

FINGERPRINTS PRACTICAL

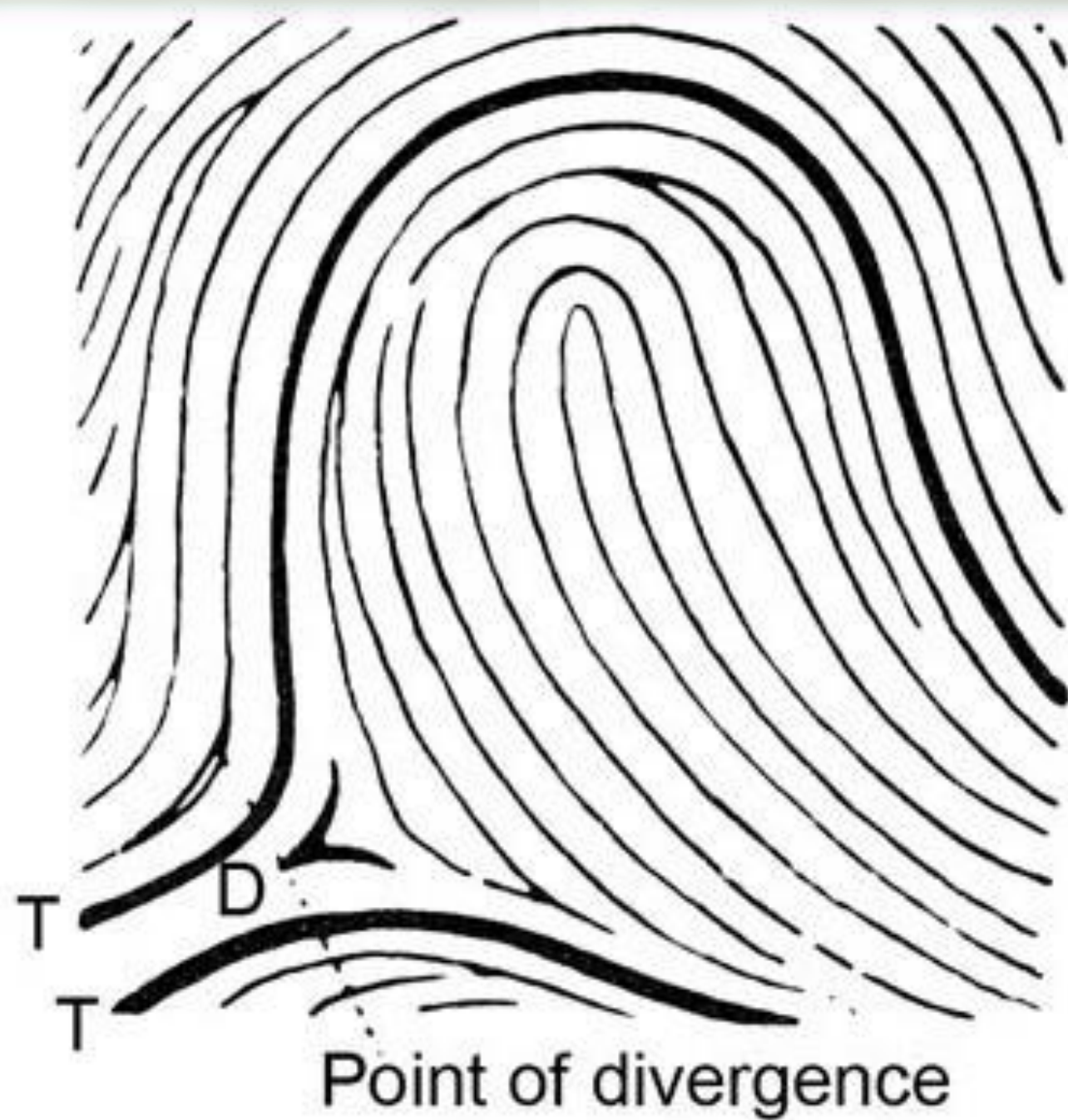
SHREYA VR
SENIOR SCIENTIFIC OFFICER
TRUTH LABS HYDERABAD

INTRODUCTION

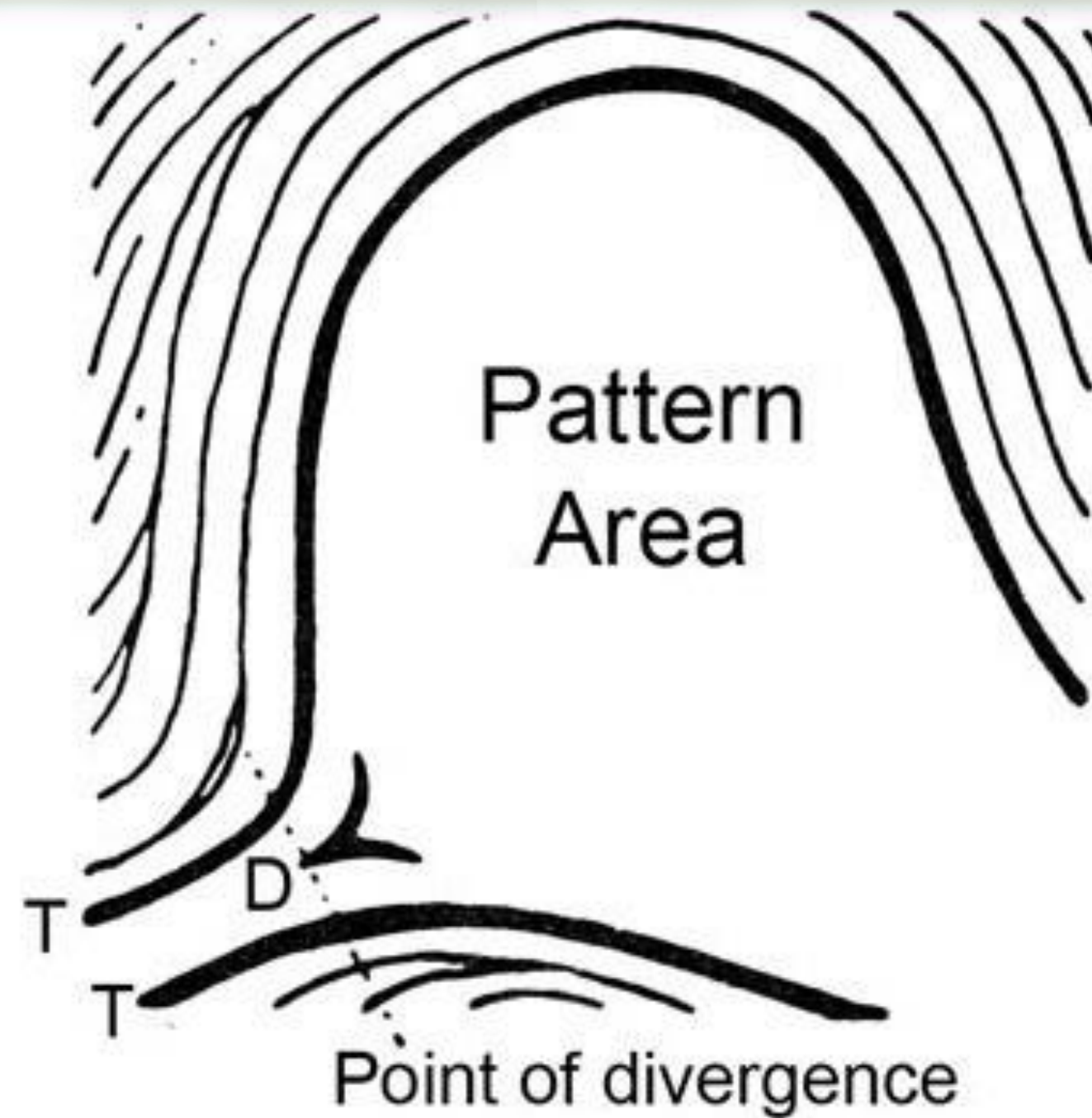
- Look at your finger tips.
- These lines are commonly referred as Ridges or Friction Ridges.
- The ridges are result of raised portions on the outer layer of skin i.e., epidermis. The ridges are also referred as epidermal ridges.
- The depression between two ridges is called as a furrow/valley.
- These ridges and furrows form a particular pattern and make a fingerprint.
- The study of fingerprints is called as Dactyloscopy.
- Dactyloscopy is derived from Greek word 'daktylos' which means finger and 'skopein' means to examine.

