

ARIZONA FORENSIC SCIENCE ACADEMY



Ronald Reinstein

Chairman, Arizona Forensic Services
Advisory Committee

What is AFSA?

An innovative course that brings prosecutors and defense attorneys together to learn about the scientific issues which are presented in criminal cases from the experts who actually do the science



How is this different?

- Prosecutors and defense attorneys combined
- Science presented by experts from accredited/recognized labs
- Forum encouraging open discussion and questioning from all sides



Who is involved?

- Prosecutors from municipal, county and state agencies
- Defense attorneys from municipal and county agencies, private practice, and organizations such as the Innocence Project
- Topic experts from municipal, county, and state agencies



Who organized this?

- Board members come from:
 - The Arizona Attorney General's Office
 - The Phoenix PD Crime Laboratory
 - The Maricopa County Office of the Medical Examiner
 - The Maricopa County Office of the Legal Advocate
 - The Maricopa County Attorney's Office
 - The Arizona Department of Public Safety Crime Lab
 - The Phoenix Public Defender's Office
 - The Arizona Prosecuting Attorneys Advisory Council
 - The Arizona Criminal Justice Commission



What is the format?

- Held at the Maricopa County Forensic Science Center in Phoenix
- Two types of academies
 - Basic
 - Advanced



What is the format?

- Basic Academy –
 - Consists of 11 3-hour sessions
 - Gives comprehensive overviews of the various topics
 - Includes hands-on opportunities and lab tours
 - Attorneys are required to attend a minimum of 80% of the sessions



What is the format?

- Advanced Academy –
 - Delves deeper into several of topics covered in Basic
 - Includes more discussion on court issues and landmark cases relevant to the topics
 - Includes hands-on opportunities
 - Attorneys are required to attend a minimum of 80% of the sessions



What are the topics?

- Controlled substances
- Toxicology
- Crime scene investigation
- Forensic biology and DNA
- Firearms analysis
- Latent print comparisons
- Questioned documents
- Arson and trace evidence
- Death investigations
- Digital forensics
- Daubert in Arizona
- Ethics



What are the results?

- Improved communication, cooperation and understanding among agencies
- Creation of a forum where unbiased information can be presented and discussed by all relevant parties



What are the results?

- Increased comfort for experts in dealing with legal issues/questions
- Increased comfort for attorneys in approaching scientific issues



Where are things going from here?

- Continuing to put on basic and advanced academies as demand warrants
- Bringing additional agencies into the fold to increase awareness and involvement



Where are things going from here?

- Discussion of the creation of a Southern Arizona version of AFSA
- Alumni group offering continuing education opportunities
 - Historical perspective on Frye and Daubert



Where are things going from here?

- Forensic Science Speakers Series bringing in nationally recognized speakers to present to scientists from local crime labs
 - First Series held Spring 2012
 - Ethics in Forensics, Uncertainty of Measurement, and DNA Mixture Interpretation
 - Second Series scheduled for Fall 2012
 - Leadership in Forensics, Emerging Drugs & Bath Salts, and Validation of ABI's 3500 Genetic Analyzers



Arizona DNA Report Standardization Project

Arizona Department of Public Safety
Phoenix Police Department
Scottsdale Police Department
Mesa Police Department
Tucson Police Department



Project Goals

DNA Technical Leaders (TL) from Arizona were tasked with a standardization project consisting of three main goals:

1. Uniformity of DNA technical reports in regard to content and sequence of information contained in reports,
2. Consensus of wording in DNA technical reports in regards to statistical model used, and
3. Consistent definitions for terminology used in DNA technical reports.



Project Timeline

- This group of TL's initially met on July 19, 2011 and have met an additional 5 times to strive for a successful conclusion to this project.

September 8, 2011

November 22, 2011

February 16, 2011

May 8, 2012

July 17, 2012

October 2012

Project Completion by January 2013



Project Overview: Step 1

Autosomal & Single Source

- The first step of the project consisted of composing a mock homicide case consisting of single source profiles.
- Prior to the meeting, all TL's were provided electropherograms and an allele summary table, and asked to interpret this information and compose a DNA technical report as they would at their laboratory and distribute it too all other participating members of the group.
- These reports were used to compare the content and sequence of information among laboratories and establish uniformity.



