeting was convened with representatives from TTPS, TTFS, Customs & Excise Division and Immigration Division to discuss the sampling of employees, non-nationals detained under the Immigration Act and deported citizens. Each agency is now required to develop a sampling work plan, identify a room for sampling/storage and coordinate with the Ministry of Health to have qualified persons collect and transport samples to TTFSC. 	<ul style="list-style-type: none"> ▪ Work-plans are to be submitted to the Deputy Custodian Manager. ▪ The 15 000 Buccal Swab Kits procured by the Ministry of National Security expire on November 01, 2022. ▪ The utilization of qualified persons from the Ministry of Health may be a challenge due to the ongoing demands for medical personnel at health facilities and vaccination sites. ▪ The utilization of qualified persons within the Ministry of National Security is being explored.

11. NFDD Custodian Unit - Buccal Swab 'train-the-trainer' Training

Completed Training: Trinidad and Tobago Police Services (TTPS), Municipal Police, Trinidad and Tobago Prison Service, Trinidad and Tobago Forensic Science Centre (TTFSC), Ministry of Health (MOH), Tobago Regional Health Authority (TRHA), North-Central Regional Health Authority (NCRHA), South-West Regional Health Authority (SWRHA), Customs and Excise Division, Immigration Division and the Trinidad and Tobago Fire Service.

Persons who completed training are now Buccal Swab Sample Collection 'Trainers' familiar with DNA Legislation and are certified as:

1. **Collectors** i.e. persons authorised to perform collection procedure and certify other persons in sample collection policies so that these persons may become 'trainers', 'collectors' or both; or
2. **Non-Collectors** i.e. persons not authorised to perform collection procedure but may certify other persons in sample collection policies so that these persons may become 'trainers'.

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
TTPS	June 25, July 25 , 2018	Police Academy	35	20
	July 26, August 07, 2018	Police Academy	48	22
	August 09 and 10 , 2018	Police Academy	37	31
	August 22, 2018	Police Academy	3	3
	August 27 and 30, 2018	Police Academy	26	20
TTPS - Tobago	October 25 and December 06, 2018	Tobago – Scarborough Police Station	14	9
TTPS - SERU	November 16 , 2018	SERU	18	18
TTPS - SERU	November 23, 2018	Tower C , level 19	26	24
TOTAL			207	147

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Prison Service	July 30 and August 15, 2018	Tower C , level 20	33	15
Prison Service+ Doctors	September 17 and 18, 2018	Tower C , level 20	21 + 3 Doctors	13
Prison Service	October 29 and 30, 2018	Tower C , level 20	31 + 3	29
TOTAL			91	57

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Ministry of Health	November 14, 2018	Insect Vector Control	30	29
	November 30 , 2018	Tower C , level 19	5	5
TOTAL			35	34

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
TTFSC	August 17 and 24 , 2018	Forensic Science Centre	10	10
	October 23, 2018	Tower C , level 19	1	1
TOTAL			11	11

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Municipal Police	July 23 and August 13, 2018	Tower C , level 20	37	14
	March 13, 2019	Ministry of Rural Development, Kent House	20	20
	March 15, 2019	Ministry of Rural Development, Kent House	24	24
	June 06, 2019	Ministry of Rural Development, Kent House	9	8
TOTAL			90	66

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Tobago RHA	July 29, 2019	Scarborough General Hospital	26	22
TOTAL			26	22

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
North – Central RHA	September 05, 2019	Mount Hope Women’s Hospital	21	19
	September 06, 2019	Mount Hope Women’s Hospital	23	19
TOTAL			44	38

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
South-West RHA	September 27, 2019	San Fernando General Hospital	19	18
	October 09, 2019	San Fernando General Hospital	14	14
	October 22, 2019	San Fernando General Hospital	20	8
TOTAL			53	40

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Customs and Excise	September 11, 2018	Tower C , level 20	3	3
	September 26, 2018	Customs House Training Room	7	5
	August 19, 2019		8	7
	August 26, 2019		5	5
	September 02, 2019		10	9
	September 09, 2019		11	5
	October 17, 2019		8	2
	November 25, 2019		13	8
	February 12, 2020		9	8
TOTAL				74

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Immigration Division	September 14 and 21, 2018	Tower C , level 20	40	14
	November 27, 2018	Tower C , level 20	13	14
	November 29, 2018	Tower C , level 20	10	10
	July 15, 2020	Government Campus Plaza	9	9
	July 22, 2020	Government Campus Plaza	12	9
TOTAL			84	56

