



Advancing Justice with Case Review and Informed Strategies for DNA Testing

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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.



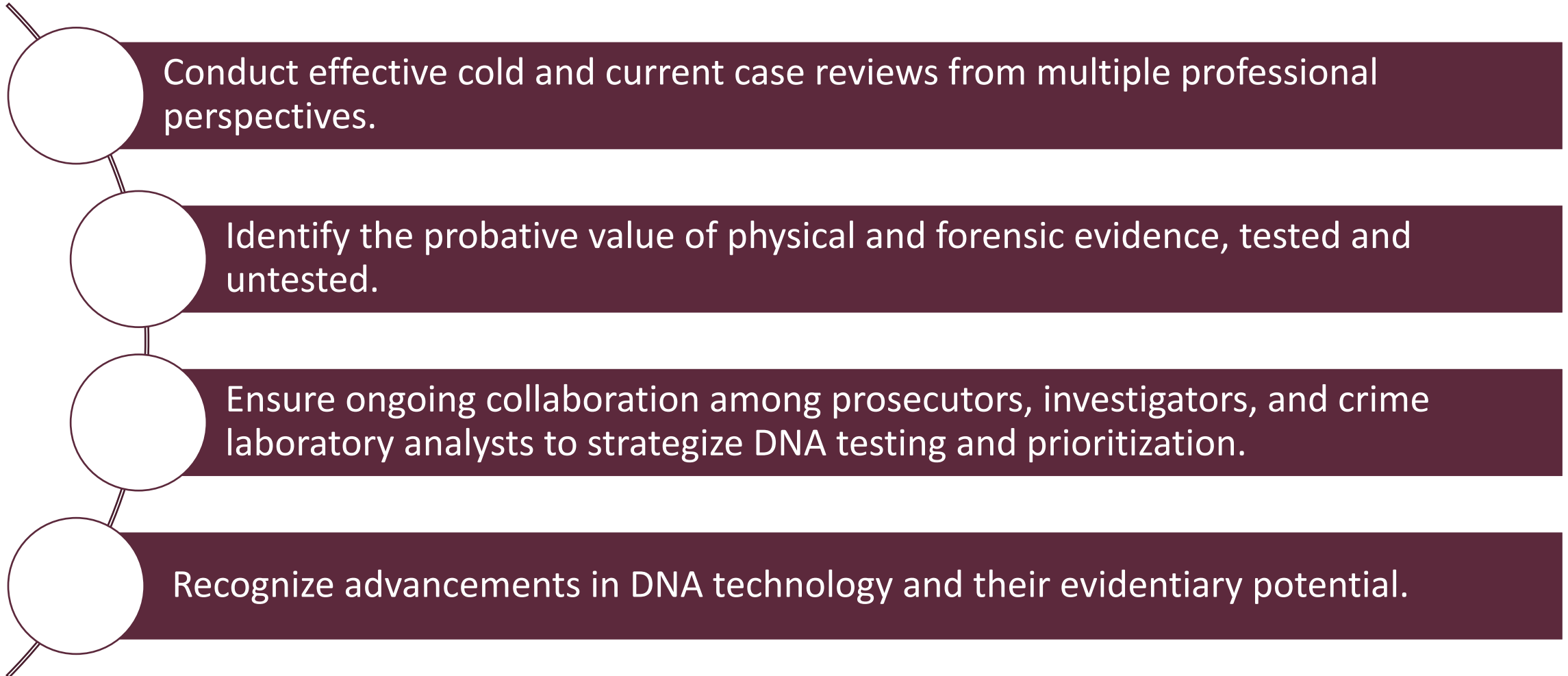
Misty Marra

Misty Marra is a Forensic DNA Analyst and the DNA Laboratory Coordinator at the Marshall University Forensic Science Center (MUFSC) in Huntington, WV. She received a Bachelor of Arts degree in Biology from West Virginia University and a Master of Science degree in Forensic Science from Marshall University. Misty has performed analysis/review of over 5,000 forensic DNA cases, which have included sexual assaults, homicides and property crimes. She has been instrumental in coordinating the MUFSC's sexual assault kit testing projects and the contracted technical review of outsourced sexual assault kit projects with agencies and crime labs across the US.

Misty has served as a Subject Matter Expert and has conducted instructional webinars and on-site trainings regarding DNA and its use in criminal cases with a focus on sexual assault cases both nationally and internationally for entities such as RTI International, SANE-SART Resource Service, and the Office for Victims of Crime.



Objectives

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- 1. Conduct effective cold and current case reviews from multiple professional perspectives.
 - 2. Identify the probative value of physical and forensic evidence, tested and untested.
 - 3. Ensure ongoing collaboration among prosecutors, investigators, and crime laboratory analysts to strategize DNA testing and prioritization.
 - 4. Recognize advancements in DNA technology and their evidentiary potential.

