Crime Laboratories

Forensic Science Services
Crime Labs in the U.S.

- Wide Variation in services offered, for reasons including:
  - Local laws
  - Functions of the organization to which the lab is attached
  - Budgetary and staffing limitations
Crime Labs in the U.S.

- Crime Labs can include:
  - Physical Science Unit
  - Biology Unit
  - Firearms Unit
  - Document Examination Unit
  - Photography Unit
  - Toxicology Unit
  - Latent Fingerprint Unit
  - Voice Analysis Unit
  - Crime Scene Investigation Unit
Crime Labs in the U.S.

- Other Forensic Science Services:
  - Forensic Pathology
  - Forensic Anthropology
  - Forensic Entomology
  - Forensic Psychiatry
  - Forensic Odontology
  - Forensic Engineering
  - Forensic Computer and Digital Analysis
Physical Science Unit

- Applies techniques of chemistry, physics, and geology to crime scene examination
  - Glass
  - Paint
  - Explosives
  - Soil
Biology Unit

- DNA profiling
  - Blood stains and body fluids
- Hair and fiber analysis
- Compare botanical materials such as wood and plants
Firearms Unit

- Firearms
  - Discharged bullets
  - Cartridge cases
  - Shotgun shells
  - Other ammunition
- Garments: examined for firearm discharge residues
- Tool marks
Document Examination Unit

- Examining handwriting and typewriting
- Paper and ink analysis
- Indented writings, erasures
- Burned or charred documents
Photography Unit

- Examines and records physical evidence
  - This may include digital, infrared, UV, and X-ray imaging
- Prepares photographic exhibits for courtroom presentation
Toxicology Unit

- Examines body fluids and organs for presence or absence of drugs and poisons
- *Often such functions are in a separate lab under the direction of the medical examiner or coroner’s office*
Fingerprint Unit

- Develop latent fingerprints
- May take fingerprints of suspects, persons of interest
- Analyze fingerprint ridge characteristics
Other Services

- Polygraph
  - A tool of the criminal investigator rather than the forensic scientist

- Voiceprint Analysis
  - Telephoned threats, tape-recorded messages, etc.
  - Not always considered a valid means of identification.
Crime-scene Investigation Unit

- This is often under the jurisdiction of the law enforcement agency.

- This unit dispatches specially trained personnel (police and/or civilian) to the crime scene to collect and preserve physical evidence for later lab analysis.
Working Together…

Indented writing may be deposited on paper left underneath a sheet of paper being written upon. Electrostatic imaging is used to visualize indented impressions on paper (Chapter 17).

Handwriting examination reveals that block lettering is consistent with a single writer who wrote three other anthrax letters (Chapter 17).

DNA may be recovered from saliva used to seal an envelope (Chapter 9).

Cellophane tape was used to seal four envelopes containing the anthrax letters. The fitting together of the serrated ends of the tape strips confirmed that they were torn in succession from the same roll of tape (Chapter 3).

Photocopy toner may reveal its manufacturer through chemical and physical properties (Chapter 17).

Fingerprints may be detectable on paper using a variety of chemical developing techniques (Chapter 15).

Paper examination may identify a manufacturer. General appearance, watermarks, fiber analysis, and chemical analysis of pigments, additives, and fillers may reveal a paper’s origin (Chapter 17).

DNA may be recovered from saliva residues on the back of a stamp (Chapter 9). However, in this case, the stamp is printed onto the envelope.

Ink analysis may reveal a pen’s manufacturer (Chapter 17).

Trace evidence, such as hairs and fibers, may be present within the contents of the envelope. (Chapter 11)