TERMINOLOGY

- The common characteristics that make up the pattern are
 - Delta: It is formed when a ridge bifurcates and the arms diverge or when two adjacent ridges diverge causing an interspace.
 - Core: Central point of the pattern
 - Pattern area: Core, Delta and Ridges
 - Type lines: Two inner most ridges which run parallel, diverge and then continue to cover the pattern area.



T - Type Line



D - Delta

FINGERPRINT PATTERNS

- Arch: The ridges enter from one side and exit from the other side without any recurves.
 - Plain Arch: The ridges enter from one side and flows upward marginally almost like a wave which continues to exit from the other side.
 - Tented Arch: It is similar to plain arch but the ridges enter from one side and thrust upwards giving the shape of a tent.



PLAIN ARCH



TENTED ARCH

- Loop: One or more ridges enter either side recurve, touch or pass an imaginary line between delta and core, tend to exit from the same side as the ridge entry.
 - Radial Loop: Towards Radius bone or thumb
 - Ulnar Loop: Towards Ulna bone or little finger



- Whorl: Pattern has two deltas and the ridges recurve before reaching each delta.
- Plain Whorl: The ridges are in the form of concentric circles
- Central Pocket Whorl: The ridges recurve more than once
- Double Loop/Whorl: It has two separate loops



- Accidental Pattern: It is a pattern with two or more deltas and a combination of two or more types of patterns.



Types of Fingerprints

- Patent Fingerprints: can be made by blood, grease, ink, or dirt. This type of fingerprint is easily visible to the human eye.
- Latent Fingerprints: are made of the sweat and oil on the skin's surface. This type of fingerprint is invisible to the naked eye and requires additional processing in order to be seen.
- Plastic Fingerprints: are three-dimensional impressions and can be made by pressing fingers in fresh paint, wax, soap, or tar. These fingerprints are easily seen by the human eye and do not require additional processing for visibility purposes.

PLAIN AND ROLLED FINGERPRINTS

- Identification Purpose
- Immigration
- Background Verification
- Competitive examinations
- Authentication

Development of Fingerprints using Powder Technique

- Physical Method which is relatively simple and relies on the adherence of powder to the latent print residue to provide good visibility. Latent print powder has an affinity for moisture and preferentially clings to the residue deposited by friction ridge skin. It is well accepted that the mechanical attraction between these particles and the moisture and oily components in a print causes adhesion, with absorption being a factor.
- Powder is made up of two components
 - Pigment
 - Binder
- Black Powder, White Powder, Grey Powder, Magnetic Powder, Fluorescent Powder etc.
- Camel Hair Brush, Ostrich Hair Brush, Fibre Brush, Magnetic Applicator

Lifting of Fingerprints

- Transparent Tape
- Backing Card
- Hinge Lifters

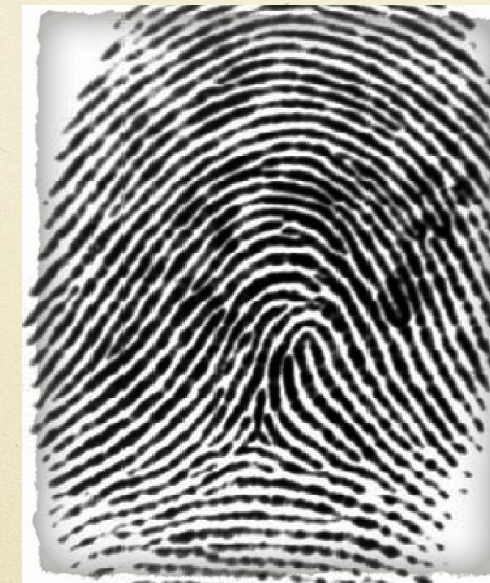


Comparison and Identification of Fingerprints

- Questioned/Disputed Fingerprint
- Admitted Fingerprint
- Specimen Fingerprint

- Based on Pattern

Identification



- Based on Pattern

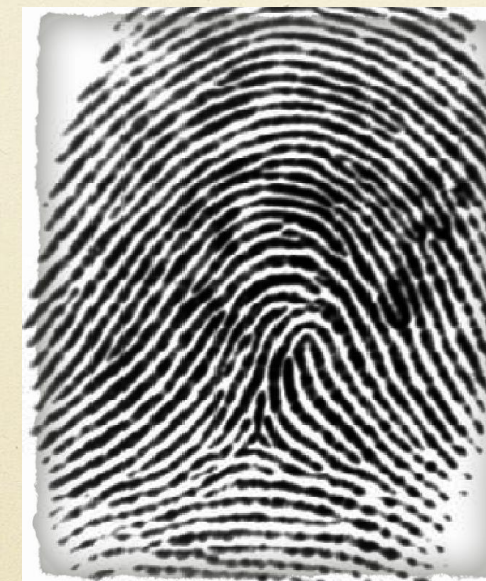
Identification



PLAIN WHORL.



