



PREVENTING WRONGFUL CONVICTIONS: WHY STATE
LEGISLATURES MUST TAKE THE LEAD IN REGULATING THE
ADMISSIBILITY OF FAULTY FORENSIC EVIDENCE

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ABSTRACT

The advent of DNA evidence ushered in a new era of criminal justice. With its unique ability to match a piece of biological matter to an individual source, DNA provided prosecutors with evidence of unparalleled weight in proving guilt. But DNA evidence also emerged as an unparalleled tool in asserting the innocence of a previously convicted defendant.

The exonerations of the past thirty years—particularly those based on DNA evidence—exposed traditional forensic evidence, previously thought of as infallible, as flawed and prone to causing wrongful convictions.¹ Specifically, the Innocence Project has identified 111 instances of faulty forensic evidence contributing to a wrongful conviction.² The National Registry of Wrongful Convictions identifies 735 cases as of August 5, 2022.³

* I would be remiss if I did not begin by offering my sincere thanks and gratitude to Professor George C. Thomas III. Without his instruction, guidance, and advice, this commentary would not be possible. I would also like to dedicate this commentary in memory of my father, Thomas G. Lynch, Esq.

1. The first ever DNA exoneration involved a conviction in which faulty forensic evidence was presented. See Rob Warden, *The Rape That Wasn't: The Nation's First DNA Exoneration*, BLUHM LEGAL CLINIC NW. SCH. OF L., <https://www.law.northwestern.edu/legalclinic/wrongfulconvictions/exonerations/il/gary-dotson.html> (last visited June 30, 2022); see also Gary Dotson, THE NAT'L REGISTRY OF EXONERATIONS, <https://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3186> (last visited Aug. 4, 2022).

2. *All Cases*, INNOCENCE PROJECT, <https://innocenceproject.org/all-cases/#unvalidated-or-improper-forensic-science/> (last visited Aug. 4, 2022).

3. *Browse Cases*, THE NAT'L REGISTRY OF EXONERATIONS, <https://www.law.umich.edu/special/exoneration/Pages/browse.aspx?View={B8342AE7-6520-4A32-8A06-4B326208BAF8}&FilterField1=Contributing%5F0020%5FFactors%5F0020&FilterValue1=False%20or%20Misleading%20Forensic%20Evidence> (last visited Aug. 5, 2022). As of

This commentary addresses a proposed bill in California designed to target faulty forensic evidence. First, it provides an overview of (1) documented issues with the validity of common types of forensic evidence, (2) efforts by other states to tighten the admissibility of forensic evidence or provide more liberal grounds for post-conviction relief, and (3) the questionable analysis courts have conducted in response to challenges of the admissibility of forensic evidence. This commentary concludes that state legislators must take the lead in reforming the standards for the admission and use of forensic evidence in criminal proceedings because the courts have abdicated their gatekeeping responsibility.

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August 5, 2022, the Registry lists 735 cases in which false or misleading forensic evidence played a role in conviction. *See id.* The Registry is regularly updated and the count may change accordingly. *See id.* The Registry, unlike the Innocence Project, is not limited to DNA exonerations. *See Exonerations by Year: DNA and Non-DNA*, THE NAT'L REGISTRY OF EXONERATIONS, <https://www.law.umich.edu/special/exoneration/Pages/Exoneration-by-Year.aspx> (last visited Aug. 4, 2022).

I. INTRODUCTION

California Senate Bill 938 was introduced on February 6, 2020, by State Senator Scott Wiener.⁴ The bill seeks to amend Section 802 of the state's Evidence Code and Section 1473 of the Penal Code.⁵

The pertinent section of the Evidence Code that would be amended concerns what a witness may testify to on direct examination. Section 802(a) states that “[i]n the case of an expert, this includes the expert's special knowledge, skill, experience, training, and education.”⁶ It clarified that “[a]n expert opinion based on circular reasoning is not based on matter that is a type that reasonably may be relied upon by an expert in forming an opinion upon a subject to which the expert's testimony relates.”⁷

Circular reasoning is defined in Section 802(b) as “any portion of an expert's opinion that is solely based upon the premise that the expert seeks to conclude.”⁸ It also includes “any portion of the opinion or testimony that is based upon studies, literature, data or other materials on which the expert relies . . . seeks to conclude.”⁹

Section 1473 of the Penal Code allows for a person to prosecute a writ of habeas corpus in certain circumstances, including the showing of false evidence.¹⁰ Section 1473(e)(1) would be amended to expand the definition of false evidence, which currently is limited to “opinions of experts that have either been repudiated by the expert who originally provided the opinion at a hearing or trial or that have been undermined by later scientific research or technical advances.”¹¹ It would also replace certain parts of the section to include: “scientific research, including scientific research that existed at the time expert's testimony was given, technological advances or the emergence of a reasonable dispute within the expert's relevant scientific community as to the validity of the methods or theories upon which the expert based their opinion.”¹²

4. S. 938, 2019–2020 Leg., Reg. Sess. (Cal. 2020). Senator Wiener had previously been involved with the proposal and enactment of SB 923 in 2018, which more tightly regulated eyewitness identification procedures. *SB 923 Creates Statewide Standards in CA for Eyewitness Identifications*, SHOUSE CAL. L. GRP. (Nov. 13, 2018), <https://www.shouselaw.com/ca/blog/laws/sb-923-creates-statewide-standards-in-ca-for-eyewitness-identifications/>.

5. *See generally* Cal. S. 938.

6. *Id.* sec. 1, § 802(a).

7. *Id.*

8. *Id.* § 802(b).

9. *Id.* sec. 2, § 1473(a).

10. *Id.* § 1473(e)(1).