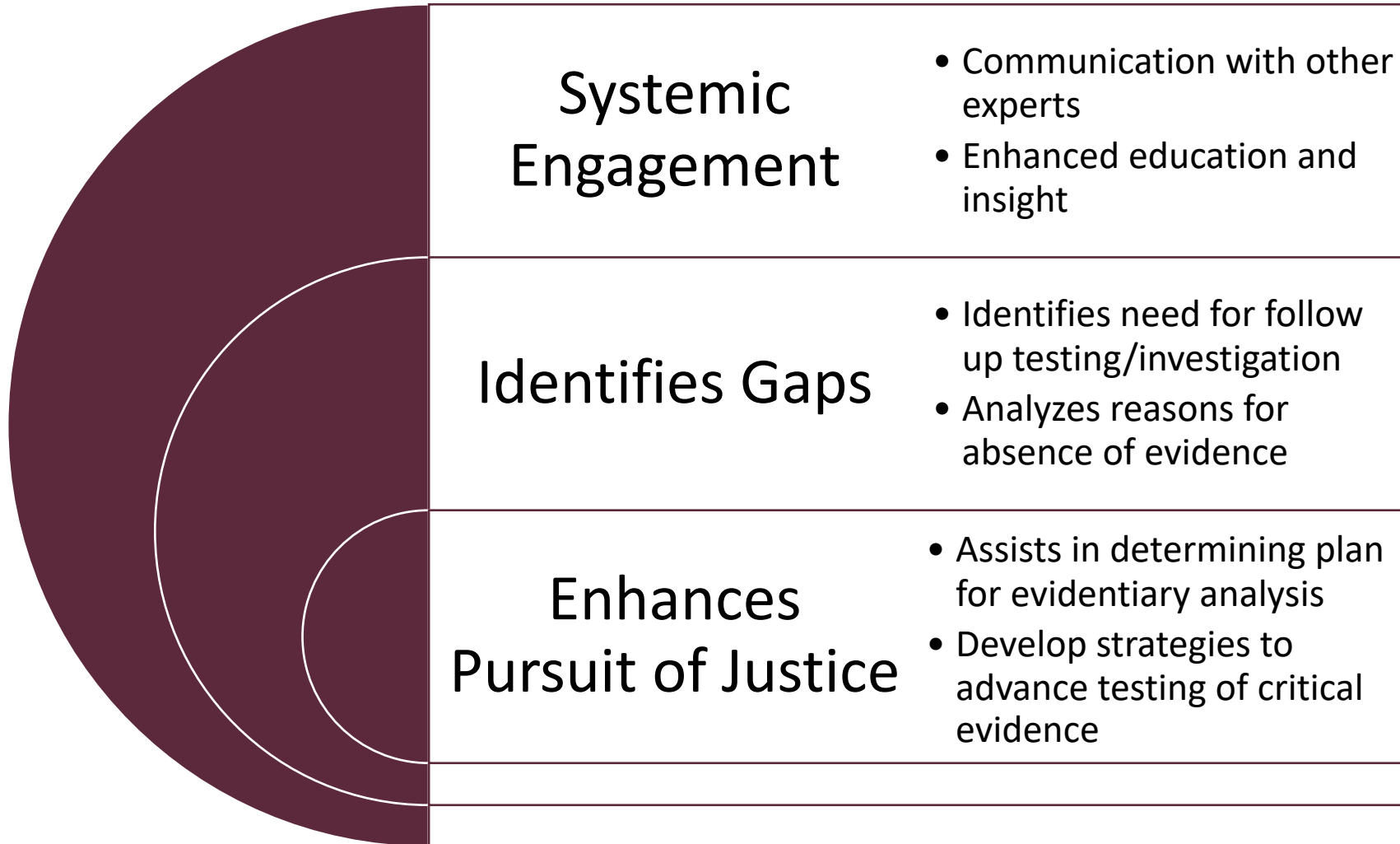
ANALYZING THE EVIDENCE

Informing Strategy with Case Review

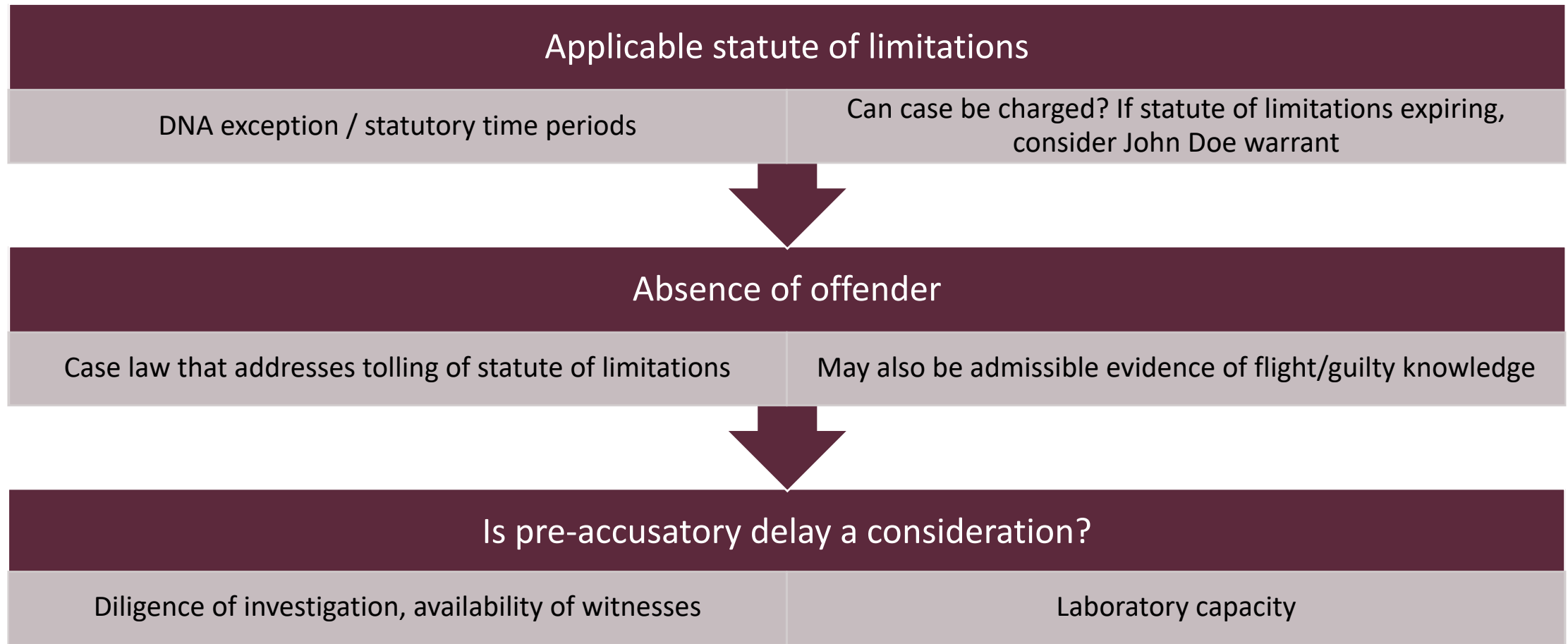
Cold and Current Case Review: Multidisciplinary Engagement



