



Fingerprints A Forensic Science

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Fingerprints 101

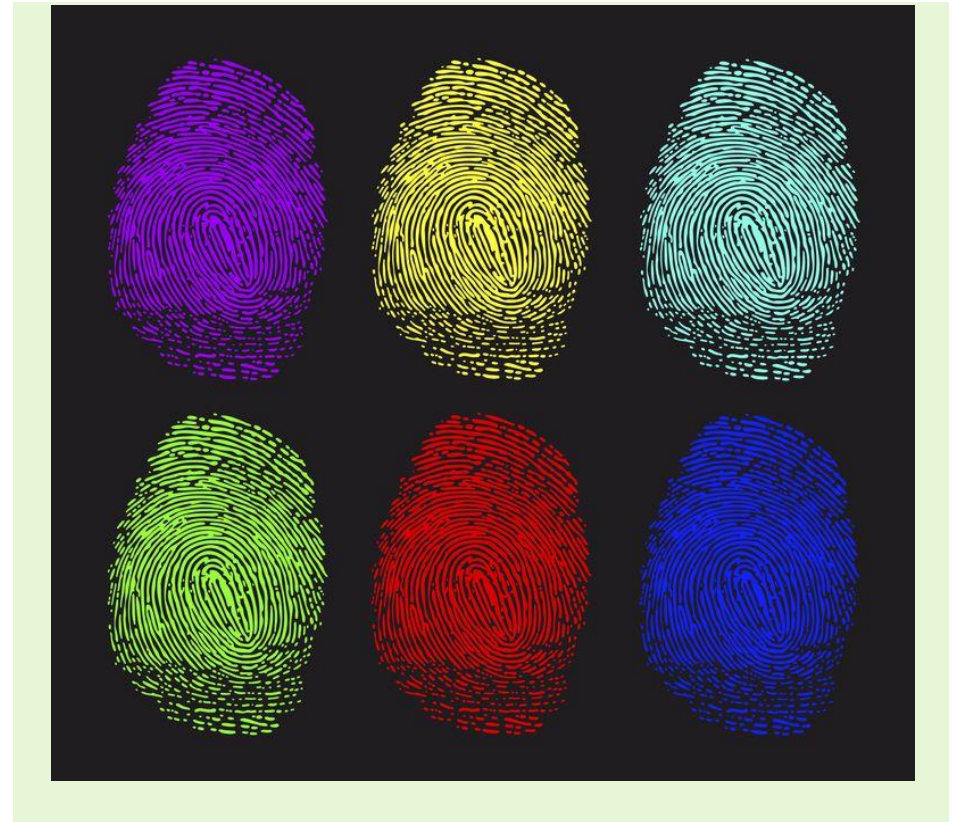
FINGERPRINTS



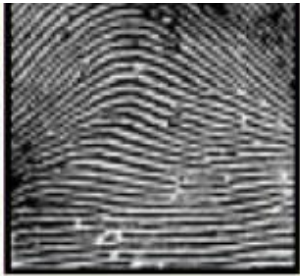
- Fingerprints are individualized friction ridge skin patterns
- Means of **personal identification** for centuries
- **Universally accepted** among forensic scientists
- **Not** always *perfect*
- A biometric means of **identification**
- **Retina, iris pattern, face thermography**

Key Points Of Fingerprints

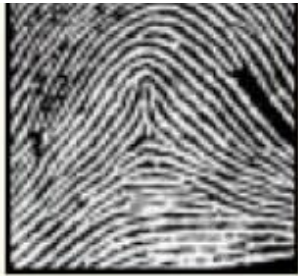
- Every fingerprint is unique to **ONE** individual- identical twins **DO NOT** have the same fingerprints
- Fingerprints **DO NOT** change during your life **UNLESS** damage has occurred to the dermal skin layer
- **Form** in embryonic development and **remain constant** throughout your life
- **Genetic make up** plays a role in their development