11. *Id.*

12. *Id.*

The press release from Wiener’s office makes clear that the intent of SB 938 is to “prevent wrongful convictions resulting from faulty expert witness testimony.”¹³ The bill seeks to “ensure that expert witnesses are not making baseless claims in court and are backing up testimony with evidence based on valid methodology, research, peer-reviewed studies, and scientifically sound data.”¹⁴

II. SPECIFIC ISSUES WITH PARTICULAR FORMS OF FORENSIC EVIDENCE

The 2009 National Academy of Sciences Report (“NAS Report”) casted doubt on the scientific validity and reliability of numerous forms of forensic evidence.¹⁵ The major overlying issue common to all forms of forensic evidence—except for DNA—was that “no forensic [science] method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source.”¹⁶

13. Press Release, Senator Scott Wiener, Senator Wiener Introduces Legislation to Prevent Wrongful Convictions Resulting from Faulty Expert Witness Testimony (Feb. 7, 2020), <https://sd11.senate.ca.gov/print/677>.

14. *Id.*

15. See generally COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCIS. CMTY., NAT’L RSCH. COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (Nat’l Acad. of Scis., 2009) [hereinafter NAS Report]. The release of the NAS Report led to news reports in major publications. See Solomon Moore, *Science Found Wanting in Nation’s Crime Labs*, N.Y. TIMES (Feb. 4, 2009), <https://www.nytimes.com/2009/02/05/us/05forensics.html>; Dan Vergano, *Report: Real-World Police Forensics Don’t Resemble ‘CSI’*, ABC NEWS (Feb. 18, 2009, 10:26 PM), <https://abcnews.go.com/Technology/story?id=6910337&page=1>; Jason Felch & Maura Dolan, *Report Questions Science, Reliability of Crime Lab Evidence*, L.A. TIMES (Feb. 19, 2009, 12:00 AM), <https://www.latimes.com/archives/la-xpm-2009-feb-19-na-crime-science19-story.html>; Steve Mills, *Some Techniques Long Suspect*, CHI. TRIB. (Feb. 19, 2009), <https://www.chicagotribune.com/news/ct-xpm-2009-02-19-0902180764-story.html>; Jennifer L. Mnookin, *Clueless ‘Science’*, L.A. TIMES (Feb. 19, 2009), <https://www.latimes.com/archives/la-xpm-2009-feb-19-oe-mnookin19-story.html>.

16. NAS Report, *supra* note 15, at 7. Another notable report on forensic evidence was released by the President’s Council of Advisors on Science and Technology (“PCAST”). See EXEC. OFF. OF THE PRESIDENT, PRESIDENT’S COUNCIL OF ADVISORS ON SCI. & TECH., FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS (2016), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf [hereinafter PCAST Report]. While not as scathing as the NAS Report, the PCAST was also critical of numerous forms of forensic evidence. See generally *id.*

A. Fingerprint Analysis

The NAS Report is quite critical of fingerprint and friction ridge analysis.¹⁷ The study overviews the examination technique used for fingerprint analysis, which is known as ACE-V:¹⁸ an acronym for analysis, comparison, evaluation, and verification.¹⁹

The NAS Report criticizes the ACE-V method largely based on the subjectivity present throughout the process.²⁰ It is noted that assessment is “based largely on human interpretation” and that the method “does not specify particular measurements or a standard test protocol and examiners must make subjective assessments throughout.”²¹ Declaring a match is a subjective assessment that is not “repeatable from examiner to examiner.”²² It is even noted that “experienced examiners do not necessarily agree with even their own past conclusions.”²³ The NAS Report concluded its evaluation of fingerprint evidence with a biting

17. See NAS Report, *supra* note 15, at 142. A notable and highly publicized case involving an incorrect fingerprint match was that of Brandon Mayfield, arising from the Madrid Train bombings. See Elaine Sciolino, *Bombings in Madrid: The Attack; 10 Bombs Shatter Trains in Madrid, Killing 192*, N.Y. TIMES (Mar. 12, 2004), <https://www.nytimes.com/2004/03/12/world/bombings-in-madrid-the-attack-10-bombs-shatter-trains-in-madrid-killing-192.html>. FBI examiners initially matched a latent print to Mayfield but later withdrew that finding after further investigation by Spanish authorities. See *id.*; Sarah Kershaw & Eric Lichtblau, *Bomb Case Against Lawyer Is Rejected*, N.Y. TIMES (May 25, 2004), <https://www.nytimes.com/2004/05/25/us/bomb-case-against-lawyer-is-rejected.html>.

18. NAS Report, *supra* note 15, at 137.

19. *Id.* at 137–38. Analysis requires consideration of: (1) the “condition of the skin,” (2) the “[t]ype of residue,” (3) the “[m]echanics of touch,” (4) the “[n]ature of the surface touched,” (5) the “[d]evelopment technique,” (6) the “[c]apture technique,” (7) and the “[s]ize of the latent print or the percentage of the surface that is available for comparison.” *Id.* at 137. Comparison requires the contrasting of known “details that correspond” with the latent print and the known print. *Id.* Evaluation consists of determining “the agreement of the friction ridge formations in the two prints and [evaluating] the sufficiency of the detail present to establish an identification.” *Id.* at 138. Finally, “[v]erification occurs when another qualified examiner repeats the observations and comes to the same conclusion.” *Id.*

20. *Id.* at 139.

