

# **Comparison of DNA Stability Using Various Sample Collection Devices for forensic DNA analysis**

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Oita Prefectural Police, Japan**

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# **Today's Presentation**

**1. Introduction**

**2. Materials and Methods**

**3. Results**

**4. Summary and Further works**

# Today's Presentation

**1. Introduction**

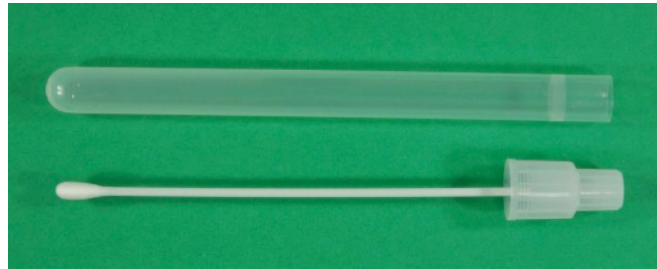
2. Materials and Methods

3. Results

4. Summary and Further works

# DNA collection devices

**Medical Swab**



**All samples**

**Forensic Swab**



**blood samples**

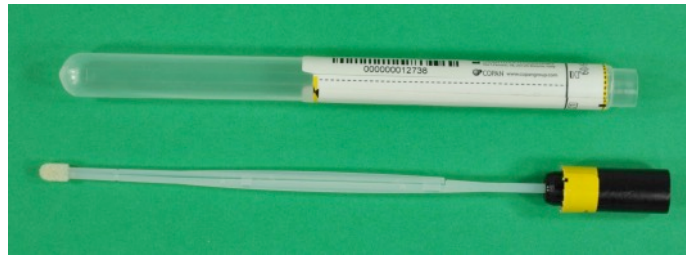
**Adhesive Tape**



**touch samples**

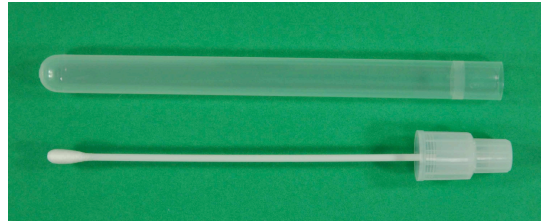
# DNA collection devices

**Divisible 4N6FLOQSwab**



# Objectives

**Medical Swab**



**Forensic Swab**



**Adhesive Tape**

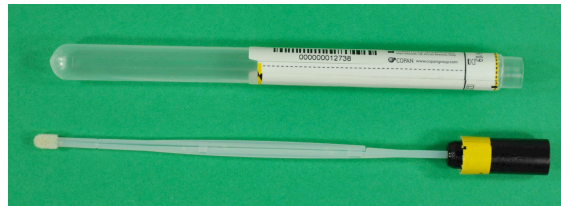


**Comparison**



- DNA recovery
- DNA stability

**Divisible 4N6FLOQSwab**



# Today's Presentation

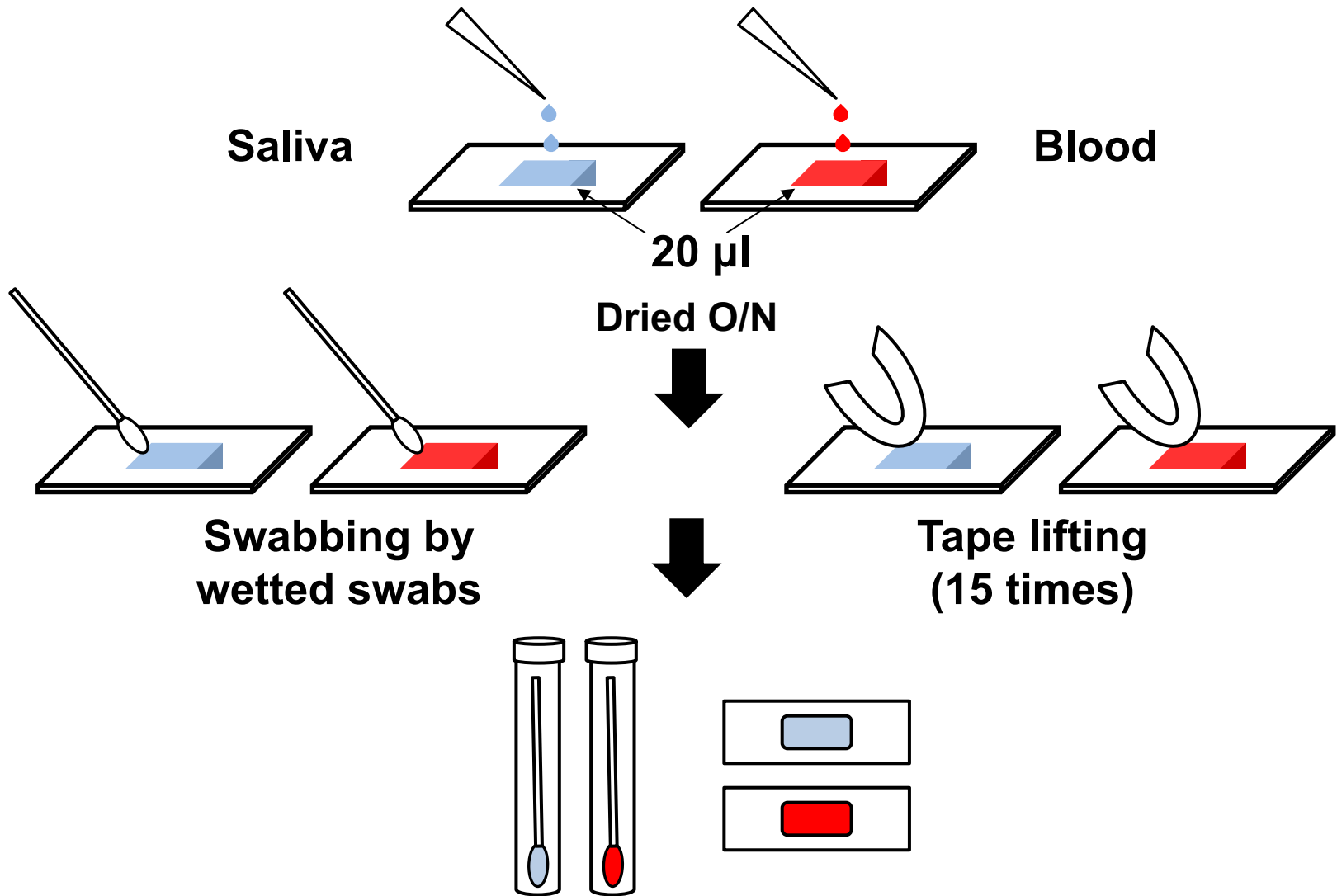
1. Introduction

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# Sample Preparation and Collection



Stored **RT** for **1 week, 2 and 4 weeks**

# **Extraction and Quantification**

## **Extraction Kit**

(Swab)

PrepFiler Express Forensic DNA Extraction Kit  
(Applied Biosystems)

(Adhesive Tape)

PrepFiler Express BTA Forensic DNA Extraction Kit  
(Applied Biosystems)

## **Quantification**

Quantifiler Trio DNA Quantification Kit  
(Applied Biosystems)

# **DNA Amplification and Profiling**

## **DNA Amplification**

Identifiler Plus Kit (Applied Biosystems)

## **Electrophoresis**

Applied Biosystems 3130x/ Genetic Analyzer  
(Applied Biosystems)

