

# USING A VALIDATION STUDY MODEL TO MINIMIZE WRONGFUL CONVICTIONS

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What can the court system do to adequately ensure that DNA evidence is not being used to convict innocent people?



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### Secondary and subsequent DNA transfer during criminal investigation



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- “With the introduction of new multiplexes and instrumentation...there has recently been a rapid change in the technology that has greatly increased sensitivity of detection so that a DNA profile can routinely be obtained from only a few cells. Research to assess the risks of passive transfer has not kept pace with this development; hence the ‘hidden’ risk of innocent DNA transfer at the crime-scene is currently not properly understood.”

- ▶ 2019 AAFS Annual Meeting, Workshop 10, DNA Mixture Interpretation Principles: Observations From a National Institute of Standards and Technology (NIST) Scientific Foundation Review (Sheila Willis presentation)
- ▶ Peter Gill, Misleading DNA Evidence (2014)
- ▶ NIST DNA Mixture Interpretation: A Scientific Foundation Review (Draft Report 2021) – Chapter 5

**DNA Mixture Interpretation:**  
*A NIST Scientific Foundation Review*

Key takeaway 5.4 “DNA statistical results such as a subsample likelihood ratio do not provide information about how or when DNA was transferred, or whether it is relevant to a case. **Therefore using the likelihood ratio as a stand alone number without context can be misleading.**”

# DNA Evidence & Innocent Suspects

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- Farah Jama
- Lukis Anderson
- Adam Scott
- Kevin Brown
- Amanda Knox/Raffeale Sollecito

“For every error discovered, there are an unknown number that are undiscovered.” Gill, Misleading DNA Evidence, at p. 21.

# OPTIONS FOR THE COURTS

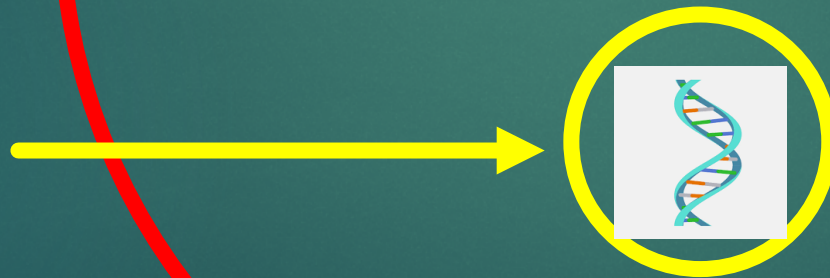
1. DO NOTHING
2. ALLOW EXPERT OPINION TESTIMONY ON ACTIVITY-LEVEL PROPOSITIONS
3. RELY ON PROCEDURAL SAFEGUARDS SHORT OF EXCLUSION, I.E., CAUTIONARY JURY INSTRUCTIONS, DEFENSE EXPERT TESTIMONY
4. EXCLUDE DNA EVIDENCE IN SITUATIONS WHERE THE CASE CIRCUMSTANCES DEMONSTRATE AN UNREASONABLE RISK THAT THE DNA IS NOT ASSOCIATED WITH THE CRIME.

**What can the court system do to adequately ensure that DNA evidence is not being used to convict innocent people?**



▶ Criminal Justice System

DNA Evidence



# GOALS

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**Distinguish true positives from true negatives**

Laboratory: Distinguish between true contributor and true non-contributor

Criminal Justice System: Distinguish between guilty and innocent

# METHOD

Laboratory: Standard Operating Procedures

Criminal Justice System: Constitutional Rules, Rules of Procedure, Rules of Evidence, Statutes, Case Law

## Criminal Justice System:

“[A] fundamental value determination of our society [is] that it is far worse to convict an innocent man than to let a guilty man go free.” In re Winship, 397 U.S. 358, 372 (1970)(Harlan, J. concurring)

“The maxim of the law is ... that it is better that ninety-nine ... offenders should escape, than that one innocent man should be condemned.” Schlup v. Delo, 513 U.S. 298, 325 (1995)

# Does the method work?

Laboratory: Validation Studies

Criminal Justice System: ???

