Supporting documents for DNA Database Services

Prepared by: Ms. Sireethron Sangpueng Forensic Scientist, Professional Level
Reviewed by: Mrs. Chanidapa Srinongwa Forensic Scientist, Senior Professional Level
Approved by: Mr. Suranarong Srisuwan Director of Division of Forensic Science Standard

Introduction

Handbook of DNA Database Services of DNA Division, Central Institute of Forensic Science which aims to provide necessarily information related to DNA database Services such as sample collection, sample collector types, appropriated characteristic of sample and package, delivery process and service process, etc. This handbook provides a briefly guideline for Clients, both public and private sector which precision, fast and system. The result, DNA profiles have performed with precise and accurate following DNA laboratory standard according to International standard.

Mrs. Chanidapa Srinongwa
Forensic Scientist, Senior Professional Level
Director of Division of Forensic DNA

Content

DNA database laboratory

DNA Division

Central Institute of Forensic Science

Location: 111 Moo 4, Ban Mai Subdistrict, Mueang Pathum Thani Distric, Pathum Thani Province 12000

Contact Number: -

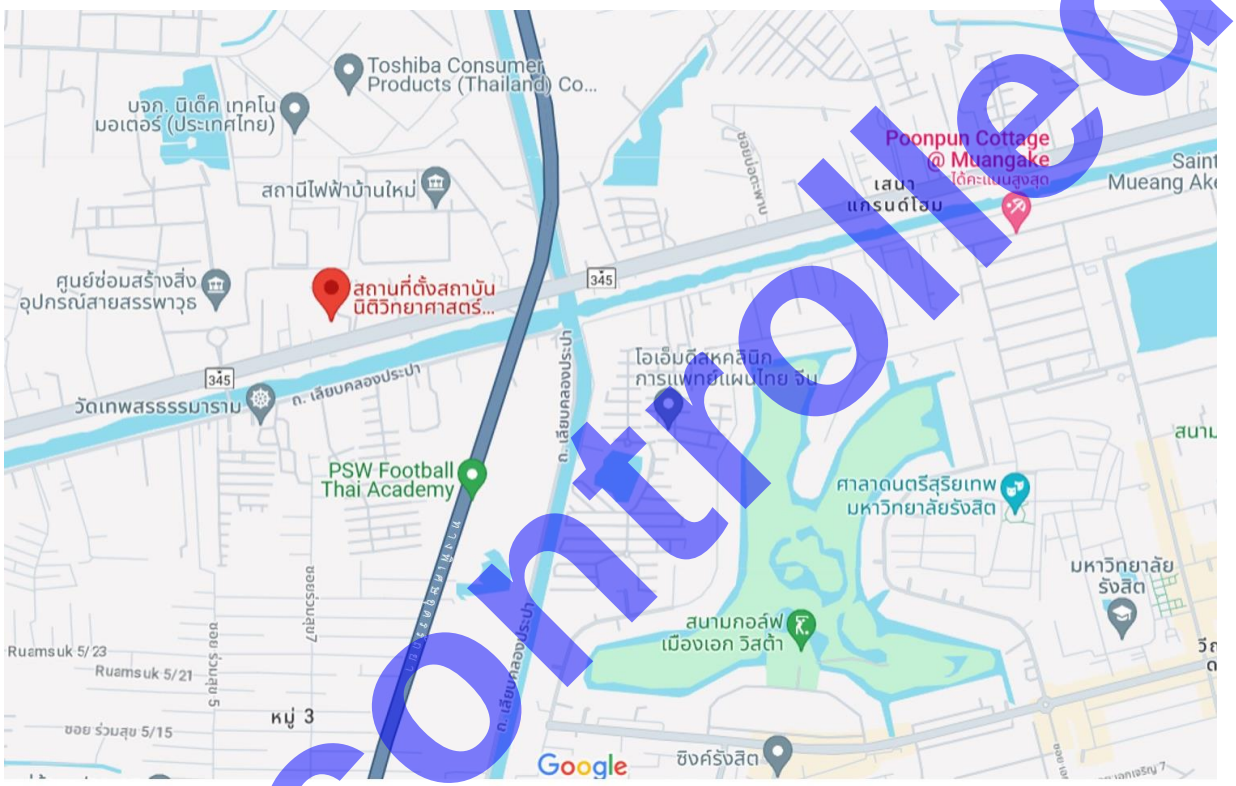
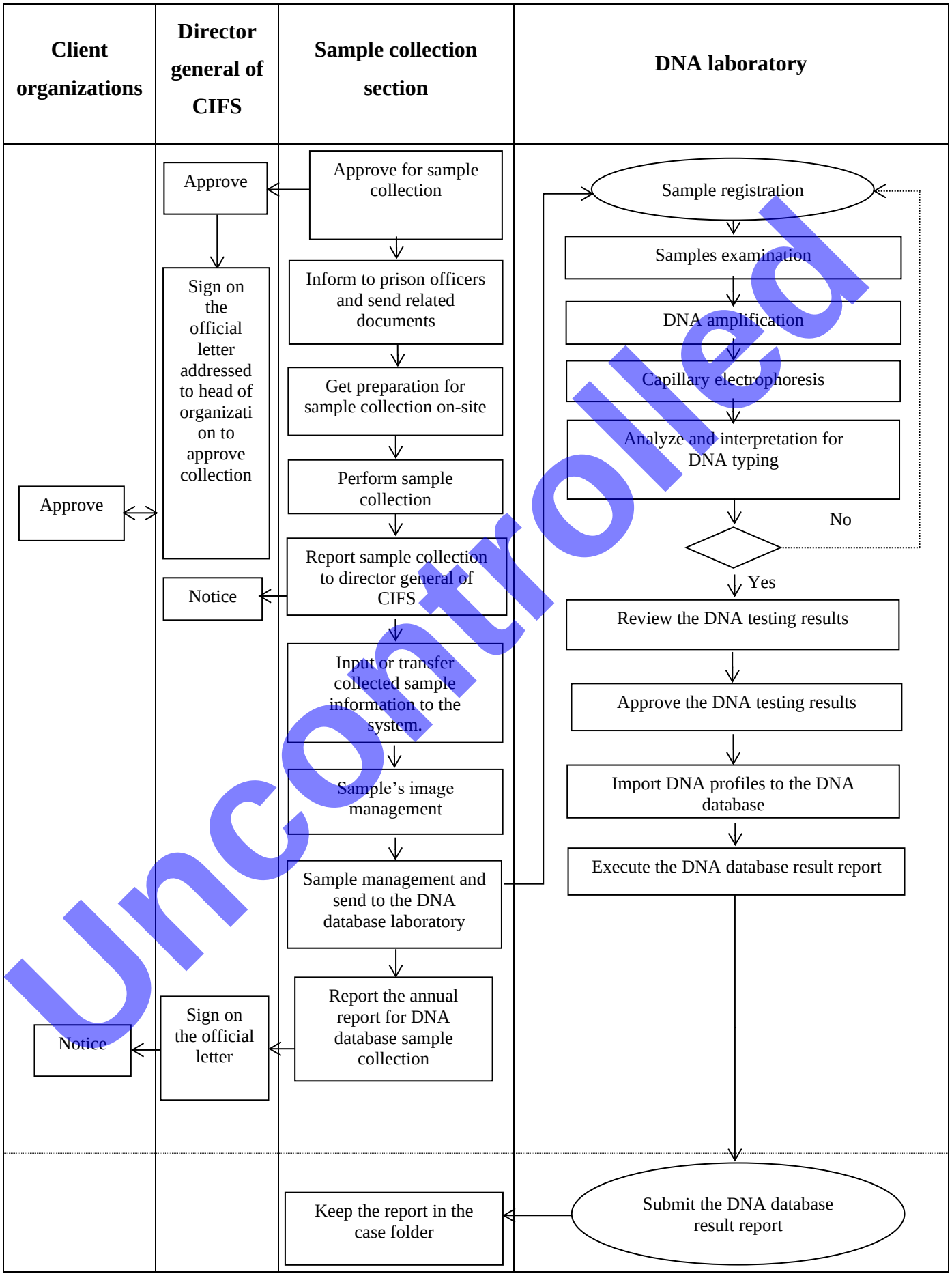


Figure 1 Map of DNA laboratory, DNA Division, Central Institute of Forensic Science

Scope of services

DNA Laboratory, DNA division provides services to analyze forensic DNA from individual including prisoners, suspects or reference person to use as evidence for the trial, support justice and being the forensic databases. DNA Division also servers sample collection and DNA database searching.