## **Analysis**

GeneMapper *ID-X*(Applied Biosystems)

# Today's Presentation

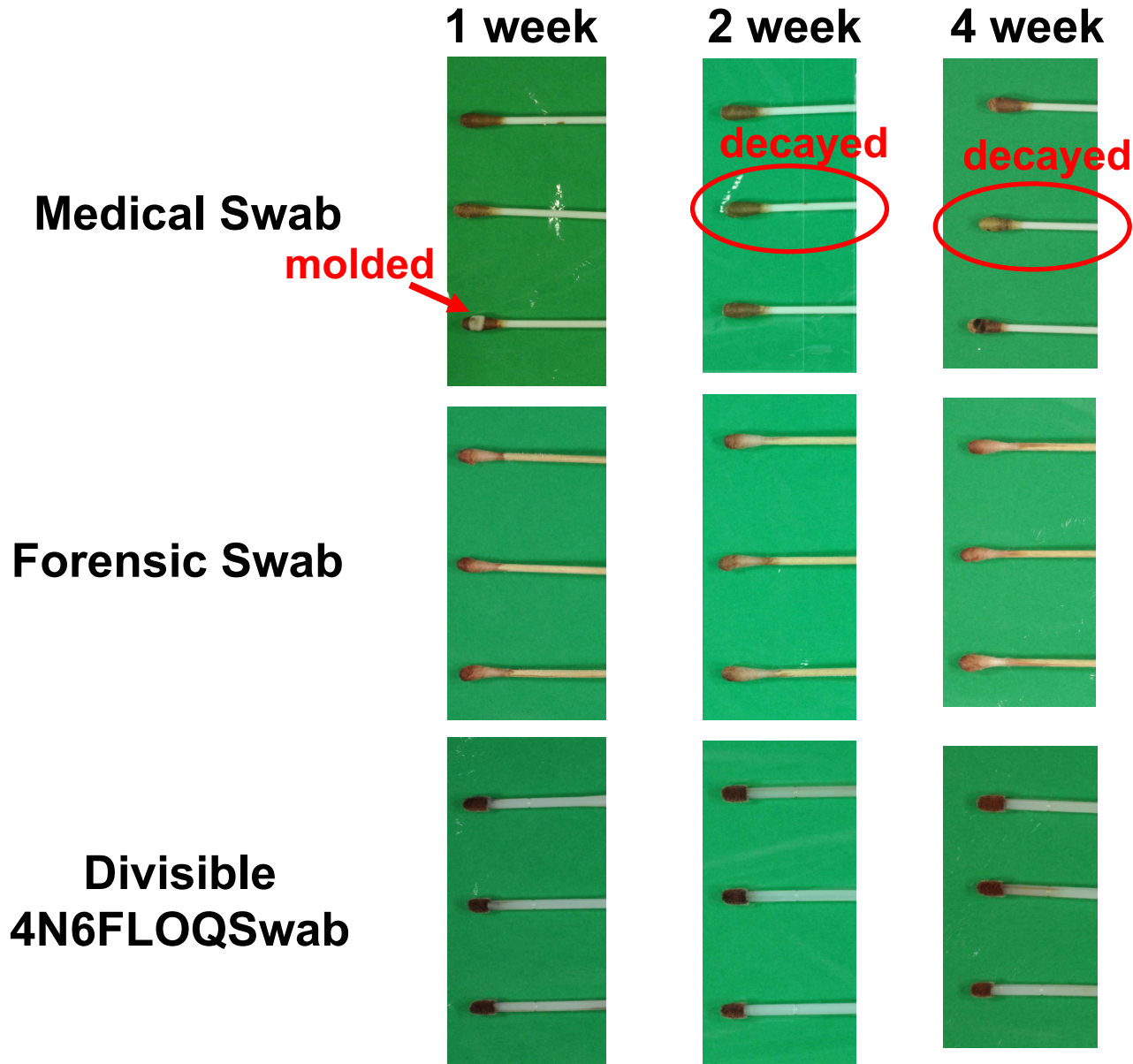
1. Introduction

2. Materials and Methods

**3. Results**

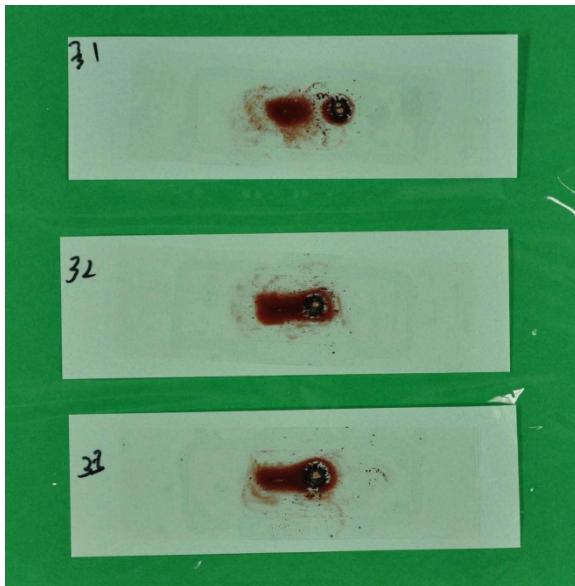
4. Summary and Further works

# Swabs after sampling blood

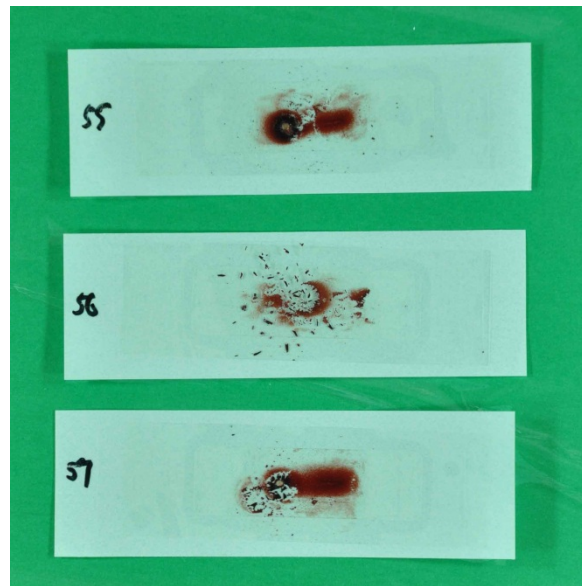


