

# Courage Comes First



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**Texas Forensic Science Commission**  
**NIST Error Management Symposium**  
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# Texas Forensic Science Commission

- Created by Legislature in 2005 but not funded until 2007.
- 9 Commissioners: 7 scientists, 2 lawyers
- Responsible for:
  - Investigating allegations of negligence and misconduct including lab self-disclosures.
  - Managing crime laboratory accreditation program (approximately 100 laboratories)
  - Developing and administering licensing program (starts January 1, 2019)

# Roadmap: What Works for Us

- Transparency
- Accountability (not to be confused with blame)
- Trustworthy Partnerships
- Courage

The challenge:



# WHO IS YOUR HERO?





# Nearly Destroyed by Our First Case

- December 1991: House fire kills 1-year old twins and a 2-year old. Father is the only one who makes it out alive. Charged with murder.
- February 1992: NFPA 921 is published.
- August 1992: Father is sentenced to death.
- February 2004: Father is executed. Four days prior, clemency petition filed and denied.
- June 2005: FSC established. Funded 2007.
- August 2008: National IP files complaint.

# Nearly Destroyed by Our First Case

- September 2010: SFMO (Maldonado) stands by original investigation; defends the work.
- April 2011: Commission issues report recognizing changed incendiary indicators. No comment on guilt or innocence.
- One key recommendation was a retroactive review of cases.
- October 2011: SFMO agrees (reluctantly).
- December 2011: SFMO resigns.
- June 2012: Texas hires new SFMO.

# Examples of SFMO Action

- Development of Science Advisory Workgroup
- Notification on 3 cases that should have been undetermined, one of which resulted in exoneration.
- Complete retraining of SFMO staff.
- Re-tooling of SFMO office.
- Regional traveling intensive training programs.
- Spreading the message nationally.

# Austin American-Statesman

**American-Statesman:** You've made a mark reviewing old arson cases. You've done so by working with the Innocence Project of Texas to identify suspect convictions. From a prosecutor's point of view, are you working with the enemy?

**Chris Connealy:** Well, I can't speak for them but I don't look at the Innocence Project as the enemy. We have the same goal, to make sure justice is served. Certainly prosecutors have that same goal as well.

Working with the Innocence Project is the right thing to do. Is it normal? No. Has it been embraced by folks who are my peers? Absolutely not. But I think a lot more agree and understand why we're doing it. And until trust is violated between us or them, why not work together? We need to do all the due diligence on our part to make sure the public has confidence that we are following best practices for fire investigations. We are meeting the current science. We are cognizant of the current science.

# Austin American-Statesman

- **As a former firefighter and fire chief (in Houston and Cedar Park), what have these reviews taught you?**
- That you have to stay current with best practices. It's hard to get in trouble following best practices, and that means following the standards that are out there and training your people about what they do out in the field, and you lead or manage from that approach. **Those things that get measured get better.** I'm a big fan of performance measures. I'm a big believer in third-party validation. **You can brag on yourself all day long, but I'd rather someone else say it.**

# Recognition

- Texan of the Year Finalist 2013 (DMN)
- Public Official of the Year (Governing Magazine)
- President's Hall of Fame Award from the National Association of State Fire Marshals
- International Association of Arson Investigators (Dec. 2015)

**WWCD?**

# Texas Crime Labs: Transparency

## TEXAS DPS

- Statement of Qualifications
- *Disclosure Form*
- Arose due to recognition of disclosure obligations including the Michael Morton Act and TX Disciplinary Rules (broader than *Brady*).
- Disciplinary issues were easy.
- But what about quality events in the laboratory?

# The Case that Forced the Issue

- Blood alcohol examiner in Garland lab.
- Had a switched sample in 2013.
- Identified by submitting agencies.
- Recognized and corrected by analyst; new reports issued; QAP generated.
- Not reported to TFSC because not considered to be professional negligence or misconduct (at the time; today it would have been disclosed).

# The Case that Forced the Issue

- QAP on switched sample received during discovery and circulated w/in local defense bar.
- Analyst asked about switched sample on the stand.
- Provides answers that were not forthcoming (tube vs. vial) and judge advises him to take the 5<sup>th</sup>.
- Testimony is continued by deposition; result is that multiple counties decline to sponsor analyst.
- Prompts discussion with client base about disclosure of quality events.

# What DPS Could Have Said



# What They Did Say

- We will post every QAP we have ever had online, sorted by laboratory (HFSC, Bexar Co. were already doing this).
- We will develop a **Disclosure Form** for every analyst in the laboratory and it will be attached to every report.
- **It will include:** any criminal conviction; sustained disciplinary actions; sustained complaints; violation of department policy; performance improvement plans; Class 1 or 2 failed internal or external proficiency tests; unsatisfactory completion of a competency set; incorrect testing conclusions; sample switches; complaints against the analyst accepted for review by the TFSC; any quality/corrective action plan involving the analyst that was determined to be a significant quality event.