Project Overview: Step 1

Autosomal & Single Source

The following criteria were evaluated on the varying laboratory's DNA technical reports for single source profiles:

- Items listed with a brief description
- Results section that contain loci
- Conclusion section with statistics using the word “match”
- RMP used with approximation
- CODIS disposition statement
- Disposition of evidence statement
- Included chain of custody
- Exclusion statement for non-matches
- Report organized in order of analysis (Items, results, conclusions, disposition of evidence)



Project Overview: Step 2

Autosomal, Y-STR, & Partial Match

- The next type of case examined by the group was a mock sexual assault case involving both autosomal and Y-STR's. The case consisted of both a match and a partial match for both technologies.
- Once again, electropherograms and an allele summary table was provided prior to the meeting, and each TL generated a report based on their laboratory's guidelines.



Project Overview: Step 2

Autosomal, Y-STR, & Partial Match

The following criteria were evaluated on the varying laboratory's DNA technical reports for sexual assault profiles:

- Items separated into fractions
- Theta value used for RMP
- Partial results listing conclusive loci
- Partial results listing inconclusive loci or loci with no results
- Female, epi, or non-sperm fraction included in report
- Number of loci used for partial Y-STR profile
- Y-STR profile statistics wording
- Database used for YSTR's
- CODIS disposition statement



Project Overview: Step 3

Autosomal & 2 Person Mixture

- The last type of case examined by the group was a non-intimate, two person mixture. The mock homicide case consisted of both a match and a partial match.
- Each TL was provided electropherograms and an allele summary table prior to the meeting, and generated a report based on their laboratory's guidelines which was distributed to each participating member of the group.



Project Overview: Step 3

Autosomal & 2 Person Mixture

The following criteria were evaluated on the varying laboratory's DNA technical reports for non-intimate, two person mixture profiles:

- Minimum number of contributors listed for full profile match
- Wording for inclusion
- Statistics used for full profile match
- Minimum number of contributors listed for partial profile match
- Partial results listing number or name of conclusive loci
- Partial results listing inconclusive loci or loci with no results
- Statistics used for partial profile match
- CODIS disposition statement



Items of Consent

- Reports will have a CODIS disposition statement.
- If a female fraction is reported, it will be referred to as epi or non-sperm fraction.
- If the female fraction is probative, it is required to be reported; otherwise it is at the lab's discretion as to whether it is included in the report.
- When listing the conclusive loci on a partial match, at a minimum, only the number of loci need to be listed (it is not required to list the loci by name).
- Likewise, when listing inconclusive or loci with no results obtained on a partial profile, only the number of loci are required to be reported.



Items of Consent (con't)

- A statement on the number of contributors will be made on an interpretable, mixed profile.
- At a minimum, the most complete profile for a single source Y-STR profile will be reported for all laboratories.
- The statistical wording for a Y-STR single source match would include the wording “not seen” or “not been observed” in the database, and the wording of 95% confidence interval would not be included in the conclusion.
- If the Y-STR profile had not been seen in the database, then only the number of times the profile had been observed in each racial group would be reported.



Items of Impasse

- Some laboratories include allele tables with their reports, while some do not. It will be up to the lab's discretion as to whether they are included in the report.
- The theta value used for RMP calculations varied between laboratories depending on what racial groups are frequently calculated (i.e. American Indians).
- There is not a consensus on the statistical database used for Y-STRs; and therefore, both the AB and USYSTR database will be continued to be used by the DNA laboratories in the State of Arizona.
- An agreement could not be reached on statistical calculations used for both full and partial matches involving mixtures. The determination on which statistical calculation to use is up to the lab's discretion and policies.



Definitions

- A list of all terminology used in DNA technical reports from all represented laboratories were accumulated into a single list.
- These terms were defined by the Phoenix Police Department Crime Laboratory and entitled as a “Field Guide” to the Arizona DNA reports.
- An additional section is pending which will include statistical terminology.



Serology

- Members of the project believed the project should expand to include serology.
- A serology questionnaire, composed by the Phoenix PD Lab, was distributed to participating members of the group, which covered types of serology testing to include specific presumptive and confirmatory tests.
- At the next meeting, these tests were discussed for consistency among laboratories.
- An additional questionnaire was then distributed that examined how laboratories reported serology results.
- The serology phase of the project is still in process.



Conclusion

- All major type of DNA reports have been examined.
- More similarities have been encountered among laboratories than differences.
- Serology is the last phase of project.
- Next meeting is anticipated in October.
- Expected end date of project is before the end of 2012.



Questions?

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