# Tapes after sampling blood

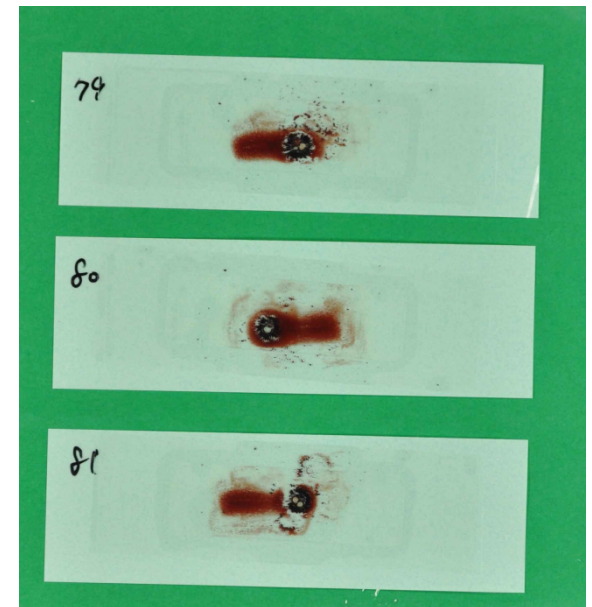
1 week



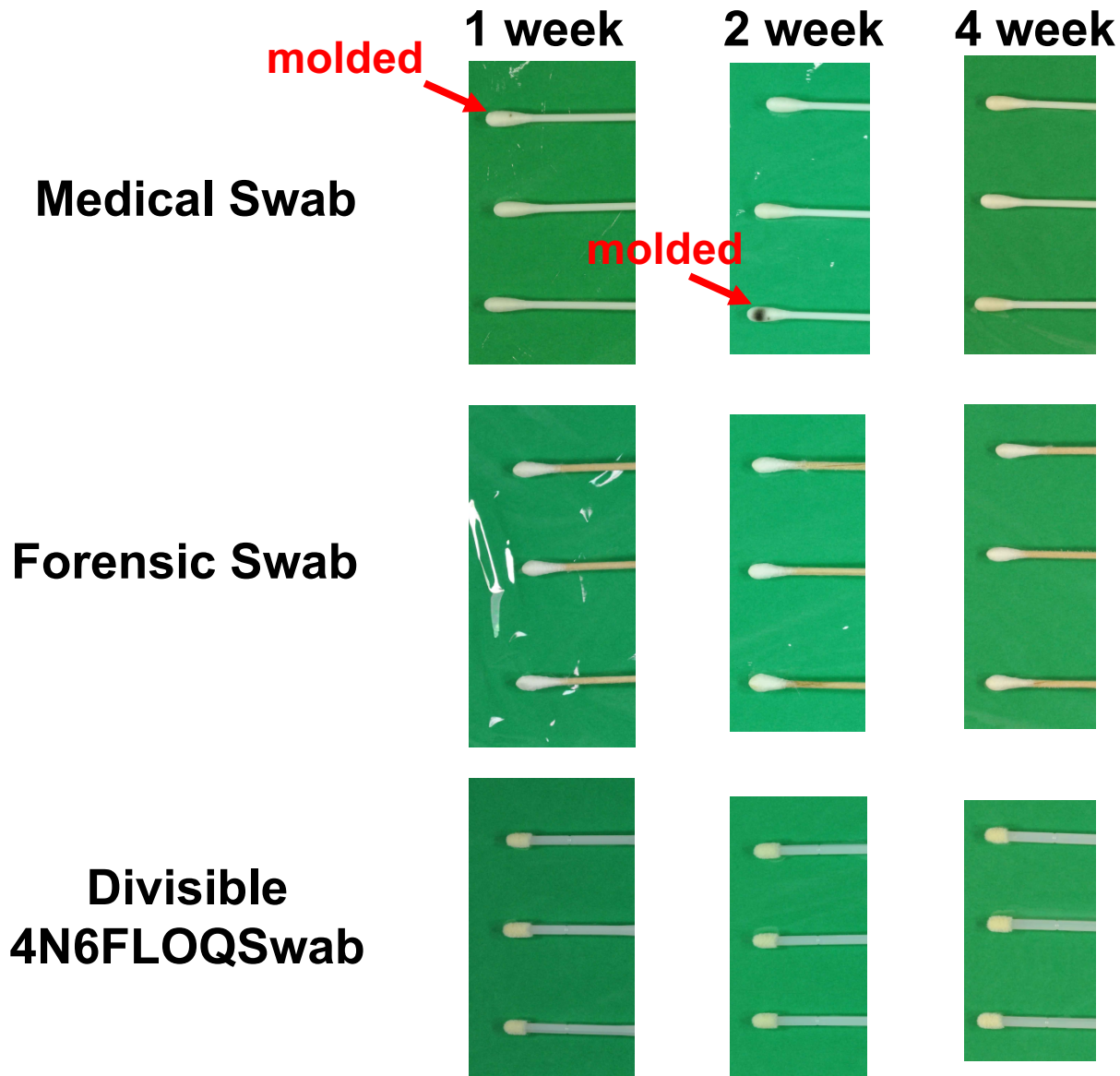
2 weeks



4 weeks

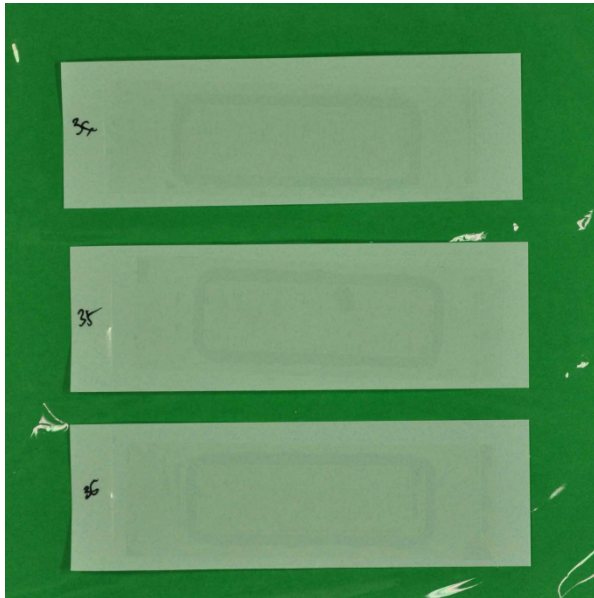


# Swabs after sampling saliva

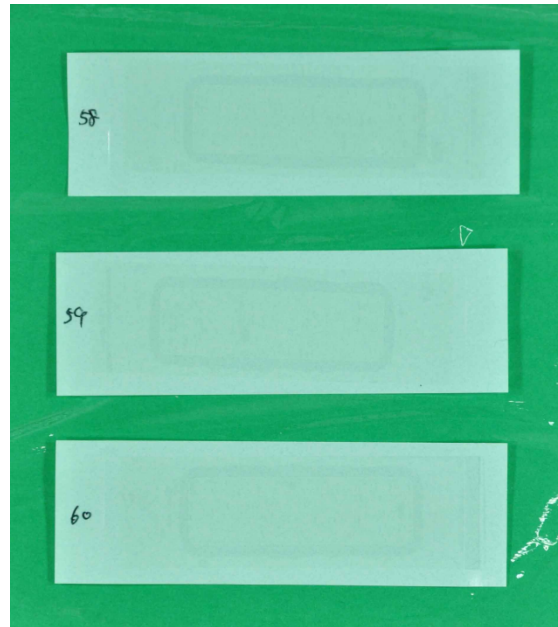


