

TOUCH DNA Visualized Extraction System OR-GDNA1000

Touch DNA, also known as Trace DNA, is a forensic method for analysing DNA left at the scene of a crime, it only requires very small samples, for example from the skin cells left on an object after it has been touched or casually handled, or from footprints. Touch DNA analysis only requires several cells from the outermost layer of human skin.

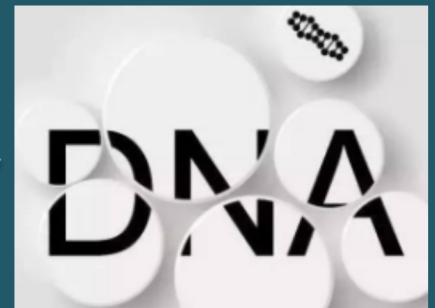
The system comes with specialized designed high object distance microscope, integrating multipath combined wavelength light sources, filters group, CMOS camera and Pad. Working for excitation fluorescence of skin cells, blood stain, semen stain, saliva stain etc, which will be visualized.

LIGHT SOURCES:

- Mixing-waveband Light Source $\leq 460\text{nm}$ (for TOUCH DNA)
- Laser $445\text{nm} \pm 2\text{nm}$
- IR 850nm
- White light 6000K
- Oblique light $\leq 470\text{nm}$ (Mixing-waveband Light Source for TOUCH DNA)



TOUCH DNA Visualized & Extraction



DNA ID / Rapid DNA

SOLUTIONS:

1. Visualized Touch DNA reduce blind and useless extraction, avoid contamination or mixture.
2. Tens to hundreds of trace evidence can be detected and extracted accurately.
3. Gathering areas can be visibly examined

Touch DNA could be:

1. Various kinds of criminal weapons & tools with anti-reconnaissance cleaning
2. Skin-touched bricks, sticks, clothes, shoes, hats, masks, gloves, etc.
3. Detecting trace blood stains and drip bloodstain evidence on dark cotton clothing, fiber fabrics, and black tiles
4. Detecting saliva, semen spots, urinary traces and other biological samples.

CONSTRUCTION

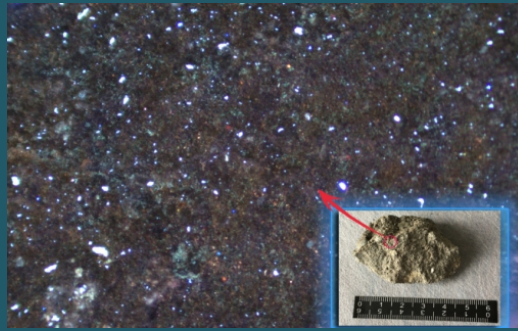
1. Three-axis (X-Y-Z) Adjustable
2. X/Y axial fine tuning $\pm 20\text{mm}$; Z axial adjustable height range to 400mm
3. Dimension: $400 \times 600 \times 52\text{mm}$ Weight: 16.2kg.

EFFECTS SHOW

Skin cells -- IPHONE screen surface
(Mixing-waveband Light Source)



skin cell -- Rough Stone surface
(Mixing-waveband Light Source)



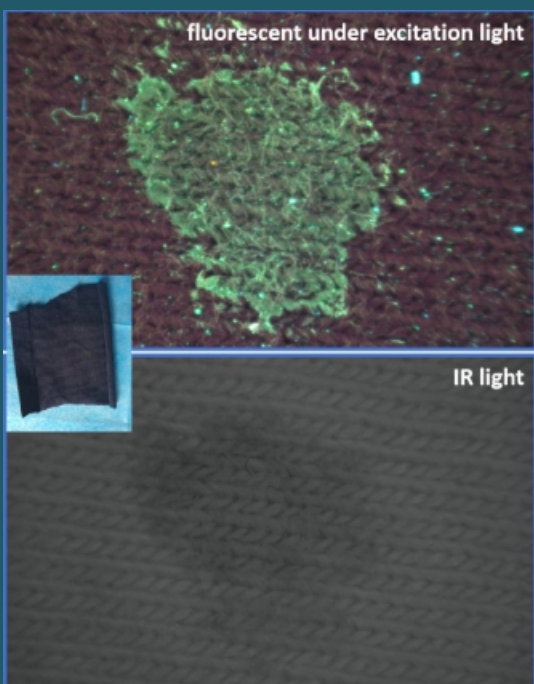
skin cell -- USB
(Mixing-waveband Light Source)