CENTRAL POCKET WHORL.



LOOP

- Based on Pattern

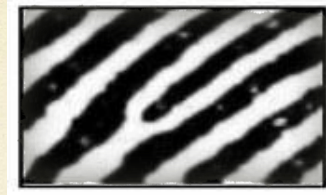
Identification



DOUBLE LOOP

Ridge Characteristics

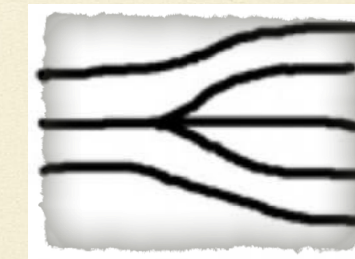
- Ridge Termination/Ending



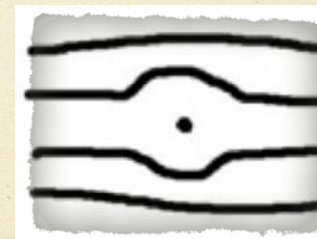
- Bifurcation



- Trifurcation



- Dot



- Crossover



- Enclosure



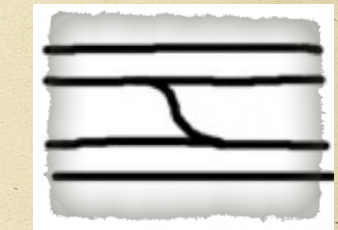
- Short Ridge



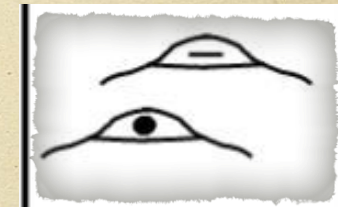
- Spur/Hook



