

2018

Cabining Judicial Discretion Over Forensic Evidence with a New Special Relevance Rule

Emma F.E. Shoucair

University of Michigan Law School

Follow this and additional works at: <https://repository.law.umich.edu/mlr>



Part of the [Criminal Procedure Commons](#), [Evidence Commons](#), and the [Science and Technology Law Commons](#)

Recommended Citation

Emma F. Shoucair, *Cabining Judicial Discretion Over Forensic Evidence with a New Special Relevance Rule*, 117 MICH. L. REV. 173 (2018).
Available at: <https://repository.law.umich.edu/mlr/vol117/iss1/5>

This Note is brought to you for free and open access by the Michigan Law Review at University of Michigan Law School Scholarship Repository. It has been accepted for inclusion in Michigan Law Review by an authorized editor of University of Michigan Law School Scholarship Repository. For more information, please contact mlaw.repository@umich.edu.

NOTE

CABINING JUDICIAL DISCRETION OVER FORENSIC EVIDENCE WITH A NEW SPECIAL RELEVANCE RULE

Emma F.E. Shoucair*

Modern forensic evidence suffers from a number of flaws, including insufficient scientific grounding, exaggerated testimony, lack of uniform best practices, and an inefficacious standard for admission that regularly allows judges to admit scientifically unsound evidence. This Note discusses these problems, lays out the current landscape of forensic science reform, and suggests the addition of a new special relevance rule to the Federal Rules of Evidence (and similar rules in state evidence codes). This proposed rule would cabin judicial discretion to admit non-DNA forensic evidence by barring prosecutorial introduction of such evidence in criminal trials absent a competing defense expert or a high showing of scientific viability.

TABLE OF CONTENTS

INTRODUCTION.....	174
I. FORENSIC EVIDENCE IN FEDERAL COURTS.....	176
II. PROBLEMS WITH FORENSIC EVIDENCE.....	179
A. <i>Unreliable Tests and Unreliable Testimony</i>	179
B. <i>Accreditation, Certification, and Best Practices</i>	183
C. <i>Barriers to Improvement</i>	184
D. <i>Judges, Juries, and Daubert</i>	186
III. TOWARD A SOLUTION: A NEW SPECIAL RELEVANCE RULE.....	187
A. <i>Evidence Code Generally</i>	188
B. <i>Rule 416: A New Special Relevance Rule</i>	189
C. <i>Parallels in Existing Evidence Rules</i>	191
IV. ADDRESSING COUNTERARGUMENTS	193
A. <i>Limiting Instructions or Categorical Exclusion?</i>	193
B. <i>Making It More Difficult to Secure Convictions</i>	195

* J.D., May 2018, University of Michigan Law School. First and foremost, my gratitude to my husband Jason Henry and my dog Ruby for tolerating the production of this Note. I would also like to thank my Notes Editors, Matthew Wallace, Paul Hoversten, and Mel Cassel, for their feedback and support, as well as Arianna Demas, Patrick Maroun, Jonathan Tietz, and Megan Brown for the work they have done on this piece. Finally, many thanks to Professors Eve Brensike Primus and Imran Syed for their feedback on earlier versions of this paper. All errors are my own.

CONCLUSION..... 196

INTRODUCTION

On January 20, 1980, Santae A. Tribble was convicted of armed robbery and the felony murder of a taxi driver he had never met.¹ He spent the next twenty-eight years in prison, where he contracted HIV and hepatitis.² Mr. Tribble's conviction was based on testimony³ from the FBI Crime Laboratory that there was a high degree of similarity between his hair and hair found at the scene.⁴ But, in 2012, mitochondrial DNA testing revealed that Mr. Tribble could not have contributed any of the hairs found at the scene.⁵ One of the hairs the FBI had matched to Mr. Tribble had come, in fact, from a dog.⁶ In February 2016, a judge ordered the District of Columbia to pay Mr. Tribble over \$13 million in damages.⁷

In 2015, the Justice Department and the FBI admitted that 26 of the 28 examiners in the FBI Crime Laboratory had given exaggerated testimony from 1972 to 1999;⁸ these examiners had overstated to juries the actual probative value of hair-match analysis.⁹ Of the 268 trials with overstated hair-match evidence examined by the National Association of Criminal Defense Lawyers and the Innocence Project, 14 of the defendants "sentenced to death . . . [had] been executed or died in prison."¹⁰ During those trials, there would have been no reason for the judges, prosecution counsel, or defense counsel to suspect they were being presented with exaggerated testimony. And the problem is

1. See *Santae Tribble*, NAT'L REGISTRY OF EXONERATIONS (July 3, 2012) (updated July 19, 2016), <https://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3926> [<https://perma.cc/WH83-98C8>].

2. Spencer S. Hsu, *Judge Orders D.C. to Pay \$13.2 Million in Wrongful FBI Hair Conviction Case*, WASH. POST (Feb. 28, 2016), https://www.washingtonpost.com/local/public-safety/judge-orders-dc-to-pay-132-million-in-wrongful-fbi-hair-conviction-case/2016/02/28/da82e178-dcde-11e5-81ae-7491b9b9e7df_story.html [<https://perma.cc/3CME-EAAZ>].

3. The D.C. Superior Court order granting Tribble's certificate of innocence notes that the expert's testimony was "critical to the jury's decision." Certificate of Actual Innocence at 1, *United States v. Tribble*, No. 78 FEL 4160 (D.C. Super. Ct. 2012).

4. Hsu, *supra* note 2.

5. *Santae Tribble*, *supra* note 1.

6. *Id.*

7. *Tribble v. District of Columbia*, 144 DAILY WASH. L. RPTR. 669, 680 (D.C. Super. Ct. 2016), *amended by* 2016 WL 3405166, at *1 (D.C. Super. Ct. Mar. 25, 2016).

8. Spencer S. Hsu, *FBI Admits Flaws in Hair Analysis over Decades*, WASH. POST (Apr. 18, 2015), https://www.washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfab310_story.html [<https://perma.cc/N7SR-BGPF>].

9. *Id.*

10. *Id.*

broader than hair analysis: since 1989, 524 exonerations nationwide involved false or misleading forensic evidence.¹¹

Forensic science is defined as “the application of scientific principles and techniques to matters of criminal justice especially as relating to the collection, examination, and analysis of physical evidence.”¹² The public’s relationship with forensic science is complicated, and forensic evidence has become paramount in criminal trials. Many jurors have come to expect forensic evidence in criminal trials,¹³ even though most trials involve none.¹⁴ Some research suggests that this so-called “CSI Effect” makes jurors less willing to convict in the absence of forensic evidence.¹⁵ As a result, investigators will sometimes perform unnecessary tests in the field simply to have something “scientific” to present to a jury.¹⁶ These tendencies underscore the importance of ensuring only accurate and reliable forensic evidence reaches a jury: as the Supreme Court noted in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, “[e]xpert evidence can be both powerful and quite misleading because of the difficulty in evaluating it.”¹⁷

Part I of this Note describes the current federal evidentiary framework for admitting expert scientific testimony. Part II discusses the problems with forensic science in criminal trials: the lack of foundational scientific validity, the lack of any rigorous system of laboratory accreditation or certification system

11. % Exonerations by Contributing Factor, NAT’L REGISTRY EXONERATIONS, <https://www.law.umich.edu/special/exoneration/Pages/ExonerationsContribFactorsByCrime.aspx> [https://perma.cc/HY3N-ULJT].

12. *Forensic Science*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/medical/forensic%20science> [https://perma.cc/E4HN-BX4T].

13. Donald E. Shelton, *The ‘CSI Effect’: Does It Really Exist?*, NAT’L INST. JUST. (Mar. 17, 2008), <https://www.nij.gov/journals/259/pages/csi-effect.aspx> [https://perma.cc/G9DK-MMVC] (indicating that 46% of jurors expect to see scientific evidence in every criminal case, 22% expect to see DNA evidence in every criminal case, 36% expect to see fingerprint evidence in every criminal case, and 32% expect to see ballistic evidence in every criminal case).