# The Choice



# Texas Crime Labs: Accountability (NOT BLAME)

- The crime laboratory self-disclosure program
- Examples of Investigations:
  - Dry-labbing in drug chemistry section.
  - Theft of controlled substances.
  - Not testing all evidence in SA kits.
  - Crime scene mistakes.
- No Further Action:
  - Over 25 self-disclosures where no further action needed.
  - Range from erroneous latent ID's resulting in dismissal of analyst to malfunctioning of bar coding device.

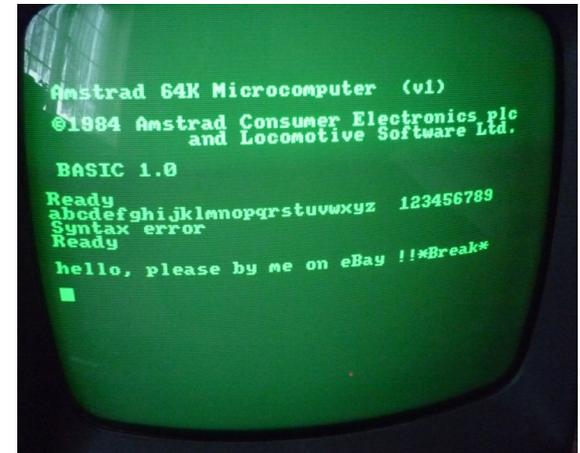
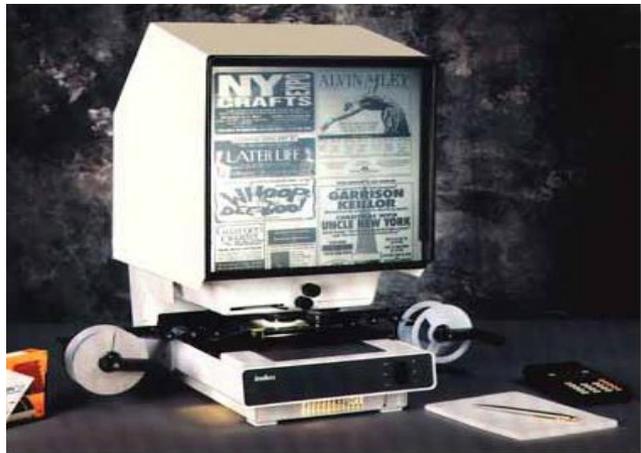


# HM Review:

## Building Trustworthy Partnerships

- Spring 2013: Retroactive review of hair microscopy cases brought to our attention.
- Resulted from similar review of FBI cases.
- Commission asked the crime laboratories to search for old cases.
- January 2014 lab directors: “we have an ethical and professional obligation as scientists, to take appropriate action if there has been a miscarriage of justice.”
- First time laboratories officially partnered with IPOT. Review team included mix of stakeholders.

# THE CHALLENGE OF GATHERING CASES



# Hair Microscopy Review: Sampling

- 287 Positive Probative Association cases from 693 Lab Reports
- 120 LexisNexis/Westlaw Cases
- Of 813 total, 79 total cases for record review (trial convictions). At least 29 disposed by plea.

## **Transcript Review**

62 where record either received or reviewed; 17 where no record obtained or available or reviewed

50 records reviewed to date by Hair Review Team

22 notifications

28 cases with no notification

3 examiners team recommended review of ALL cases

## PENDING QUESTIONS UNDER CONSIDERATION

- Is sample size large enough?
- Is it more efficient/effective to ask for more cases?
- Or should we continue with 3 examiner (full review)?
- And leave the review team process open for anyone else upon request?

# Texas Crime Labs: Courage

- *Small example*: Latent print check-in
- **HUGE EXAMPLE**: DNA mixture case review.

# THE INTERPRETIVE CHALLENGE

- Mixtures have become more complex as technology advances and more touch DNA is submitted for analysis. For single source samples & those for which a major component can be teased out, RMP can be used.
- BUT, when you have a mixture and no clear major contributor, the statistic used in the United States was almost always the Combined Probability of Inclusion (CPI).
- There was tremendous misunderstanding (and still is) about how to properly interpret complex mixtures. *See e.g.*, two studies by NIST – MIX05 and MIX13 (71 out of 101 labs used CPI or CPE for complex mixture interpretation).
- CPI has been particularly problematic – a main principle of is that it should not be used for loci where allele dropout is possible. The labs did not always understand how to identify and address the possibility of allele dropout.
- In 2010, SWGDAM issued guidelines to help labs flag dropout. But not all labs adopted guidelines in a timely manner, and not all labs understood the guidelines.

## D.N.A. BOX 13.1

### URBAN LEGENDS OF CPI

Urban legends are funny (or sometimes horrifying) stories that spread quickly, often via email. While they are seldom based in reality, urban legends often reflect the paranoia of the population that perpetuates them. In recent years a number of misconceptions have arisen within the forensic DNA community surrounding the purpose and practice of the combined probability of inclusion (CPI) statistic in DNA mixture analysis.