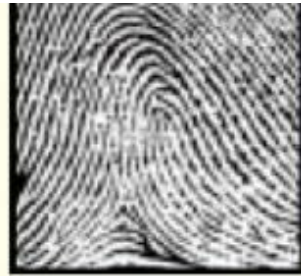
Fingerprints Unique Characteristics



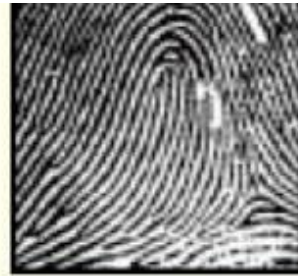
Plain Arch



Tented Arch



Ulnar Loop



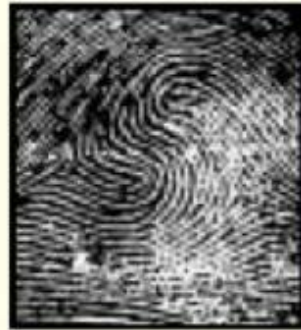
Radial Loop



Plain Whorl



Central Pocket Loop



Double Loop Whorl

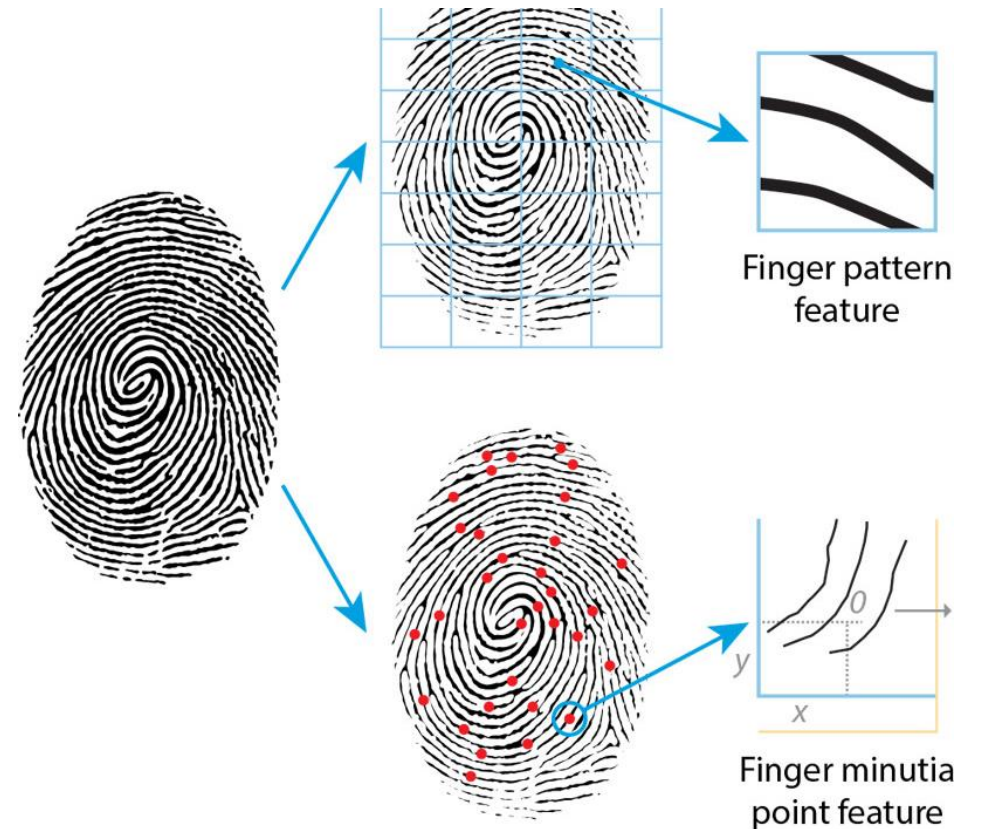
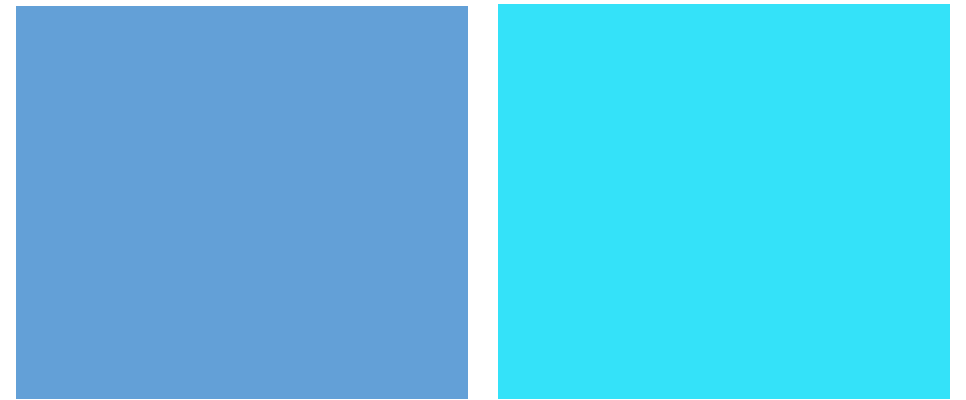