- Bridge



- Eye



- Double Bifurcation

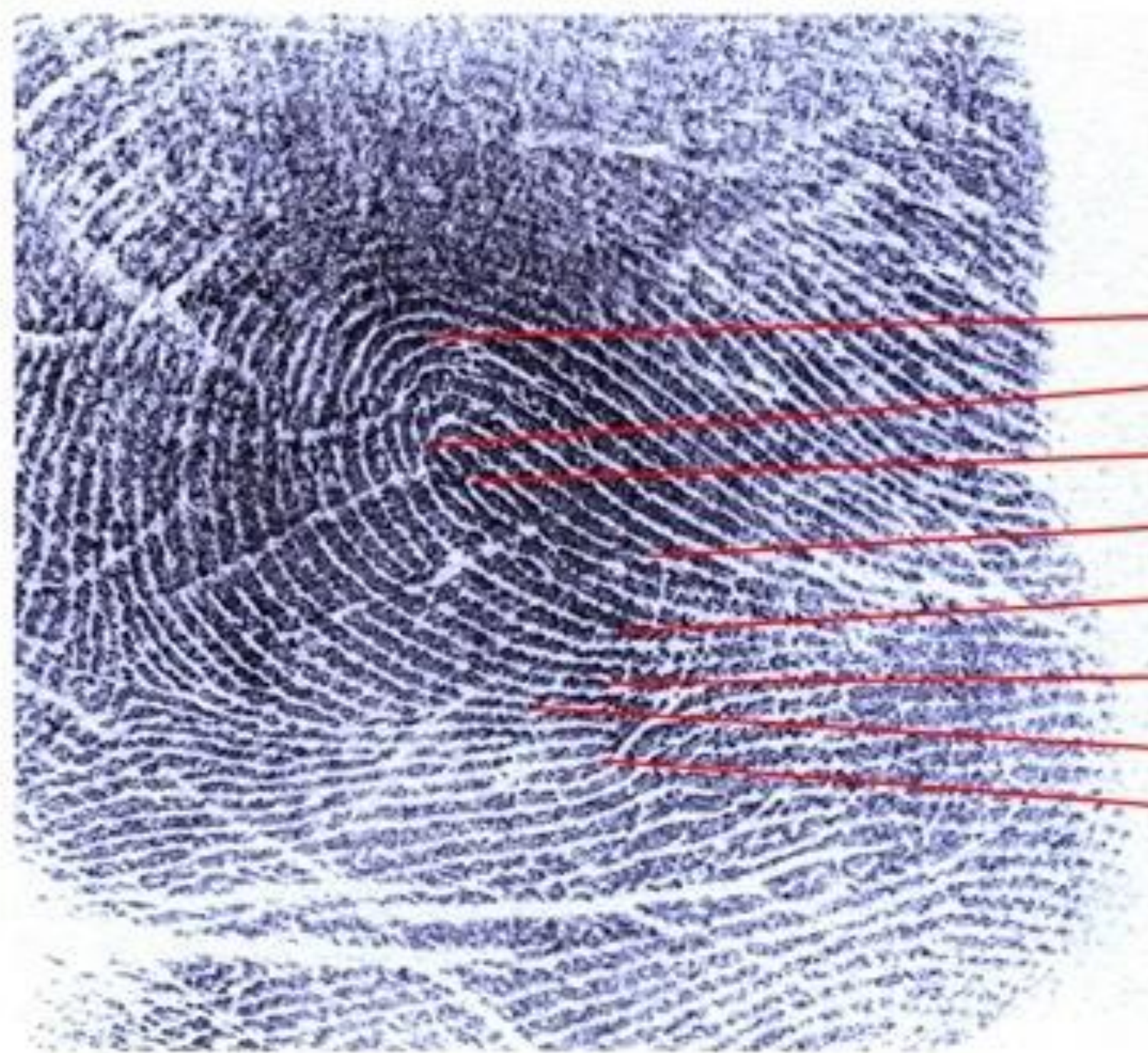




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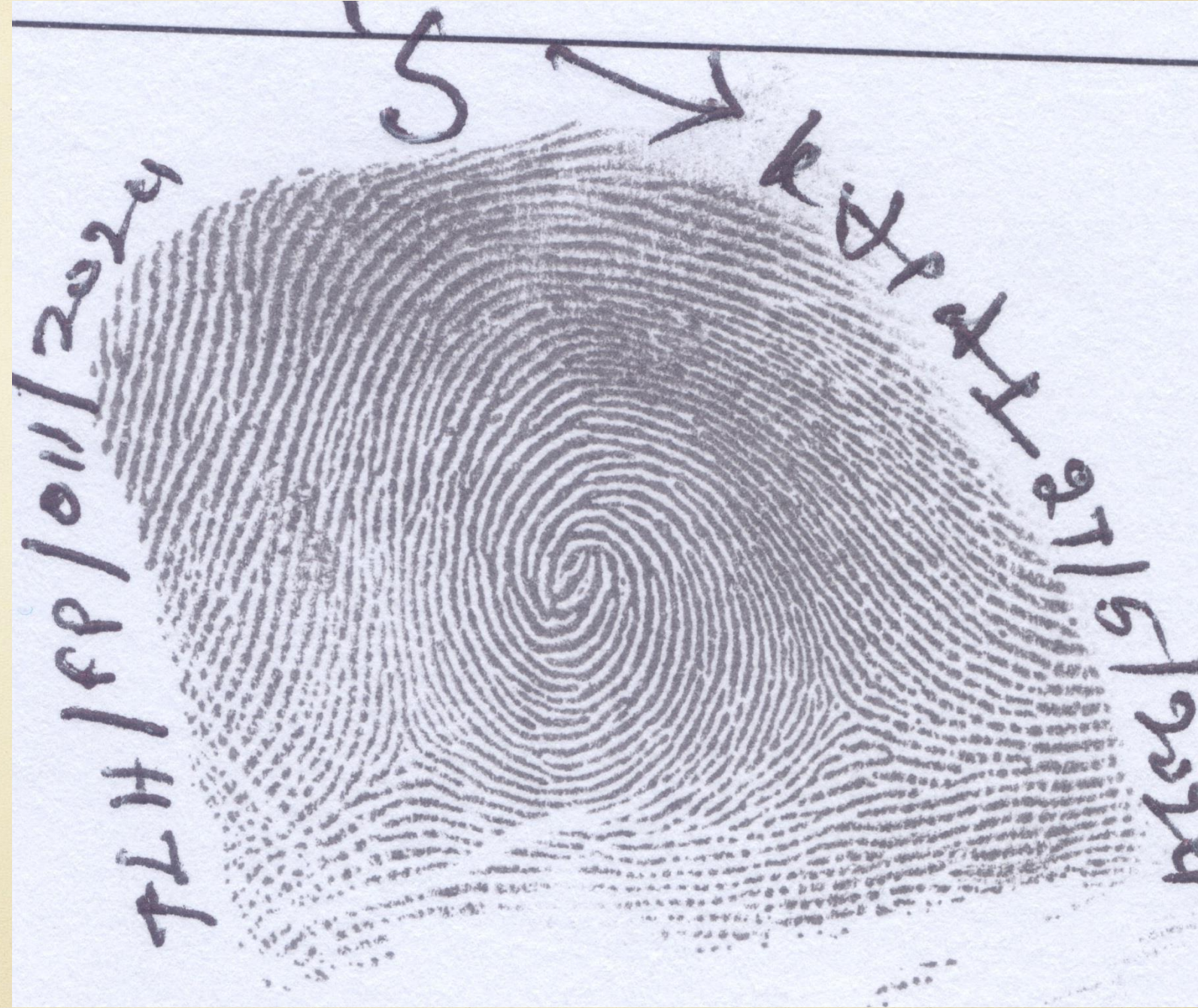
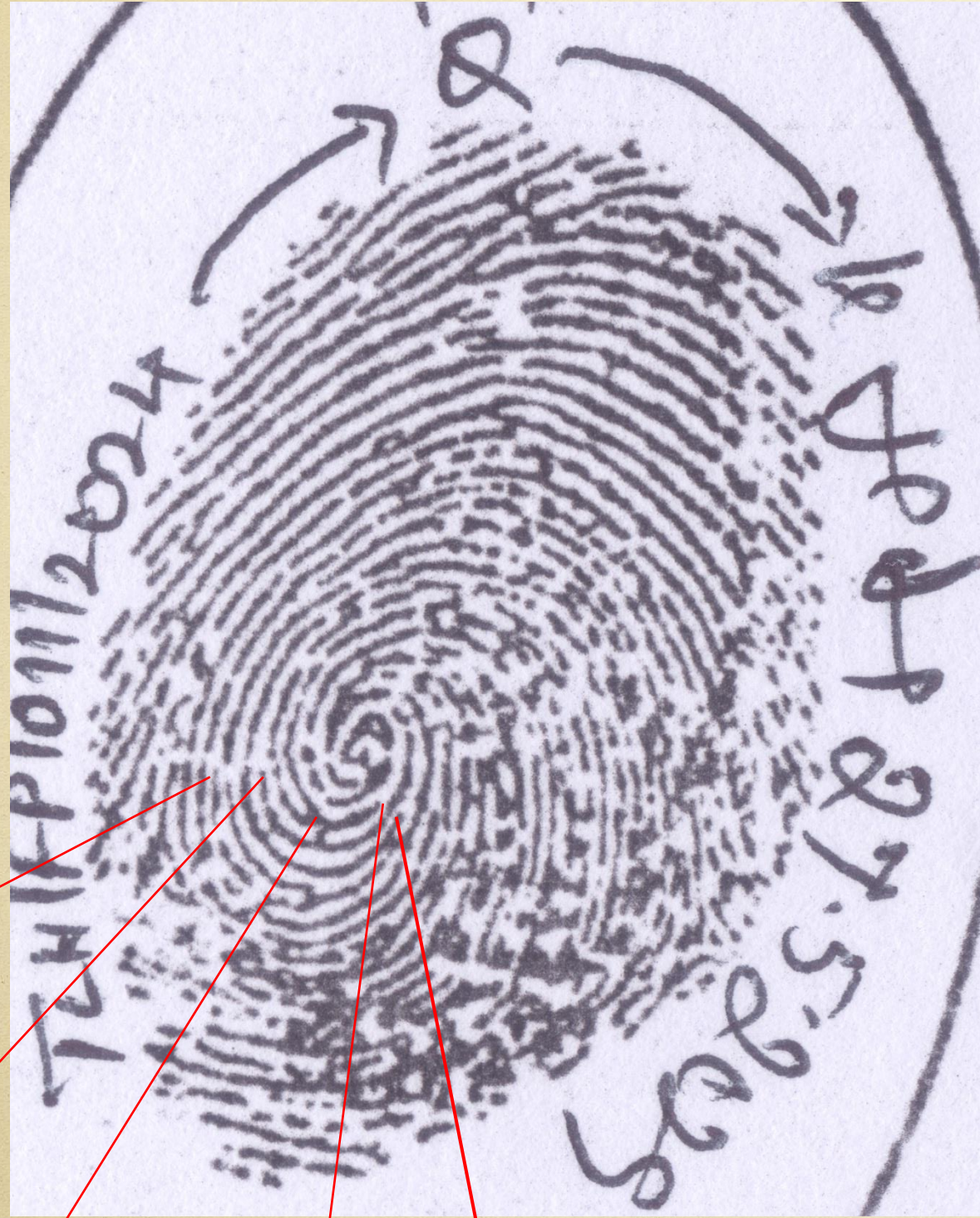
B