In trying to describe problems with the application of CPI to complex mixtures, I have come up with several urban legends that can be associated with this approach to DNA mixture analysis.

1. The number of contributors to a mixture does not matter.
2. It is okay to report “conservative” numbers like 1 in 10.
3. CPI provides a true and relevant statement to aid investigators and the court.
4. CPI is easy to understand for non-DNA users of information.
5. It is okay to apply CPI stats without worrying about relative peak heights for alleles.
6. If all peaks at a locus are above the established stochastic threshold, then the locus is safe to use.
7. It is okay to apply CPI without thinking about the mixture because you assume nothing.
8. Suspect-driven CPI (where the comparison of each suspect results in a different statistical result) is fine.
9. CPI works fine even if potential relatives are in the mixture.
10. It is okay to just consider the presence of potential donor alleles.

Brief explanations of each are provided in the chapter.

*Source:* Author's presentation at the DNA Technical Leaders Summit held in Norman, Oklahoma on November 20, 2013. For more on the concept of urban legends, see [http://en.wikipedia.org/wiki/Urban\\_Legend](http://en.wikipedia.org/wiki/Urban_Legend) and <http://www.snopes.com/>.

# HOW DID TEXAS LEARN WE HAD AN ISSUE WITH CPI? UNINTENDED CONSEQUENCES OF MAY 2015 FBI NOTICE

- FBI population data was generated in the 1990s.
- Used as the basis for statistical calculations by most labs.
- Minor errors occurred during typing in 51 of ~30K alleles typed. Errors were human and technology limitations.
- FBI and state partners addressed potential impact with population studies. State partners (like DPS) offered to recalculate in an abundance of caution and upon request.
- The statistical impact of FBI errors should have been insignificant no matter how you look at it.

# TEXAS DEPARTMENT OF PUBLIC SAFETY

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June 30, 2015

The Texas Department of Public Safety Crime Laboratory system was informed by the Federal Bureau of Investigation in May 2015 of errors in the FBI-developed population database. This database has been used by the Texas DPS Crime Laboratory system as well as many other crime laboratories across the country for calculating match statistics in criminal investigations and other types of human identification applications since 1999.

Upon notification, the forensic DNA community immediately began corrective action. During implementation of corrective measures, minor discrepancies were discovered in additional data used exclusively by the Texas Department of Public Safety. All of the errors have been corrected and the changes have empirically demonstrated minimal impact on the calculations used to determine the significance of an association. **Further, the database corrections have no impact on the inclusion or exclusion of victims or defendants in any result.**

If requested in writing, the Texas DPS Crime Laboratory System will recalculate and report statistics previously reported in individual cases.

If you have any questions, please contact your local crime laboratory.

A handwritten signature in blue ink that reads "Brady W Mills".

Brady W Mills  
Deputy Assistant Director  
Law Enforcement Support

# THE ASK....

- Some prosecutors asked for recalculations in their pending cases, in an abundance of caution.
- AND Results were not what they expected.
- Examples include significant changes in some CPI statistics, like from 1 in 1.4 billion to 1 in 36 or 1 in 4,000 to inconclusive.
- Prosecutors wanted to know what happened??
- **The labs answered by explaining their mixture protocols had changed.**
- The response went something like....

# REACTION OF MOST PROSECUTORS



One response could have been....



# SOME ARGUMENTS



- SWGDAM issues guidelines, not rules.
- Science changes; SWGDAM not retroactive.
- There is a lot of confusion in the community; the literature is not clear.
- We can't look at old cases because it is just not possible to validate an ST on an old kit/instrument.
- We followed our protocol.
- We were audited/assessed "x" times.
- Probabilistic Genotyping will fix it.

# THE TEXAS APPROACH: ADDRESSING POTENTIALLY AFFECTED CASES COLLABORATIVELY



- Commission (with Dr. Budowle and other expert help) has worked with labs to ensure observation of key principle of CPI and revise protocols to be as robust as possible.
- Dr. Budowle reviewed protocols and case examples. Further work only necessary in one lab (APD DNA Lab).
- Also created statewide triage system to identify cases that may be impacted. Steps: (1) Labs generate mixture lists. (2) Prosecutors determine which cases had convictions and send notice. (3) Defense team receives inmate requests. Cases screened for materiality. (4) Team asks lab for recalculations where necessary. (5) Lawyers appointed to file writs or Chapter 64 motions but only where the statistical analysis changed significantly and the DNA may have been material.

Labs generate DNA mixture lists.  
Commission combines into master list.

**COLOR KEY:**  
LAB ACTION  
PROSECUTOR ACTION  
DEFENDANT/DEFENSE COUNSEL ACTION  
FORENSIC SCIENCE COMMISSION ACTION  
COURT

**PRIORITIES:**  
1. CAPITAL  
2. CURRENTLY INCARCERATED  
3. PAROLE/SUPERVISION  
4. OUT OF SYSTEM



\*In some cases, counsel may be appointed to fulfill function of defense triage team

# PARTING THOUGHTS



# QUESTIONS?



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Texas Forensic Science Commission

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