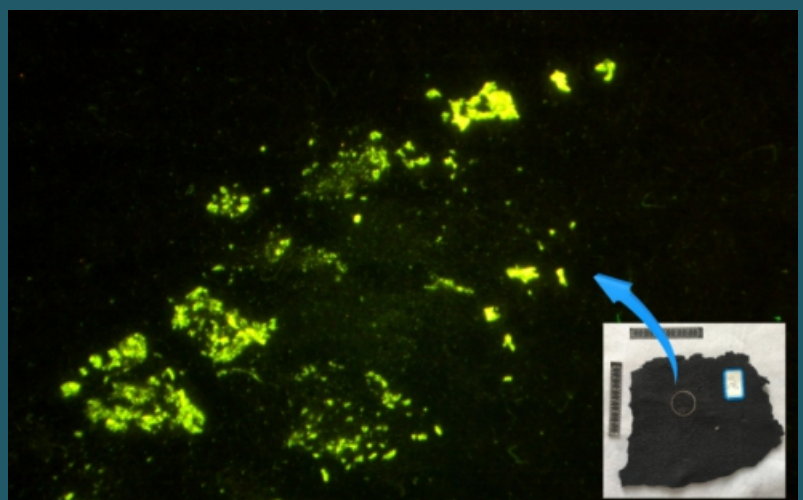
Skin cell -- Knife Blade
(Mixing-waveband Light Source)



Blood stain (850nm) --- on cloth



laser 445nm -- semen on cloth



CRIMINAL CASES

CASE 1

SOLVED

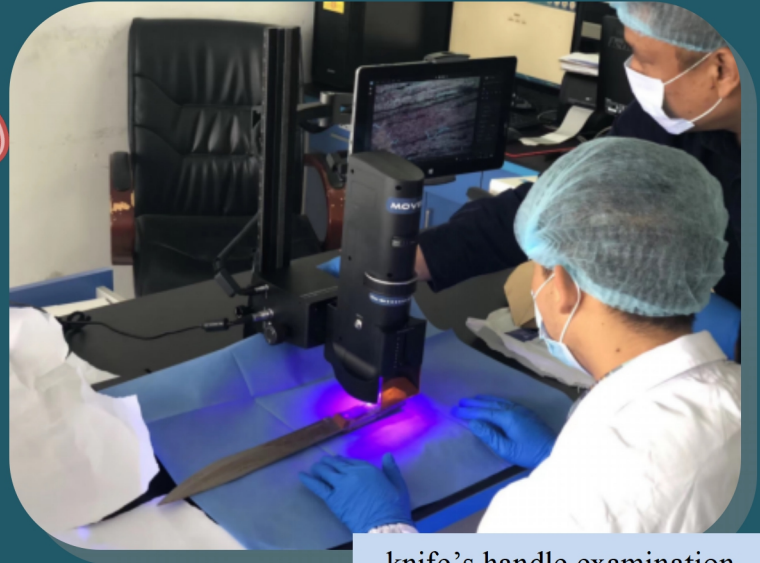
2019 Case, victim killed by a knife.

Knife was covered by victim's blood and put under victim's pillow.

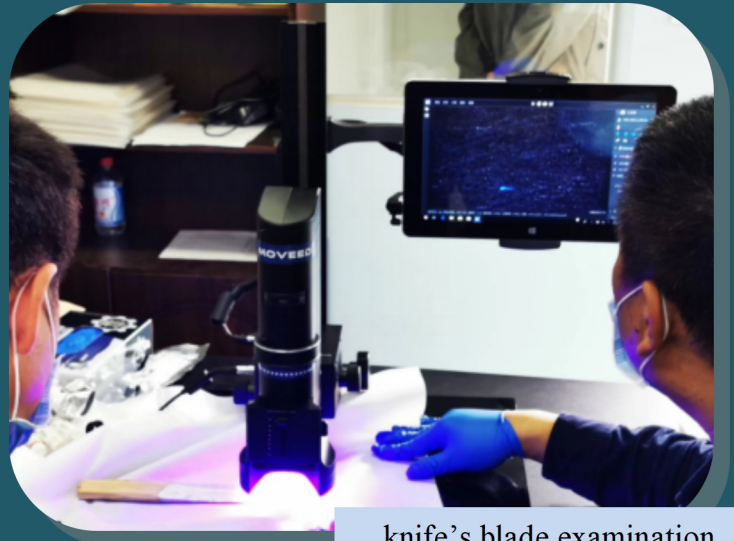
Suspect's DNA was contaminated by victim's blood and skin cells that victim usually left on bed & pillow.