14. For an estimate of cases in which forensic evidence exists, see, for example, Keith O’Brien, *The Case Against Evidence*, BOS. GLOBE (Nov. 7, 2010), http://archive.boston.com/bostonglobe/ideas/articles/2010/11/07/the_case_against_evidence/ (on file with the *Michigan Law Review*) (detailing a survey of homicide cases in which only 13.5% featured physical evidence, with DNA evidence in only 4.5% of the cases).

15. Shelton, *supra* note 13.

16. Arun Rath, *Is the ‘CSI Effect’ Influencing Courtrooms?*, NPR (Feb. 5, 2011, 7:30 PM), <http://www.npr.org/2011/02/06/133497696/is-the-csi-effect-influencing-courtrooms> (on file with the *Michigan Law Review*).

17. 509 U.S. 579, 595 (1993) (quoting Jack B. Weinstein, *Rule 702 of the Federal Rules of Evidence Is Sound; It Should Not Be Amended*, 138 F.R.D. 631, 632 (1991)). The President’s Council of Advisors in Science and Technology’s (PCAST) 2016 report emphasizes the uniquely dangerous nature of forensic testimony—jurors largely lack the knowledge and ability to evaluate expert forensic testimony independently and are likely to attach high probative value to a “match” (which for many forensic tests are subjective). PRESIDENT’S COUNCIL OF ADVISORS ON SCI. & TECH., EXEC. OFFICE OF THE PRESIDENT, REPORT TO THE PRESIDENT: FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS 45 (2016) [hereinafter PCAST REPORT].

for individual practitioners, the institutional barriers to improving the system, and the problematic ways in which judges and juries interact with forensic evidence. Part III proposes a new special relevance rule excluding non-DNA forensic evidence in criminal trials under certain circumstances absent a significant showing of scientific validity. This new rule would protect the integrity of the legal process in the face of inaccurate evidence. Finally, Part IV addresses potential counterarguments to the adoption of this new special relevance rule.

I. FORENSIC EVIDENCE IN FEDERAL COURTS

The admissibility of forensic evidence, presented through expert testimony, is governed by two rules in federal court: Federal Rules of Evidence 702 and 403.¹⁸ These rules often have analogues in state evidence codes¹⁹ and are motivated in part by concerns about the high degree of deference juries often give to expert testimony.²⁰ To prevent juries from over-valuing expert opinions, care must be taken to ensure the testimony juries hear is based on reliable and valid methodologies.

Rule 702 governs when expert testimony may be admitted:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.²¹

This version of Rule 702 is the legislative adoption of *Daubert's* expert testimony admission standards.²² *Daubert* makes judges the “gatekeepers” of the courtroom: away from the jury, a judge determines whether the expert

18. FED. R. EVID. 702; FED. R. EVID. 403.

19. For example, PA. R. EVID. 702, which varies slightly from its federal counterpart in requiring that the “expert’s scientific, technical, or other specialized knowledge [be] beyond that possessed by the average layperson,” and PA. R. EVID. 403, which, in contrast to FED. R. EVID. 403, discussed *infra*, only requires that the probative value be outweighed by the danger of unfair prejudice (eliminating “substantially”).

20. See *Daubert*, 509 U.S. 579, 595 (1993) (quoting Jack B. Weinstein, *Rule 702 of the Federal Rules of Evidence Is Sound; It Should Not Be Amended*, 138 F.R.D. 631, 632 (1991)).

21. FED. R. EVID. 702.

22. *Daubert*, 509 U.S. at 588; see Gary Edmond et al., *Admissibility Compared: The Reception of Incriminating Expert Evidence (i.e., Forensic Science) in Four Adversarial Jurisdictions*, 3 U. DENV. CRIM. L. REV. 31, 39 (2013) (noting that the revision to Rule 702 in 2000 was made “to make the need for ‘reliability’ explicit” in light of the opinion in *Daubert*).

testimony can be admitted. In making this determination, the judge must assess whether the information the expert will convey is relevant and helpful to the factfinder, as well as whether that testimony is the product of a valid set of methods.²³ *Daubert* presents a nonexhaustive list of factors for judges to consider when conducting this validity inquiry: testing, peer review, error rates, existence/maintenance of standards, and general acceptance.²⁴ This set of factors replaces the old inquiry into “general acceptance” by the scientific community from *Frye v. United States*.²⁵ These factors are instructive as to whether proffered expert scientific or technical testimony is “junk” or not. The Supreme Court expanded on *Daubert* in two subsequent cases, *General Electric Co. v. Joiner*²⁶ and *Kumho Tire Co. v. Carmichael*.²⁷ *Joiner* established the standard of review for *Daubert* hearings as abuse of discretion,²⁸ and *Kumho* extended the scope of *Daubert* to include nonscientific knowledge, including “technical” or “other specialized knowledge.”²⁹

The ruling in *Daubert* was not unanimous. In his dissent, Chief Justice Rehnquist expressed discomfort with the amount of authority given to judges to exclude evidence on the basis of their own nonexpert scientific fluency: “I do not doubt that Rule 702 confides to the judge some gatekeeping responsibility in deciding questions of the admissibility of proffered expert testimony. But I do not think it imposes on them either the obligation or the authority to become amateur scientists in order to perform that role.”³⁰ It appears, however, that how the rule is formulated does not make a huge difference in what evidence gets admitted in certain contexts. States have adopted *Daubert* to varying degrees. Some states have adopted it formally, while others maintain the older *Frye* standard;³¹ still others have created a hybrid standard.³² In the

23. *Daubert*, 509 U.S. at 592–93.

24. *Id.* at 593–94.

25. 293 F. 1013, 1014 (D.C. Cir. 1923).

26. 522 U.S. 136 (1997).

27. 526 U.S. 137 (1999).

28. *Joiner*, 522 U.S. at 141.

29. *Kumho Tire*, 526 U.S. at 147–48.

30. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 600–01 (1993) (Rehnquist, C.J., dissenting).

31. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) (establishing the criteria for admission as general acceptance within the applicable scientific community, a standard much more deferential to the relevant scientific communities and entailing less active judicial examination of the evidence itself).

32. Alice B. Lustre, Annotation, *Post-Daubert Standards for Admissibility of Scientific and Other Expert Evidence in State Courts*, 90 A.L.R.5th 453, § 2 (2011) (noting that 25 states have formally adopted *Daubert* as the standard for admissibility, while fifteen states plus the District of Columbia still use *Frye*; six states combine *Daubert* factors into *Frye*, and four states have unique tests).

end, junk science appears to reach juries with similar frequencies in state courts regardless of the formal rule.³³

In addition to the different developmental paths seen between federal and state courts in the application of *Daubert*, there is also a marked divergence between civil and criminal contexts. In criminal trials, which are rife with forensic evidence and are the focus of the present inquiry, defense attorneys regularly fail to bring *Daubert* challenges.³⁴ When they do bring these challenges, they usually lose.³⁵ It is sometimes said that a rigorous cross-examination—the very heart of the adversarial process—will expose any junk forensic evidence.³⁶ In practice, however, this has not been borne out. In instances where fraud or misconduct on the part of testifying experts was later uncovered, not once did cross-examination bring the conduct to light.³⁷ If the adversarial system of nonscientists is not in practice discovering *fraud* in criminal contexts, it is unlikely to discover a lack of underlying peer review, a lack of general scientific acceptance, or a lack of falsifiability. If the point of *Daubert* was to ensure the accuracy of admitted expert testimony, it has not succeeded.³⁸

More generally, Rule 403 lays out the general standard for when any evidence can be excluded: “The court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence.”³⁹

33. See, e.g., Edward K. Cheng & Albert H. Yoon, *Does Frye or Daubert Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471, 482–90 (2005) (discussing the evolution of state court judges’ attitudes toward questionable scientific evidence in toxic tort contexts, suggesting the metric of the frequency with which tort defendants in state court remove to federal court as a way of showing the differing treatment of scientific evidence on the federal and state levels). In state level civil litigation, “the choice between a *Frye* and *Daubert* standard does not make any practical difference.” *Id.* at 475.