# Tapes after sampling saliva

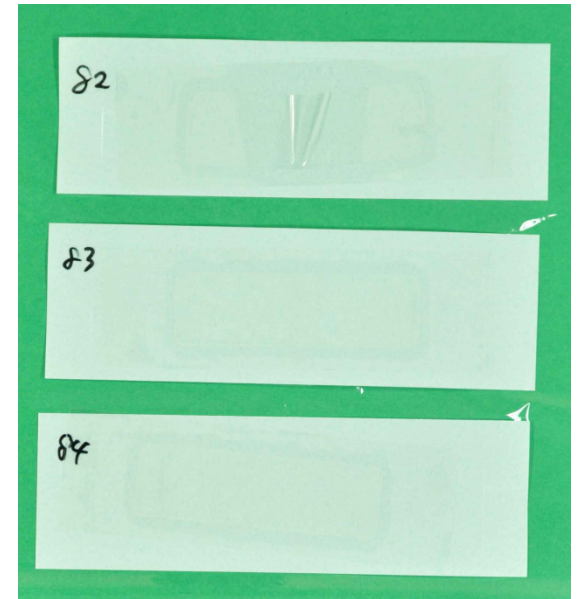
1 week



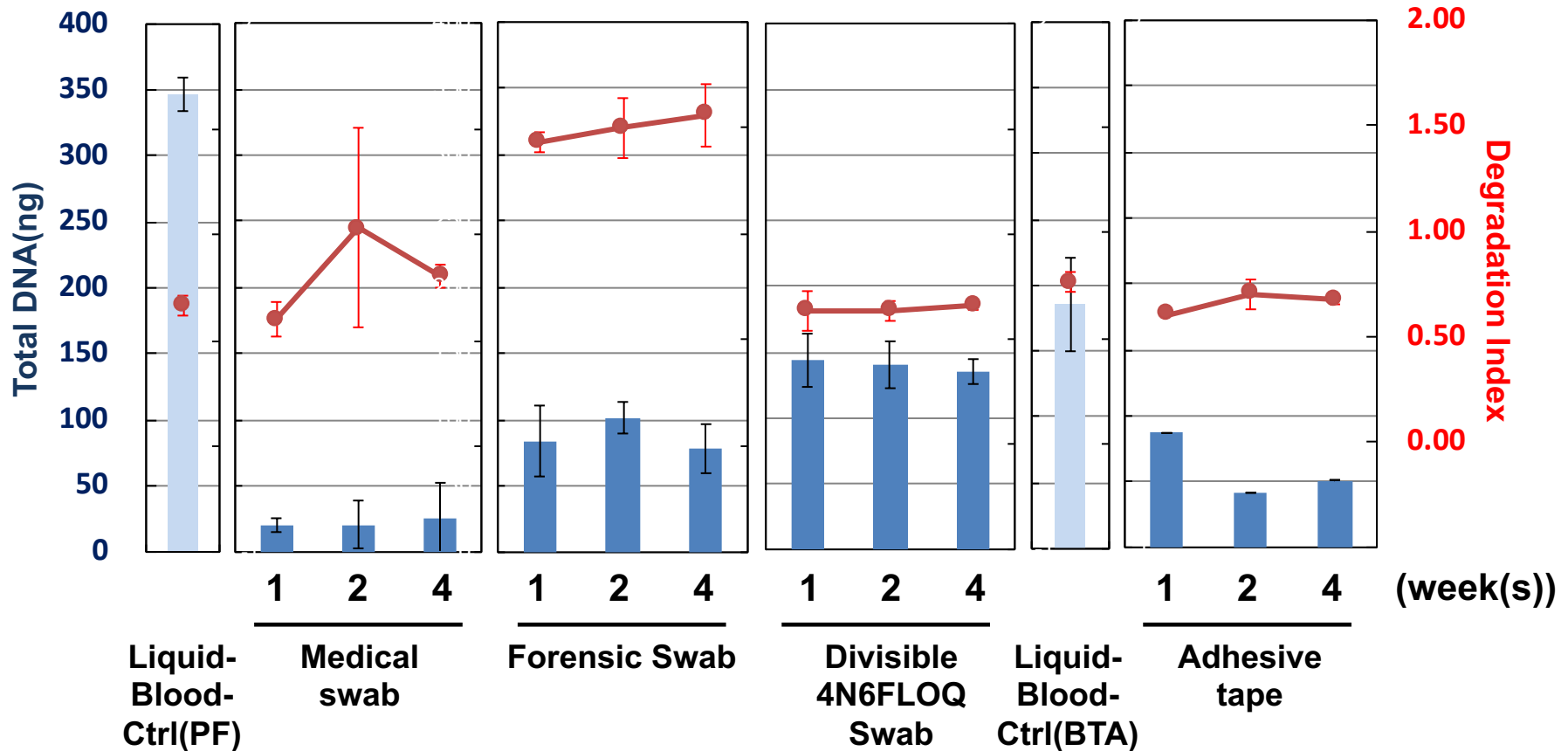
2 weeks



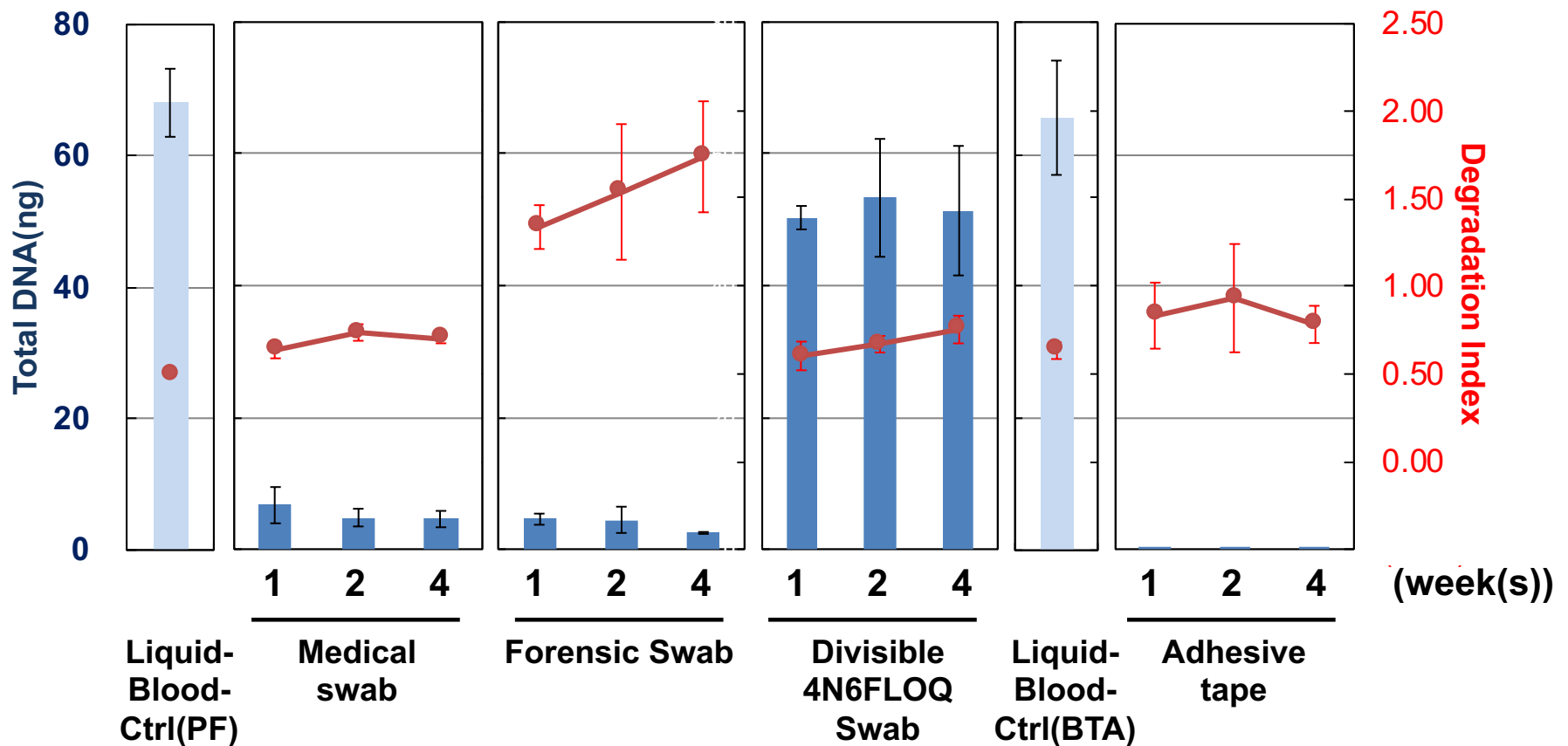
4 weeks



# DNA recovery and stability of blood sample



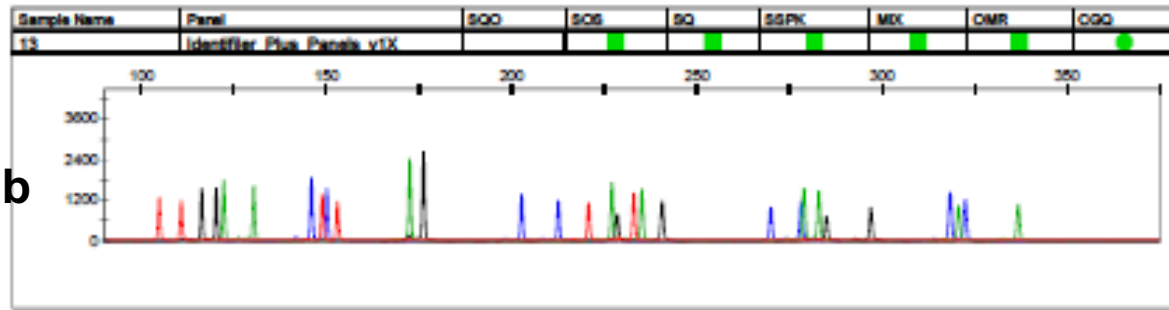
# DNA recovery and stability of saliva sample