True Collaboration



Initial Determinations and Strategies



Case Review: Identifying Probative Evidence

Begin with reviewing police reports, statements, laboratory reports

Identify any items associated with and *linking* crime scene, victim, offender

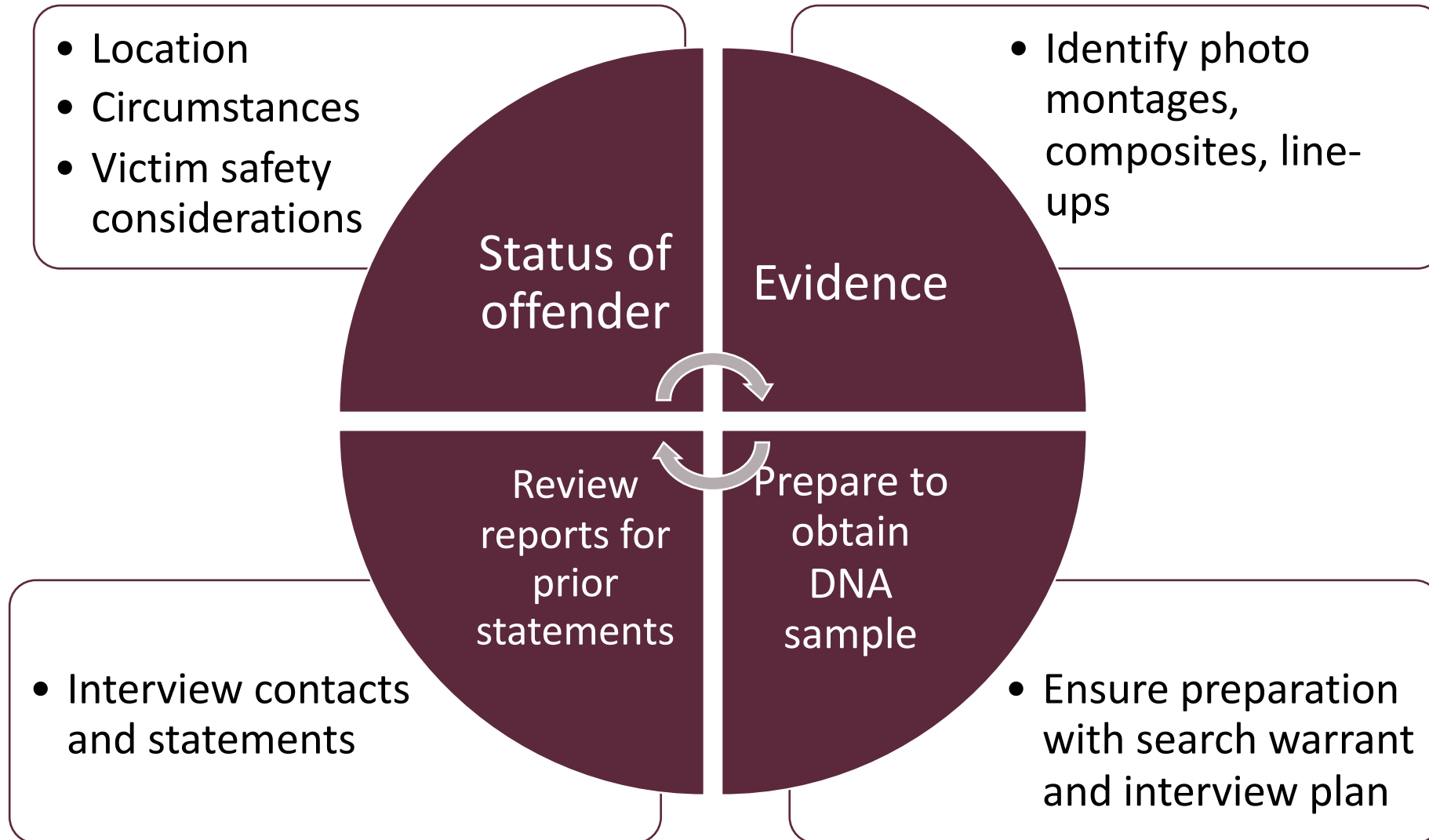
Determine availability of all evidence: tested, untested and unsubmitted

Recognize evidence that may corroborate aspects of the victim's disclosure, testimony of witnesses, presence of offender

Dive deeper—what details are significant, both old and new?