34. See, e.g., D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALB. L. REV. 99, 104 (2000) (describing a survey of federal appellate cases and district cases, as well as state cases that showed the rapid increase in expert challenges in civil cases after *Daubert* as compared to a much smaller increase in criminal cases).

35. *Id.* at 105–08 (showing that in criminal cases on appeal in a federal court, “defense-proffered expertise was found to be properly excluded 83% of the time . . . and government proffered expertise was found only once to be so undependable as to require exclusion”); *id.* at 109–10 (showing that the statistics are similar at the federal district court level).

36. See, e.g., *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595–96 (1993) (Rehnquist, C.J., dissenting).

37. Peter J. Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice and Some Suggestions for Reform*, 95 AM. J. PUB. HEALTH, S107, S109 (2005).

38. Paul C. Giannelli, *Forensic Science: Daubert’s Failure*, 69 CASE W. RES. L. REV. (forthcoming 2018) (manuscript at 3–6) (on file with the *Michigan Law Review*). On the other hand, in federal civil cases, the results of *Daubert* have been “decidedly pro-defendant” and have “empowered defendants to exclude certain types of scientific evidence, substantially improving their chances of obtaining summary judgment and thereby avoiding what are perceived to be unpredictable and often plaintiff-friendly juries.” Cheng & Yoon, *supra* note 33, at 473.

39. FED. R. EVID. 403.

Analyzing evidence under Rule 403 entails balancing the probative value of the evidence against the risk of unfair prejudice to the party opposing its admission (generally, in criminal trials, the defendant). Early attempts to exclude questionable forensic evidence, such as polygraph examinations, went through Rule 403.⁴⁰ Highly prejudicial expert testimony can still be excluded through 403 balancing even if it survives Rule 702. Indeed, in several instances, Congress has determined some types of evidence fail 403 balancing as a matter of law (that is, “its probative value is substantially outweighed by a danger of . . . unfair prejudice”)⁴¹ and are per se excluded for certain purposes.⁴² It is against the backdrop of Rules 702 and 403 that this Note examines the substantive problems with expert forensic evidence.

II. PROBLEMS WITH FORENSIC EVIDENCE

A. Unreliable Tests and Unreliable Testimony

Many of the common forensic tests used to convict criminal defendants are not backed up by scientific data, which ought to raise concerns about admissibility under 702. The lack of foundational scientific data for many forensic techniques has garnered considerable attention, both in popular media and in legal scholarship.⁴³ DNA matching, “a fortuitous by-product of cutting-edge science,”⁴⁴ is the gold standard for forensic evidence.⁴⁵ Notably, and in contrast to many of the other commonly used forensic tests, DNA testing was not developed for the purpose of use in court. It was subjected to rigorous peer-reviewed analysis in the scientific community to determine its validity, and only then was it applied to criminal proceedings (and even then only after

40. See, e.g., *United States v. Williams*, 95 F.3d 723, 730 (8th Cir. 1996) (finding that the district court had not abused its discretion in excluding polygraph evidence on the grounds that it was more prejudicial than probative under Rule 403); *United States v. Sherlin*, 67 F.3d 1208, 1216–17 (6th Cir. 1995) (holding that polygraph testing could be properly excluded under Rule 403 as overly prejudicial even if admissible under Rule 702).

41. FED. R. EVID. 403.

42. See *infra* Section III.C.

43. For an up-to-date survey of the legal literature and comments by courts expressing dissatisfaction with the scientific validity of commonly used forensic tests, see Giannelli, *supra* note 38; see also LastWeekTonight, *Forensic Science: Last Week Tonight with John Oliver (HBO)*, YouTube (Oct. 1, 2017), <https://www.youtube.com/watch?v=ScmJvzmzDcG0> [<https://perma.cc/R553-YL33>].

44. COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCIS. CMTY., NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 133 (2009) [hereinafter NAS REPORT].

45. “[E]minent scientists contributed their expertise to ensuring that DNA evidence offered in a courtroom would be valid and reliable.” *Id.*

a fierce debate).⁴⁶ As a result, its probative value is very high, although (mostly human) errors still happen.⁴⁷

In these ways, DNA is an outlier. Other common forensics tests were developed specifically for use in criminal investigation,⁴⁸ and their validity and accuracy have not been confirmed through peer-reviewed studies. For example, the FBI recently recognized the need for foundational studies establishing the validity and error rates for latent fingerprint analysis, a technique that has been in use since 1800 without any serious verification of its accuracy.⁴⁹ The FBI's study, just one of two studies to date that have attempted to assess error rates, suggests that errors may appear in one out of every 306 cases,⁵⁰ a rate that is very much out of line with our cultural intuitions about fingerprint accuracy. Without being explicitly informed of this reality, juries will continue to operate as though fingerprint matching is infallible. A summary of common forensic tests can be found below:

46. For an overview of the use of DNA evidence in court (starting in 1986 after its discovery and initial scientific vetting in 1953), see Lisa Calandro et al., *Evolution of DNA Evidence for Crime Solving—A Judicial and Legislative History*, FORENSIC MAG. (Jan. 6, 2005, 3:00 AM), <https://www.forensicmag.com/article/2005/01/evolution-dna-evidence-crime-solving-judicial-and-legislative-history> [<https://perma.cc/C5Q4-TFJM>]. For a discussion of the so-called “DNA wars,” see, for example, Gina Kolata, *Two Chief Rivals in the Battle Over DNA Evidence Now Agree on Its Use*, N.Y. TIMES (Oct. 27, 1994), <http://www.nytimes.com/1994/10/27/us/two-chief-rivals-in-the-battle-over-dna-evidence-now-agree-on-its-use.html> (on file with the *Michigan Law Review*).

47. Kolata, *supra* note 46.

48. Often, the tests themselves are developed by laboratories affiliated with prosecutorial offices, raising the issue of partiality. See, for example, the controversial EDTA test developed on short notice by the FBI Crime Laboratory for use in Stephen Avery's trial in Netflix's popular *Making a Murderer*. Amelia McDonnell-Parry, *Experts Offer Concerns Over Forensic Testing in 'Making a Murderer' Case*, ROLLING STONE (Apr. 14, 2016), <http://www.rollingstone.com/culture/news/experts-offer-concerns-over-forensic-testing-in-making-a-murderer-case-20160414> [<https://perma.cc/28U7-HLXV>].

49. PCAST REPORT, *supra* note 17, at 101.

50. *Id.*

TABLE 1: COMPARISON OF FORENSIC TESTS⁵¹

Forensic Test	Objective/Subjective ⁵²	Well-Defined Criteria for "Match"	Peer Review	Known Error Rate ⁵³
DNA	Objective	Yes	Yes	Yes: probability of a random (incorrect) match is less than one in ten billion (incorrect matching due to human error is higher but not estimable generally). ⁵⁴
Fingerprints	Objective/Subjective	No	No	Possibly as high as one in several hundred. ⁵⁵
Impressions (footprint, tire tread, etc.)	Subjective	No	No	Unknown
Ballistics	Subjective	No	No	Unknown: one study suggests error rates as high as 1 in 46 (false positive matches). ⁵⁶
Hair	Subjective: visual assessment of examiner.	No standard for number of visually subjective features that constitute a match.	Not outside of DNA analysis (if follicle present on hair).	Difficult to assess; one study found 12% false positive rate and 44% false negative rate.
Fiber	Objective/Subjective	Standardized chemical procedures for analysis, but no guidelines for proving individuation.	No	Unknown: no studies showing probabilities of class identification based on characteristics or environmental factors.
Bitemarks	Subjective	No	No	Unknown: studies published as recently as 2010 have demonstrated that skin is not a reliable medium for preserving bitemarks, and often forensic odontologists do not consistently agree even on whether an injury is a human bitemark at all. ⁵⁷

51. Unless otherwise noted, this information has been taken from the NAS REPORT, *supra* note 44, at 127–83.

52. Objective tests are tests in which a definitive match between two samples is possible—for example, DNA collected from a crime scene and DNA collected from a suspect. Subjective tests, on the other hand, are tests in which a human tester makes a judgment call as to the similarity of two samples—for example, the visual characteristics of a hair found at a crime scene and a hair collected from a suspect.

