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ACHIEVING JUSTICE AT TRIAL:
Crime Scene Analysis and Expert Testimony

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Patricia D. Powers

Patti Powers joined AEquitas after serving as a Senior Deputy Prosecuting Attorney in Washington State for 27 years, bringing extensive litigation expertise as a well-respected trial attorney. She supervised the Sexual Assault-Domestic Violence Unit and prosecuted and tried a high volume of violent crimes—specializing in adult sexual assault, child sexual assault and abuse, sexual exploitation of minors, domestic violence, and related homicides (including complex litigation of high profile, as well as cold and current cases). Patti served on the domestic violence and child fatality review committees and was a member of the Washington State Technical Assistance Committee for Child Death Review Guidelines. For five years, she was appointed as a Highly Qualified Expert for the United States Army, Criminal Investigation Division; in this role, she provided training for army criminal investigation agents and prosecutors at Fort Leonard Wood, Missouri and in Germany. Patti is the lead Attorney Advisor on the SAKI project.

Jodi Corsi

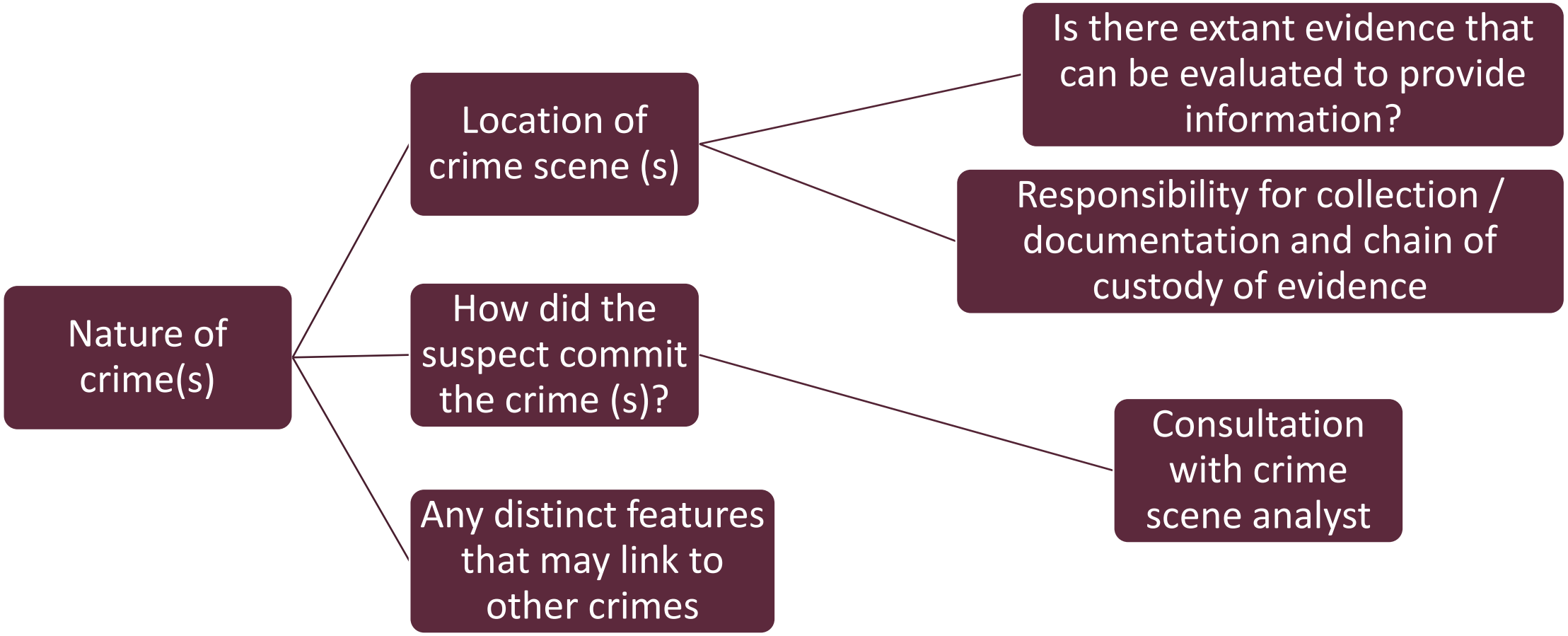
Jodi Corsi is currently the manager of the Biology Unit at the Michigan State Police (MSP) Metropolitan Detroit Forensic Laboratory. She has been with MSP for over 15 years, most of that time as a forensic scientist in the Biology Unit. In addition to processing evidence for body fluid identification (BFI), Ms. Corsi also responds to crime scenes and is a trained bloodstain pattern analyst. She also teaches biology, bloodstain pattern analysis, and photography at evidence technician schools.

Objectives

- Identify critical evidence at the crime scene(s) and its utility from a forensic perspective.
- Utilize best practices for collecting and preserving evidence and documenting the chain of custody.
- Collaborate with forensic analysts as cases develop.
- Effectively present forensic evidence in conjunction with behavioral and testimonial evidence at trial.

Identification and Evaluation of Crime Scene(s) and Evidence

Initial Perspective



Crime Scene(s) Considerations

- What is the crime scene? Where is it?
- What is its physical context? For example —are there multiple areas that must be considered?
- In current cases: are there digital photographs/ videos, measurements?
- In cold cases: does the case file contain photographs, documentations, measurements?
- Is evidence properly documented in context of the scene?
- Were distances measures between key areas?

Crime Scene Considerations: Homicide

Where was the victim's body found?

Was body moved from another location? How was it transported?

Where within the crime scene did the assault begin?