DNA database laboratory workflow



DNA laboratory organization chart

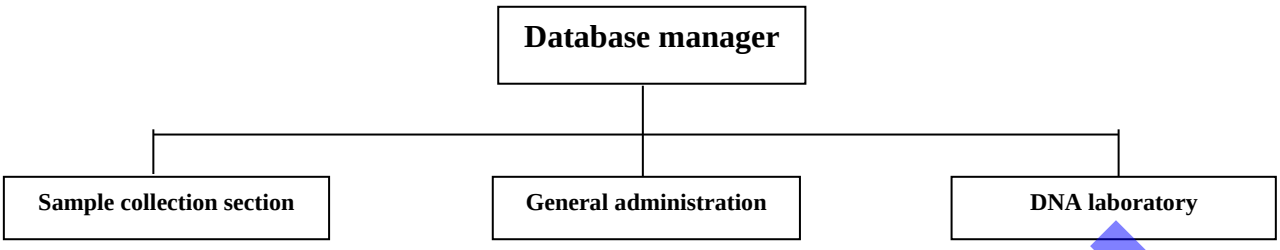


Figure 2 Organization chart of DNA laboratory

Instruction for registration and collection DNA sample

1. The officers of DNA Division coordinate with the Department of Corrections to request for the information of prisoners in the form of e-mail (figure 3). When the officers receive information, it is taken to the RapidDNA system for inspecting the personal information. Then, Referent Number Barcode, DNA Collection Consent Form, Reporting for Collection DNA Form and other related documents are printed out.

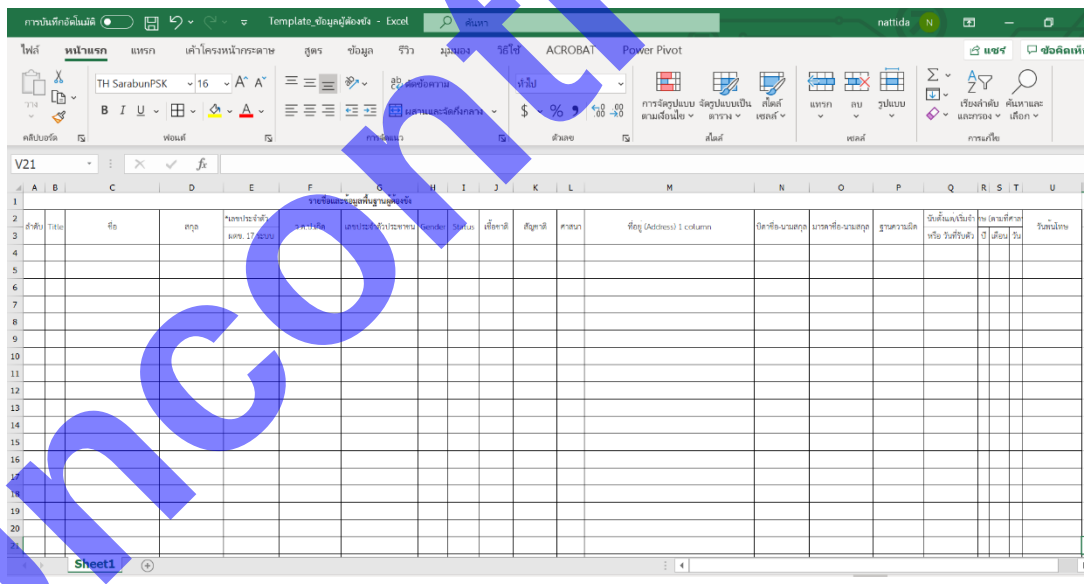


Figure 3 Layout for recording information of prisoners

2. The Genetic collecting devices and materials are prepared for DNA collecting. At the prison, the officer coordinate with the prison officer as well as explain the details of the DNA collecting to the prisoners. The officers then take the photo, interview and collect the DNA following Referent Number of the prisoner in order. The documents and evidences are reviewed by the officers before sending to the DNA laboratory.