53. Note that it is difficult to calculate error rates without a discussion of what type of error is being discussed; errors can include subjective examiner error, instrumentation error vs. actual statistical error inherent in the method of testing itself. This distinction is generally beyond the scope of the current discussion.

54. PCAST REPORT, *supra* note 17, at 72.

55. *Id.* at 101.

56. *Id.* at 111.

57. *Id.* at 84

As the table above demonstrates, most forensic tests are not objective or particularly scientific, creating a mismatch between jury expectations and reality. This mismatch, especially when considered in conjunction with the discussion of accreditation below, demonstrates the difficulties inherent in using scientifically dubious subjective methods to convict defendants. The entire perceived value of forensic evidence is its objectivity and rigor: it is presented as *science*. The 2016 report by the President's Council of Advisors on Science and Technology (PCAST) recommends abandoning bitemark analysis and hair match analysis (which it called "scientifically unacceptable"⁵⁸) because the probability they will be developed into scientifically valid methods is very low. It also found shoeprint impression identification analysis to be lacking in scientific foundational validity.⁵⁹ Yet despite the obvious and now well-publicized flaws with these types of evidence, they are routinely admitted as evidence in criminal trials.⁶⁰

In addition to problems with the tests themselves, there are also issues with forensic experts' trial testimony. Even the analysts at the FBI Crime Laboratory are not immune from problematic testimony, as detailed by the *Washington Post* in 2015.⁶¹ A 2009 study found that in a sample of 156 exonerees convicted using the testimony of forensic experts and later exonerated using DNA evidence, 60% of the cases included invalid forensic testimony—implicating 72 analysts and 52 laboratories.⁶² The most common errors in the invalid forensic science testimony were incorrect use of population data (e.g., "only 5% of the population has red hair" when no data on the frequency of hair types exists)⁶³ and overstatement of the probative value of forensic tests⁶⁴ (e.g., the FBI's use of hair match despite a lack of empirical evidence showing

58. PCAST REPORT, *supra* note 17, at 121, 148.

59. *See id.* at 61–62, 117.

60. Stephanie L. Damon-Moore, Note, *Trial Judges and the Forensic Science Problem*, Note, 92 N.Y.U. L. REV. 1532, 1536 (2017) (discussing possible reasons for judges continuing to admit forensic evidence).

61. *See Hsu, supra* note 8.

62. Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1, 1–2 (2009).

63. *Id.* at 9. The authors further subdivide this type of error into the following types: nonprobative evidence presented as probative, exculpatory evidence discounted, and inaccurate frequency or statistic presented. To illustrate this type of error, the authors point to a rape case in which the prosecution's expert testified that the genetic material from a vaginal swab of the victim contained a genetic marker for blood type B (the defendant's blood type), and stated that only 11% of Caucasians have type B blood, making it very likely that the defendant was the rapist. The expert failed to disclose, however, that the victim also had type B blood, and that the marker detected could have come exclusively from the victim and masked markers from the semen. *Id.* at 17–18.

64. *Id.* at 9. The authors further subdivide this type of error into the following types: statistic provided without empirical support, non-numerical statements provided without empirical support, and conclusion that evidence originated from defendant. *Id.* at 18–19.

its validity). The study also found systemic issues with the legal treatment of invalid forensic testimony:

Unfortunately, our criminal system may not be well situated to prevent unscientific testimony. The adversarial system largely failed to police the invalid testimony during these trials. Defense counsel rarely cross-examined analysts concerning invalid testimony and rarely retained experts, since courts routinely deny funding for defense experts. Prosecutors, moreover, presented erroneous accounts of the forensic evidence during closing arguments. In a few cases in which the defense challenged invalid forensic science, judges seldom provided relief. Courts do not typically review testimony after finding the underlying methodology reliable and permitting the forensic analyst to take the stand.⁶⁵

Garrett and Neufeld's observation highlights the need for both scientific and legal reform. The forensic science community should strive for the most reliable and accurate data it can provide, and the legal system needs to do a better job policing the admission of inaccurate information.

B. Accreditation, Certification, and Best Practices

A separate set of problems with forensic science relates to the laboratories and analysts that carry out the testing. Forensic science laboratories are overwhelmingly administered by law enforcement agencies, raising concerns about the potential for conflict between laboratory priorities of achieving the most accurate results and law enforcement priorities of achieving the greatest number of convictions.⁶⁶ The National Academic Press (NAS) report names the independence of forensic laboratories as a priority for ensuring the scientific integrity of forensic testimony.⁶⁷

Lack of accreditation for forensic laboratories in most states is also a cause for concern. The NAS report notes:

Several commentators appearing before the committee noted that nearly anyone with a garage and some capital theoretically could open a forensics laboratory and start offering services. Although this might be a bit hyperbolic, the fact is that there are no requirements, except in a few states (New York, Oklahoma, and Texas), for forensics laboratories to meet specific standards for quality assurance or for practitioners to be certified according to an agreed set of standards.⁶⁸

In addition to a lack of a uniform accreditation system (or even the existence of mandatory state-level accreditation in every state), there is likewise no uniform set of quality control or quality assurance standards.⁶⁹ There is no system

65. *Id.* at 10–11.

66. NAS REPORT, *supra* note 44, at 183–84.

67. *Id.*

68. *Id.* at 193.

69. *Id.* at 193–94.

of federal oversight.⁷⁰ The result is, unsurprisingly, uneven quality of laboratories.⁷¹

The problems do not end with the laboratories. Blind proficiency testing of individual examiners is recommended but often not required.⁷² There is no uniform system of individual certification; rather, different subdisciplines have their own certification processes, and “some certification organizations appear to lack stringent requirements.”⁷³ The lack of a universal, rigorous standard for individual certifications raises special concerns, given that so much of forensic testimony is based on subjective testing in which the analyst makes visual matches.⁷⁴ Confidence in the analysts providing the expert testimony is essential, and there is currently no reliable system in place to warrant such confidence.

C. Barriers to Improvement

The 2009 NAS and the 2016 PCAST reports provide recommendations for improving the state of forensic science. The NAS report recommends reforms like the congressional establishment of an independent federal oversight body to promulgate standards and fund peer-reviewed research into reliability and error rates.⁷⁵ It also recommends the establishment of accredited and independent laboratories, as well as the creation of standards for forensic analysts.⁷⁶ The PCAST report recommends continuing scientific studies to shore up foundational validity and to convert subjective tests into objective ones.⁷⁷ The authors of the report urge the judiciary to use scientific standards when weighing admission,⁷⁸ implying they think judges are not currently doing so.⁷⁹

These recommendations shed light on the difficulties in achieving standardized reform.⁸⁰ Congress has not created or funded an independent agency to address substandard forensic science, and it is unlikely to make it a priority in the near future. Certain legislative incentives cut against expecting action from Congress or state legislatures. Increasing the rigor of forensic science

70. *Id.* Thus necessitating the NAS recommendation that Congress create an agency. See *infra* note 75 and accompanying text.