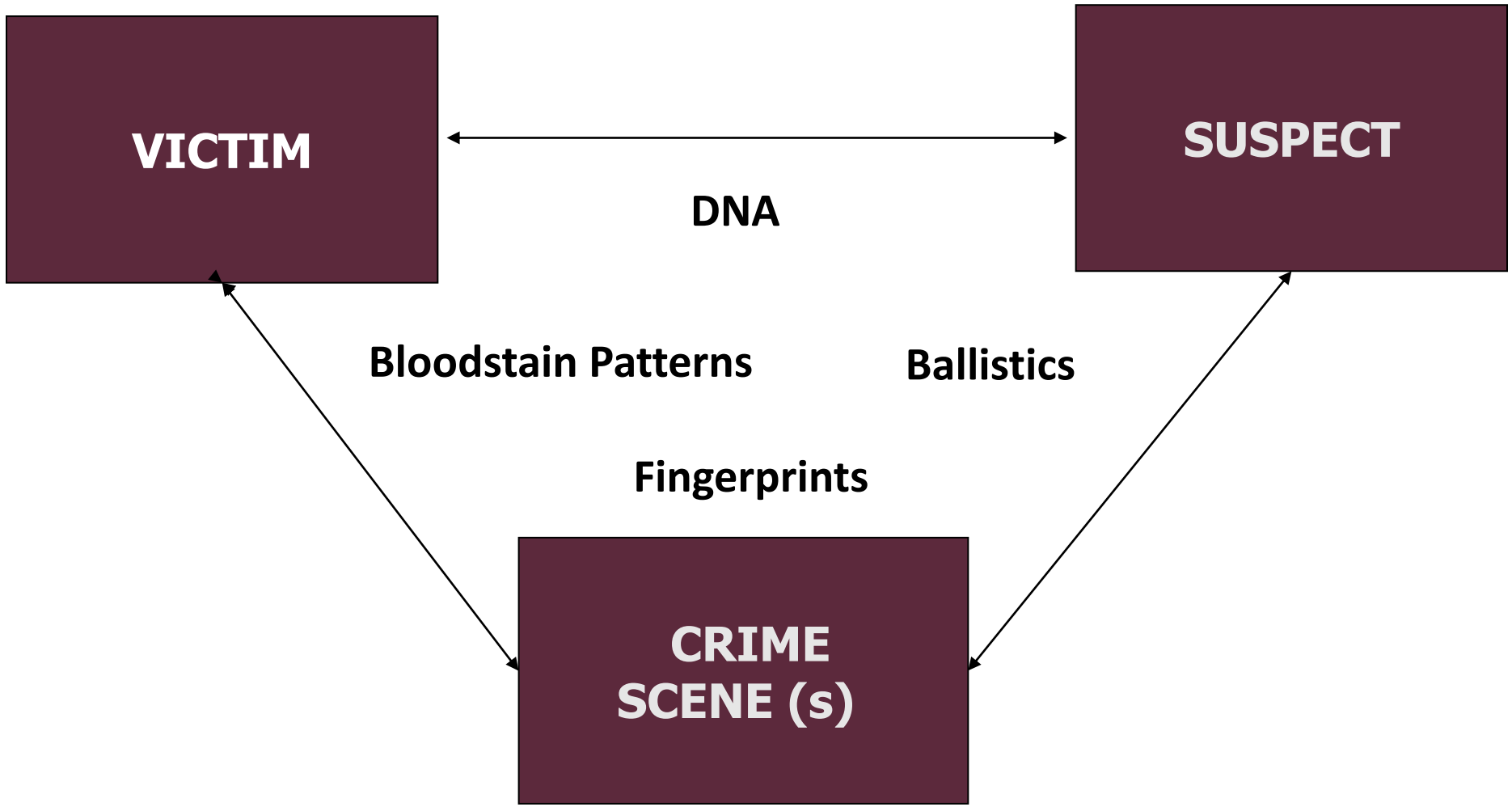
Where is physical or trace evidence located within the crime scene?

Crime Scene Analysis

- What forensic evidence does the crime scene(s) provide?
- Is other physical evidence corroborative of an aspect of the case?
- What contextual evidence is necessary?
- Remember: Anything and everything may be or become of evidentiary value.

Power of Linkage

Reality of the Crime



Crime Scene and Forensic Science

Forensic Science

- The application of natural sciences to criminal and civil law
- Use of scientific methods or expertise to investigate crimes or examine evidence that might be presented in a court of law
- Forensic scientists examine and analyze evidence from crime scenes and elsewhere to develop objective findings that can assist the investigation and prosecution of perpetrators of crime or absolve an innocent person from suspicion

Crime Scene Process

- Pre-scene briefing (communication)
- Develop a plan for processing the scene
- Documentation
  - Notes, photographs, diagrams
- Search/mark evidence
- Photograph/collect evidence
- Process for hidden/latent evidence
- Post-scene briefing (communication)

Arrival on Scene

- After the scene has been secured and made safe, walk through the scene (if/where possible) to evaluate
- Wear gloves – latent prints and DNA
- Watch where you walk/drive – footwear and tire tracks
  - Avoid the path of the subject

Physical Evidence

Any material object intended to prove a fact in issue based on its demonstrable physical characteristics

Physical evidence can:

- Link people and locations
- Substantiate that a crime/violation was committed
- Corroborate or disprove an alibi
- Induce confessions
- Exonerate the innocent

Forensic Evidence (Physical)

- Physical evidence for laboratory analysis
- Utilized to associate people and/or locations
  - Latent prints, footwear impressions, biological evidence, fired cartridge cases, weapons, etc.
- Some can be easily destroyed or damaged

Investigative Evidence (Physical)

- Physical evidence that will most likely not be sent to the forensic laboratory for analysis
- May assist with the “why”
  - Digital evidence
  - Video
  - Financial and personal documents
  - Calendars/planners
  - Prescription drugs and controlled substances
- Collected after forensic evidence has been collected

Evidence of Value

Relationship between suspect and victim

- Latent prints, footwear, trace evidence may be of no value
- Blood and other evidence that associates the suspect when the crime occurred are critical

Always err on the side of collecting

- Just because it’s collected doesn’t mean analysis will be done

Probative evidence: sufficiently useful to prove something in the court of law

Primary Sources of Best Evidence

- Point of entry/exit
- Locations/room(s) where events (struggles, searching, clean-up, etc.) occurred
- Subjects/witnesses/victims

Our evaluation of the investigative details and the crime scene shape our plan and sources of best evidence.

Crime Scene Documentation

- Photography
  - General – capture the scene in the state you found it
  - Evidence
- Sketches
- Notes

Evidence (or anything important) Photography – **3 Types**

Overview/Establishing

Location of evidence within the overall scene/room

Mid-range

Establish location & more detail of evidence

Close-up

Fine detail of evidence and item number

Examination Quality (EQ) (**<u>not all evidence</u>**)

Images for comparison to an object (*e.g.,* footwear, fingerprint)

Sketches

- Provides
  - Layout of scene
  - Overall dimensions (on sketch or in table)
  - Locations of objects/evidence
  - Location of decedent
- Supplements photographs

Notes: General Information

- Arrival /departure times, point of entry utilized
- Nature of investigation
- Vehicles at scene (make/model/VIN /plate)
- Duties of personnel at scene
- Victim, suspect, and witnesses
- Persons who entered scene
- Sign-in and sign-out sheet

Notes: Observations

Window and door conditions (forced entry)

Comments/info received from witnesses or other persons at scene

Lighting conditions (lights/appliances on)

Weather conditions

Building description

Evidence Packaging

- Package items separately to avoid:
  - Interaction between items
  - Exceptions apply
    - Latent lifts, clothing, paper documents
- Container and seal
  - Protect from tampering, contamination, and damage
- Dry
  - Wetness can transfer and soak through
  - Wet or slightly moist evidence = **MOLD** = degraded DNA / loss of evidence