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
TTFS	July 19 and September 19, 2018	Fire Services Headquarters	34	7
	November 30 , 2020	Virtual	15	9
	December 01 , 2020		15	9
	April 14 , 2021		15	14
	April 21, 2021		15	10
May 11, 2021	8		7	
TOTAL			102	56

Incomplete training: Trinidad and Tobago Defence Force (TTDF), North-West RHA and Eastern RHA

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
TTDF	September 10 and 13, 2018	Defence Force Headquarters	21	12
TTDF + Medics	October 01 and 02, 2018		12	10
TOTAL			33	22

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
Eastern RHA	March 09, 2020	Sangre Grande Enhanced Health Centre	21	15
Eastern RHA	August 11, 2020	Sangre Grande Enhanced Health Centre	25	Cancelled due to COVID-19
Eastern RHA	August 20, 2020	Sangre Grande Enhanced Health Centre	25	Cancelled due to COVID-19
TOTAL			71	15

Stakeholder	Training Dates	Training Location	# persons invited	# persons completed
North West RHA	TBD	TBD	50	TBD

Number of Ranks Trained

TTPS	
Rank	Number trained
WPC	62
PC	61
CPL	15
AG/SGT	3
SGT	5
AG INSP	1
Total	147

Immigration	
Rank	Number trained
Immigration Officer I	1
Immigration Officer II	37
Immigration Officer III	5
Woman Detention Officer 1	8
Detention Officer 1	2
EMT	2
Senior EMT	1
Total	56

Prison Service	
Rank	Number trained
Prison Officer I	47
Prison Officer II	10
Total	57

Trinidad and Tobago Forensic Science Centre	
Rank	Number trained
BOA	2
Associate Professional	1
Scientific Officer I	3
Scientific Officer II	1
Forensic Exhibit Clerk	2
Forensic Biologist	2
Total	11

TIDE	
Rank	Number trained
L/CPL	2
SGT	3
CPL	1
Writer	1
Petty Officer	2
Chief Petty Officer	1
Private (PTE)	3
Warrant Officer II	1
Warrant Officer	1
Senior Aircraftman	2
Sub Lieutenant	1
EMT Private (PTE)	1
Leading Seaman	3
Total	22

Customs	
Rank	Number trained
AG/C&EO 1	23
C&EO 2	9
AG/C&EO 3	6
Supervisor C&EO	1
C&E Guard 1	6
C&E Guard 2	6
C&E Guard 3	1
Total	52

Fire Services	
Rank	Number
Fire Fighter	47
Fire Sub Officer	3
AG/Fire Sub Officer	1
Fire Sub Station Officer	4
Auxiliary Fire Fighter	1
Total	56

Municipal Police	
Rank	Number trained
PC	19
WPC	27
AG/CPL	3
CPL	4
AG/SGT	4
SGT	2
Inspector/ Ag	3
Inspector	3
Senior Supt.	1
Total	66

Ministry of Health and Regional Health Authorities	
Rank	Number trained
Primary Care Physician II Admin (Ag)	2
District Medical Officer	6
County Medical Officer of Health / (Ag)	5
Primary Care Physician II / (Ag)	38
Medical Officer I	4
Senior Medical Officer	5
Registrar / (Ag)	22
Primary Care Physician I	6
Prison Medical Officer	3
Police Medical Officer	1
Medical Chief of Staff (MCO)	1
Clinical Facilitator	1
House Officer	14
Consultant	3
Nurse Manager	2
Nurse/ RN	23
Nursing Supervisor	3
Head Nurse	2
Nursing Instructor	2
Medical Officer II	1
Head, A&E	1
District Health Visitor	4
Total	149

12. Conclusion

Forensic DNA databanks continue to be a valuable crime-fighting tool for law enforcement agencies and has the potential to link crimes that occurred at differing time periods and geological locations, in addition to solving cases without initial suspects. However, the NFDD of Trinidad and Tobago is still in its infancy stage and due to many challenges, remains an underutilized resource.

For the year 2021, three (3) DNA profiles were uploaded onto the NFDD and the Unit issued its first final match report to the TTPS. Furthermore, thirty-one (31) Fire Officers were sensitized in buccal swab sample collection.

The Unit's goals for 2022 include ISO/IEC 9001 (Quality Management System) accreditation, the procurement of outstanding ICT items, the commencement of buccal swab sample collection from persons listed in the ***DNA Act*** and the continuous upload of DNA profiles from the TTFSC and other approved laboratories.

End of Report