71. NAS REPORT, *supra* note 44, at 194.

72. *Id.* at 207–08.

73. *Id.* at 209–10.

74. See *supra* Table 1.

75. NAS REPORT, *supra* note 44, at 19.

76. *Id.* at 190–91, 214–15.

77. PCAST REPORT, *supra* note 17, at 128–29.

78. *Id.* at 142–45.

79. *Id.*

80. See generally Jessica D. Gabel, *Realizing Reliability in Forensic Science from the Ground Up*, 104 J. CRIM. L. & CRIMINOLOGY 283 (2014).

could be considered defendant friendly, and elected representatives are often reluctant to seem “soft on crime.”⁸¹ These issues also exist on the state legislative level.⁸² There was pushback from law enforcement agencies to the 2016 PCAST report before the report had even been released,⁸³ so there is reason to believe that law enforcement groups oppose some of the proposed reforms.

This is not to say that no progress has been made. At the end of his administration, President Obama detailed the advances made in criminal justice reform, including the establishment of the National Commission on Forensic Science, which recommended that the Department of Justice (DOJ) be required to use accredited labs whenever practicable, and increased research into the foundational validity of many of the common forensic tests discussed above.⁸⁴ But the Obama administration faced criticism for not requiring federal law enforcement agencies to adopt the recommendations of the 2016 PCAST report.⁸⁵ While recognition that tests like hair match are not scientifically valid is a step in the right direction, no legislative or executive action was taken under President Obama to prevent the use of such tests.

However lackluster advocates found the Obama administration’s push toward reform, movement has trended in the opposite direction under President Trump. Attorney General Jeff Sessions’s decision in April of 2016 to allow the National Commission on Forensic Science to expire has “rais[ed] concerns among defense attorneys and other advocates about the future of the Justice Department’s work in that arena.”⁸⁶ Deputy Attorney General Rod Rosenstein announced a new working group “whose top missions will be setting uniform standards for how experts testify about such evidence and creating a program to monitor the accuracy of forensic testimony” as well as improving the resources of crime labs.⁸⁷ The move, however, has been met with criticism because the working group will be internal to the DOJ and not independent, and therefore tied to prosecutorial interests.⁸⁸ Additionally,

81. See William J. Stuntz, *The Pathological Politics of Criminal Law*, 100 MICH. L. REV. 505, 509, 529–33 (2001).

82. *Id.*

83. Del Quentin Wilber, *White House Panel Expected to Issue Report Critical of Some Forensic Evidence in Criminal Cases*, L.A. TIMES (Sept. 1, 2016, 4:05 PM), <http://www.latimes.com/nation/la-na-council-forensic-evidence-20160831-snap-story.html> [<https://perma.cc/LMY9-WLS6>] (“Jim Pasco, executive director of the National Fraternal Order of Police, was briefed on the recommendations and said it appeared to be based on a ‘half-baked model’ that ‘calls into question technologies’ that have long been used in court.”).

84. Barack Obama, Commentary, *The President’s Role in Advancing Criminal Justice Reform*, 130 HARV. L. REV. 811, 860–61 (2017).

85. Radley Balko, *Obama’s Rhetoric on Forensics Is at Odds with His Record*, WASH. POST (Jan. 5, 2017), <https://www.washingtonpost.com/news/the-watch/wp/2017/01/05/obamas-rhetoric-on-forensics-is-at-odds-with-his-record/> [<https://perma.cc/7GWR-Q743>].

86. Sadie Gurman, *Justice Department Considers Revamp of Federal Standards for Forensic Evidence*, PBS (Aug. 7, 2017, 10:00 AM), <https://www.pbs.org/newshour/nation/justice-department-revives-effort-looking-forensic-evidence> [<https://perma.cc/39FS-LH4C>].

87. *Id.*

88. *Id.*

Rosenstein has said that “[w]e must use forensic analysis carefully, but we must continue to use it . . . We should not exclude reliable forensic analysis,”⁸⁹ seemingly without acknowledgment that the analysis is, in many cases, simply *not* reliable.

The scientific state of affairs outlined here is alarming. The practical difficulty of achieving meaningful outright reform through Congress, as well as the slow or nonexistent movement by the executive branch, underscores the need for changes in how the legal system regulates the admission of forensic evidence.

D. Judges, Juries, and Daubert

We now turn to examining a “puzzling and consequential question”: “[w]hy didn’t the Supreme Court’s ‘junk science’ decision, *Daubert*[], prevent or restrict the admissibility of testimony based on flawed forensic techniques?”⁹⁰

Daubert instructed judges to engage with the science as science (through, for example, an evaluation of peer review) on an individualized basis, not just to inquire as to whether a community of practitioners accepted it.⁹¹ The fact that little difference can be detected in evidence admission in states that have shifted from the *Frye* standard to the *Daubert* standard⁹² perhaps indicates that judges are not actually applying the scrutiny now required by Rule 702.

Some scholars have suggested that judges resist the admissibility standards presented in *Daubert*, even in the civil context. Federal judges will sometimes cite to cases that pre-date *Daubert* or admit evidence that does not meet the criteria of Rule 702 and say the jury is to evaluate the “weight” of the testimony.⁹³ There is also some evidence that judges do not want to play the role of gatekeeper of scientific evidence. One judge even noted that “the process of dealing with expert scientific testimony” was like “being ‘hit . . . between your eyes with a four-by-four.’”⁹⁴ Few judges have scientific backgrounds; it is

89. *Id.*

90. Giannelli, *supra* note 38 (footnote omitted).

91. Compare *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 592–93 (1993) (noting that “the trial judge must determine . . . whether the reasoning or methodology underlying the testimony is scientifically valid”), with *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) (articulating the test as whether “the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs”).

92. See Chen & Yoon, *supra* note 33, at 498–99.

93. David E. Bernstein, *The Misbegotten Judicial Resistance to the Daubert Revolution*, 89 NOTRE DAME L. REV. 27, 54–55 (2013); see *Milward v. Acuity Specialty Prods. Grp.*, 639 F.3d 11 (1st Cir. 2011).

94. Cassandra H. Welch, Note, *Flexible Standards, Deferential Review: Daubert’s Legacy of Confusion*, 29 HARV. J.L. & PUB. POL’Y 1085, 1096 (2006) (quoting Jon Y. Ikegami, *Objection: Hearsay—Why Hearsay-Like Thinking Is a Flawed Proxy for Scientific Validity in the Daubert “Gatekeeper” Standard*, 73 S. CAL. L. REV. 705, 711 (2000)).

likely difficult for them to be the gatekeepers for information they do not have the tools to understand. The situation may be even more complicated: some evidence suggests that judges overall apply greater rigor to expert testimony offered by criminal defendants and civil litigants than they do to that offered by prosecutors.⁹⁵ In other words, it's not that judges cannot adequately evaluate the science, it's that in certain contexts they have incentives not to.

Other explanations for a judicial willingness to admit evidence that should be excluded under Rule 702 and *Daubert* in criminal trials include the fact that many judges are former prosecutors, that judges in many states must run "'tough on crime' elections,"⁹⁶ that defense attorneys fail to object to prosecution expert witnesses, and that judges generally have concerns about withholding evidence from juries.⁹⁷

Lack of judicial rigor in applying the *Daubert* standard is especially concerning in criminal trials where prosecutors introduce questionable forensic evidence; the introduction of forensic evidence itself may be prejudicial, since juries are possibly predisposed to accepting it regardless of its actual scientific validity. In recent years, the media has often discussed the so-called "CSI Effect," which purports to make prosecutors' jobs harder because the public has now come to expect forensic evidence and will not convict without it.⁹⁸ But there is also some data suggestive of a somewhat different effect: the public has come to view forensic science as generally accurate.⁹⁹ This uncritical acceptance is a troubling development, and it is all the more important that unsound scientific evidence be excluded before it reaches a jury. Doing so requires reexamination of the admission standard in criminal trials.