3. The evidences then are registered to RapidDNA system by forensic scientist who collected DNA sample or forensic scientist who is assigned for sending (Evidence Sender). Preparation the evidence items and documents as follows:

3.1 Collection DNA for Personal Databases Form (FM-DNA-182)

3.2 DNA Collection Consent Form (FM-DNA-135)

3.3 Evidences

4. The forensic scientist who is assigned to receive evidences (Evidence Receiver): inspects the documents as stage in 3 and completion of the evidence package e.g. no trace tearing or opening incorrectly. Evidence Sender and Evidence Receiver signs signature, sending date and receiving date in Collection DNA for Personal Databases Form (FM-DNA-182).

5. The documents are inspected then are confirmed location of evidence in storage box in RapidDNA system following Work Instruction for Using Information Technology (IT) System for RapidDNA Database (WI-DNA-074_E) by Evidence Receiver.

6. Evidence Receiver collects the DNA samples in suitable condition in the laboratory then collects Request for DNA Analysis of DNA Database Samples Form (FM-DNA-062) in the case file for sending to the case manager.

7. Case manager prepares for assignment e.g. creates analysis batches or cases (normally 80 samples), issues the identified case numbers then assigns to assignees and analysts. The lead time is 30 working days.

Remark 1. The assignment must not exceed ten cases per an analyst in a month (approximately 800 samples).

2. In case the assignment is more than 10 cases in a month, the lead time will be more than 30 working days depending on number of exceeded cases.

Specimens management

1. FTA Card and Buccal Sample are sent by the officers of DNA Division, Central Institute of Forensic Science.

2. DNA Laboratory will return samples to the Sample Collection Section, DNA Division after the all processes are completed. The remain samples will be kept in the appropriate temperature storage at least 20 years.

3. The detail records on DNA Analysis of DNA Database Samples Form (FM-DNA-062) are required as follows.

3.1 Evidence No. (if known). Fill in Evidence No. to match to Evidence No. that labeled on the package of samples.

3.2 Sample collector type such as FTA Card, mini FTA Card or BCS.

3.3 Gender (owner of the sample).

3.4 Prison or sample collection place.

3.5 Amount of samples.

3.6 List No. such as 1,2,3.

Remark: The laboratory will receive only FTA Card and Buccal Sample (BCS).

If sample collector type does not match the criteria, case manager should consider and approve prior sending samples to the laboratory.

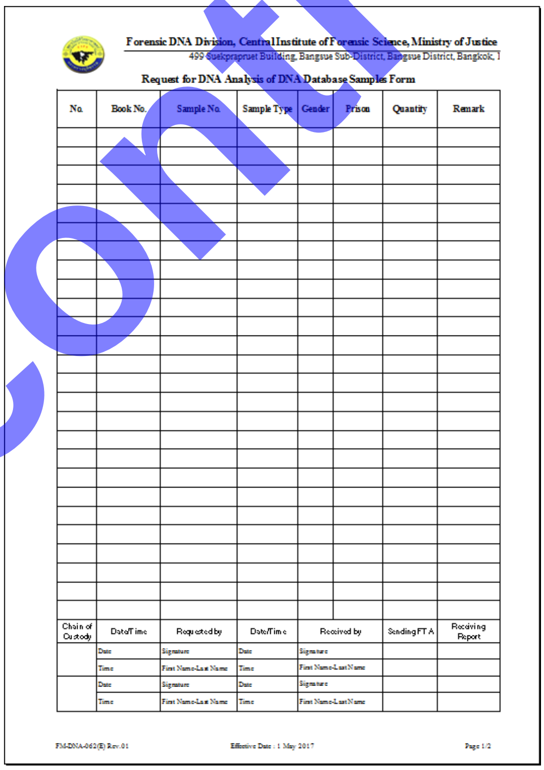
3.7 Remark: (if applicable) specify additional information that the Evidence Sender deems necessary to know prior to perform DNA testing or to inform any defect of samples not following the guideline.