21. *Id.*

22. *Id.* Of relevance to this point is the certainty with which some fingerprint examiners had expressed their findings of a “match.” In the Mayfield case, a government affidavit claimed that the examiner “considers the match to be a 100% identification of Mayfield.” Simon A. Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. CRIM. L. & CRIMINOLOGY 985, 986 (2005). Further, in the media attention that followed the Mayfield debacle, the agent in charge of the FBI fingerprint division claimed during an interview with 60 Minutes that the error rate of fingerprint matches was zero and that FBI examiners can properly testify to 100% certainty of a match. Paul C. Giannelli, *Forensic Science: Daubert’s Failure*, 68 CASE W. RES. L. REV. 869, 920 (2018).

23. NAS Report, *supra* note 15, at 139.

rebuke of ACE-V, declaring that it is “not specific enough to qualify as a validated method.”²⁴

B. Hair Analysis

The NAS Report found that hair analysis and comparison can narrow in on a class of persons but cannot—absent DNA testing—declare an individual match.²⁵ It noted that “[n]o scientifically accepted statistics exist about the frequency with which particular characteristics of hair are distributed in the population.”²⁶ The Report concluded that there is “no scientific support for the use of hair comparisons for individualization in the absence of nuclear DNA.”²⁷

C. Toolmark Analysis

In assessing toolmarks, an examiner attempts to identify individual characteristics “to assess the extent of agreement . . . in the two sets of toolmarks.”²⁸ A match can be declared when “sufficient’ agreement exists in the pattern of two sets of marks.”²⁹ Agreement is significant “when it exceeds the best agreement demonstrated between tool marks known to have been produced by different tools and is consistent with the agreement demonstrated by tool marks known to have been produced by the same tool.”³⁰ The Association of Firearm and Tool Mark Examiners admitted that the “decisions involve subjective qualitative judgements by examiners and that the accuracy of examiners’ assessments is highly dependent on their skill and training.”³¹

24. *Id.* at 142. The PCAST Report was not as critical of fingerprint evidence, asserting a rather odd conclusion that “fingerprint analysis is a foundationally valid subjective methodology – albeit with a false positive rate that is substantial and is likely to be higher than expected by many jurors based on longstanding claims about the infallibility of fingerprint analysis.” *See* PCAST Report, *supra* note 16, at 9.

25. *See* NAS Report, *supra* note 15, at 156.

26. *Id.*

27. *Id.* at 161.

28. *Id.* at 153.

29. *Id.*

30. *Id.* (quoting *AFTE Criteria for Identification Committee Report*, 24 ASS’N FIREARMS & TOOL MARK EXAM’RS J. 336, 336 (1992)).

31. NAS Report, *supra* note 15, at 153. To this point, a rather embarrassing incident for toolmark examination occurred when the Detroit Police Lab was shut down in 2008. Nick Bunkley, *Detroit Police Lab is Closed After Audit Finds Serious Errors in Many Cases*, N.Y. TIMES (Sept. 25, 2008), <https://www.nytimes.com/2008/09/26/us/26detroit.html>. An audit concluded that “sloppy work had probably resulted in wrongful convictions.” *Id.* The firearms unit’s work had been halted prior to the entire lab being shut down. *Id.* It was discovered that the unit’s compliance rate with essential standards was only 42%. *Id.* Further, in a re-examination of 200 shooting cases selected at random, serious errors were found in 19. *Id.*

The NAS Report was critical of the validity of this method.³² The study noted that there is “not enough known about the variabilities among individual tools and guns”³³ As a result, they were “not able to specify how many points of similarity are necessary for a given level of confidence in the result.”³⁴ The Report also noted that “[s]ufficient studies have not been done to understand the reliability and repeatability of the methods.”³⁵ It criticized the analysis technique as one that “has adopted a theory of identification, but it does not provide a specific protocol.”³⁶ The NAS Report further determined that the guidance available for toolmark analysis failed to consider “questions regarding variability, reliability, repeatability, or the number of correlations needed to achieve a given degree of confidence.”³⁷ These shortcomings puts toolmark analysis at odds with the “goal for all the methods of forensic science.”³⁸

D. Bitemark Analysis

The NAS Report identifies an overarching issue with bitemark evidence: bite marks “on the skin will change over time and can be distorted by the elasticity of the skin, the unevenness of the surface bite, and swelling and healing.”³⁹ This “severely limit[s] the validity of forensic odontology.”⁴⁰ No scientific studies show that bite marks can demonstrate sufficient detail for positive identification.⁴¹ Furthermore, “experts diverge widely in their evaluations of the same bite mark evidence”⁴² The Report also found that the “uniqueness of human dentition has not been scientifically established,” and even if it had been, “[t]he ability of the dentition, if unique, to transfer a unique pattern to human skin and the ability of the skin to maintain that uniqueness has not been scientifically established.”⁴³

32. See NAS Report, *supra* note 15, at 154.

33. *Id.*

34. *Id.*

35. *Id.*

36. *Id.* at 155.

37. *Id.*

38. *Id.*

39. *Id.* at 174.

40. *Id.* The PCAST Report was similarly dubious about the validity of bitemark evidence. PCAST Report, *supra* note 16, at 9. The Report noted that “evidence strongly suggests that examiners not only cannot identify the source of a bitemark with reasonable accuracy, they cannot even consistently agree on whether an injury *is* a human bitemark.” *Id.* The PCAST Report concluded that “bitemark analysis is far from meeting the scientific standards for foundational validity” and that the prospects of bitemark analysis ever becoming scientifically valid were low. *Id.*

41. See NAS Report, *supra* note 15, at 176.

42. *Id.*

43. *Id.* at 175.