III. TOWARD A SOLUTION: A NEW SPECIAL RELEVANCE RULE

There are a number of productive avenues for fixing the complex set of problems presented by junk forensic science, many of them involving scientists, law enforcement officers, lawyers, and legislators. These potential solutions are outlined above in the discussion of the NAS and PCAST reports.¹⁰⁰ The actual scientific research necessary to develop these methods into rigorous tests with probative value must be conducted by scientists, federal standards must be put into place to ensure consistency across jurisdictions, and the

95. Damon-Moore, *supra* note 60, at 1535, 1535 n.15; *see also* Neufeld, *supra* note 37, at S109.

96. Damon-Moore, *supra* note 60, at 1536.

97. *Id.*

98. *See, e.g.*, Brian Dakss, 'The CSI Effect', CBS (Mar. 21, 2005, 10:47 AM), <https://www.cbsnews.com/news/the-csi-effect/> [<https://perma.cc/7MXS-5CDL>] (noting that jurors in the Robert Blake murder trial refused to convict based on eyewitness testimony, and quoting a juror as saying "[i]f [the prosecutor] would have had [blood spatter or gunshot residue evidence], that would have meant that he was guilty").

99. Simon A. Cole & Rachel Dioso-Villa, *Investigating the 'CSI Effect' Effect: Media and Litigation Crisis in Criminal Law*, 61 STAN. L. REV. 1335, 1354–55 (2009).

100. *See supra* Section II.C.

development and execution of forensic tests must take place free from prosecutorial influence. These solutions, however, will all require time and funding, and scientifically questionable evidence should not continue to be admitted in the meantime.

Other strategies for allaying the risks of misleading evidence involve encouraging defense attorneys to bring *Daubert* (and state-level equivalent) challenges to any prosecution expert presenting forensic evidence. States can be encouraged to enact or improve wrongful conviction recovery statutes. Eighteen states have no such statutes,¹⁰¹ and increasing the recovery amounts in the states that do have them will disincentivize the use of unscientific evidence. Given the political constraints on passing legislation perceived as defendant friendly,¹⁰² and because public defenders in many jurisdictions carry huge caseloads,¹⁰³ increasing expectations placed on the defense would not be productive. Because of the difficulties inherent in implementing these solutions, the most efficient way to minimize the damage junk science can do to the legal system is to exclude it, at least until there exists adequate scientific data demonstrating validity and reliability for each individual method.

A. Evidence Code Generally

Our evidence codes tend to be liberal—they trust juries and overall favor jury evaluation of evidence. Rule 402 lays out the baseline for admission: “Relevant evidence is admissible unless any of the following provides otherwise: the United States Constitution; a federal statute; these rules; or other rules prescribed by the Supreme Court.”¹⁰⁴ There are situations, however, in which relevant evidence is deemed too prejudicial to reach a jury.¹⁰⁵ Because non-DNA forensic evidence’s prejudicial effect on a jury substantially outweighs its probative value, this Note proposes adding a narrow special relevance rule excluding non-DNA forensic evidence in criminal trials under certain circumstances. This is not to say that non-DNA forensic evidence has zero probative

101. *Compensating the Wrongly Convicted*, INNOCENCE PROJECT, <http://www.innocenceproject.org/compensating-wrongly-convicted/> [https://perma.cc/R2L9-PGWC].

102. See, e.g., Stuntz, *supra* note 81, at 509–10 (2001) (describing the criminal justice system as “a one-way ratchet that makes an ever-larger slice of the population felons” due to both public pressure and cooperation between legislators and prosecutors).

103. “On average, a public defender would need about 3,035 work hours—a year and a half—to do a year’s worth of work.” Jaeah Lee et al., *Charts: Why You’re in Deep Trouble if You Can’t Afford a Lawyer*, MOTHER JONES (May 6, 2013, 10:00 AM), <http://www.motherjones.com/politics/2013/05/public-defenders-gideon-supreme-court-charts> [https://perma.cc/6KJ7-CPV5]. See generally Carrie Dvorak Brennan, Note, *The Public Defender System: A Comparative Assessment*, 25 IND. INT’L & COMP. L. REV. 237 (2015).

104. FED. R. EVID. 402.

105. For example, Rule 403 excludes evidence when the risk of unfair prejudice to the opposing party substantially outweighs the probative value of the evidence. As discussed *infra*, several federal evidence rules categorically exclude highly prejudicial evidence with low probative value for certain purposes as a matter of law.

value; for example, a fiber match may be able to tell you broad characteristics about that fiber, even if it cannot provide more specific information. But the prejudicial effect on criminal juries¹⁰⁶ is simply too high a price to pay to warrant admission of this type of evidence absent better scientific grounding.

B. Rule 416: A New Special Relevance Rule

In light of the above discussion, this Note proposes a new rule barring prosecutors from introducing non-DNA forensic evidence absent either a competing defense expert or a high showing of scientific validity. This rule will ensure either that the jury has adequate context for the evidence or that the burden is placed on the proponent to prove that the evidence is scientifically valid.¹⁰⁷ This Section argues that, as a matter of law, the risk of unfair prejudice from current non-DNA forensic evidence substantially outweighs its probative value, and that the interests of justice are not being served by allowing for judicial discretion regarding this type of evidence.

Balancing under Rule 403 already requires assessing the probative value of the evidence in question and then asking whether this probative value is substantially outweighed by the danger of unfair prejudice to the opposing party.¹⁰⁸ As discussed above, the probative value of non-DNA forensic evidence is low.¹⁰⁹ Error rates are often not known, and when they are, they can be higher than we expect or should be comfortable with.¹¹⁰ Unlike DNA matching, these methods often *cannot* match a defendant to a crime scene. Rather, they often can only narrow the list of possible matches. In some cases, they cannot even do this.¹¹¹

On the other hand, the risk of unfair prejudice to the defendant created by non-DNA forensic evidence is extremely high. We have been attuned to the dangers of juries blindly believing experts since before the adoption of the revised Rule 702—ensuring the reliability of expert testimony that reaches juries is a key motivation for the rule itself.¹¹² Add to this the credulous relationship between juries and forensics, and even forensic testimony with

106. See *infra* Section III.B.

107. While nominally the burden of proof for expert testimony does lie with the proponent under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 592 (1993), in practice the evidence is admitted absent an affirmative challenge from the opponent. See *supra* Section II.D. The proposed rule would *require* a threshold showing of validity from the proponent without requiring the opponent to object.

108. FED. R. EVID. 403.

109. See *supra* Section II.A.

110. Recall that the error rate for fingerprint matching is potentially one in several *hundred*. See *supra* Section II.A.

111. In bitemark comparison analysis, for example, forensic odontologists often cannot agree on whether a mark is a bite at all. See *supra* Table 1.

112. “Ever since experts have been testifying, courts and commentators have worried that judges and jurors, themselves lacking the relevant expertise, will be unable to distinguish genuine expertise from the external trappings of it.” Frederick Schauer & Barbara A. Spellman, *Is Expert Evidence Really Different?*, 89 NOTRE DAME L. REV. 1, 13 (2013).

appropriate jury instructions can have prejudicial effects.¹¹³ Often this testimony comes in even without those caveats.¹¹⁴ Because forensic evidence is so prejudicial, the probative value would have to be extremely high for it to pass 403 balancing. Indeed, this is why DNA matches pass muster under 403: the odds of a mistake are low, and the probative value of a DNA match is extremely high.¹¹⁵ We do not see that kind of probative value with non-DNA forensic evidence, and so, as a matter of law, the probative value we do see is substantially outweighed by the danger of unfair prejudice.