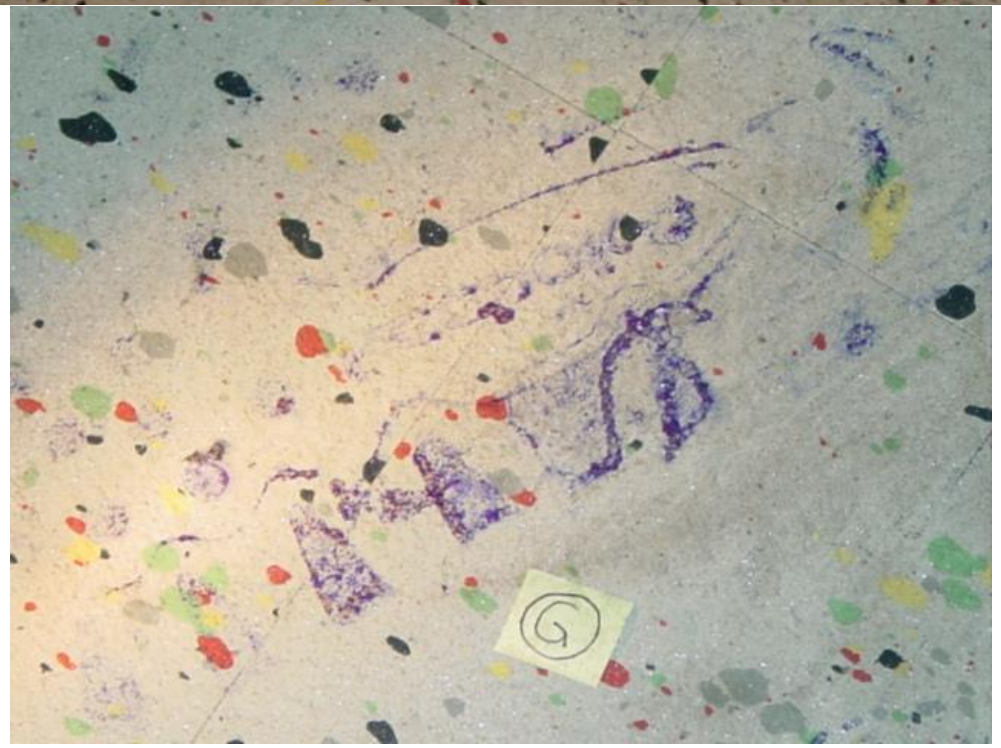
Body Fluid Identification (BFI) Evidence

- Blood
- Semen
- Saliva
- Contact DNA (AKA skin cells, touch DNA, cellular material)
- Hair
  - Root material = nDNA
  - Shaft = mtDNA

Evidence submitted for examination and collection of sources of DNA

Searching for Blood

- Bright light
- Chemical testing on visible stains
- IR (Infrared Light) alternate light source
- Process for latent bloodstains
  - Luminol
  - Leucocrystal violet (LCV)



Handling Biological Evidence

- Latex/Nitrile gloves are required when handling biological evidence
  - Gloves must also be changed each time prior to collection of biological evidence
- Clean any tools/instruments before/during and after use
  - Disposable tools — they must be discarded after collection completed
- Contamination
  - Avoid touching an area where you believe DNA may be present
  - Avoid talking, sneezing, or coughing near evidence
  - Avoid touching your face, nose, or mouth when collecting and packaging evidence
- When possible, air-dry, or package so evidence can breathe/dry

Biology Exams

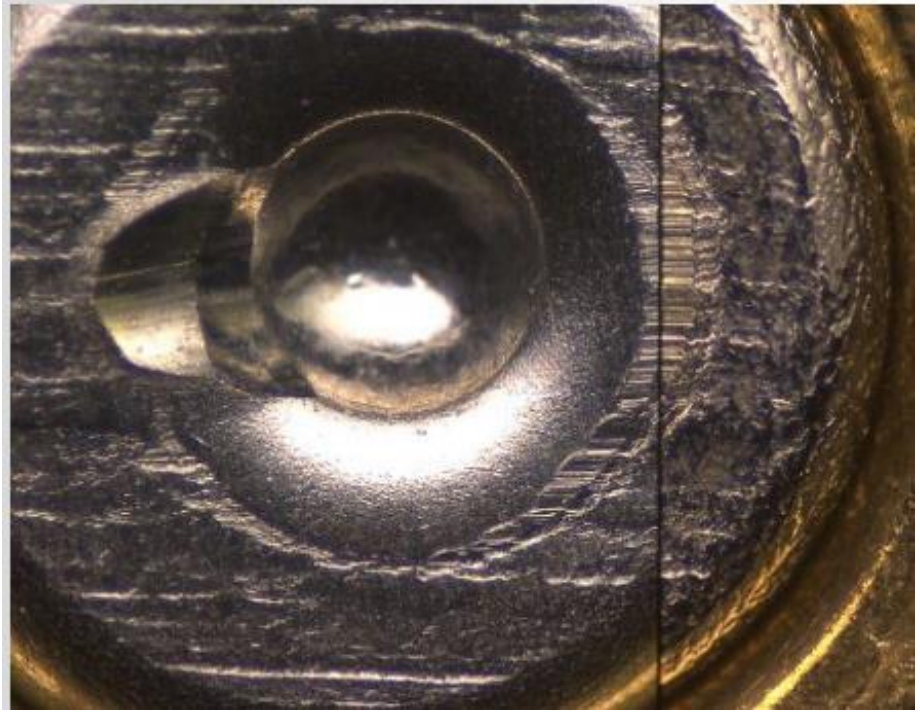
- Additional testing typically done at the lab
- DNA analysis
  - Extracting DNA from samples and analyzing/comparing DNA profiles
- CODIS (Combined DNA Index System)
  - Profiles entered into system for search
  - Known profiles from subjects
  - Questioned profiles from evidence

Bloodstain Pattern Analysis (BPA)

- Examination and interpretation of bloodstains at a crime scene
- Blood is a fluid, and it reacts to external factors in a predictable manner
- Patterns can be used to answer questions and reconstruct events
- Thorough documentation, notes, and especially photography are critical

Firearms / Toolmark Evidence

- Examination of firearms, bullets, cartridge casings, shotgun shells and other ammunition
- Exams performed:
  - Firearms function testing
  - Bullet/shot pellet classification
  - Bullet and cartridge case comparisons
  - Trajectory
  - Serial number restoration
  - Toolmark comparisons
  - GSR distance determination
  - IBIS/NIBIN (database)



Friction Ridge Evidence (Latent Prints, Fingerprints)

- Analysts process and examine evidence for friction ridge impressions
- Exams conducted
  - Process items of evidence for friction ridge
    - Powders
    - Chemicals
    - Alternate Light Source
  - Compare questioned latent prints to known impressions for subjects/persons
  - Automated Fingerprint Identification System (AFIS)

Friction Ridge Processing at the Scene

- Search with oblique light
- Typically use black or white powder
- For possible latent prints in suspected blood
  - Amido Black
  - Leucocrystal violet
- Collect item of interest for processing at lab