# Electropherogram of blood sample(1)

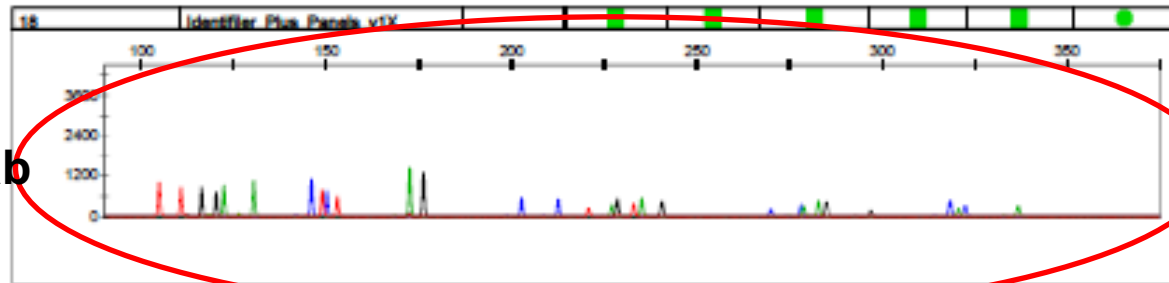
1 week

Medical Swab



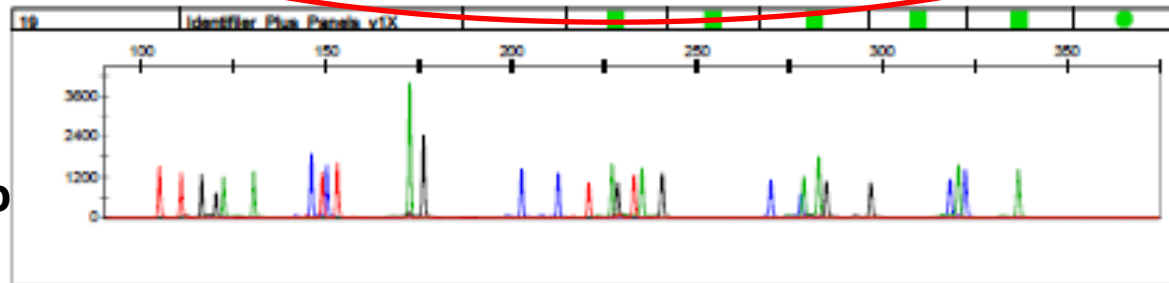
DI=0.60

Forensic Swab



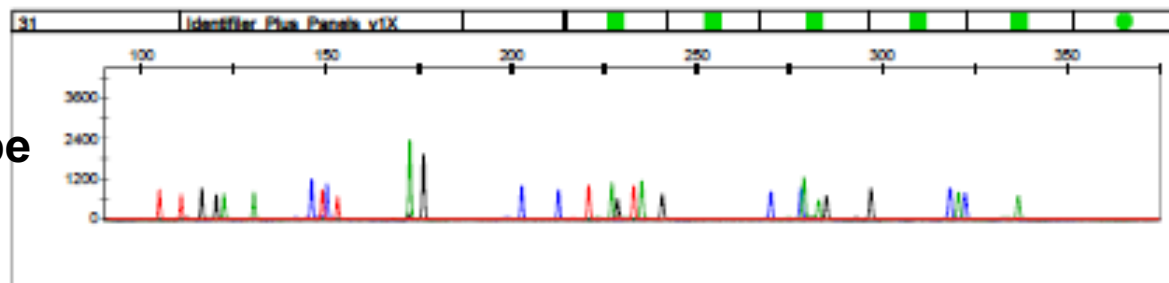
DI=1.43

Divisible  
4N6FLOQSwab



DI=0.63

Adhesive Tape

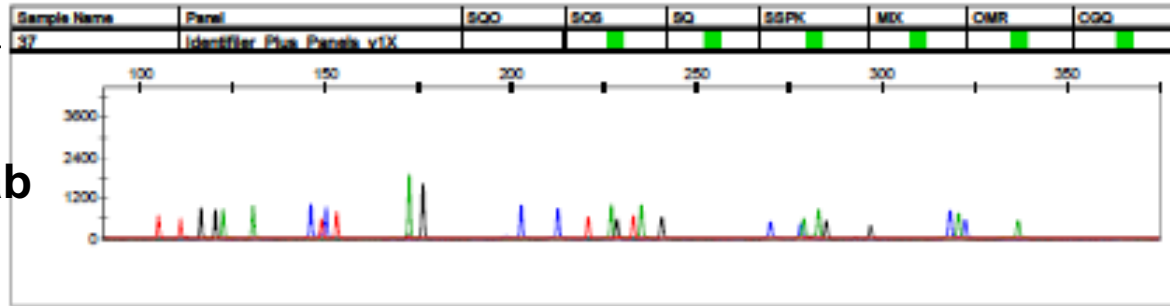


DI=0.60

# Electropherogram of blood sample (2)

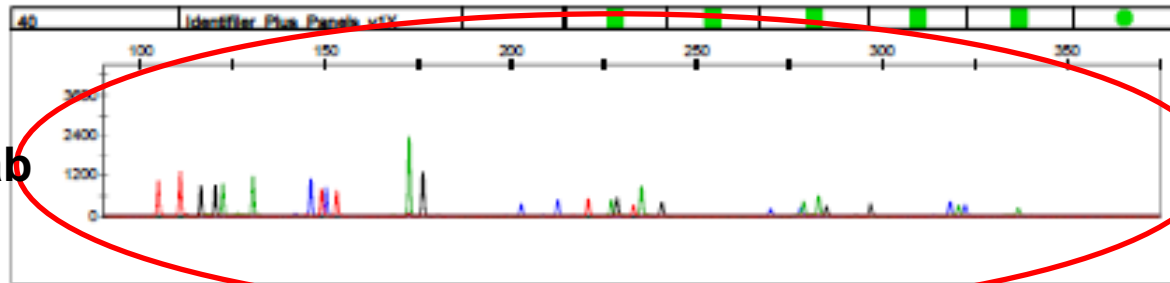
2 weeks

Medical Swab



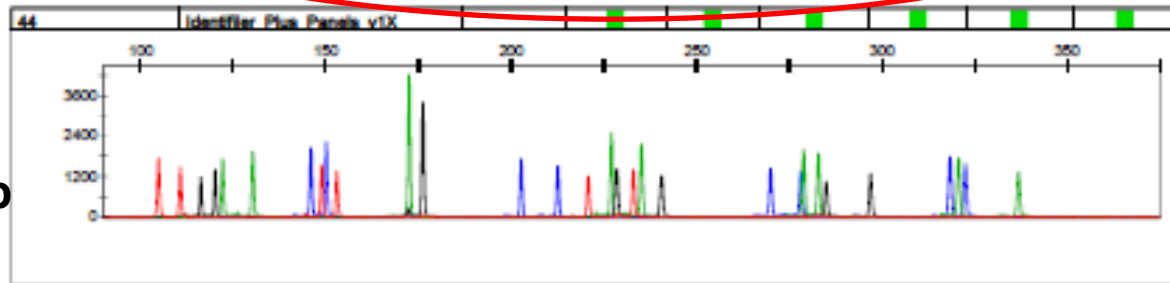
DI=1.03

Forensic Swab



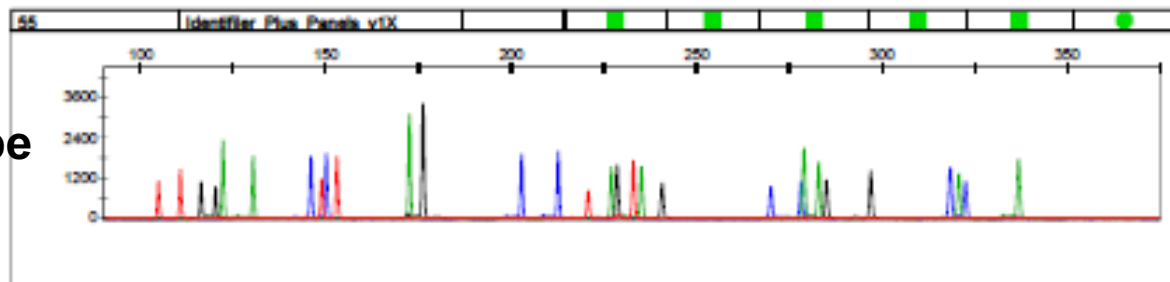
DI=1.50

Divisible  
4N6FLOQSwab



DI=0.63

Adhesive Tape