To cabin judicial discretion to admit this type of evidence, this Note proposes the following special relevance rule:

Rule 416: Non-DNA Forensic Evidence in Criminal Trials

(a) Definitions:

(1) “Non-DNA forensic evidence” shall include the results of a comparative test meant to identify a suspect, to identify material relevant in a criminal proceeding, or to match material relevant in a criminal proceeding to a suspect, aside from results that pertain to the use of genetic material to identify a suspect.

(2) These tests include, but are not limited to: hair-match analysis, bitemark comparisons, ballistics matching, fingerprint matching, arson analysis, firearm identification, and toolmark identification.

(b) The prosecution shall not be permitted to introduce non-DNA forensic matching in criminal proceedings unless the method has gained acceptance in the relevant academic science community comparable to that enjoyed by DNA evidence for the purposes for which it is being admitted.

(c) Exception: The prosecution can introduce non-DNA forensic evidence if the defense presents a competing expert speaking to the evidence to be introduced.

In the absence of a competing defense expert to provide context to the jury, this rule bars the admission of hair match, bitemark, fiber analysis, and other similar test results until and unless proponents of this type of evidence can get credentialed scientists to conduct rigorous peer-reviewed studies demonstrating validity to a high degree of certainty. For many forensic tests—for example, bitemark analysis—reaching this level of support is unlikely.¹¹⁶

113. See *supra* note 99 and accompanying text.

114. See, for example, the systemic exaggerated testimony around hair match analysis discussed in notes 8–10 *supra*.

115. See *supra* note 47 and accompanying text.

116. See *supra* note 51 and accompanying text.

For others, such as fingerprints, additional testing could firm up the understanding of error rates.¹¹⁷ The goal here is to admit only evidence that reaches DNA-levels of reliability: liberty should not be restricted on the basis of less. This rule is limited to criminal proceedings, since as discussed above, the adversarial process and judicial gatekeeping seem to function better in civil contexts,¹¹⁸ making outright exclusion unwarranted there. The list of examples provided in 416(a)(2) is not exhaustive and should be extended by analogy to exclude new forensic tests that have not yet reached the requisite level of evidentiary support.

This proposed rule explicitly requires that the general acceptance component of the inquiry be carried out with respect to academic science communities, not to groups of forensic science practitioners. The explicit reference to academic scientists in the rule permits challenges to forensic evidence only if the thinking in those communities changes and once-accepted methods become discredited.

The inquiry into whether a forensic test has reached the threshold for admission will resemble the inquiry mandated by *Daubert* that has proved difficult to conduct. The difference is that the new rule requires an explicit comparison to the amount of testing, level of peer review, understanding of error rates, presence of standard maintenance, and level of general acceptance for DNA matching evidence, and so it gives judges an objective benchmark against which to evaluate the evidence in question. To guard against any judicial tendency to claim reliability where there is none, appellate courts should review the admissions *de novo*. Requiring a default, intentionally high, threshold showing from the proponent, intense scrutiny on appeal, and the existence of an actual objective benchmark should ensure greater rigor in the admission of problematic forensic testimony for the purposes of conviction. The defense is given considerably more latitude in evidence it can introduce to a jury, parallel to Rules 404(a)(2)(A)–(C) discussed below, because less reliable evidence may still introduce reasonable doubt.

C. *Parallels in Existing Evidence Rules*

All parts of this proposed rule have precedent in existing parts of the federal evidence code, and this rule is an extension of principles and concerns already at play in other parts of the code. While removing judicial discretion seems counter to the principles of a liberal evidence code, Congress has on multiple occasions decided to do precisely this.

Several evidence rules create different standards for civil and criminal contexts, with the understanding that criminal conviction carries with it serious penalties, including loss of life, restriction of liberty,

117. PCAST REPORT, *supra* note 17, at 10.

118. See *supra* note 34 and accompanying text.

disenfranchisement,¹¹⁹ and difficulty in obtaining employment.¹²⁰ There is thus a recognition that evidentiary rules are sometimes different in criminal proceedings than in civil proceedings. For example, Rule 404(a)(2)(A)–(C)¹²¹ allows criminal defendants wider latitude in introducing certain types of character evidence than the government, with the understanding that character evidence may sow the seed of reasonable doubt. Similarly, Rule 803(8)(A)(ii) permits the admission of public records that otherwise would be considered hearsay, unless that record was made by a law enforcement officer under the duty to report in a criminal case. To preserve the defendant's rights, that report cannot be admitted without the officer present for cross-examination.¹²² The federal evidence code is familiar with making different rules for civil and criminal contexts, as the proposed Rule 416 would do.

Under Rule 410, evidence of pleas, plea discussions, and related statements are not admissible except under narrow circumstances.¹²³ The rationale behind this exclusion is in part to protect criminal defendants from what would be the admission of extremely prejudicial evidence against them (statements made during plea negotiations) even though the probative value of these statements might be very high. The proposed new rule would bar similarly prejudicial evidence that has a far lower likely probative value than statements excluded under Rule 410; the goal of protecting criminal defendants is the same.

119. See, e.g., *Felony Disenfranchisement*, SENT'G PROJECT, <http://www.sentencingproject.org/issues/felony-disenfranchisement/> [<https://perma.cc/JUY6-W9NY>].

120. See Amanda Agan & Sonja Starr, *Ban the Box, Criminal Records, and Statistical Discrimination: A Field Experiment*, 133 Q. J. ECON. 191 (2018).

121. FED. R. EVID. 404(a)(2)(A) (allowing a criminal defendant to offer evidence of the defendant's pertinent trait); FED. R. EVID. 404(a)(2)(B) (allowing a criminal defendant to offer evidence of an alleged victim's pertinent trait).

122. See FED. R. EVID. 803(8)(A)(ii).

123. FED. R. EVID. 410:

(a) Prohibited Uses. In a civil or criminal case, evidence of the following is not admissible against the defendant who made the plea or participated in the plea discussions: (1) a guilty plea that was later withdrawn; (2) a nolo contendere plea; (3) a statement made during a proceeding on either of those pleas under Federal Rule of Criminal Procedure 11 or a comparable state procedure; or (4) a statement made during plea discussions with an attorney for the prosecuting authority if the discussions did not result in a guilty plea or they resulted in a later-withdrawn guilty plea.

(b) EXCEPTIONS. The court may admit a statement described in Rule 410(a)(3) or (4):

(1) in any proceeding in which another statement made during the same plea or plea discussions has been introduced, if in fairness the statements ought to be considered together; or (2) in a criminal proceeding for perjury or false statement, if the defendant made the statement under oath, on the record, and with counsel present.

Likewise, there are several instances in the federal evidence code in which evidence fails 403 balancing as a matter of law. Rules 407,¹²⁴ 408,¹²⁵ 409,¹²⁶ and 411¹²⁷ each categorically bar the admission of subsequent remedial measures, compromise offers and negotiations, offers to pay medical expenses, and the presence/absence of liability insurance, respectively, for the purposes of showing liability (although this type of evidence is admissible for other purposes). The drafters of the Federal Rules of Evidence chose to remove judicial discretion in these instances; even relevant evidence is per se inadmissible for the purposes of showing liability. The prejudicial effect on juries is simply too high when weighed against the minimal probative value this evidence provides for the proscribed purposes.¹²⁸

IV. ADDRESSING COUNTERARGUMENTS

A. *Limiting Instructions or Categorical Exclusion?*

It has been argued that the evidence code should be *more* liberal with respect to expert testimony, in that *Daubert* mandates the exclusion of expert

124. FED. R. EVID. 407:

When measures are taken that would have made an earlier injury or harm less likely to occur, evidence of the subsequent measures is not admissible to prove: negligence; culpable conduct; a defect in a product or its design; or a need for a warning or instruction. But the court may admit this evidence for another purpose, such as impeachment or—if disputed—proving ownership, control, or the feasibility of precautionary measures.