E. Explosives and Fire Debris Analysis

The NAS Report endorsed forensic explosive examinations, noting that “scientific foundations exist to support the analysis of explosions, because such analysis is based primarily on well-established chemistry.”⁴⁴ On fire debris examination, the Report noted that “much more research is needed on the natural variability of burn patterns and damage characteristics and how they are affected by the presence of various accelerants.”⁴⁵ It further stated that “many of the rules of thumb that are typically assumed to indicate that an accelerant was used (e.g., ‘alligatoring’^[46] of wood, specific char patterns) have been shown not to be true.”⁴⁷ The NAS Report recommends further experiments to increase the scientific backing of arson investigations.⁴⁸

III. OTHER STATE STATUTES AND COURT RULES PASSED TO ADDRESS FALSE OR MISLEADING FORENSIC EVIDENCE

In recent years, a number of states have passed measures to (1) allow for exoneration of those wrongly convicted by faulty forensic evidence and (2) keep faulty forensic evidence out of trial.

Texas Senate Bill 344 was enacted in 2013.⁴⁹ The bill amended Chapter 11 of the Texas Code of Criminal Procedure by adding an additional article relating to scientific evidence in an application for a writ of habeas corpus.⁵⁰ Essentially, it allowed for the consideration of relevant scientific evidence that is available at the time of the application for a writ of habeas corpus, but that was not available at the time of the trial.⁵¹

44. *Id.* at 172.

45. *Id.* at 173.

46. Alligatoring describes charred wood which contains “large shiny blisters” on the surface—apparently invoking images of the back of an alligator. Paul Giannelli & Kimberly Gawel, *Arson Evidence*, 47 CRIM. L. BULL. 1241, 1246 (2011). Alligatoring of wood was traditionally considered evidence of “extreme temperatures” over an “extended period of time,” with some arson investigation manuals through the 1990s lending credence to this theory. *Id.* However, the National Fire Protection Association (“NFPA”) now advises that alligatoring “is not evidence that a liquid accelerant was present during the fire, or that a fire spread rapidly or burned with greater intensity.” *Id.* (quoting NAT’L FIRE PROT. ASS’N, NFPA 921: GUIDE FOR FIRE AND EXPLOSION INVESTIGATIONS (1992)).

47. NAS Report, *supra* note 15, at 173.

48. *Id.*

49. S. 344, 2013 Leg., 83d Sess. (Tex. 2013) (enacted).

50. *Id.*

51. *Id.*

Texas had a notorious forensic evidence failure in the case of Cameron Todd Willingham.⁵² In 1991, Willingham's house burned down, killing Willingham's three daughters.⁵³ The fire was determined to be arson, and Willingham was convicted of capital murder and sentenced to death.⁵⁴ He was executed⁵⁵ on February 17, 2004.⁵⁶ Evidence introduced at trial to prove arson was later deemed to be invalid by a panel of leading arson experts.⁵⁷

Connecticut Senate Bill 509 was of a similar nature to the Texas bill.⁵⁸ The Connecticut bill allowed for a petition for a new trial to be granted based on the showing of newly discovered evidence that could have created a reasonable likelihood of a different outcome at trial.⁵⁹ It expressly stated that new evidence includes newly discovered forensic evidence.⁶⁰ The bill compels consideration of changes in relevant scientific evidence in determining whether the forensic evidence was not available at the time of trial.⁶¹

In 2018, The Michigan Supreme Court ordered changes to the court rules regarding a motion for relief from judgement and special

52. Paul C. Giannelli, *Junk Science and the Execution of an Innocent Man*, 7 N.Y.U. J. L. & LIBERTY 221, 222 (2013).

53. *Id.*

54. Willingham v. Cockrell, No. 02-10133, 2003 WL 1107011, at *1 (5th Cir. Feb. 17, 2003).

55. Willingham filed numerous appeals, none of which were successful. *See* Willingham v. State, 897 S.W.2d 351, 359 (Tex. Crim. App. 1995), *cert. denied* 516 U.S. 946 (1995); *Willingham*, 2003 WL 1107011, at *9. Willingham also applied for clemency before the Texas Board of Pardons and Paroles, but his application was unanimously denied on February 13, 2004. Meghan J. Ryan, *Remedying Wrongful Execution*, 45 U. MICH. J.L. REFORM 261, 268 (2012). Governor Rick Perry also failed to grant clemency to Willingham or issue a stay of execution. *Id.*

56. *See id.*

57. David Grann, *Trial by Fire*, NEW YORKER (Aug. 31, 2009), <https://www.newyorker.com/magazine/2009/09/07/trial-by-fire>. The commission concluded that *all* the evidence provided to support the guilt of Willingham was "scientifically proven to be invalid." *Id.*

Texas also established a government commission to investigate forensic science issues. Craig Beyler's report "concluded that investigators in the Willingham case had no scientific basis for claiming that the fire was arson, ignored evidence that contradicted their theory, had no comprehension of flashover and fire dynamics, relied on discredited folklore, and failed to eliminate potential accidental or alternative causes of the fire." *Id.* For more information on the questionable validity of the evidence presented against Willingham, see Giannelli & Gawel, *supra* note 46.

58. *See* S. 509, 2018 Gen. Assemb., Feb. Sess. (Conn. 2018) (enacted); S. 344, 2013 Leg., 83d Sess. (Tex. 2013) (enacted).