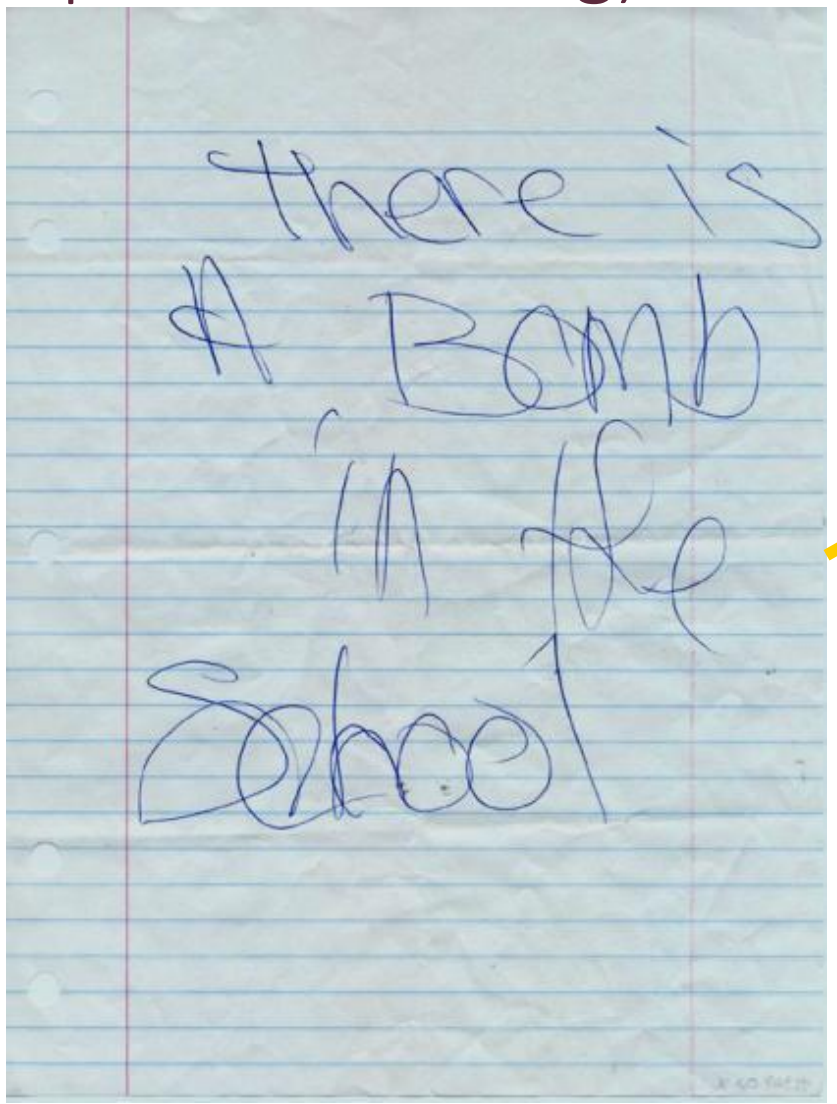
Questioned Documents (QD) Evidence

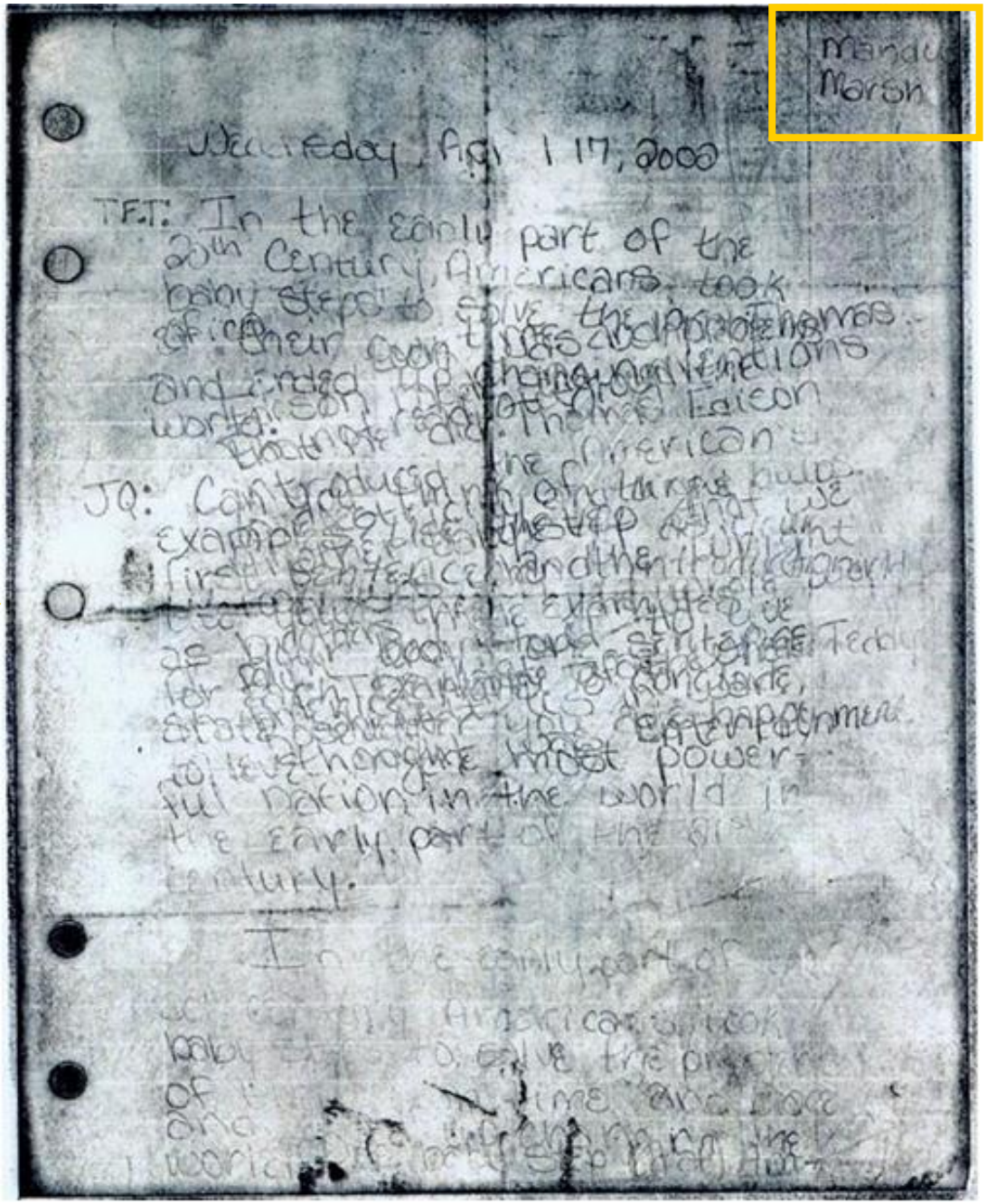
Documents whose origins or authenticity are unknown or uncertain

- Writing & Printing
- Inks
- Paper
- Impressions / Impressed Writing
- Printing Processes
- Staple and Hole Punches
- Typewriters & Mechanical Devices
- Photocopiers, Printers, & Facsimiles

- Burned
- Water-soaked
- Damaged, Altered, Destroyed
- Human Skin
- Torn, Shredded, Cut
- Graffiti
- Any other type of document evidence

Bomb Threat Note (Impressed Writing)





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Trace Evidence

Typical Trace Evidence

- Fire Debris
- Paint
- Glass
- Fibers
- Footwear/Tire Impressions
- Explosives
- Vehicle Filaments
- Physical Matches