125. FED. R. EVID. 408:

(a) PROHIBITED USES. Evidence of the following is not admissible—on behalf of any party—either to prove or disprove the validity or amount of a disputed claim or to impeach by a prior inconsistent statement or a contradiction: (1) furnishing, promising, or offering—or accepting, promising to accept, or offering to accept—a valuable consideration in compromising or attempting to compromise the claim; and (2) conduct or a statement made during compromise negotiations about the claim—except when offered in a criminal case and when the negotiations related to a claim by a public office in the exercise of its regulatory, investigative, or enforcement authority. (b) EXCEPTIONS. The court may admit this evidence for another purpose, such as proving a witness's bias or prejudice, negating a contention of undue delay, or proving an effort to obstruct a criminal investigation or prosecution.

126. FED. R. EVID. 409: “Evidence of furnishing, promising to pay, or offering to pay medical, hospital, or similar expenses resulting from an injury is not admissible to prove liability for the injury.”

127. FED. R. EVID. 411: “Evidence that a person was or was not insured against liability is not admissible to prove whether the person acted negligently or otherwise wrongfully. But the court may admit this evidence for another purpose, such as proving a witness's bias or prejudice or proving agency, ownership, or control.”

128. For example, the presence of liability insurance often causes juries to worry about double recovery regardless of the actual presence or absence of liability; on the other hand, the probative value of whether or not a party had liability insurance for determining whether or not the party was negligent is not particularly high, since many non-negligent parties carry liability insurance. FED. R. EVID. 411 advisory committee's note to 1972 Proposed Rules.

testimony that is more reliable than, say, eyewitness identification, which we know to be seriously problematic and which comes in with no problems under Rule 402.¹²⁹ There is nothing special, this line of argument goes, about expert testimony justifying the higher standard for admission. The literature along these lines questions the prevalence of jury overvaluation of expert testimony as a reason for the heightened concern.¹³⁰ It points to evidence that juries may view experts more as “hired guns” and argues that, generally, deference to experts is not irrational jury behavior.¹³¹ Regardless of whether or not there is empirical evidence showing that juries do not overvalue expert testimony *generally*, forensic evidence may be different: the expert testifying is not just any expert but often one with *additional* indicia of government authority. And given the state of some forensic evidence, assigning any value may be too much value.

Professor Richard Friedman argues that *Daubert* should be “squeezed out of the picture” and reliability replaced by other approaches to evidence admissibility.¹³² He suggests that hair match analysis, although unreliable, still has enough probative value to be admitted with an instruction from the judge as to the proper weight¹³³ as a “less restrictive” alternative to outright exclusion.¹³⁴ Given the problems detailed above, however, forensic evidence can be either “affirmatively misleading”¹³⁵ or “of so little probative value as not to be worth the costs of presenting it”¹³⁶ and should thus be excluded. This argument for exclusion can be made completely independent of the overvaluation concern that Friedman argues is overblown.¹³⁷ The admission of forensic evidence is often “wrong in a way that may be damaging to the search for truth,”¹³⁸ and the evidence of this has only gotten stronger as we collect better data on exonerations.

Friedman makes the good point that the ideal process would be for courts of last resort to exclude misleading evidence as a matter of law,¹³⁹ but since this is simply not happening, it would be wise to explore other options to

129. Schauer & Spellman, *supra* note 112, at 8–10.

130. *Id.* at 13.

131. *Id.* at 13–16.

132. Richard D. Friedman, *Squeezing Daubert Out of the Picture*, 33 SETON HALL L. REV. 1047, 1048 (2003). Friedman suggests that the bulk of evidence admissibility determinations be about sufficiency rather than reliability, in part because such determinations are as a matter of law and thus subject to de novo review, a condition I also argue for with my proposed rule. *Id.* at 1065–69.

133. *Id.* at 1057–59.

134. *Id.* at 1048.

135. Richard D. Friedman, *Minimizing the Jury Over-Valuation Concern*, 4 MICH. ST. L. REV. 967, 968 (2003).

136. *Id.*

137. *Id.* at 969–71.

138. *Id.* at 984.

139. *Id.*

solving the problem, including the use of legislatures instead of courts. Friedman also identifies exclusion of evidence as a potentially beneficial driving force for the improvement of such evidence,¹⁴⁰ but the current system is not driving that improvement, either. Forcing the junk evidence to remain out until enough improvement takes place to increase its probative value significantly will spur the development of better forensic tests. It is also worth noting that the proposed Rule 416, when combined with existing judicial behavior in civil contexts, would create Friedman's preferred set of standards for expert evidence: "[s]tandards should be very lenient for criminal defendants, and tougher for prosecutors, with the standards for civil litigants somewhere in between."¹⁴¹ This scale would be created by legislative rather than judicial action.

B. *Making It More Difficult to Secure Convictions*

A central objection to the proposed Rule 416 is that it will make it extremely difficult to admit non-DNA forensic evidence and therefore make obtaining convictions of guilty defendants more difficult. This rule will make admitting junk science much more difficult in criminal trials. If the government is concerned that courts are excluding relevant evidence, Congress and state legislatures are free to create financial incentives for academic science communities to test current forensic methods and develop new, more accurate ones that can be admitted under the new rule. If evidence of reliability cannot be obtained through rigorous study, that forensic test should never be used to convict.

Another possible objection is that this rule will not be responsive enough to cutting-edge scientific developments. The response to this objection is two-fold. First, once a forensic testing method reaches the level of scientific grounding and acceptance enjoyed by DNA matching, Congress can amend the rule and create an exception explicitly allowing it without the formality of the threshold showing of evidentiary support. In any case, the proposed rule itself would make an allowance for forensic testing methods that have proved their mettle.¹⁴² Second, while it would perhaps be preferable from an efficiency standpoint to have a judicially driven evolving standard for what is a reliable forensic-testing method rather than relying on the political branches, the last 25 years have shown us that this is simply not a workable solution. Resource constraints on public defenders' offices are not likely to ease in the near future. Forensic science laboratories are not likely to decouple from prosecutors' offices. Federal oversight of the science and the accreditation is likewise not

140. *Id.*

141. Friedman, *supra* note 132, at 1047.

142. See *supra* Section III.B (Proposed Rule 416(b): "The prosecution shall not be permitted to introduce non-DNA forensic matching in criminal proceedings unless the method has gained acceptance in the relevant academic science community comparable to that enjoyed by DNA evidence for the purposes for which it is being admitted.").

likely to be forthcoming.¹⁴³ Reliance on the improvement of the evidence itself is likely misplaced, and the price we pay in improper convictions in the meantime is too high.

CONCLUSION

Regardless of the reasons for judges' failure to exclude scientifically unacceptable forensic evidence, giving the gatekeeping role to judges was probably overly burdensome to begin with.

It's not like trial judges got together for a big celebration when *Daubert* came out,' [U.S. District Court Judge Paul] Grimm said. 'I am a judge because I didn't understand science and math! If I could do science and math, I'd be Doctor so-and-so, not Judge so-and-so. That's the reaction of judges in terms of dealing with these things.'¹⁴⁴

There is increasing recognition among judges that they need to be doing a better job at excluding evidence they, too, once thought was "infallible."¹⁴⁵ But a more efficient solution and one better suited to achieving justice would be to acknowledge the limitations of their training and cabin their discretion. Forensic evidence should not be admitted absent a showing that it enjoys as high reliability and acceptance among scientists as DNA match evidence, which is what the proposed Rule 416 would achieve. The destruction of lives, such as Santae Tribble's, due to the irresponsible use of scientifically invalid evidence cannot continue in a system that values justice and accurate trial results.

143. See *supra* Section II.C.

144. Maria Dinzeo, *Skepticism of Forensic Methods Urged at 9th Circuit Conference*, COURTHOUSE NEWS (Jul. 18, 2017), <https://www.courthousenews.com/skepticism-forensic-methods-urged-9th-circuit-conference/> [<https://perma.cc/V6NA-VQ2N>].

145. *Id.*