3.8 Chain of Custody

3.8.1 Please make sure that name of Evidence Sender, Sending Date and Sending Time are wrote clear and correct.

3.8.2 Please make sure that name of Evidence Receiver, Receiving Date and Receiving Time are wrote clear and correct.

3.8.3 Reason for sending samples such as STR, Y-STR analysis



Forensic DNA Division, Central Institute of Forensic Science, Ministry of Justice

499 Suekprapruet Building, Bangsue Sub-District, Bangsue District, Bangkok, 1

Request for DNA Analysis of DNA Database Samples Form

No.	Book No.	Sample No.	Sample Type	Gender	Prison	Quantity	Remark

Chain of Custody	Date/Time	Requested by	Date/Time	Received by	Sending FTA	Receiving Report
	Date	Signature	Date	Signature		
	Time	First Name-Last Name	Time	First Name-Last Name		
	Date	Signature	Date	Signature		
	Time	First Name-Last Name	Time	First Name-Last Name		

FM-DNA-062(E) Rev.01 Effective Date : 1 May 2017 Page 1/2

Figure 4 Shows request for DNA Analysis of DNA Database Samples Form (FM-DNA-062)

Containers or packages

DNA Samples should be wrapped or covered and sealed in the container to protect them from contamination. The samples should be stored in room temperature that minimizes extremely heat and humidity during delivery. For the package of DNA database samples will be contain in foil envelops with desiccant bag inside for FTA Card.

Chain of custody

1. In the DNA laboratory, all samples will be received by the authrorized personel assignning to receive samples. Then related details will be filled out in the Collection DNA for Personal Databases Form (FM-DNA-182).
2. When the laboratory receives the evidence for examination. Information is recorded in RapidDNA system to control the chain of custody and record in the DNA Database Samples Form (FM-DNA-062).
3. Samples will be stored in the samples cabinet according to the sample storage recording in the system. All cabinets are located in the room with access control only authrorized personels.
4. After completed testing, samples will be stored to the previous sample cabinets in the room with access control to prevent people who have no duty to dispose or exchange samples without permission.
5. FTA Card will be returned to the sample collection section, DNA Division after testing completed. They will be stored in the sample cabinet inside the room with access control and keep at least for 20 years, after that it will be disposed by the relevant authorities.

Acceptable specimens characteristic for DNA casework testing

1. Baccal sample on FTA card
   - 1.1 Individually packed in a foil envelope with desiccant bag inside.
   - 1.2 FTA paper change color from pink to white indicated having buccal cells on the paper.
   - 1.3 Should be dred, not moised.
   - 1.4 No fungus.
2. Baccal sample on Cotton swab
   - 2.1 Individually packed in a paper envelope
   - 2.2 Should be dred, not moised.
   - 2.3 Not appear stain on the envelope.
   - 2.4 No fungus.

How to deal with defective specimens

In order to make a test is correct, efficient and standardized. Submitting samples to the DNA laboratory, both biological material or other kind samples, Should be conformed to the acceptable sample characteristic for DNA Database testing of this handbook. If samples do not meet these criteria, they will be considered as defective samples. Then defective samples will be processed following the Table 1.

Table 1 How To Deal With Defective Specimens

No.	Defective Details	Action
1	No defects found.	- Perform as routine test.
2	Condition of the sample is not appropriate for the test such as found fungus.	- Perform test - Record the defective condition in Request for DNA Analysis of DNA Database Samples Form (FM-DNA-062)
3	Have no request form (FM-DNA-062) or some information in the request form is incorrect or not complete.	- Has not been processed yet. - Temporary stores in the sample cabinet of the DNA Laboratory. - Incorrect or missing information should be corrected immediately by sender or Inform clients to correct them.
4	Not labeled, no sample number or some parts of sample number are scratched, torn or fade away.	- Perform test - Record the defective condition of the sample in Request for DNA Analysis of DNA Database Samples Form (FM-DNA-062). - Incorrect or missing information should be corrected by sender.
5	Sample number does not meet the number specified in the Request for DNA Analysis of DNA Database Samples Form (FM-DNA-062).	
6	The samples container is not appeared proper sealed and signed.	
7	Other defectives besides these.	-Present to the Laboratory Manager and DNA Database Manager to be considered.

Instruction for collecting specimens

Instruction for prior collecting samples

1. Wear new and clean gloves before working.
2. Change gloves every time you collect a new sample.
3. Packed the sample in a clean container and suitable to type of sample.