Accurately extracted FOUR skin cells from knife's scabbard under OR-GDNA1000. And identified suspect's TOUCH DNA.

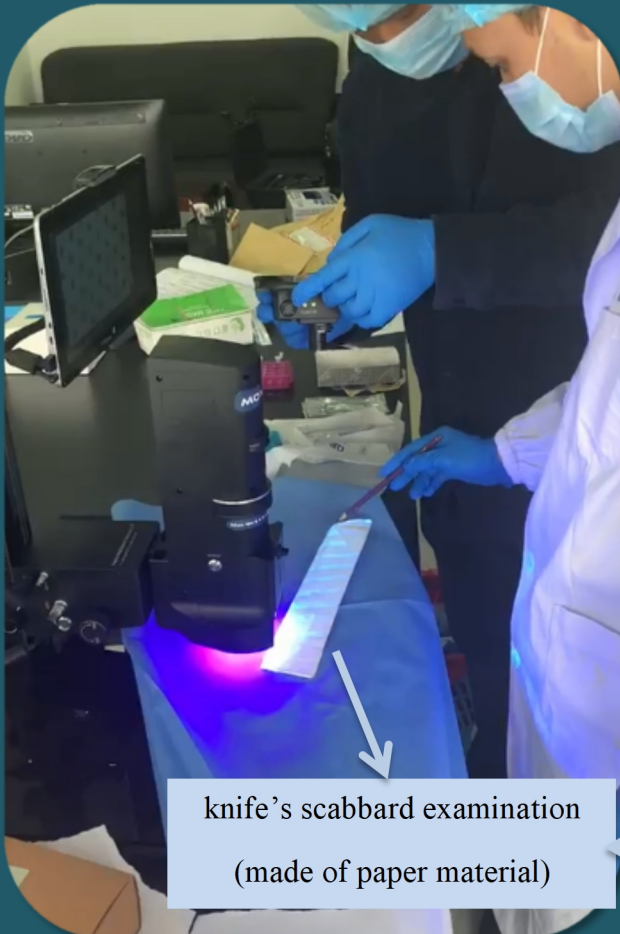
The case solved by the accurately extracted TOUCH DNA.



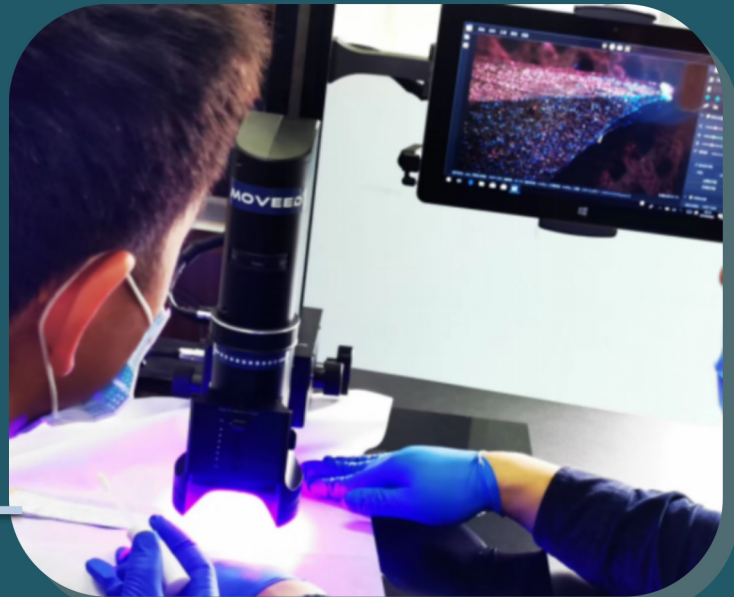
knife's handle examination



knife's blade examination



knife's scabbard examination
(made of paper material)