59. Conn. S. 509 § 1(a).

60. *Id.*

61. *Id.* § 1(b)(1).

responsibilities of a prosecutor.⁶² The new rules allowed for a defendant to file a second or subsequent motion for relief based on a claim of “new evidence” that was not discovered before the first motion.⁶³ New evidence was defined to expressly include new scientific evidence, which includes shifts in scientific consensus:

In a field of scientific knowledge, including shifts in scientific consensus in a testifying expert’s own scientific knowledge and opinions in a scientific method on which the relevant scientific evidence at trial was based.⁶⁴

The order also commands a prosecutor—if they know of new, material evidence that creates a reasonable likelihood that a convicted defendant is innocent—to disclose the evidence to an appropriate court or authority.⁶⁵ If the defendant was convicted in the prosecutor’s jurisdiction, then the prosecutor must turn over the evidence to the defendant.⁶⁶

Passed in 2019, the Nevada Assembly Bill 356 allows for an alternative method of petitioning for a new trial based on newly discovered evidence outside of the two-year statutory limit from conviction which existed prior to the law’s enactment.⁶⁷ Relevant forensic scientific evidence that was not available at the time of trial is included within the definition of “newly discovered evidence.”⁶⁸

Additionally, the law allows for the use of forensic scientific evidence that “undermines materially forensic scientific evidence presented at trial.”⁶⁹ Forensic evidence is undermined if “new research or information” repudiates the applied or foundational validity of scientific evidence or testimony.⁷⁰

A Wyoming statute passed in 2018 allows for a person convicted of a felony to petition the county court for an exoneration hearing by showing newly discovered evidence.⁷¹ Newly discovered evidence is defined as forensic evidence that was not available at time of trial and evidence that undermines forensic evidence presented at trial.⁷² Forensic evidence is

62. Mich. Sup. Ct. Order, Amendments of Rule 6.502 of the Michigan Court Rules and Rule 3.8 of the Michigan Rules of Professional Conduct (Sep. 20, 2018).

63. *Id.*

64. *Id.*

65. *Id.*

66. *Id.*

67. Assemb. 356, 2019 Assemb., 80th Sess. (Nev. 2019) (enacted).

68. *Id.*

69. *Id.*

70. *Id.*

71. WYO. STAT. ANN. § 7–12–403 (West 2018).

72. *Id.*

undermined if “new research or information” repudiates the applied or foundational validity of scientific evidence or testimony.⁷³

IV. CHALLENGES TO THE ADMISSIBILITY OF FORENSIC EVIDENCE UNDER
DAUBERT V. MERRELL DOW PHARMACEUTICALS AND IN STATE COURTS

In 1993, the Supreme Court heard *Daubert v. Merrell Dow Pharmaceuticals*⁷⁴ to “determine the standard for admitting expert scientific testimony in a federal trial.”⁷⁵ Until 1993, the standard for admissibility at the Federal level had been the *United States v. Frye*⁷⁶ test, which required that the scientific principle seeking admission to be sufficiently established as having gained general acceptance in its particular scientific field.⁷⁷

However, since the advent of the *Frye* standard, Congress implemented the Federal Rules of Evidence.⁷⁸ Federal Rule of Evidence 402 governed general principles of admissibility, and Rule 702 concerned admissibility of expert testimony.⁷⁹ The Court agreed with the petitioners’ assertion that the adoption of the Federal Rules of Evidence superseded the *Frye* standard.⁸⁰

The Court listed a number of factors that should be considered when evaluating expert testimony.⁸¹ One factor requires a determination of the theory or technique that supports the foundation of the scientific knowledge.⁸² The Court asserted that scientific methodology is based on generating hypotheses and testing them, and that this methodology

73. *Id.* Perhaps a statute with similar wording would have made a difference in a recent case in New Jersey. In 2020, the Appellate Division affirmed a denial for retrial in the case of Steven R. Fortin, who petitioned based on newly discovered scientific evidence regarding bitemark evidence used in his 2007 conviction for sexual assault and murder. *State v. Fortin*, 234 A.3d 372, 374–75 (N.J. Super. Ct. App. Div. 2020). In his appeal, Fortin asserted that the NAS Report and PCAST Report, among other documents, created “clear and compelling certainty that the bitemark testimony used in [defendant’s 2007 retrial] is now considered flawed and insufficient to meet current standards for scientific admissibility.” *Id.* at 381–83. The Innocence Project even submitted a brief in support of Fortin’s motion, also asserting that the NAS Report and PCAST Report had changed the scientific consensus about bitemark evidence. *Id.* at 383–84. The court was not persuaded. *Id.* at 388. While it found that the NAS and PCAST Reports were clearly material, the court determined that the evidence was cumulative, noting that similar evidence to impeach bitemark evidence was available in 2007. *Id.*

74. 509 U.S. 579 (1993).

75. *Id.* at 582.

76. 293 F. 1013 (D.C. Cir. 1923).

77. *See Daubert*, 509 U.S. at 585.

78. *Id.* at 587.

79. *See* FED. RS. EVID. 402, 702.

80. *See Daubert*, 509 U.S. at 587.

81. *Id.* at 593.

82. *Id.*

distinguishes science from other forms of study.⁸³ A second factor requires consideration of whether the theory or technique has been subject to peer review.⁸⁴ The known or potential rate of error is a third factor.⁸⁵ The Court determined that the overarching concern of Rule 702 is the scientific validity of the principles that support a proposed submission.⁸⁶ However, the Court also emphasized that the inquiry under Rule 702 was a “flexible one.”⁸⁷

Ultimately, the relatively rigorous standard for admissibility of scientific evidence under *Daubert* has had a limited effect on forensic evidence in criminal proceedings.⁸⁸ In *United States v. Reyes-Ballista*,⁸⁹ the defendant specifically cited the NAS Report in arguing that fingerprint evidence does not meet the *Daubert* standard.⁹⁰ The Court was unpersuaded by this reasoning, noting that “this argument has been dismissed many times before.”⁹¹ In support of this assertion, the Court cited to *United States v. Pena*.⁹² The *Pena* Court found that numerous courts have admitted fingerprint evidence in the face of a *Daubert* challenge, and moreover, that the ACE-V method has been found by courts to be sufficient to meet the standard.⁹³

However, *Pena* does not support the proposition that NAS Report-based challenges to the admissibility of fingerprint evidence have been rejected.⁹⁴ There is no mention of the NAS Report in *Pena*.⁹⁵ Additionally, the cases cited in *Pena* that are quoted in *Reyes-Ballista*—with one exception—were published prior to the release of the NAS Report.⁹⁶ The exception, *United States v. Baines*,⁹⁷ also fails to reference the NAS Report.⁹⁸

The court in *Reyes-Ballista* essentially dismissed a challenge to the admissibility of fingerprint evidence under *Daubert*, a challenge that cited the NAS Report, with a baseless assertion that the Report’s

83. *Id.*

84. *Id.* at 594.