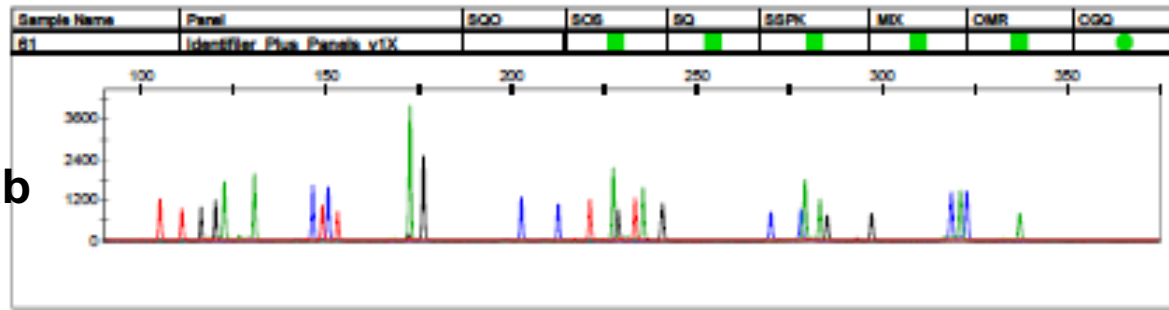


DI=0.70

# Electropherogram of blood sample (3)

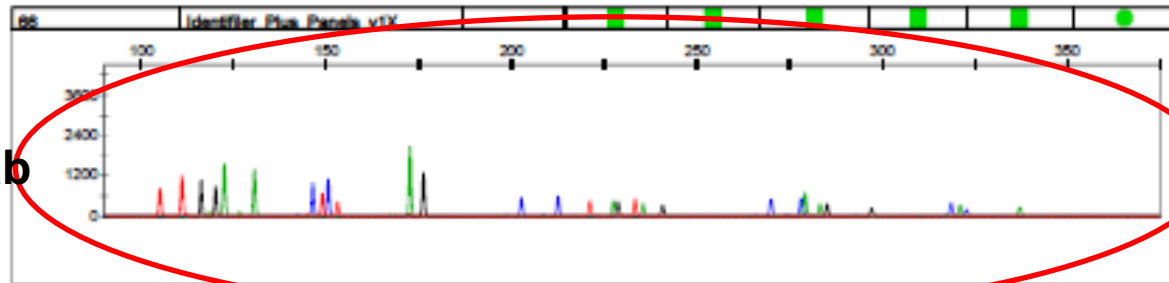
4 weeks

Medical Swab



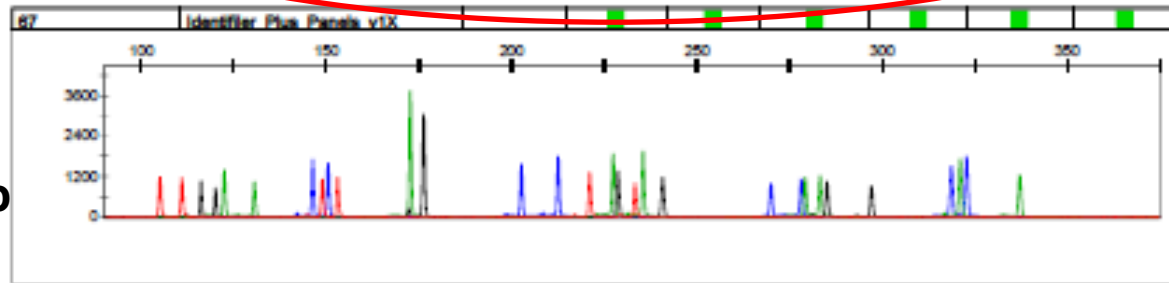
DI=0.80

Forensic Swab



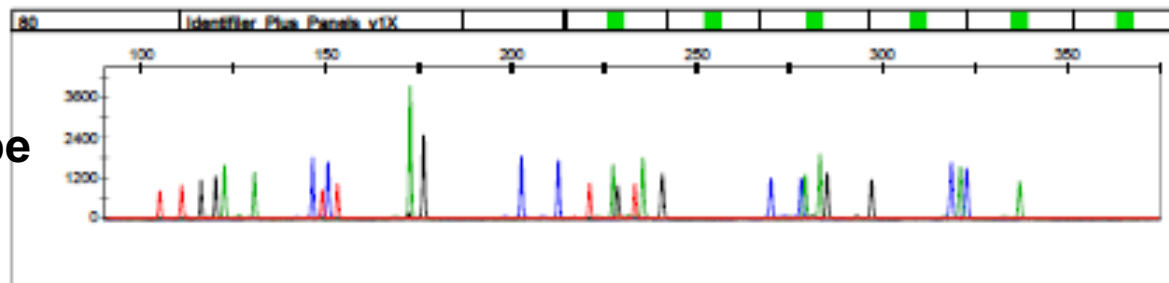
DI=1.56

Divisible  
4N6FLOQSwab



DI=0.66

Adhesive Tape

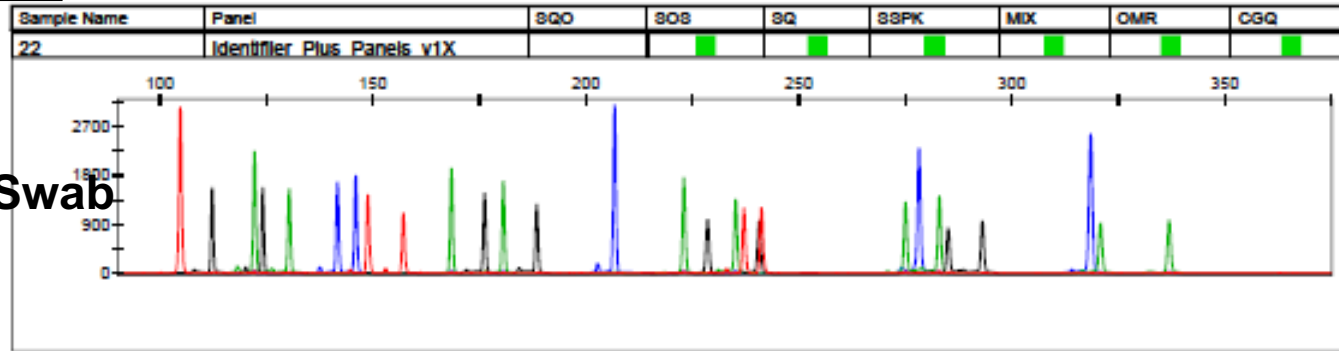


DI=0.67

# Electropherogram of saliva sample(1)

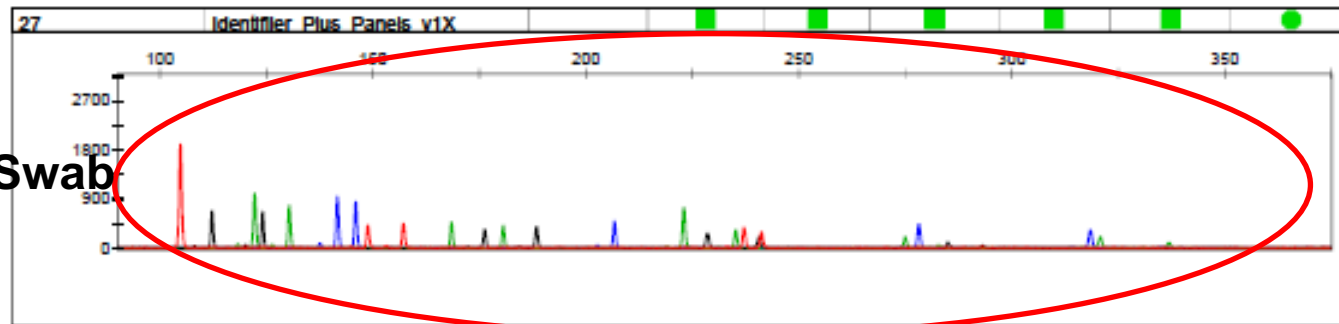
1 week

Medical Swab



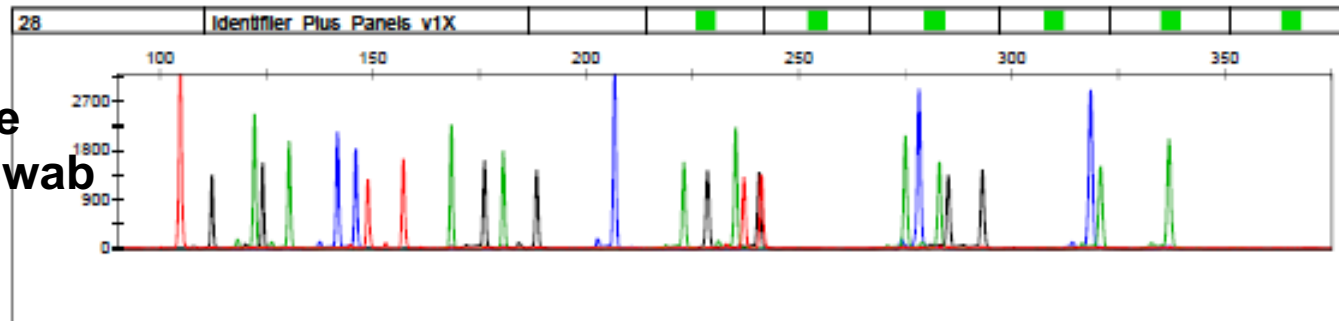
DI=0.63

Forensic Swab



DI=1.33

Divisible  
4N6FLOQSwab

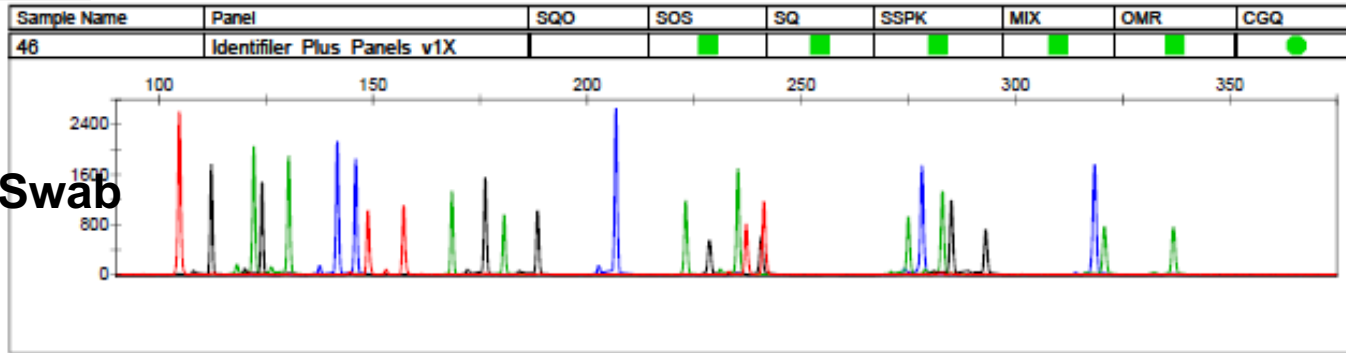