CASE 2

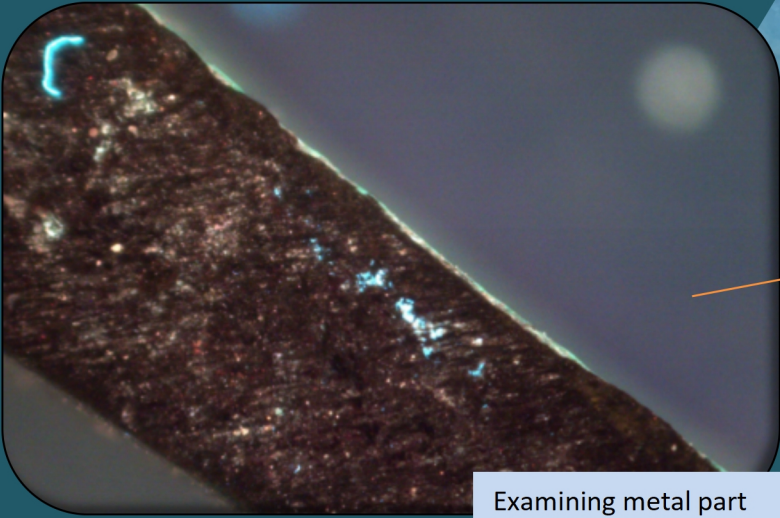
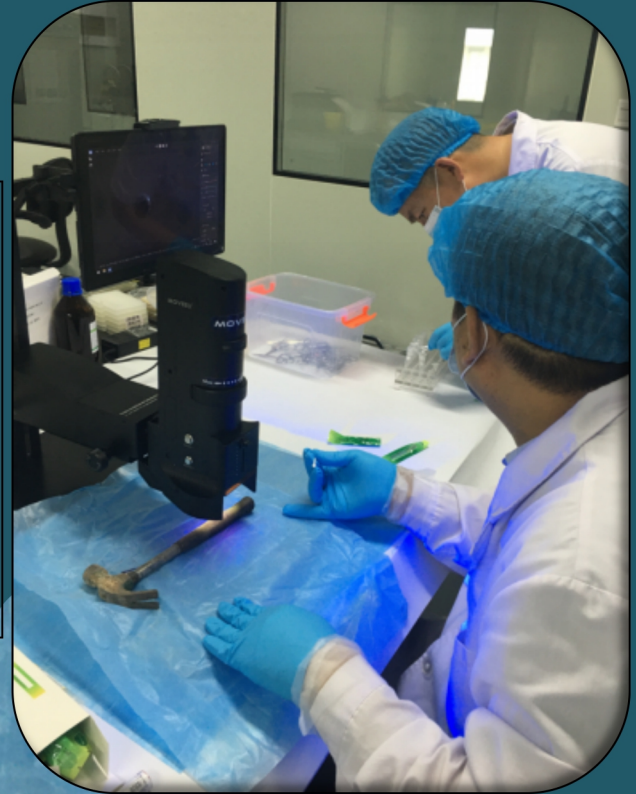
SOLVED

2004 unsolved Case, victim killed by a hammer.

Hammer handle wore a rubber material, which had several holes. Most of the handle covered by blood.

Examining under OR-GDNA1000, finding TOUCH DNA gathering areas or sweat stain, then swab for DNA identify.

Case finally solved by identify DNA from Skin cells and sweat stain of single suspect left on gap of rubber material handle.



Examining metal part



Cotton swab traces obviously left on after many times extraction.



Suspect's skin cells and sweat stain found on the gap of rubber material handle.