Consider all aspects of evidence: physical, forensic, behavioral, testimonial

Discuss Offender Information



Cold Case Review: Focus on Evidence and Testing

- Determine availability of all identified evidence as well as other items retained in evidence.
- Review all laboratory submissions and reports of completed and/or partial testing.
- Account for the chain of custody of all submitted and returned evidence.
- Carefully review documentation for all chain of custody witnesses.

Case Review: Collaboration in Practice

- Discuss and determine evidence probative of the elements of the crime and context of the crime from diverse points of view.
- Identify evidence that was not submitted for testing and that may yield results now, *e.g.*, sexual assault kit, physical evidence.
- Consult with laboratory analyst regarding any earlier untested/ partially tested submissions to determine current testing capacity.
- Consult with laboratory analyst about other identified items to determine potential for testing.

Another Area of Collaboration: Request for Consumption of DNA

- Working relationships among laboratory analysts, prosecutors, and investigators ensure communication of request for consumption of DNA.
- Timeliness is an important consideration for the laboratory analyst and also for the prosecutor and defense counsel.
- Prosecutors should communicate request to defense and the matter may be noted for the Court's ruling.
- Prosecutors should be familiar with laboratory standards and preferences regarding presence of another expert, video.

Follow-up: Developing the Case

- Prosecutor may ask for additional items to be tested based upon developments in the case.
- Secondary evidence may become important in the context of the case and should be discussed with analyst.
- If an item can't be tested, it's important to learn the reasons.

CONSULTATION WITH CRIME LABORATORY

How We Can Help With Case Review

Cold Case Review: Evidence Evaluation

- Identify all evidence that was previously submitted.
- Help determine the location of all the evidence
 - Is any evidence still at the crime lab?
 - Some cuttings may remain at the lab even if bulk evidence was returned.
 - Has any evidence been returned to the agency?
 - If evidence is not at crime lab or law enforcement agency – may ask if any evidence destroyed?
- During case review – develop list of evidence that had not been submitted.

Why Evidence May Not Have Been Submitted

- Check the laboratory's evidence submission policy.
 - Number of items of evidence may be limited depending on the nature and type of case.
 - Tiered approach
 - Certain number of items accepted at initial submission.
 - If no meaningful information is obtained, additional items may be submitted after consultation with lab analyst or lab management.
 - Some evidence items may not be accepted for DNA analysis by your lab.
- Evidence submission policies are NOT intended to eliminate necessary analysis or to discourage evidence collection but to allow the lab to provide quality and timely results.

Cold Case Review: Evidence Evaluation

- Identify secondary evidence that was not considered at the time of the original submission.
- Has additional evidence with potential forensic value been discovered since the original submission?
- Cannot make informed decisions about how to proceed with testing until there is a full inventory of the evidence and the probative value of the evidence.

Cold Case Review: Laboratory Report Review

- Determine what evidence was received vs. what evidence was tested.
 - May be listed on the report or may have to dig into case notes.
 - Evidence tested to completion or partially tested.
- Determine what DNA technology was used.
 - Biological screening methods.
 - STR's, Y-STR's, etc.
 - Amplification kit – legacy or current kit.
- Explain results, conclusions and statistical significance.

Cold Case Review: Partially Tested Evidence

- Biological screening/serology testing only
 - Lab report may detail preliminary results with a statement indicating that the lab was waiting for additional information/requests or permission for consumption.
- Previously tested with non-CODIS eligible DNA methods
 - RFLP, DQ-Alpha, older STRs.
- Phased testing approach due to funding/contracts
 - Only a certain number of item screened/DNA tested and no DNA profile was obtained.
- No CODIS profile and additional items are available for testing.

Cold Case Review: Previous Testing Evaluation

- What technology was used in the original testing?
- What were the results of the evidence that was previously tested?
 - Negative results – consider re-testing with current/advanced technology or move on to other evidence.
 - If based on serology tests, viable DNA is still possible even if serology negative.
 - Current DNA quantification and amplification kits are more sensitive.
 - Consider advanced technology such as Y-STR testing.
 - Sufficient results – consider charges and value to the case.
 - May still need to perform more testing.
 - Unresolvable mixture results – stay tuned.

Cold Case Review: CODIS

- Was there a CODIS entry?
 - Still best tool in our toolbox for developing an investigative lead.
- Was there a CODIS hit?
 - To an individual or to another case?
 - What follow up has been performed?
 - Has a confirmation sample been collected and submitted?
- Elimination standards
 - Policies can allow a forensic profile to be entered into CODIS before comparison to elimination standards.
 - Still need to pursue collection of elimination standards.
 - If there is a match to an elimination standard, the forensic profile will be removed from CODIS.

