

## 2. Criminal Identification

### A. Crime Scene Identification



Lifting latent footprint

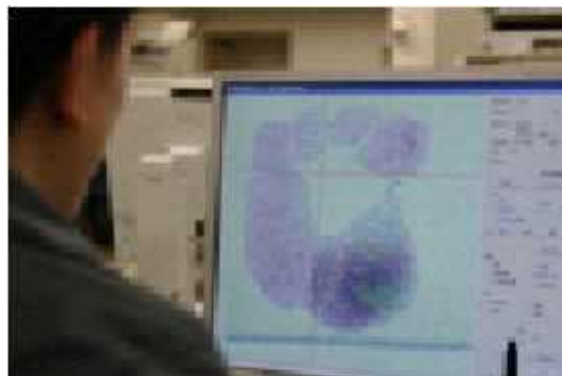
Forensic specialists, advanced equipment and crime scene vehicles for identification activities are allocated to the Tokyo Metropolitan Police Department and every prefectural police force. This enables the police to conduct thorough crime scene examinations and to respond immediately to any type of case or accident.

### B. Fingerprint/Palmprint Identification



Lifting latent fingerprint

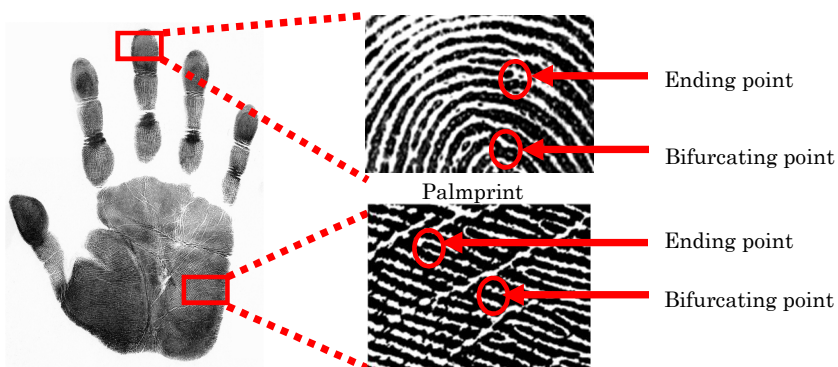
Each individual has his/her own unique pattern of fingerprints and palmprints which remain unchanged throughout life. Fingerprint and palmprint identification play a vital role in criminal investigations.



Automated Fingerprint Identification System (AFIS)

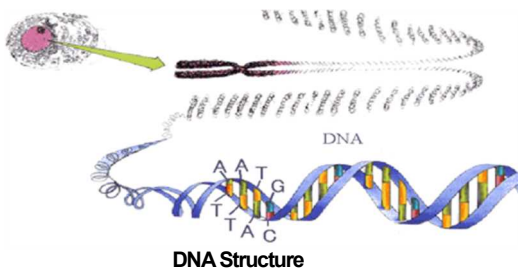
The NPA introduced the Automated Fingerprint Identification System (AFIS) in 1982 to improve the efficiency of fingerprint matching. The current AFIS, which also supports palmprint identification, accumulates minute (ending points and bifurcations) data of fingerprint/palmprint ridges. Inquiries are automatically compared against the registered database in order to select similar fingerprints/palmprints.

Fingerprint



Also, the AFIS connects all the police forces within Japan online, allowing real-time processing of fingerprint/palmprint registrations and inquiries. The NPA has been working to improve the system to promote accurate and prompt criminal investigations.

### C. Forensic Identification



The National Research Institute of Police Science (NRIPS) and the Criminal Investigation Laboratories (CILs) of the MPD and the prefectural police conduct close analyses and examinations of evidence. DNA profiling is conducted at all CILs in order to identify individuals at a high degree of accuracy by examining minute specimens left at the crime scenes.

NRIPS also established the Training Institute of Forensic Science to provide training for CIL specialists to improve and standardize the quality of examination techniques.



Collecting DNA samples



DNA profiling

## 3. National Research Institute of Police Science

NRIPS is a comprehensive research institution to promote the development of science in support of police activities.

The institute has three major missions: research and development; examination and analysis; and technical guidance. Many research and development projects in various fields are conducted, considering the needs of the prefectural police.

Following are recent major research projects:

### A. Development of mRNA-based body fluid identification



Quantitative PCR instrument

Body fluid identification of biological forensic samples provides important probative evidence for criminal investigations. However, some conventional procedures should be improved because of their insufficient specificity and detectability. For example, the results of  $\alpha$ -amylase activity-based presumptive tests for saliva should be interpreted carefully because the  $\alpha$ -amylase activities are also found in other body fluids. NRIPS therefore has investigated the applicability of mRNAs which are characteristically and highly expressed in the targeted body fluids, and successfully developed a more specific quantitative RT-PCR procedure for discriminating saliva from other body fluids.