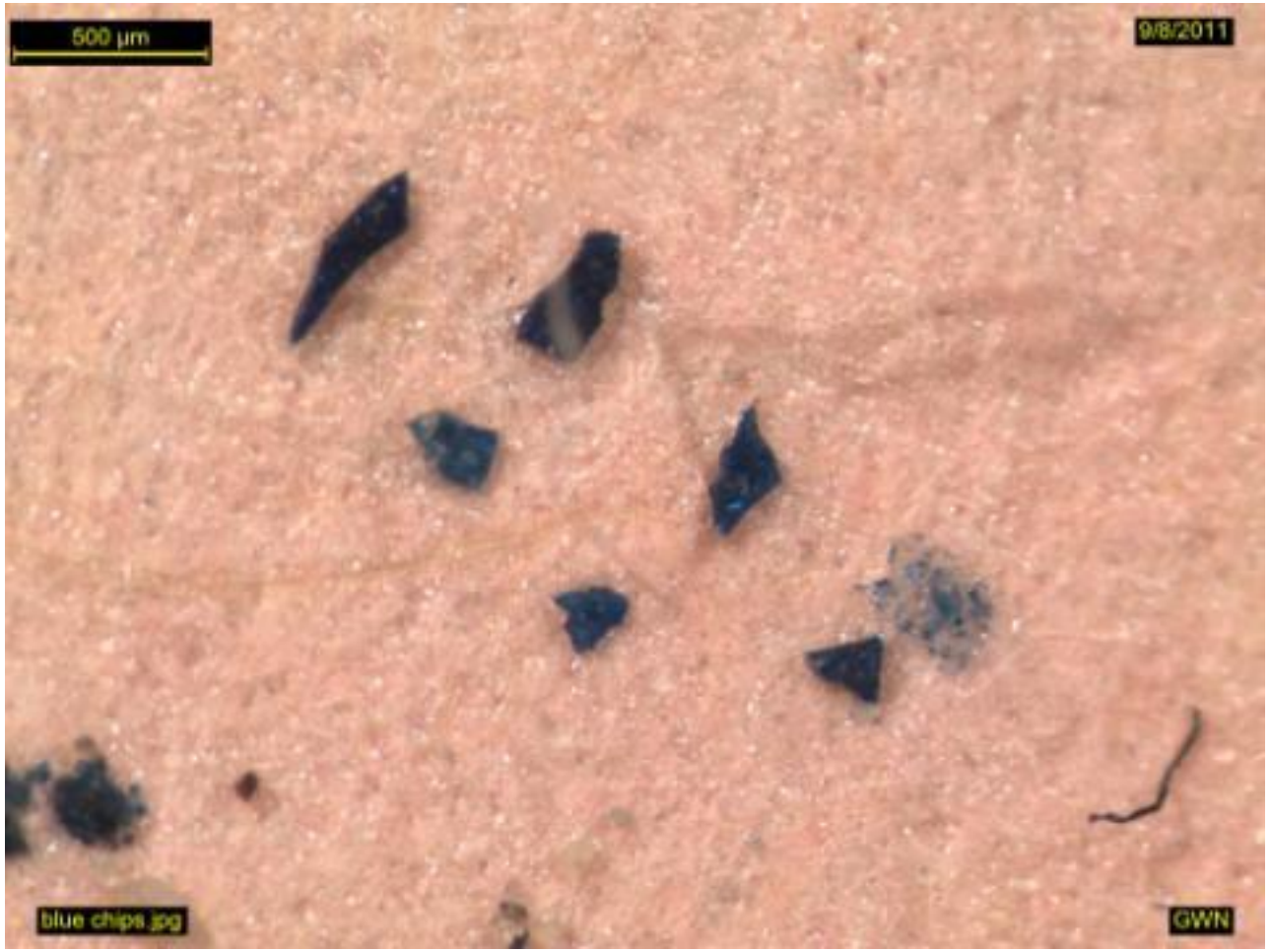
Atypical Trace Evidence

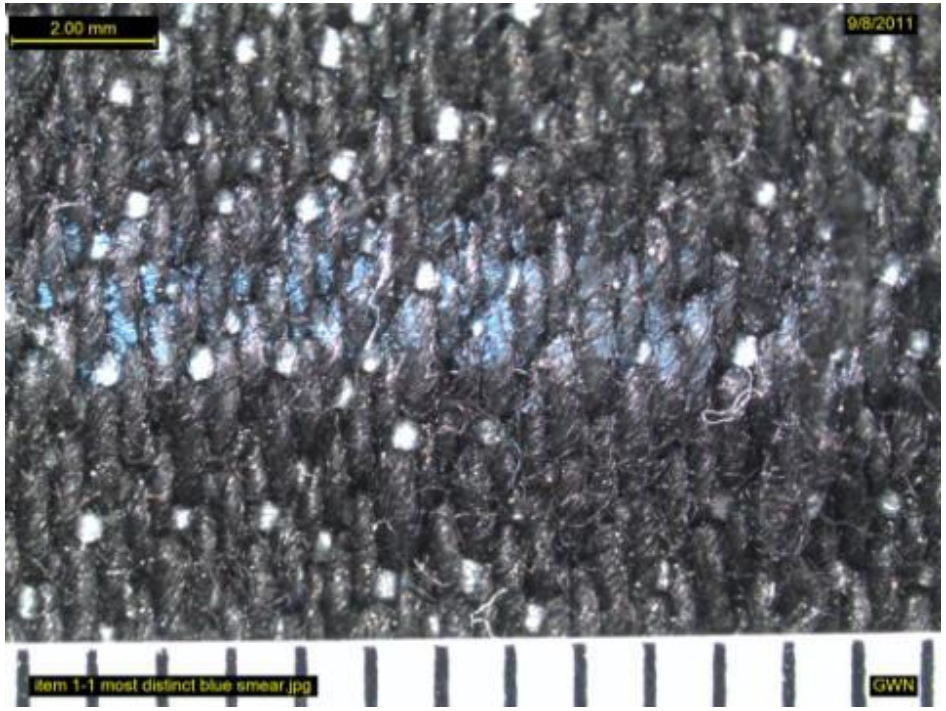
- Unknowns
- Air Bag Examination
- Safe Insulation
- Cosmetics
- Soil
- Bank Dye
- Plastic/Polymers
- Tire Stance
- Lubricants