CODIS: FRE 404(b) in Sexual Assault and Homicide Cases

Interview victim(s) or homicide witnesses

Consider joinder; cross-admissibility of FRE 404(b) evidence

Corroboration/cross-corroboration

Issues: confession or admissions to one crime, strength of individual case, cautionary instruction

TRIAGE: Determining Priorities for Testing and Timeliness

Prosecution and Laboratory Analyst Considerations

Discussing Evidence Submission in the Context of the Case

- Cold or current case? When is the case scheduled for trial? What is the expectation of counsel?
- Have there been previous delays? Is the case part of the backlog?
- What is the capacity of the crime laboratory for meeting current deadline?
- Discuss the necessary “interim deadline” for discovery and adequate time for prosecutor and defense preparation.

Pandemic and Backlogged Cases

Backlogged Cases: Cold and Current

Speedy Trial/ Pre-accusatory Delay
Court's Orders Tolling Speedy Trial and
Commencing

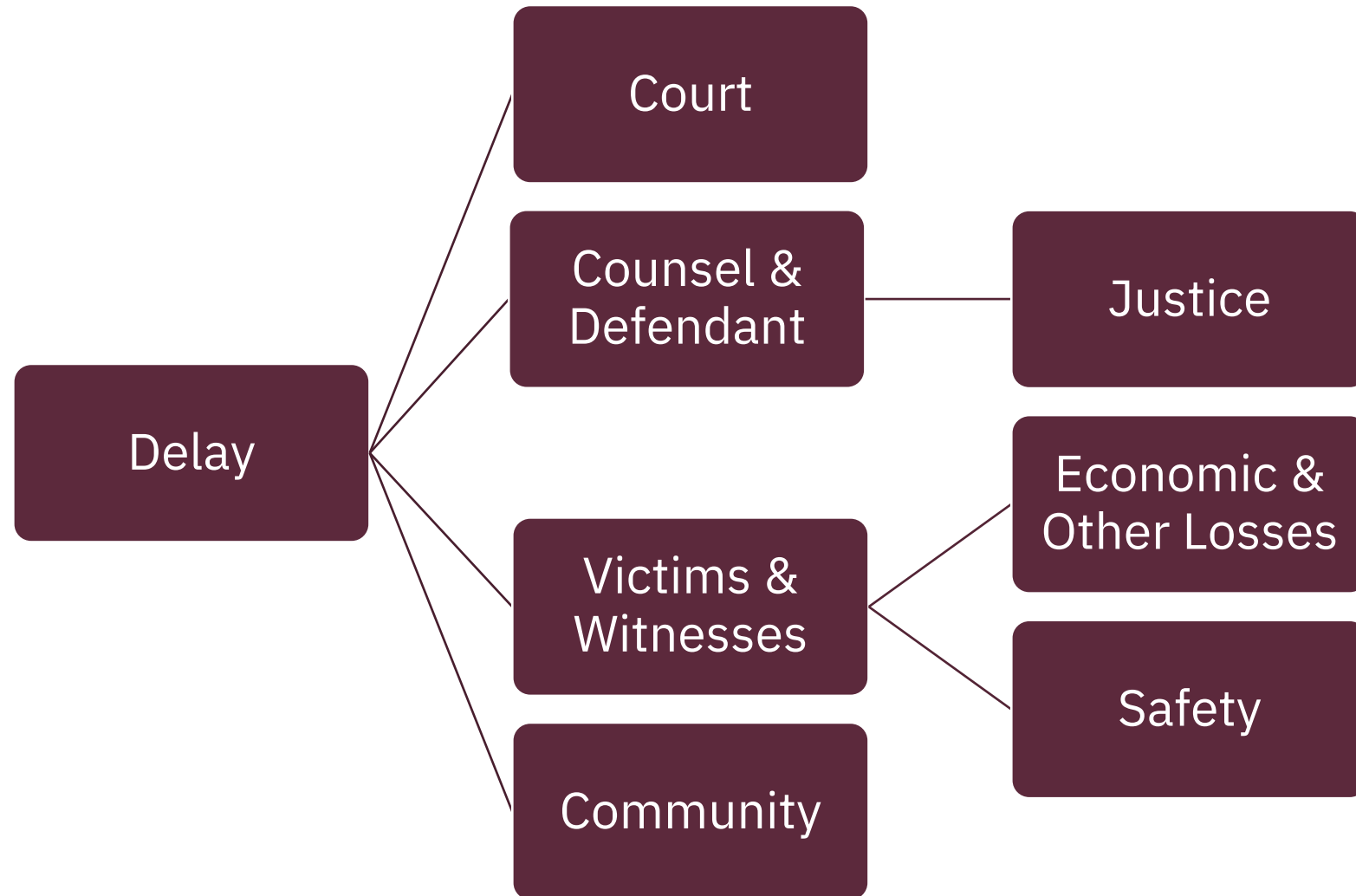
Prioritization of
Violent Crimes/
Complex Cases

Other Systemic
Delays

Victim Need for
Resolution

Witness Availability/
Expert Witness
Scheduling

Systemic Impact of Delayed Cases



Why Delay is Necessary: Building the Record

- Establish *due diligence*, timely submission of evidence to the crime laboratory, and follow-up.
- Contact crime laboratory analyst regarding necessary time for testing.
- Communicate and provide updates to the defense and the Court.
- Establish necessity for testing and importance of evidence to the State and Defendant.

US v. Olsen

No. 20-50329, 2021 WL 1589359 (9th Cir. 2021)

“The Speedy Trial Act also includes an ends of justice provision, allowing for the exclusion of time where a district court finds ‘that the ends of justice served by taking such action outweigh the best interest of the public and the defendant in a speedy trial.’”