CASE 3

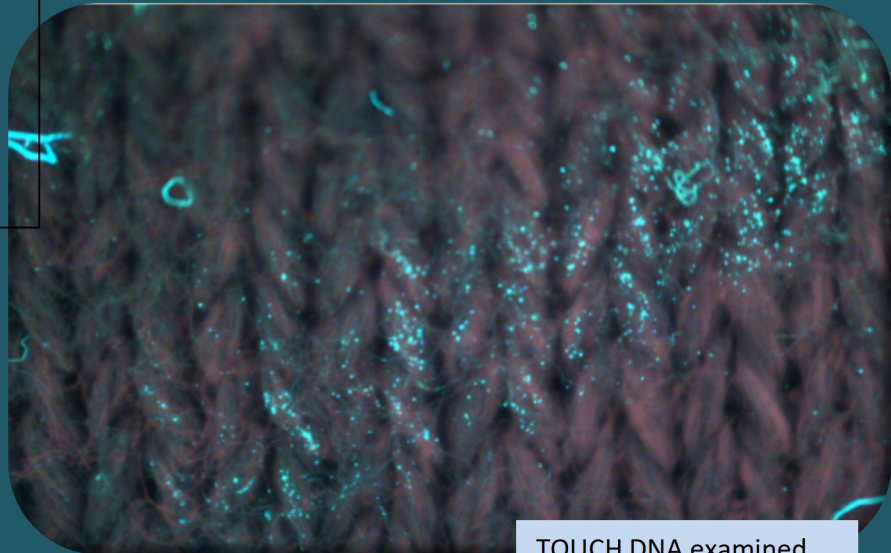
2001 unsolved Case, a couple were killed, wife's sweater had more than 30 cuts and full of blood.

In past 20 years, extracted DNA from sweater were only the couple's.

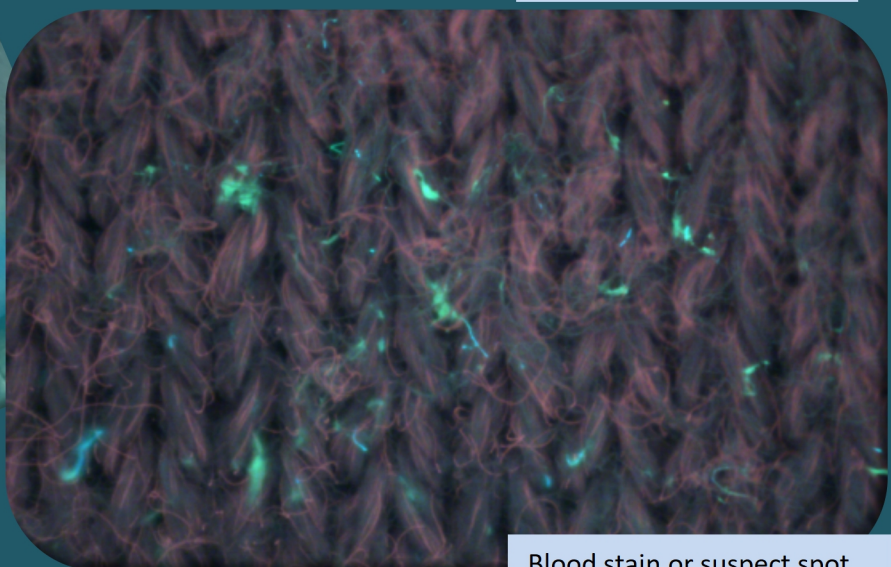
Examining under OR-GDNA1000, finding TOUCH DNA gathering areas, identified TWO persons's mixing DNA. One was the wife's, and another was unknown, who maybe the possible suspect.

July 7th, 2021 had excluded victim's known associated persons and the persons in charge of this case. The possible suspect's DNA is not in national DNA bank. Further step is searching in Y-STR bank.

Waiting for the result.