85. *Id.*

86. *Id.* at 594–95.

87. *Id.* at 594.

88. See Stephanie L. Damon-Moore, *Trial Judges and the Forensic Science Problem*, 92 N.Y.U. L. REV. 1532, 1552 (2017).

89. No. 18-634-2, 2020 WL 6822372 (D.P.R. Nov. 20, 2020).

90. *Id.* at *2.

91. *Id.*

92. *Id.* at *2–3 (citing *United States v. Pena*, 586 F.3d 105, 110–11 (1st Cir. 2009)).

93. *Pena*, 586 F.3d at 110–11.

94. *Id.* at 105.

95. See generally *id.*

96. *Id.* at 110–11.

97. 573 F.3d 979 (10th Cir. 2009).

98. See generally *id.*

conclusion had been repeatedly rejected in specific prior cases.⁹⁹ The Court further denigrated the defendant's challenges, labeling them as "generic claims" that "dissipate in the face of the overwhelming caselaw standing for the proposition that fingerprint evidence is reliable enough for jury trials as a helpful form of identification testimony."¹⁰⁰ The Court, citing *Pena*, noted "that there is no need to conduct a *Daubert* hearing before admitting latent fingerprint identification evidence based upon the 'ACE-V' method."¹⁰¹ Additional factors relied upon by the Court in denying defendant's motion were the historical admissibility of fingerprint evidence¹⁰² as well as the language of *Daubert*, indicating that the inquiry on the admissibility of expert testimony is a "flexible one."¹⁰³

The reasoning put forth in *Reyes-Ballista* is not an anomaly. In *United States v. Stone*,¹⁰⁴ the defendants moved to have expert testimony regarding identification of latent fingerprints excluded.¹⁰⁵ In their motion, the defendants requested that the Court exclude the fingerprint evidence, unlike earlier cases,¹⁰⁶ based in part on the NAS Report.¹⁰⁷ In its ruling, the Court stated that it was "unpersuaded that the NAS Report provides a sufficient basis to exclude [the expert's] testimony."¹⁰⁸ The Court added: "Wholesale objections to latent fingerprint identification evidence have been uniformly rejected by courts across the country."¹⁰⁹ In support of this proposition, the Court cited to a number of cases.¹¹⁰ However, as in *Reyes-Ballista*, the cases do not cite the NAS Report in rebutting a *Daubert* challenge.¹¹¹ Furthermore, it is clear that the Court gave much more weight to prior cases in other circuits presented by the prosecution, as opposed to the journal articles presented by the defense arguing against admissibility.¹¹² The Court even went so

99. *United States v. Reyes-Ballista*, No. 18-634-2, 2020 WL 6822372, at *3 (D.P.R. Nov. 20, 2020).

100. *Id.* at *4.

101. *Id.*

102. *Id.* at *3.

103. *Id.* (quoting *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 582 (1993)).

104. 848 F. Supp. 2d 714 (E.D. Mich. 2012).

105. *Id.* at 715.

106. *See United States v. Crisp*, 324 F.3d 261, 270 (4th Cir. 2003).

107. *Stone*, 848 F. Supp. 2d at 716–17.

108. *Id.* at 717.

109. *Id.* at 718.

110. *Id.* (citing *United States v. John*, 597 F.3d 263, 274–75 (5th Cir. 2010); *United States v. Pena*, 586 F.3d 105, 110–11 (1st Cir. 2009); *United States v. Baines*, 573 F.3d 979, 990–92 (10th Cir. 2009); *United States v. Janis*, 387 F.3d 682, 690 (8th Cir. 2004); *United States v. Havvard*, 260 F.3d 597, 600 (7th Cir. 2001)).

111. *See John*, 597 F.3d at 263; *Pena*, 586 F.3d at 110–11; *Baines*, 573 F.3d at 990–92; *Janis*, 387 F.3d at 690; *Havvard*, 260 F.3d at 600; *see also Reyes-Ballista*, 2020 WL 6822372, at *3.

112. *See Stone*, 848 F. Supp. 2d at 717.

far as to infer that the defendants may have misrepresented the NAS Report because they failed to include it with their motion.¹¹³

The behavior of the courts in analyzing *Daubert* challenges to fingerprint evidence in recent years reveals a cyclical pattern. The courts are failing to analyze, or greatly minimizing, academic and scientific critiques in evaluating the merits of a particular forensic technique.¹¹⁴ The courts are not scrutinizing the technique under the *Daubert* standard. Instead, the courts are relying on prior findings that mostly hinge on historic admissibility of the technique and that do not consider more recent studies.¹¹⁵ What has resulted is a powerful and large caseload of legal precedent finding forensic evidence, particularly fingerprints, admissible.¹¹⁶ But, past legal precedent is not a *Daubert* factor.¹¹⁷ While this may be the conventional way for judges and other members of the legal community to evaluate a legal issue, it is not what *Daubert* calls for.¹¹⁸