Specimens collector types

1. Buccal Swab, the collection should be operate as following

1.1 Use steriled cotton swab to collect the buccal cells.

1.2 Air dried about 3 minutes.

1.3 Put in a paper envelope or paper box by individual separated, Do not put different individuals together to prevent contamination.

1.4 Sealed the envelope or box neatly and signed at sealed area all sides.

1.5 Fill out sample information on the envelope or paper box, at least the following information is required:

Name - surname (owner of the sample)…….

Characteristics of the sample / Sample type……

Location of collection……..

Number of sample…….

Collected by……...

Collection date……...

Collection time……...

2. Buccal sample on FTA card, the collection should be operate as followings

2.1 Use Foam Tip to collect the sample by grab at plastic handle. **Do not** touch the end of Foam Tip which is the part to collect sample.

2.2 Put the end of Foam Tip into the mouth and rub both sides of the Foam Tip with the inner buccal by rubbing about 1 minute and try to adsorb saliva as much as possible. Then take the Foam Tip out of the mouth.

2.3 Press the end of Foam Tip onto FTA card at the first circle by pressing Foam Tip for about 10 seconds, then turn to the other side of Foam Tip and press down on the same circle until the card turns from pink to white. Discard used Foam Tip when finished.

2.4 Repeat steps 1-3 by use new Foam Tip then press down on the second circle.

2.5 Wait to dried the FTA card and put in a foil pouch with a desiccant bag.

2.6 Sealed the pouch neatly and signed at sealed area all sides.

2.7 Fill out the information on the envelope, at least the information are as follows.

Name - surname (owner of the sample)…….

Collected by……...

Collection date……...

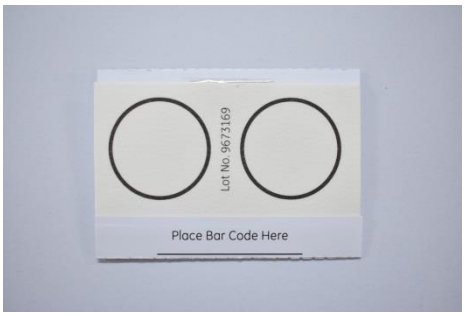


Figure 5 Buccal sample on FTA card

3. Buccal samples using the EasiCollect / EasiCollect^{+} device, the collection should be operate as followings

3.1 Do not open packages before use. When collecting samples always wear gloves.

3.2 Open the protective sleeve at the FTA Card end. Slide out the EasiCollect/ EasiCollect^{+} device leaving the foam-tip in the packaging.

3.3 Record identification information on the back of the FTA Card and then remove completely from the packaging sleeve.

3.4 Hold the EasiCollect/ EasiCollect^{+} device and Place the foam head in the mouth and using moderate pressure run it along the gum-line and under the tongue. Once the foam head is wet with saliva, rub the inside of each cheek for 1 minute. Ensure that you feel/see the cheek protrude slightly during the collection. It is extremely important to ensure that the foam head is coated with saliva during this step to enable good sample transfer.

3.5 Remove the foam head from the mouth.

3.6 Carefully remove the plastic protective film from the FTA Card holder to expose the FTA Card.

3.7 Fold the device at the hinge, and press the foam head onto the FTA Card.

3.8 Ensure that the foam head is held in place with the stem lock in the lowest position, and the foam head under the head tab.

3.9 Leave the foam head in contact with the FTA Card for 10 seconds.

3.10 Release the foam head tab by flexing the device.

3.11 Pull the stem up to the top position on the stem lock, removing the foam head from contact with the FTA card. Note: Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

3.12 Allow the sample to dry.

3.13 When dry, check the indicating FTA card and confirm that the colour has changed to white within the sample area.

3.14 If this colour change has not occurred then there may not be sufficient sample transfer, should collect DNA sample again.

3.15 Sample can then be processed immediately or packaged for transport or storage.

3.16 Ensure the stem lock is in the upper position as shown when drying, and that the foam head has been released fully from underneath the head tab.