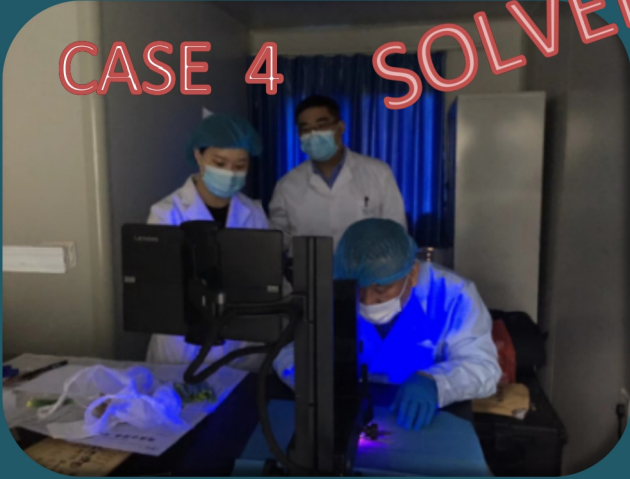


TOUCH DNA examined



Blood stain or suspect spot

CASE 4 SOLVED



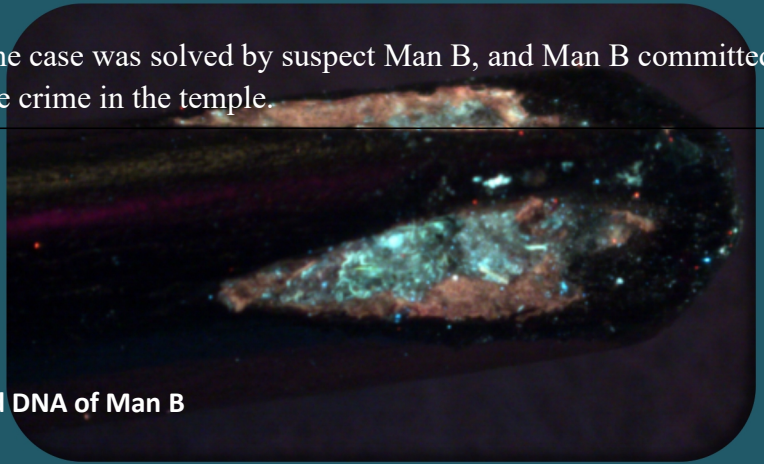
2005 unsolved Case, a monk was killed in a buddhist temple. The donation box with money was pried off, a scissor, a screwdriver, an iron nail and a plier left beside it, a piece of tablecloth on the table near the crime scene window. Suspect entered into by climbing from window and stepping on the table.

- OR-GDNA1000 examination final Results in 2021:
 Scissor: a 50+ year old woman(helper, now is 70+) & Man A: eliminated suspicion.
 Screwdriver: extracted DNA of Man B
 Iron nail: extracted DNA of Man A and Man B
 Tablecloth: extracted DNA of victim
 Plier: no DNA extracted

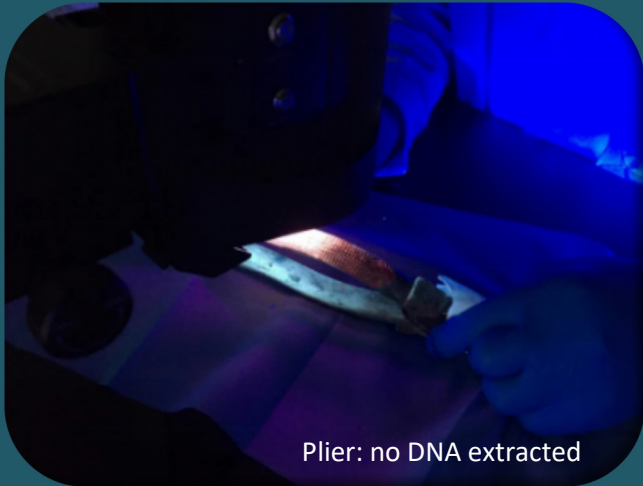
The case was solved by suspect Man B, and Man B committed the crime in the temple.