California courts have also adopted a deferential approach that allows forensic evidence, specifically fingerprint evidence, at trial. California did not adopt the *Daubert* standard for the admissibility of scientific evidence.¹¹⁹ Rather, California adheres to the *People v. Kelly*¹²⁰ standard, which allows admissibility of *new* scientific techniques if it is “generally accepted by a typical cross-section of the relevant scientific community.”¹²¹

But not all forensic evidence will fall under the gambit of *Kelly*. For instance, California courts have specifically found that fingerprint evidence is not governed under *Kelly*.¹²² The *In Re O.D.* court framed *Kelly* as requiring (1) “general acceptance of the new technique in the relevant scientific community,” (2) a properly qualified witness, and (3) use of “the correct scientific procedures.”¹²³ But, it noted that “[t]he *Kelly* standard is frequently inapplicable to expert testimony because the testimony is often neither based on a new scientific technique nor likely

113. *Id.*

114. *See, e.g., Reyes-Ballista*, 2020 WL 6822372 at *3; *Pena*, 586 F.3d at 110–11; *Stone*, 848 F. Supp. 2d at 717.

115. *See Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 585 (1993).

116. *See, e.g., Reyes-Ballista*, 2020 WL 6822372 at *3; *Pena*, 586 F.3d at 110–11; *Stone*, 848 F. Supp. 2d at 717; *Baines*, 573 F.3d at 990–992; *Janis*, 387 F.3d at 690; *Havvard*, 260 F.3d at 600.

117. *See generally Daubert*, 509 U.S. at 585.

118. *See generally id.*

119. *See People v. Leahy*, 881 P.2d 321, 331 (Cal. 1994).

120. 549 P.2d 1240 (Cal. 1976).

121. *Leahy*, 881 P.2d at 337.

122. *See In re O.D.*, 221 Cal. App. 4th 1001, 1007–08 (2013).

123. *Id.* at 1006.

to convey an aura of certainty.”¹²⁴ The court “conclude[d] as a matter of law that the ACE-V method of fingerprint comparison is not the type of scientific technique governed by *Kelly*.”¹²⁵ It reasoned that the fingerprint evidence can be understood by laypersons and would be “unlikely to convey a misleading aura of certainty.”¹²⁶ In support of this assertion, the court pointed to fingerprint comparison as being a “visual” one that the court could observe for themselves.¹²⁷ It also asserted that the expert’s testimony was “particularly unlikely to convey a misleading aura of certainty because [the expert] openly acknowledged that fingerprint comparisons are inherently subjective and that no study establishes there infallibility.”¹²⁸

Similarly in *People v. Rivas*,¹²⁹ a defendant attempted to challenge the admissibility of fingerprint evidence, citing to the NAS Report.¹³⁰ The court reiterated the finding in *In Re O.D.* that fingerprint evidence is not governed by *Kelly*.¹³¹ The defendant, perhaps anticipating this, also argued that fingerprint evidence is so inherently “unreliable that it does not meet the threshold of admissibility.”¹³² Responding to this contention, the *Rivas* court extensively quoted from *United States v. Herrera*,¹³³ allegedly because it was “persuasive.”¹³⁴ The section of the *Herrera* opinion adopted by *Rivas* asserts that “it is the distinctiveness of the [fingerprint] features rather than the ACE-V method itself that enables fingerprint examiners to match fingerprints with a high degree of confidence.”¹³⁵ There is nothing in the NAS Report that supports this proposition.¹³⁶

Similarly, the New Jersey Appellate Division recently reiterated that bitemark evidence was admissible in the state, referencing prior judicial decisions admitting the evidence in support of the premise.¹³⁷ Ironically, in adopting this approach, the courts are expressly ignoring the guidance of the NAS Report. The NAS Report is not focused on offering extensive

124. *Id.*

125. *Id.*

126. *Id.* at 1007.

127. *Id.*

128. *Id.*

129. 238 Cal. App. 4th 967 (2015).

130. *Id.* at 975–76, 978.

131. *Id.* at 975.

132. *Id.* at 978.

133. 704 F.3d 480 (7th Cir. 2013).

134. *Rivas*, 238 Cal. App. 4th at 979 (citing *Herrera*, 704 F.3d at 485).

135. *Herrera*, 704 F.3d at 485; see *Rivas*, 238 Cal. App. 4th at 978.

136. See generally NAS Report, *supra* note 15.

137. *State v. Fortin*, 234 A.3d 372, 389 (N.J. Super. Ct. App. Div. 2020). The court further noted that New Jersey Supreme Court had previously held bitemark evidence admissible under New Jersey Rule of Evidence 702, making an evidentiary hearing on bitemarks unnecessary. *Id.*

guidance on a recommended response for the legal community; instead, it focuses on how to strengthen the various forensic science disciplines.¹³⁸

However, the Report is not completely barren of suggestions for the legal community. It notes that “lawyers and judges often have insufficient training and background in scientific methodology, and they often fail to fully comprehend the approaches . . . and reliability of forensic science that is offered in trial.”¹³⁹ The Report recommends that the “fruits of any advances in the forensic science disciplines should be transferred directly to legal scholars and practitioners.”¹⁴⁰ The reasoning: “so that appropriate adjustments can be made in criminal and civil law and procedures, model jury instructions, . . . litigation strategies and judicial decisionmaking.”¹⁴¹

Thus, the NAS Report can be read as offering explicit guidance to judges, recommending that they alter their decisions on forensic evidence based on advances in the field. The NAS Report provides a major advancement in understanding the validity and reliability of numerous forms of forensic evidence. Disregarding the NAS Report in a dispute over the admissibility of expert testimony and finding it to be outweighed by prior decisions upholding the admissibility of a forensic technique—many of which predate the Report—explicitly discounts the Report’s importance.