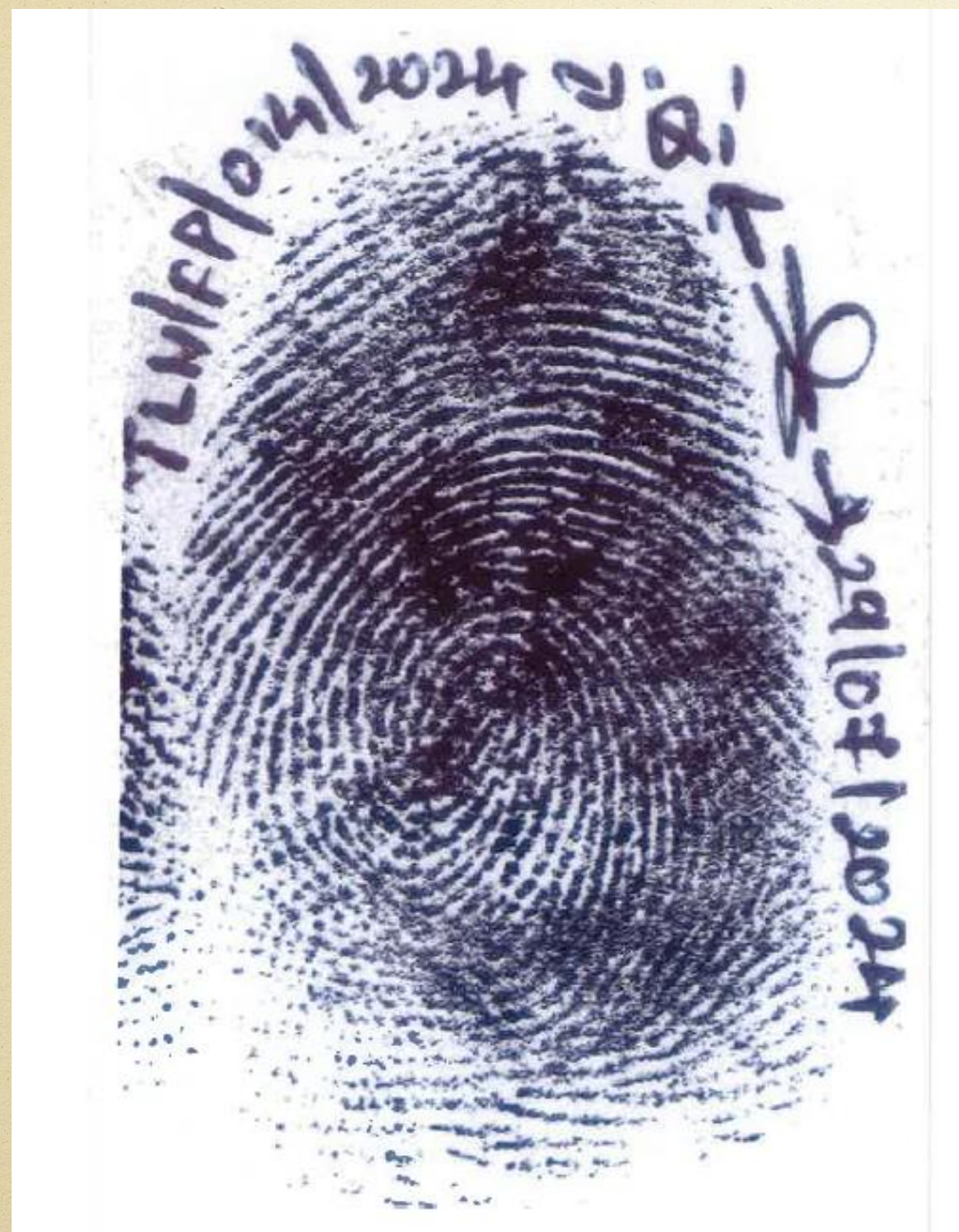


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