Most relevant to our analysis is the first enumerated factor: ‘[w]hether the failure to grant such a continuance in the proceeding would be likely to make a continuation of such proceeding impossible, or result in a miscarriage of justice.’” *Id.* § 3161(h)(7)(B)(i).

Olsen, cont'd

No. 20-50329 at 6

“Nothing in the Speedy Trial Act limits district courts to granting ends of justice continuances only when holding jury trials is impossible. *See id.* This is an unnecessarily inflexible interpretation of a provision meant to provide necessary flexibility to district courts to manage their criminal cases.”

Olsen, cont'd

No. 20-50329 at 7

“Nevertheless, in the context of the COVID-19 pandemic, we find relevant the following non-exhaustive factors: (1) whether a defendant is detained pending trial; (2) how long a defendant has been detained; (3) whether a defendant has invoked speedy trial rights since the case’s inception; (4) whether a defendant, if detained, belongs to a population that is particularly susceptible to complications if infected with the virus...”

Olsen, cont'd

Id.

“...(5) the seriousness of the charges a defendant faces, and in particular whether the defendant is accused of violent crimes; (6) whether there is a reason to suspect recidivism if the charges against the defendant are dismissed; and (7) whether the district court has the ability to safely conduct a trial...”

Crime Laboratory Considerations



Volume of work

- Other cases and deadlines; staff

Capacity and any involved outsourcing

- Can the crime laboratory perform necessary testing?

Triage Collaboration: Determining Time for Testing

Prosecution

- Provides information about status of case, pre-trial and trial date and expectations.
- Include sufficient time for providing results to defense.
- Based upon needs of case and involved issues, may request re-scheduling, if necessary, subject to the Court's discretion.

Crime Laboratory Analyst

- Provides information about time involved in testing as well as potential of necessary additional time.
- Is outsourcing involved?
- Analyst may also discuss scheduling issues for testimony.

Crime Laboratory Considerations: Time and Volume

- Current caseload
 - How does the crime lab triage their cases?
 - Work cases in the order of submission?
 - Are there grant funds that are going to end soon for certain types of cases?
 - Is the lab outsourcing cases?
 - May have to coordinate between different crime lab divisions if more than just DNA evidence – fingerprints, firearms, digital, drugs, etc.
- Rush cases can be accepted
 - Can impede the testing process of other cases.
 - May need to meet certain criteria to be rushed such as posing a significant public safety concern, involve certain types of evidence, and have a trial date within a certain time frame.
- Communication is key!

Unavailability of Prior Analyst: Prosecution Issues

Cold case review may reveal information regarding laboratory analyst who performed work and is no longer available:

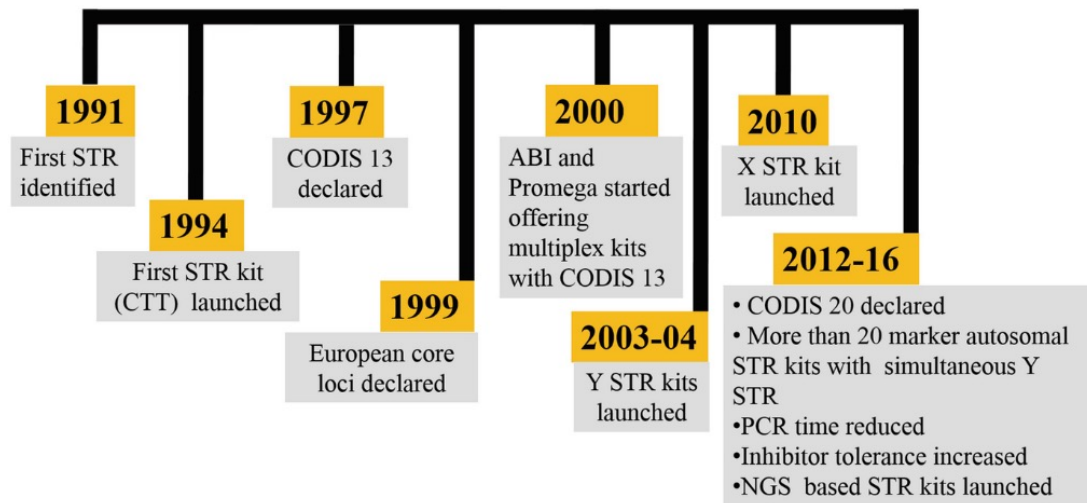
- *See Crawford v. Washington*, 541 U.S. 36 (2004) and *Williams v. Illinois*, 132 S. Ct. 2221 (2012).
- Ideally, produce every analyst who participated in testing.
- In cold case, if original analyst(s) are not available, consider retesting and rely at trial on results of new testing.
- Negotiate stipulation to testing results if possible.
- If best option to admit crucial evidence is through analyst who did not personally conduct / observe testing, be careful to pose questions as hypotheticals under FRE 703 and offer testifying expert's independent conclusion.

Discussion of Unavailability of Prior Analyst

- The type of DNA technology is key to determining if another analyst may “step in” for the prior analyst.
- Is it technology currently being used by the lab or is it legacy technology?
- Much easier to find another analyst qualified in current technology.
 - Who performed the technical review of the case? Technical reviewer is a qualified analyst that performed an evaluation of the reports, data, case file information, and other documents to ensure there is an appropriate and sufficient basis for the scientific conclusions.
 - Other options – Technical Leader or another qualified analyst.