Accidental Whorl

- Fingers
- Palms
- Soles
- Friction ridges on fingers, palms, soles
- Hills- ridges
- Valleys- furrows
- Fingerprints form 3 basic patterns
- Within each pattern are numerous variations

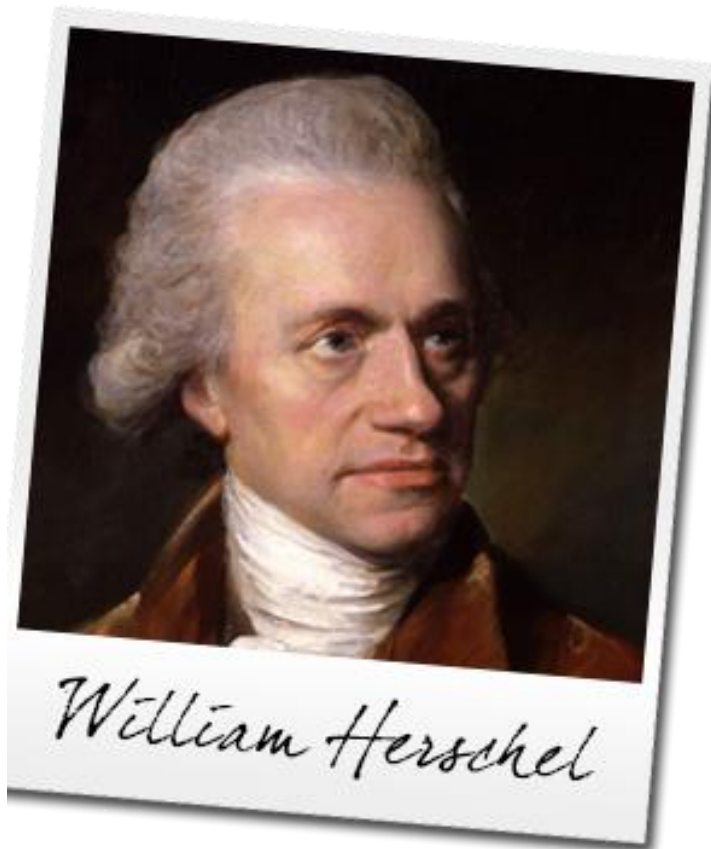
Minutiae

- The “small print” if you will of the fingerprints
- Ridges:
 - End abruptly- ending ridge
 - Split in two- bifurcation
 - Short in length- dot
 - Two bifurcations facing each other- island



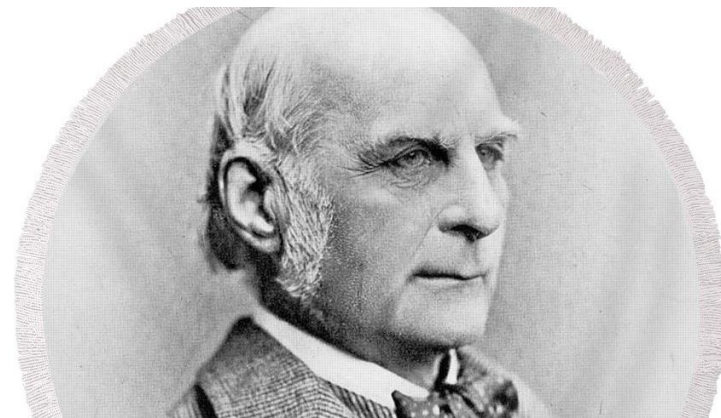


History of Fingerprints



- **Early potters** used them to sign their work- over 2000 years ago
- **Sir William Herschel**- first European to recognize the value of fingerprints as a means of personal identification
- **Alphonse Bertillon**- *Anthropometry*- differences in human physical features- *Minutiae*

History Of Fingerprints Continued



- **Sir Francis Galton**- Wrote book *Finger Prints*
- **Scotland Yard**-decided to use fingerprints based on his work
- **1903**- fingerprints in use in New York State Prison and Fort Leavenworth, KS
- **1910- Thomas Jennings** arrested in Chicago and tried for murder
- Primary evidence- fingerprints
- Wanted to be sure the case survived an appeal, so the state called in an expert witness
- **Edward Foster**- convicted, survived appeal- landmark case that made fingerprints use in court

AFIS and IBIS



- **AFIS:** how fingerprints are computer checked
- **IBIS-** same thing, but for bullets
- **Remember-** we need a standard to compare against
- **AFIS** can even do partial prints
- All are a part of the **biometric identification**



Thank You
For Your Attention
Questions and Comments