DI=0.60

# Electropherogram of saliva sample(2)

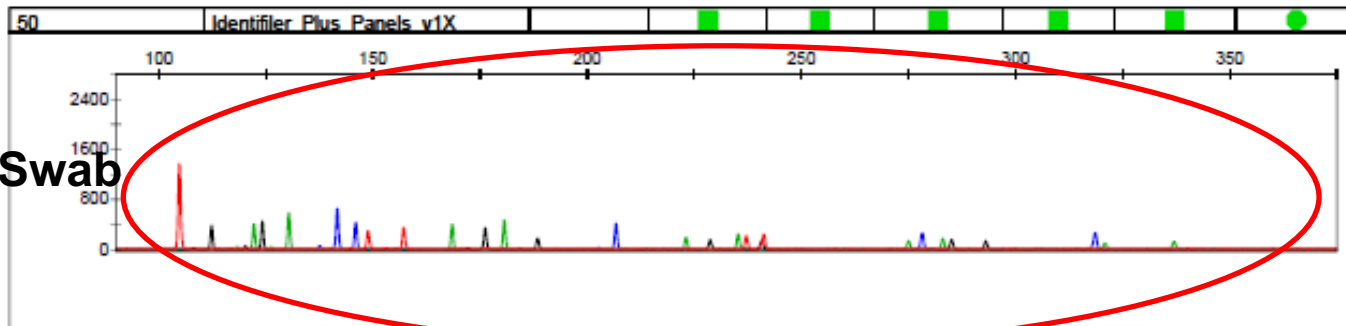
2 weeks

Medical Swab



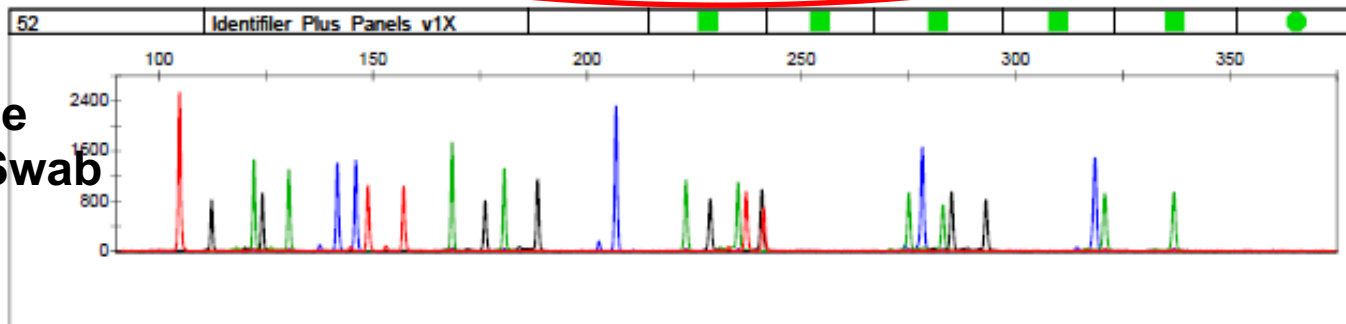
DI=0.73

Forensic Swab



DI=1.53

Divisible  
4N6FLOQSwab

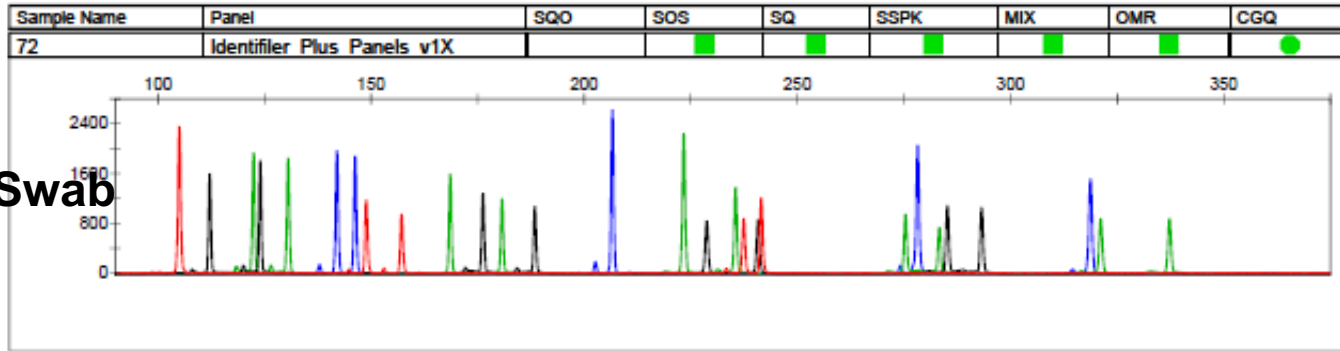


DI=0.67

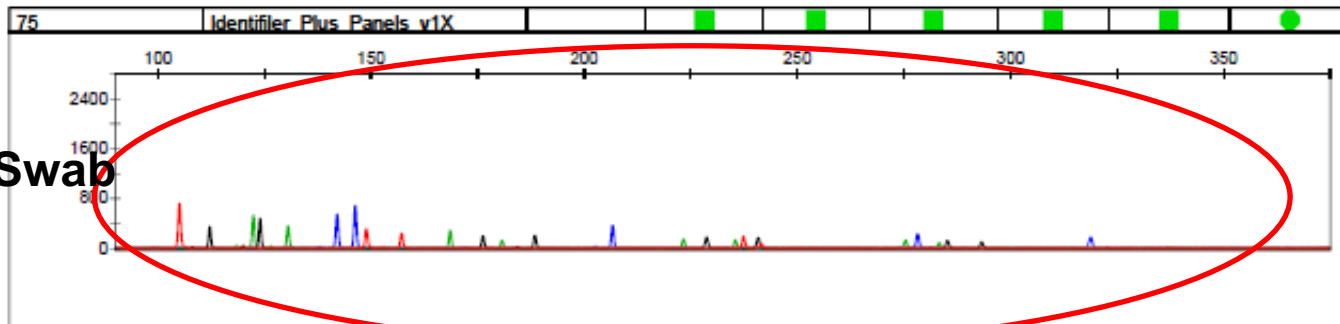
# Electropherogram of saliva sample(3)

4 weeks

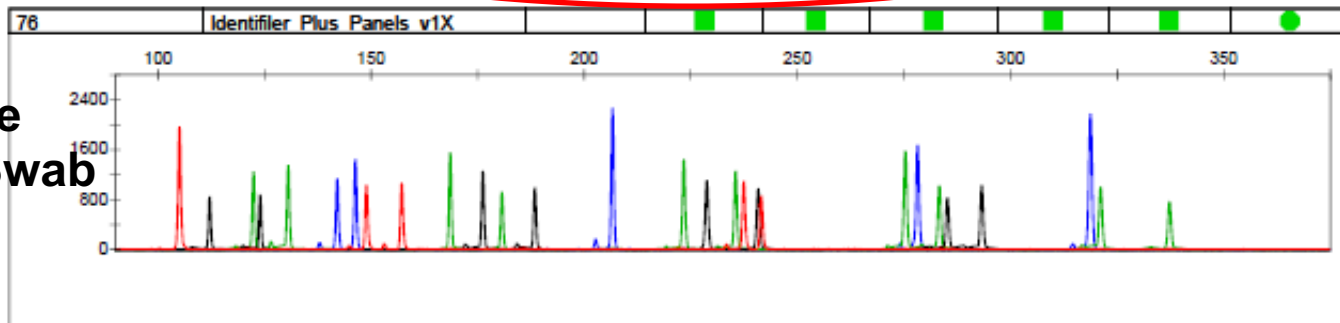
Medical Swab



Forensic Swab



Divisible  
4N6FLOQSwab



# Summary

- The Divisible 4N6FLOQSwab was the most effective upon the DNA recovery and stability from saliva and blood sample on the glass slide.
- Forensic swab was effective on the DNA recovery from blood sample but not from saliva sample and a little lower on its satabilty from both samples.
- Medical swab was easy to be molded and decayed and DNA yield from it was low.
- Adhesive tape was effective on the DNA recovery and stability from blood sample but not on saliva sample at all.

# Further works

- Influence of storage temperature on samples.
- Collecting touch type sample.

# Acknowledgements

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# THANK YOU!

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