Discussion of Unavailability of Prior Analyst

- Legacy technology is defined as a DNA typing kit, platform or technology that is no longer in use by the laboratory.



Shrivastava P., Dash H.R., Kumawat R.K., Shrivastava A., Imam J. (2018) STR Typing and Available Kits. In: Dash H., Shrivastava P., Mohapatra B., Das S. (eds) DNA Fingerprinting: Advancements and Future Endeavors. Springer, Singapore. https://doi.org/10.1007/978-981-13-1583-1_4

Discussion of Unavailability of Prior Analyst

- Laboratory accreditation standards require labs to have a procedure to address reinterpretation of legacy data – check with your crime lab.
 - Reevaluating allele calls, changing assumptions or removing alleles from stats are all considered reinterpretation.
- Lucky enough to find analyst who was previously qualified in the legacy technology – maintain/reestablish technical skills and knowledge.
 - May include reviewing laboratory validation and technical procedures, reviewing previous training or re-training, or completing an interpretation competency test.
 - Technical Leader review/authorization for reinterpretation for no more than two years.
- Analyst who has NOT been previously qualified in the legacy technology – maintain/reestablish technical skills and knowledge.
 - Requires training
 - At a minimum - reviewing laboratory validation and technical procedures relevant to the original interpretation of the legacy data.
 - Completion of competency testing of legacy data interpretation.

Discussion of Unavailability of Prior Analyst

Lots of hoops to jump through.

May be best to re-test with current technology and a current analyst.

- Depends on amount of evidence that remains.

Consult with lab personnel to determine best path forward.

Considerations for Additional Testing – Crime Lab Perspective

- Quantity and quality of evidence is significant.
- Even if the critical piece of evidence was consumed during prior testing, DNA extracts and other byproducts of previous testing may be available.
- What technology is available at your crime lab?
- Is outsourcing an option if local crime lab cannot do the testing?
- Consider testing evidence that was previously submitted but not tested.

Then and Now

Availability of New Technology

Case Review: Past Practices and Potential Present Results

- Sexual assault kits not submitted: misapprehension of need to test in cases where offender is known to the victim or may be impacted by trauma and was unavailable.
- Earlier considerations of time frame when medical forensic evidence would likely yield results.
- Mixtures that were not previously resolvable involving single or multiple perpetrators.
- Physical evidence which was not submitted and can now be tested.

Advancements Since Original Testing

Newer collection methods such as M-vac

More sensitive quantification, amplification kits and instrumentation

Improved mixture interpretation

Increased CODIS database size

New technology beyond STRs

Earlier Limitations: Mixtures

- What were our options with mixtures early on?
- Distinguishable mixtures
 - Major/minor or deduced profiles that could be compared to a reference standard and/or uploaded to CODIS.
- Indistinguishable mixtures
 - Obtained data but could not make conclusions.
 - Could be considered “throwing away” good data today.
 - Older laboratory reports may be filled with this type of data.

Mixtures: Today

- Improved mixture interpretation methods based on SWGDAM guidelines.
 - Assumptions of number of contributors, thresholds, etc.
 - Still time consuming.
- Distinguishable mixtures
 - Major/minor or deduced profiles.
- Indistinguishable mixtures
 - Probabilistic genotyping software may be an option now.

Probabilistic Genotyping

- Computer can assess multitudes of proposed profiles on how closely they resemble or can explain an observed DNA mixture profile.
- Calculate the probabilities of the observed DNA evidence, assuming the DNA either originated from the suspect (prosecution's proposition) or from an unknown donor (defense's proposition).
 - Expressed as a likelihood ratio demonstrating the weight of the findings and the strength of one proposition over the other.
- Resolve the possible components of highly complex DNA mixtures far better than manual methods.

Probabilistic Genotyping

- Can't just load the software on a computer and hit GO!
- Extensive validation PER AMPLIFICATION KIT
 - Single source profiles, partial profiles, mixtures.
 - Sensitivity, specificity and precision.
- Training of lab personnel
 - How it works.
 - Interpretation of the data generated by the software.
 - How to testify to the results at trial or even at an admissibility hearing.

Probabilistic Genotyping

- Does your crime lab use this, or would you need to outsource to another lab for deconvolution of previously unresolvable mixtures?
 - About one half of crime labs have PG online for use with others who have purchased and are in the process of getting it online.
- Remember PG cannot interpret all DNA mixtures – some are too complex or have too little information.
 - Depend on trained lab analysts to understand the limitations and provide guidance to reduce the chance that the software output is not supportable.
- Could expect some arguments to “black box” approach in court.
 - May require requesting software source codes.

Other Advancements/Technologies to Consider

Y-STRs

Forensic Genetic Genealogy

DNA Phenotyping

Ideal Scenarios for Y-STRs

- Y-STR technology does not react with female DNA.
- Failure to obtain a male DNA profile using traditional STR profile or the STR results are minimal or inconclusive, especially in the presence of high levels of female DNA.
 - Current DNA quantitation technology provides a ratio that estimates the amount of male DNA vs. total human DNA in a DNA sample.
- Extended time between the crime and evidence collection especially in sexual assaults.
- Trace amounts of male DNA in sexual assaults such as:
 - Digital penetration.
 - Sterile or vasectomized male perpetrators or when there is no ejaculation.
 - Fingernail scrapings from sexual assault victims.
- Resolve male – male mixtures.