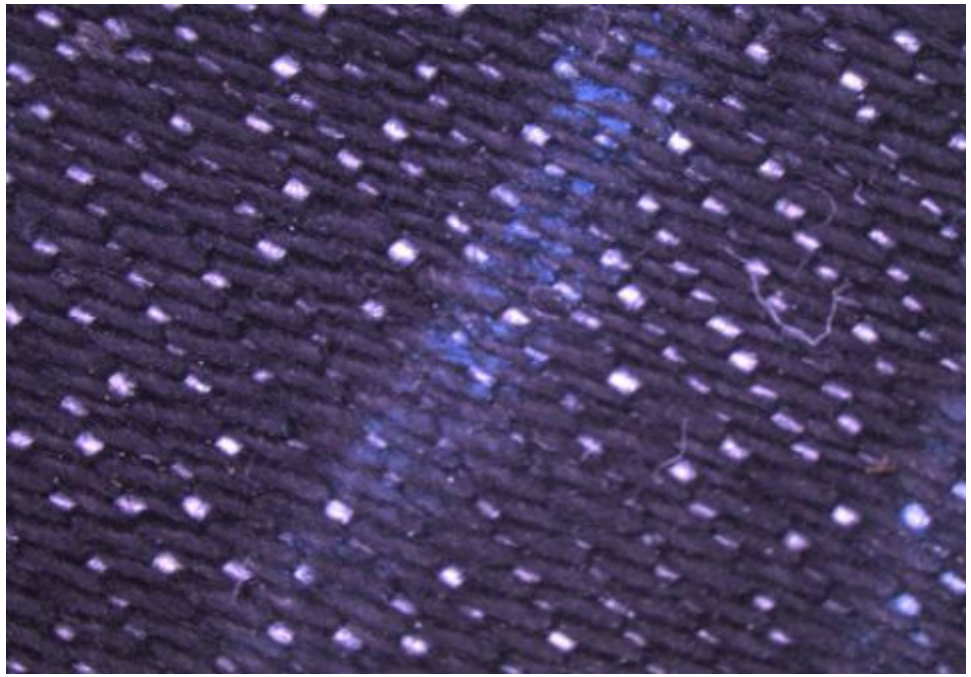
***ANYTHING* that can be compared or used to link subject/scene/victim**

Paint Smears on a Crowbar

Microscopic exam of hit and run victim's clothing = Blue smears and tiny blue paint fragments = SUSPECT VEHICLE IS BLUE







Glass Analysis

- Any time glass is broken, tiny fragments are thrown in every direction and will get on anything nearby
- Forced entry where glass is broken
  - Where to look: suspect's clothes, hair, shoes and tool used to break glass
- Pedestrian hit & run
  - Where to look: ground at scene and on victim's clothing

Impression Evidence (Footwear/Tire)

- Should be present at every scene, but can be easily destroyed (watch where you drive/step)
- Search with oblique light
- Process floor with powder

Controlled Substances

- Analysis of suspected drugs to determine if they are controlled substance
- Evidence packaging
  - Plastic Bags/Pouches
  - Marijuana in a breathable container (paper bag, cardboard box)
  - Small samples in a small plastic package and then placed inside larger clear plastic

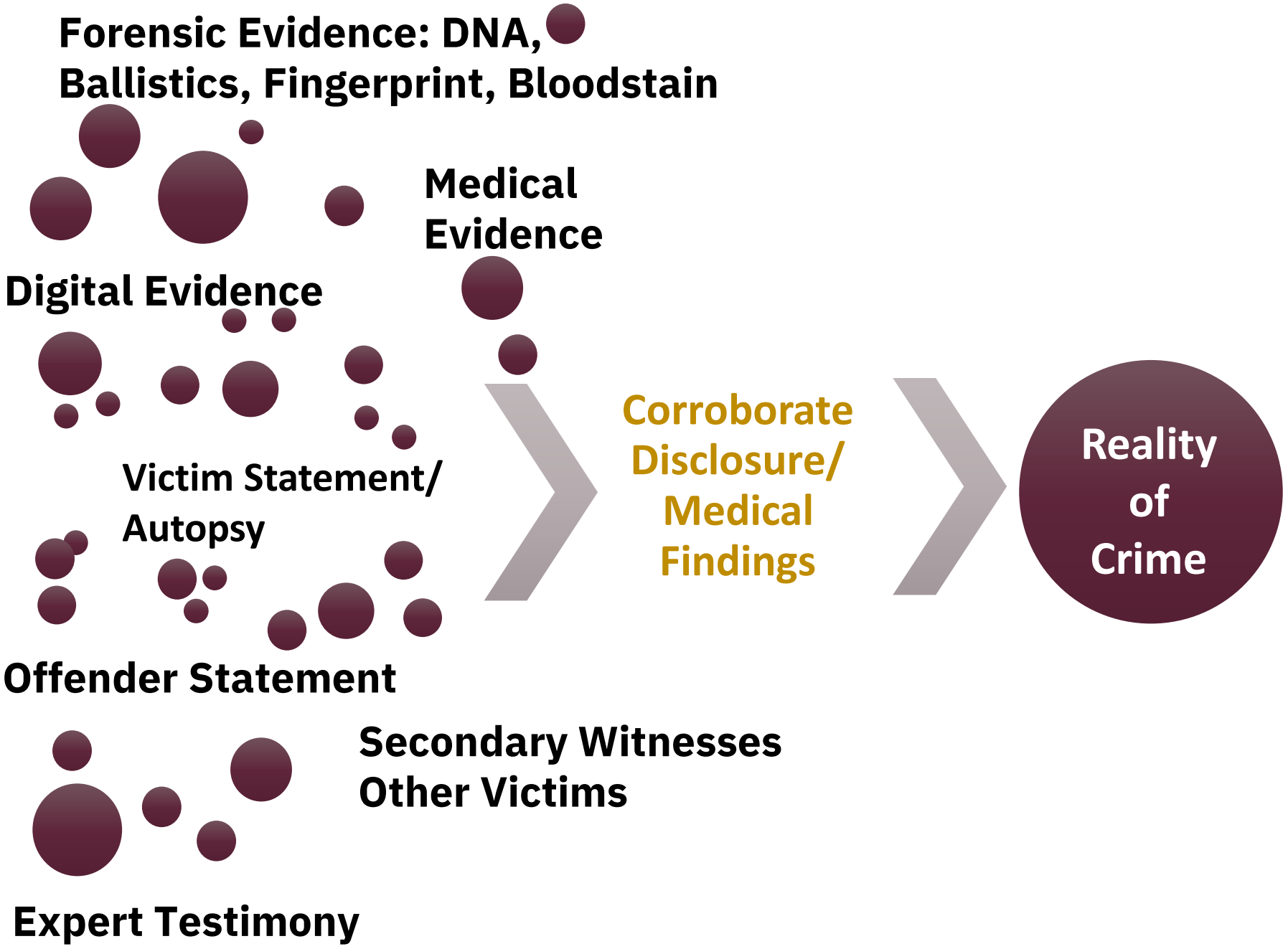
Evidence on the Decedent(s)

- Collect evidence off body prior to movement of body
- Photograph (esp. bloodstains) prior to movement of body
- Bite marks on skin — swab for saliva
- Fingernails — cover hands with paper bags
- Clothing — tape lift if hairs/fibers are probative or collect in paper packet
- Alternate light sources (ALS) can be used on the body

Forensic Scientist Testimony

- Suggest meeting with the analyst prior to testimony
- Caution against asking a question you do not know the answer to during testimony
- Testimony is limited to the content of the report

Deepening Analysis as Case Develops


Forensic Evidence: DNA, Ballistics, Fingerprint, Bloodstain
Medical Evidence
Digital Evidence
Victim Statement/ Autopsy
Offender Statement
Secondary Witnesses Other Victims
Expert Testimony
Corroborate Disclosure/ Medical Findings
Reality of Crime