V. RECOMMENDATIONS

Presently, it is clear that wrongful convictions occur. One might not be able to say with certainty how often they happen,¹⁴² but there have been thousands officially documented.¹⁴³ There are likely thousands of more that have not yet been uncovered. It is also clear that faulty forensic evidence is a leading cause of wrongful convictions.¹⁴⁴ The NAS Report has made evident that most forms of forensic evidence are currently in a

138. See generally NAS Report, *supra* note 15.

139. *Id.* at 27.

140. *Id.*

141. *Id.*

142. For three varying perspectives on wrongful conviction rates, see Michael Reisinger, *Innocents Convicted: An Empirically Justified Factual Wrongful Conviction Rate*, 97 J. CRIM. L. & CRIMINOLOGY 761, 762 (2007); Paul Cassell, *Overstating America’s Wrongful Conviction Rate? Reassessing the Convention Wisdom About the Prevalence of Wrongful Convictions*, 60 ARIZ. L. REV. 815, 818 (2018); George C. Thomas III, *Where Have All the Innocents Gone?*, 60 ARIZ. L. REV. 865, 865 (2018).

143. See INNOCENCE PROJECT, *supra* note 2; THE NAT’L REGISTRY OF EXONERATIONS, *supra* note 3.

144. See INNOCENCE PROJECT, *supra* note 2; THE NAT’L REGISTRY OF EXONERATIONS, *supra* note 3.

troubled state with questionable scientific underpinnings.¹⁴⁵ Despite federal case law that now demands a stronger scientific basis for admissibility—and many states following suit¹⁴⁶—forensic evidence continues to be given a great deference by courts.

This judicial inertia makes it imperative that state legislatures pass laws that tightly regulate the admissibility of forensic evidence, ensuring that stringent standards are met. As discussed, a number of states generally have been moving toward a more liberal view on the issue of wrongful convictions through the adoption of *Daubert*-like standards for expert testimony and more liberal standards for post-conviction habeas relief. In contrast, the courts—despite the mandate of *Daubert* to serve as gatekeepers for scientific evidence—have abdicated that role, largely allowing historical judicial admissibility to govern.

SB 938 presents a promising start towards these efforts, but, ideally, changes would need to be made for the bill to have stronger effects in line with its stated intent. SB 938 seeks to ensure stronger scientific backing for expert testimony.¹⁴⁷ Essentially, the purpose of the bill is to ensure that forensic testimony is scientifically valid.¹⁴⁸ However, it proposes to accomplish this with a prohibition on “circular reasoning” in expert testimony and proceeds to define what circular reasoning is in a way that is not entirely clear, or at the very least, in a way that leaves the language open to creative judicial interpretation. The stated purpose for SB 938 is much clearer than the actual provisions that would be implemented to further that purpose.¹⁴⁹ The bill’s purpose is to ensure that expert testimony is backed up by “valid methodology, research, peer reviewed studies, and scientifically sound data.”¹⁵⁰ The bill should require that an expert cannot rely on methods that lack valid methodology, research, or peer reviewed studies or, at the very least, put severe restrictions and qualifications on what an expert may testify to if the forensic science is lacking in those areas.

The second provision could also use stronger language. For instance, SB 938 proposes that habeas relief may be granted with the “emergence of a reasonable dispute within the expert’s relevant scientific community as to the validity of the methods or theories.”¹⁵¹ On its face, this should

145. See generally NAS Report, *supra* note 15.

146. J.L. Hill, *The States of Daubert After Florida*, LEXVISIO (May 6, 2020), <https://www.lexvisio.com/article/2019/07/09/the-states-of-daubert-after-florida>. Most states have now adopted some form of the *Daubert* standard, with only four states continuing to adhere to the *Frye* standard. *Id.*

147. See generally S. 938, 2019–2020 Leg., Reg. Sess. (Cal. 2020).

148. See generally *id.*

149. See *id.* sec. 1.

150. Press Release, Senator Scott Wiener, *supra* note 13.

151. Cal. S. 938 sec. 2, § 1473(e)(2).

allow someone to invoke the NAS Report while seeking habeas relief. However, given that courts have found rather creative ways to discredit the NAS Report, language should be crafted in a way that makes discrediting more difficult. In particular, the language of a “reasonable dispute” within the “relevant scientific community” is one that is open to being constrained by a court in a way unfavorable to a defendant seeking habeas relief.¹⁵² For instance, what constitutes a “reasonable dispute?” This is not defined. One could surmise that the NAS Report should create a reasonable dispute, but a court would have avenues to refute this by pointing to the overwhelming amount of case law that has found questionable forensic evidence admissible. Another avenue would be to constrain the definition of “the relevant scientific community.” Again, it has not made clear what the scientific community is. A court could conclude that the authors of the NAS Report were not practitioners of a particular forensic discipline in question, and thus not part of the relevant community. More textual clarity is needed to accomplish the stated goal.

VI. CONCLUSION

It is imperative that the state legislatures continue to strengthen the admissibility requirements of forensic evidence and provide reasonable avenues toward habeas relief when questionable forensic evidence leads to convictions. There is cause for optimism, as several state legislatures have been moving in this direction within the last decade.¹⁵³ State legislatures must continue to strengthen admissibility requirements, and other states must follow suit. Only then will the courts, with their feet dug deeply into the mud of historical admissibility, be dragged along with them.

152. *Id.*

153. *See, e.g.*, S. 344, 2013 Leg., 83d Sess. (Tex. 2013) (enacted); S. 509, 2018 Gen. Assemb., Feb. Sess. (Conn. 2018) (enacted); Assemb. 356, 2019 Assemb., 80th Sess. (Nev. 2019) (enacted); WYO. STAT. ANN. § 7–12–403 (West 2018).