Forensic Genetic Genealogy

Combination of genetic analysis with traditional historical and genealogical research.

Results uploaded to large public genetic genealogy databases.

Designed to help generate investigative leads by identifying close and distant relatives with DNA in common with an unknown source.

- No suspects, no database hits, narrow down suspect lists, help solve human remains/missing persons cases.

DNA Phenotyping

Prediction of physical attributes and ancestry from DNA.

- Requires a single source sample with high quality/quantity of DNA.

Also designed to help generate investigative leads.

- No suspects, no database hits, narrow down suspect lists, help solve human remains/missing persons cases.

Forensic Genetic Genealogy and DNA Phenotyping: Crime Lab Involvement

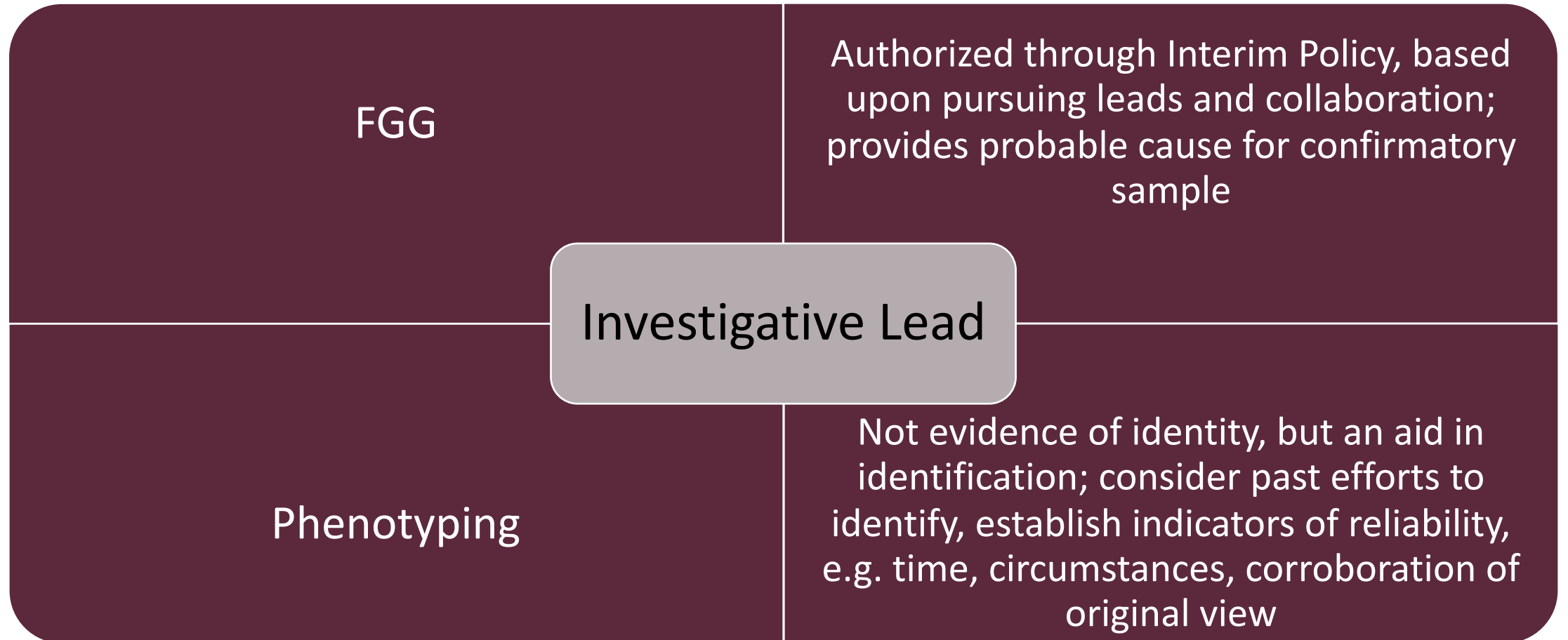
Not routinely performed at crime lab.

- Outsource to private companies.

Crime lab will test confirmation samples.

- Using traditional STR testing and comparison to evidence items.

DNA Technology: A Beginning



Case Review Wrap Up




Assess the availability of the evidence.




Evaluate what testing has been performed and the value of those results.




Take a second look at the evidence to consider if more testing is required.



Gather information to make an informed decision about further testing– consider consumption, timing, personnel, current/advanced technology, funds, etc.



Remember, it's a group decision – all disciplines have valuable input.




At the end of the day, you still may not get the results you want and may have to put this case on hold.

Case Review: Informing Effective Strategies

- Identify and test evidence to help re-create the reality of the crime.
- Address any issues of missing chain of custody witnesses: consider identification of handwriting, policies, supporting testimony.
- If earlier laboratory analyst is unavailable, pursue other options as early as possible.
- At all times, establish due diligence with all investigatory efforts, including re-submission to CODIS and use of advanced technology.

Recognize the value of collaboration at all stages!

Going Forward

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- 1. Conduct effective cold case review with multidisciplinary collaboration.
 - 2. Identify the probative value of physical and forensic evidence, tested and untested.
 - 3. Ensure ongoing discussion among prosecutor, investigator, and crime laboratory to determine potential for testing and prioritization.
 - 4. Recognize advancements in DNA technology and fully develop evidentiary potential.

Contact Information



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