# Red Flags

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PRESENTATION TITLE

Wrongful Conviction Research:

Brandon Garrett, Judging Innocence (2008)

“The Elephant in the Room” workshop series published in the Albany Law review (2016)

John Morgan, *Forensic Testimony Archeology: Analysis of Exoneration Cases and its implications for forensic science testimony and communications* (2023)

# Red Flags

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PRESENTATION FILE

Gross, et al., *Rate of false convictions of criminal defendants who are sentenced to death*, National Academy of Sciences (2014)

- ▶ estimated that at least 4.1% of inmates sentenced to death would be exonerated if the execution was indefinitely delayed.
- ▶ Expressed that death cases are not representative of all of the cases in the Criminal Justice System and that the 4.1% was likely an underestimate of the actual rate of wrongful convictions

# Red Flags

Jury composition:

“The evidence regarding the impact of the jury pool is straightforward and striking...[I]n cases with no blacks in the jury pool, black defendants are convicted at an 81% rate and white defendants at a 66% rate. When the jury pool includes at least one black potential juror, conviction rates are almost identical: 71% for black defendants and 73% for white defendants.”

Anwar, et al., *The impact of jury race in criminal Trial*, 127 *Quarterly Journal of Economics* 1017, (2012)



# Red Flags

## Limiting Instructions:

Deliberating groups were obedient to judge's limiting instruction concerning prior convictions but convicted persons at a higher rate when they knew about a person's prior record

Vidmar & Hans, American Juries: the Verdict, p. 162 (2007)

# Red Flags

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PRESENTATION TITLE

“The reliability test adopted in Rule 702 appears, at least in written appellate opinions, to be rarely used in practice to test reliability and, when used, it tends to exclude defense witnesses.”

Brandon L. Garrett & M. Chris Fabricant, *The Myth of the Reliability Test*, 86 Fordham L. Rev. 1559, 1581 (2018).

# Red Flags

“To be blunt: expert testimony in civil cases is habitually and stringently assessed under the Daubert factors. The same cannot be said of expert testimony in criminal cases. Rather, criminal cases favor admissibility over a rigorous assessment of reliability (the so called ‘weight v. admissibility’ argument).”

Jessica G. Cino, *An Uncivil Action: Criminalizing Daubert in Procedure and Practice to Avoid Wrongful Convictions*, 119 W. Va. L. Rev. 651, 656 (2016)

# Red Flags

“An analysis of post-Daubert decisions demonstrates that whereas civil defendants prevail in their Daubert challenges, most of the time criminal defendants almost always lose their challenges to government proffers. But when the prosecutor challenges a criminal defendant’s expert evidence, the evidence is almost always kept out at trial.”

Peter J. Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice and Some Suggested Reforms*, 95 Am. J. Pub. Health S 107, S109 (2005)

# OPTIONS FOR THE COURTS

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# VALIDATION

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1. GROUND TRUTH SAMPLES
2. SAMPLES BEAR THE CHARACTERISTICS OF WHAT WE EXPECT TO SEE IN CASE WORK
3. SAMPLES SHOULD ACCOUNT FOR ALL OF THE VARIABLES THAT CAN IMPACT THE ACCURACY OF A CONCLUSION IN CASEWORK
4. THE STUDY SHOULD DETERMINE WHAT CIRCUMSTANCES CAUSE THE METHOD TO FAIL
5. HIGHER DEGREES OF VALIDATION ARE REQUIRED WHEN THE CONSEQUENCE OF A FAILURE IS HIGH

# BENEFITS OF MOCK JURY STUDIES

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- We can use fact scenarios where that approximate ground truth.
- We can control mock jurors' exposure to different conditions
- We can assess whether specific procedures help mock jurors get the correct result

# Future research

1. Look at circumstances where the system failed or where the recovery of Irrelevant DNA could very easily have caused the system to fail under slightly different circumstances. (Annie Le)
2. Create fact scenarios based on demonstrated instances of indirect transfer in the lab or TPPR studies



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