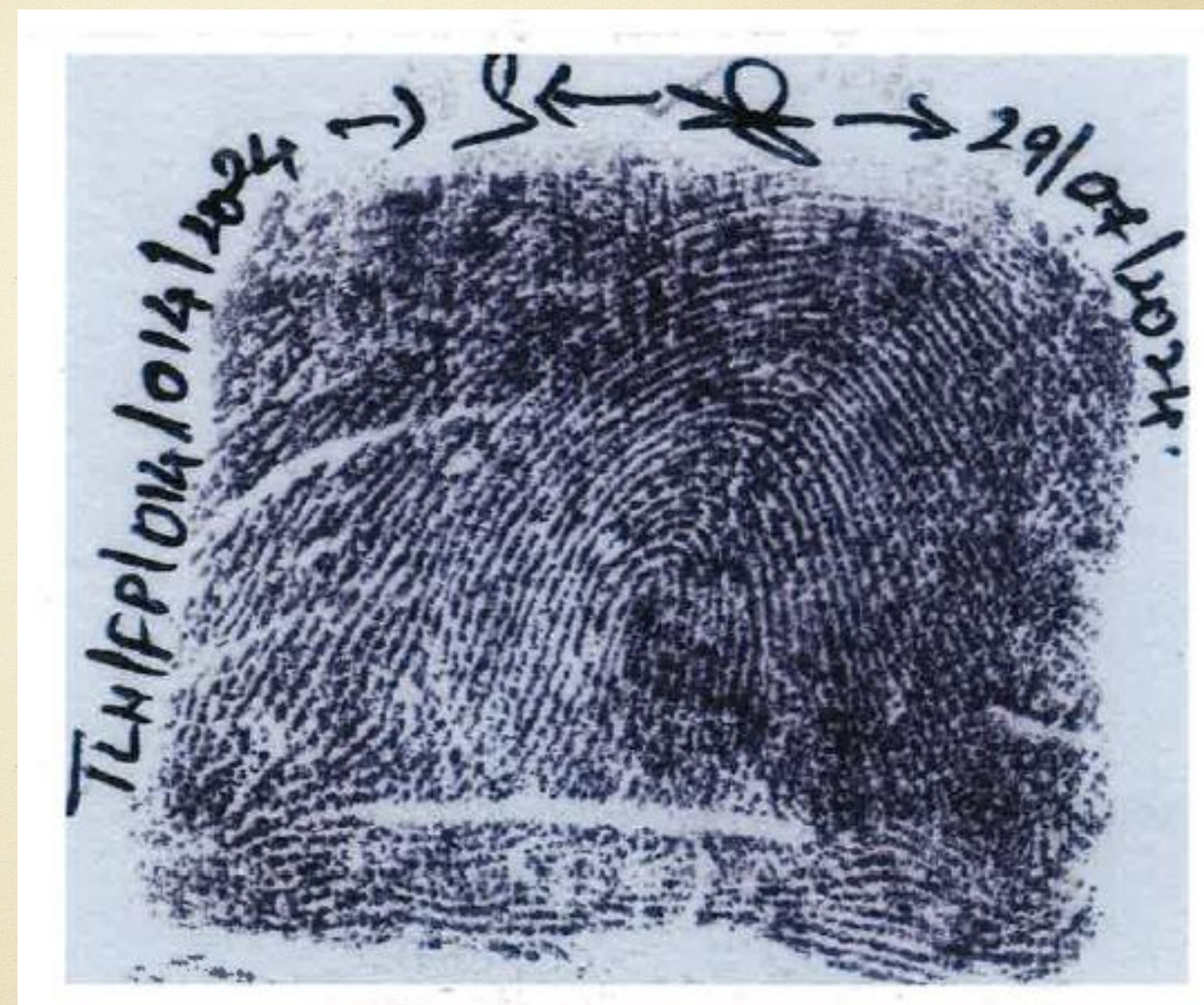


B





WHORL PATTERN



LOOP PATTERN

THANK YOU