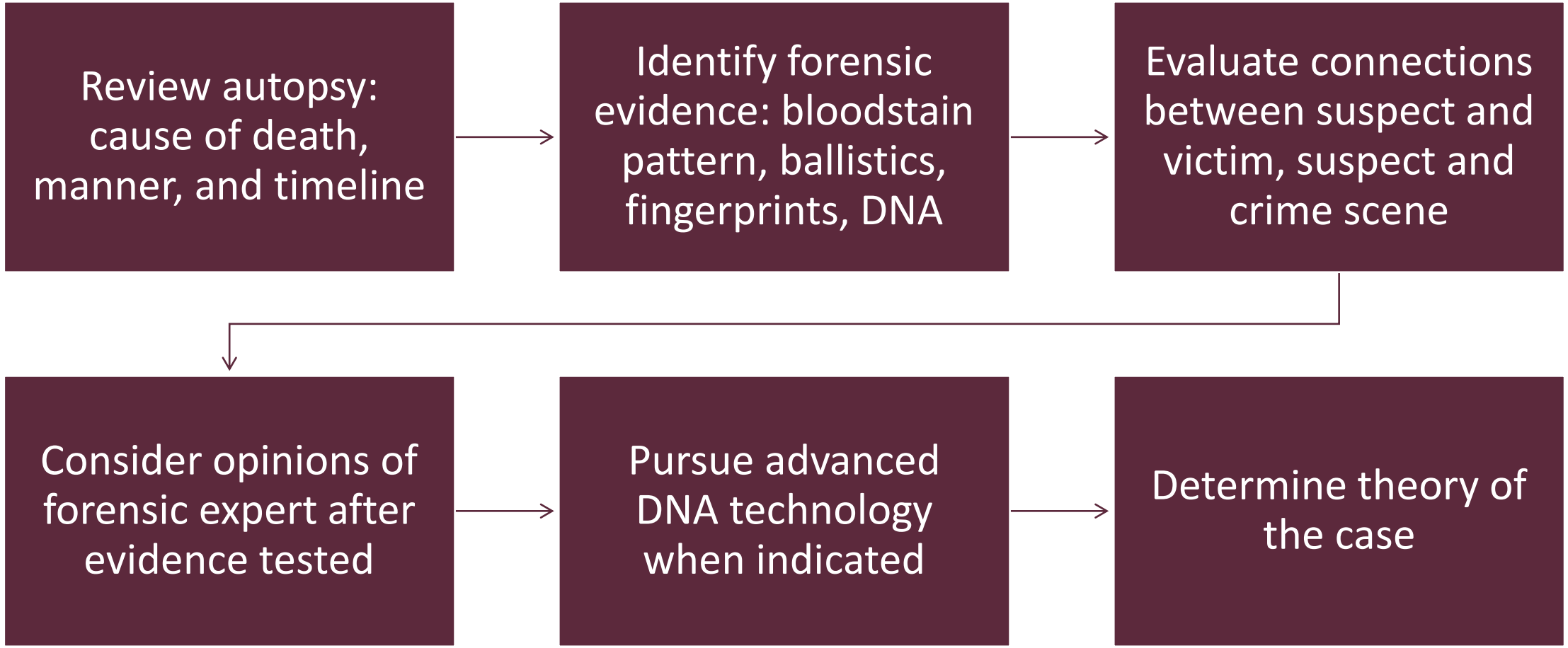
Review Current / Potential Defenses

- Denial defense
  - Does the evidence establish identity?
    - Consider sources of DNA from semen, blood, other bodily fluid
    - Consider evidence from direct and secondary witnesses
- Self-defense
  - For homicides, consider presence of defense wounds as described in post-mortem
  - Is there any physical evidence establishing that victim was the aggressor?
- Consent defense (for sexual assaults)
  - Consider presence of defense wounds
  - Consider incapacity to consent or use of force

Importance of Post-Mortem Evaluation

- Cause of death
- Manner of death
- Identification of injuries
- Causation of injuries
- Potential timeline of death

Determining a Theory of the Case



Analytical Considerations

Recognize value of negative evidence

Review/ document all aspects of evidence collection

Establish chain of custody

Determine whether physical evidence, representation, or documented evidence will be presented at trial

Context and Case Development

Determine what led to the crime scene: *res gestae*

Identify behavioral and/or physical evidence

Establish availability of secondary witnesses for context

Develop timeline leading to the crime

Identify other acts leading to the crime

Focus on premeditation and intent

Current and Cold Case Considerations

- Law enforcement narrative(s) regarding crime scene
- Identification of any involved eyewitnesses / secondary witnesses
- Law enforcement divisions of responsibility
- Location of evidence, including video, photographs, measurements
- Proper collection techniques

Additional Current and Cold Case Considerations

- Identification of all persons involved with chain of custody
- Preservation of evidence: did protocols change?
- Storage of evidence: did storage facilities change or transfer evidence to other location?
- Transfer to crime laboratory and back to evidence

Missing or Unavailable Witnesses

- Absence of chain of custody may go to the weight, rather than admissibility of evidence
- Identify other witnesses who may have supervised activity
- Consider other witnesses who may testify to protocol and evidence that protocol was followed during the relevant time
- Possible expert testimony: *Williams v. Illinois*

Forensic Evidence and Testimony: *Crawford* and *Williams*

- Ideally, produce every analyst who participated in testing
- In cold case, if original analyst(s) are not available, consider retesting and rely solely at trial on results of new testing.
- Negotiate stipulation to testing results
- If only option to admit crucial evidence is through analyst who did not personally conduct / observe testing, be careful to pose questions as hypotheticals under F.R.E. 703 and offer testifying expert's independent conclusion

Crawford v. Washington, 541 U.S. 36 (2004); Williams v. Illinois, 132 S.Ct. 2221 (2012)

Applying New Technology in Cold Cases

What extant evidence could form basis for review or analysis?

- Photos, diagrams, measurements, untested evidence from sexual assault kit, other physical evidence