3.17 Sealed the pouch neatly and signed at sealed area all sides.

3.18 Fill out the information on the envelope, at least the information are as follows.

Name - surname (owner of the sample)……

Collected by……

Collection date……

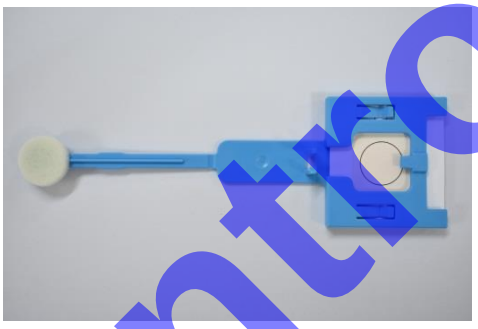


Figure 6 Buccal sample on EasiCollect device

Figure 7 Buccal sample on EasiCollect^{+} device

4. Buccal samples using the COPAN NUCLEIC-CARD device, the collection should be operate as followings

4.1 Do not open packages before use. When collecting samples always wear gloves.

4.2 Open the protective sleeve at the FTA Card end. Slide out the COPAN NUCLEIC-CARD device leaving the foam-tip in the packaging.

4.3 Record identification information on the back of the FTA Card and then remove completely from the packaging sleeve.

4.4 Hold the COPAN NUCLEIC-CARD device and Place the foam head in the mouth and using moderate pressure run it along the gum-line and under the tongue. Once the foam head is wet with saliva, rub the inside of each cheek for 1 minute. Ensure that you feel/see the cheek protrude slightly during the collection. It is extremely important to ensure that the foam head is coated with saliva during this step to enable good sample transfer.

4.5 Remove the foam head from the mouth.

4.6 Open the cassette that collect FTA card.

4.7 Fold the device at the hinge, and press the foam head onto the FTA Card.

4.8 Ensure that the foam head is held in place with the stem lock in the lowest position, and the foam head under the head tab.

4.9 Leave the foam head in contact with the FTA Card for 10 seconds or more.

4.10 Pull the stem up to the top position on the stem lock, removing the foam head from contact with the FTA card. Note: Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

4.11 Allow the sample to dry.

4.12 When dry, check the indicating FTA card and confirm that the colour has changed to white within the sample area.

4.13 If this colour change has not occurred then there may not be sufficient sample transfer, should collect DNA sample again.

4.14 Sample can then be processed immediately or packaged for transport or storage.

4.15 Ensure the stem lock is in the upper position as shown when drying, and that the foam head has been released fully from underneath the head tab.

4.16 Sealed the pouch neatly and signed at sealed area all sides.

4.17 Fill out the information on the envelope, at least the information are as follows.

Name - surname (owner of the sample)…….

Collected by……...

Collection date……...

Figure 8 Buccal sample on COPAN NUCLEIC-CARD device

References

Whatman™ FTA™. Whatman FTA technology. [Internet]. 2011 [cited 2020 Mar 11]. Available from: https://www.thermofisher.co.nz/Uploads/file/Supplier-Partners/GE-Whatman-FTA.pdf

Sample Collection Card & Kits. [Internet]. 2017 [cited 2017 May 26]. Available from: http://www.gelifesciences.com/webapp/wcs/stores/servlet/catalog/enGELifeSciences-th/product/AlternativeProductStructure_21465/

Federal Bureau of Investigation. Handbook of forensic services. Quantico Virginia: An FBI Laboratory Publication Federal Bureau of Investigation; 2013.

Budowle B, Smith J, Morettiand T, Dizinno J. DNA typing protocols: molecular biology and forensic analysis. United State of America: Eaton Publishing; 2000.

Instructions for EasiCollect™. [Internet]. 2013 [cited 2020 Mar 13]. Available from: https://www.qiagen.com/us/resources/download.aspx?id=631a02f8-559e-4e70-8101-9ec6179bdf3e&lang=en.

Instructions for EasiCollect™+. [Internet]. 2016 [cited 2020 Mar 13]. Available from: https://cdn.gelifesciences.com/dmm3bwsv3/AssetStream.aspx?mediaformatid=10061&destinationid=10016&assetid=18390.

NUCLEIC-CARD™ for DNA collection, storage and processing. [Internet]. 2019 [cited 2020 Mar 13]. Available from: http://image.copanitalia.com/wp-content/uploads/2019/11/NUCLEICCARD_JMKC020_DIGITAL.pdf.