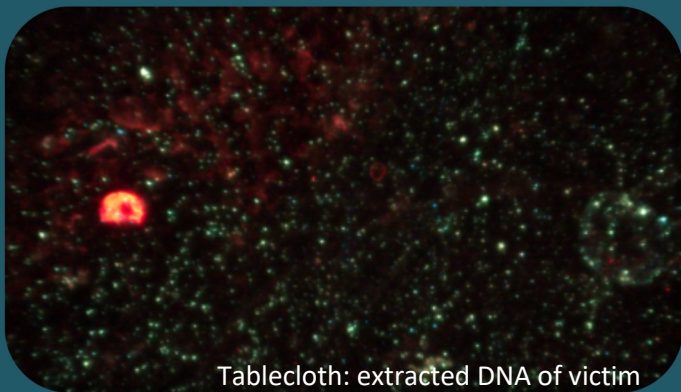
Screwdriver: extracted DNA of Man B



Scissor screw part



Plier: no DNA extracted



Tablecloth: extracted DNA of victim



Iron nail: extracted DNA of Man A and Man B

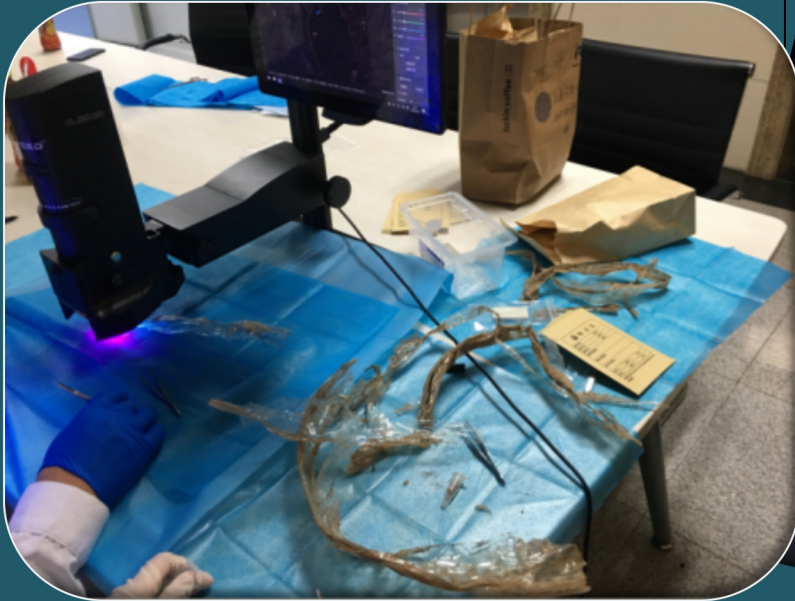
CASE 5



20 years ago an unsolved Case. A woman was killed by dead breath and discarded in a river, the body was found about a week. Her mouth and nose, wrist and ankle were twined by transparent tape.

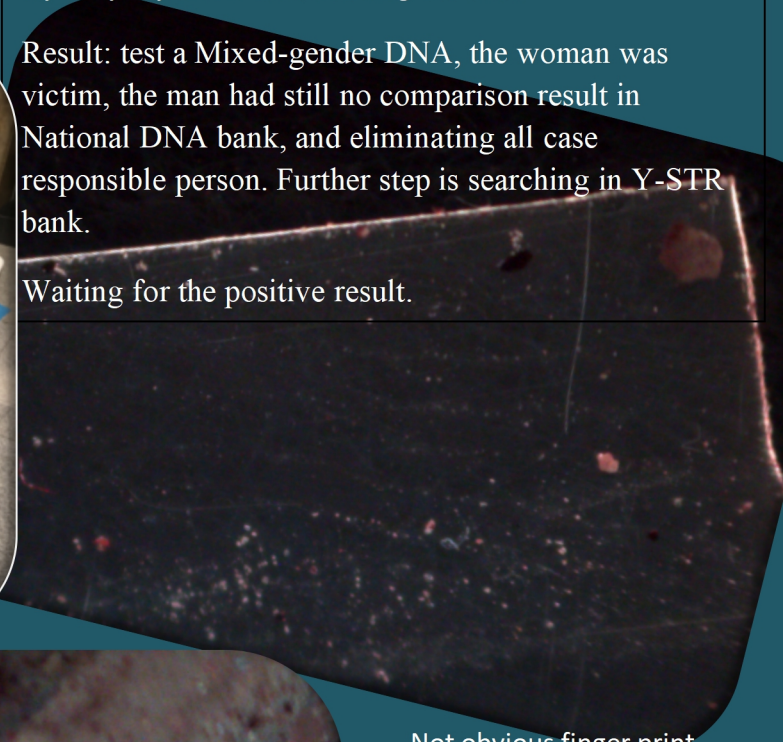
Previous investigators had cut tape several times for DNA test, but no any results. The reason may be long-time immersed in the water.

This time inspection with OR-GDNA1000 , hoping to find TOUCH DNA in transparent tape adhesion part, which the air and water hardly get into. Firstly, inspection the tape's surface, then strip off the tapes layer by layer. At last, sending for test.



Result: test a Mixed-gender DNA, the woman was victim, the man had still no comparison result in National DNA bank, and eliminating all case responsible person. Further step is searching in Y-STR bank.

Waiting for the positive result.



Not obvious finger print



A small number of TOUCH DNA