Recreating crime scene based upon prior documentation

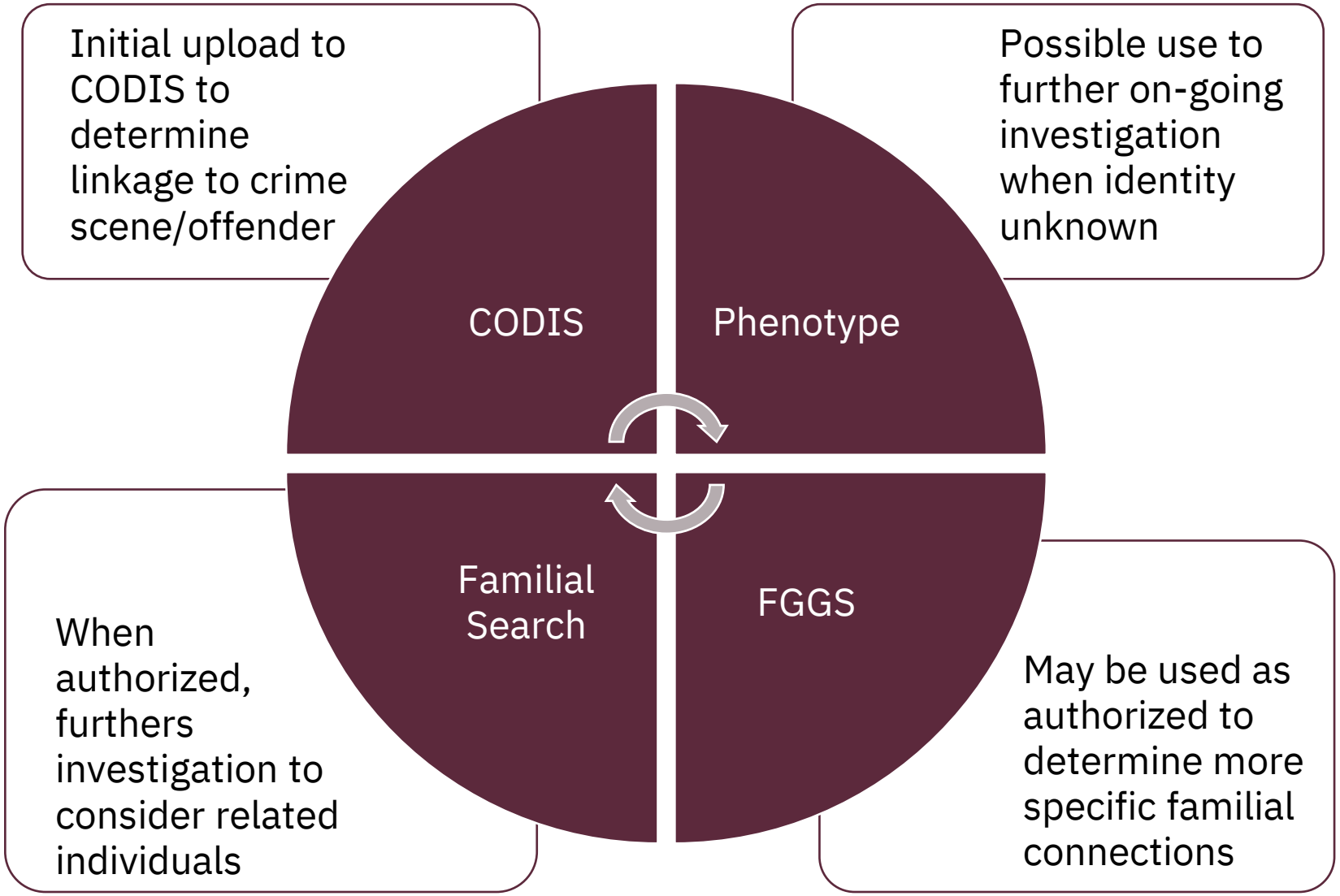
Testing sexual assault kit with mixtures and determining donor

Obtaining DNA from physical evidence not previously tested due to insufficient quantity

Obtain DNA from Untested Objects

Cigarette butts	Stamps and envelope flaps	Drinking cups and bottles	Caps
Gum	Ear plugs	Telephone receiver	Glasses

DNA Technology: Investigative Leads



Recreating the Reality of the Crime at Trial

Infrastructure of Presentation of Evidence

1

Present chain of custody witnesses without stipulation: establish diligence of investigation and importance of detail

2

Witness who can identify evidence and location at crime scene

3

Place the evidence in context of the crime scene through questioning and use of exhibits

Presenting Evidence Effectively

- Consider sustainable practices developing during the pandemic and possible virtual or socially distanced proceedings: will physical evidence be shown, or will photograph or Powerpoint be used?

- The Court should determine if admitted evidence can be photographed and presented to the jury simultaneously through selected means, *e.g.,* iPads

- Opportunity for presentation of virtual reality (VR) simulation of crime scene based upon foundational testimony

Caveats

- Always show how evidence is **connected** with other evidence and the crime
- Use demonstrative evidence or software to demonstrate interrelationship, *e.g.,* bloodstain pattern associated with placement of victim's body, stipling indicating closeness of defendant to deceased
- When presenting evidence, demonstrate through tone and demeanor the gravity of the evidence
- In addition to necessary inquiry, ask the questions the jury will need to have answered
- Anticipate alternative theories the defense will offer and ask questions in direct

Stepping Back…..

What does the evidence tell us?

What is the reality of the crime? What was the victim's experience of the crime?

Does the evidence reveal culpability?

Is expert testimony necessary for a jury to understand the meaning and significance of evidence?

Presenting Expert Testimony

Providing Depth and Context

Testimony by Expert Witnesses

FRE 702

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;

b) the testimony is based on sufficient facts or data;

c) the testimony is the product of reliable principles and methods; and

d) the expert has reliably applied the principles and methods to the facts of the case.

Bases of an Expert

FRE 703

An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted. But if the facts or data would otherwise be inadmissible, the proponent of the opinion may disclose them to the jury only if their probative value in helping the jury evaluate the opinion substantially outweighs their prejudicial effect.

Qualifications

“A witness who is qualified as an expert by knowledge, skill, experience, training, or education…”

- Clear experience
- Education
- Knowledge of relevant articles
- Authorship of articles
- Prior qualification

Expert Testimony

- Qualifications
- Education / Professional Background
- Employment Responsibilities / Length of Time
- What was the expert asked to do?
- Process observed
- Evidence-based hypotheticals
- Opinion / explanation

Proactively Consider Daubert or Frye Issues

General Acceptance	Frye v. United States, 293 F. 1013 (D.C. Cir. 1923)
Scientific Knowledge	Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993)
Technical and Other Specialized Knowledge	Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999)

Presenting Expert Testimony

- Establish expert qualifications: do not stipulate
- Focus initially on explaining the science to the jury: strategic use of “explain to us”
- Indicate what information/exhibits the expert was asked to review and the testing process observed
- Elicit opinion and explanation

Expert Testimony

- What science did the expert apply to evaluate the evidence?
- Use evidence-based hypotheticals: “Asking you to assume for purpose of this question, that the victim’s body was located in x area, what, if any significance does blood located on x part of wall have?”
- Supplement hypothetical with exhibit when possible.
- Ask expert to explain significance of absence of evidence given the history.

Preparing for Cross-Examination of State's Expert

Review defense expert's report or interview. When there is not a defense expert, focus on defense theory of the case and evidence

Review CV, consult with other prosecutors and organizations

Determine information that expert is relying upon / Defense theory

Review report/ interview with State's experts

Determine viability of issues raised

Incorporate into direct exam of State's expert

Closing Argument Based Upon the Evidence

Closing Argument

- Refer to evidence with exhibit, emphasizing importance of prior testimony and the connection between all testimony and evidence
- Whether in a courtroom or arguing through a virtual platform, be present and in the moment
- Center the victim’s experience of the crime

Closing Argument, cont'd

- Summarize expert testimony and the importance of testing results
- Explain how evidence is probative of the elements of the crime, identification of the defendant, intent, motive
- Argue that the evidence survived in a cold or current case to convey the reality of the crime

Remember that in the end, the evidence speaks for itself.

Going Forward

- Identify critical evidence at the crime scene(s) and its utility from a forensic perspective.
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- Collaborate with forensic analysts as cases develop.
- Effectively present forensic evidence, in conjunction with behavioral and testimonial evidence, at trial.

Contact Information

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