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Increasing Forensic Evidence's Reliability and Minimizing Wrongful Convictions: Applying Daubert Isn't the Only Problem

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INCREASING FORENSIC EVIDENCE'S RELIABILITY AND MINIMIZING WRONGFUL CONVICTIONS: APPLYING *DAUBERT* ISN'T THE ONLY PROBLEM*

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I. INTRODUCTION

The U.S. Supreme Court decided *Daubert v. Merrell Dow Pharmaceuticals* fifteen years ago.[1] During the intervening years, the judiciary has failed to apply *Daubert*'s "exacting standards"[2] to forensic evidence offered by the prosecution. This unwillingness is disturbing by itself, and only compounded by recognizing that, during the same period, 216 people have been exonerated with DNA technology and scores of others have been exonerated via traditional, non-DNA evidence. It appears from the initial social science and anecdotal research that unreliable forensic evidence has played a moderate to significant role in many of these injustices.[3]

Many suggest that unreliable forensic evidence undermined the criminal process and presumably played a role in several wrongful convictions because the judiciary has not applied *Daubert* to prevent prosecutorial reliance on unreliable or "junk" forensic evidence in the courtroom. While this claim is partially true, there are other factors at play. The judiciary is merely a single star in a constellation of legal *and* forensic science shortcomings that have contributed to wrongful convictions. Thus, to minimize the

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1. 509 U.S. 579 (1993).
2. *Weisgram v. Marley Co.*, 528 U.S. 440, 442 (2000).
3. For example, in a comprehensive review of the first 200 convictions overturned with DNA evidence:

> One hundred and thirteen cases (57%) involved introduction of forensic evidence at trial, with serological analysis of blood or semen the most common (79 cases), followed by expert comparison of hair evidence (43 cases), soil comparison (5 cases), DNA tests (3 cases), bite mark evidence (3 cases), fingerprint evidence (2 cases), dog scent identification (2 cases), spectrographic voice evidence (1 case), shoe prints (1 case), and fiber comparison (1 case).

Brandon L. Garrett, *Judging Innocence*, 108 Colum. L. Rev. 55, 81 (2008).

likelihood unreliable forensic evidence will affect the criminal process, both the judiciary *and* the forensic science community must enact various reforms. This Article identifies and discusses the reforms to forensic science that can combat the judiciary's failure to apply *Daubert* evenhandedly in criminal cases. Part II briefly summarizes *Daubert* and its progeny, their potential to prevent unreliable forensic evidence from undermining the criminal process, and the reality that judges have applied *Daubert* unevenly in civil and in criminal cases. Through case studies, Part III presents the noticeable link between certain wrongful convictions and unreliable forensic evidence. In Part IV, suggested reforms will be presented that can diminish the likelihood of future wrongful convictions affected by forensic scientific shortcomings.

II. EXPERT TESTIMONY AND THE LAW

No one will deny that the law should in some way effectively use expert knowledge wherever it will aid in settling disputes. The only question is as to how it can do so best.[4]

Expert witnesses are fundamental to Anglo-American judicial proceedings;[5] their influence on the legal system dates to the 13th century, when judges called upon them to aid in their decision-making.[6] During the era extending from the rise of the adversarial jury system and into the 1800s, courts summoned persons with specialized knowledge to serve as jurors on "special juries."[7] Nevertheless, courts and legal commentators traditionally have been wary of expert witnesses.[8] Accordingly, the legal community has struggled to develop coherent admissibility standards for expert testimony[9]—particularly that of scientific experts.[10] Developing admissibility standards for scientific evidence is difficult because law and science have different philosophies and objectives.[11] Law emphasizes prompt resolution and finality[12] whereas science predominantly focuses on precision.[13] Junk science and slapdash scientific work have only further muddied admissibility standards.[14]

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4. Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 Harv. L. Rev. 40, 40 (1901).

5. *See* Stephan Landsman, *One Hundred Years of Rectitude: Medical Witnesses at the Old Bailey, 1717–1817*, 16 L. & Hist. Rev. 445 (1998).

6. *See* Stephen Landsman, *Of Witches, Madmen, and Product Liability: An Historical Survey of the Use of Expert Testimony*, 13 Behav. Sci. & L. 131 (1995).

7. *See* James Oldham, *The Origins of the Special Jury*, 50 U. Chi. L. Rev. 137 (1983).

8. *See* William L. Foster, *Expert Testimony—Prevalent Complaints and Proposed Remedies*, 11 Harv. L. Rev. 169, 169 (1897); Lee M. Friedman, *Expert Testimony, Its Abuses and Reformation*, 19 Yale L.J. 247, 247 (1910); Hand, *supra* n. 4, at 40; Clemens Herschel, *Services of Experts in the Conduct of Judicial Inquiries*, 21 Am. L. Rev. 571, 571–72 (1887); Emory Washburn, *Testimony of Experts*, 1 Am. L. Rev. 45, 48–49 (1866).

9. *See* Samuel R. Gross, *Expert Evidence*, 1991 Wis. L. Rev. 1113, 1116.

10. David L. Faigman et al., *Modern Scientific Evidence: The Law and Science of Expert Testimony, Admissibility of Scientific Evidence* § 1-1.0, 2 (2d ed., West 2006).

11. *See* Edward K. Cheng, *Changing Scientific Evidence*, 88 Minn. L. Rev. 315, 329–35 (2003) (discussing these differences).

12. *See Calderon v. Thompson*, 523 U.S. 538, 555 (1998) ("Finality is essential to both the retributive and the deterrent functions of criminal law.").

13. *See* Cheng, *supra* n. 11 at 329 ("science focuses primarily on accuracy alone").

14. *See* Peter W. Huber, *Galileo's Revenge: Junk Science in the Courtroom* (Basic Bks. 1991) (discussing

During the late nineteenth and early twentieth centuries, experts could testify if qualified, and if they presented testimony beyond the average juror's knowledge range.[15] Expertise was implied by the expert's success in an occupation or vocation comprising the subject matter at issue.[16] Yet with *Frye v. United States*,[17] the court of appeals required a showing that the expert's novel scientific test had been generally accepted in the scientific community. In that 1923 case, the Court of Appeals for the District of Columbia affirmed the exclusion of a psychologist's finding, based on blood pressure measurements, that a defendant had been truthful when he denied committing a murder. In one of the most oft-cited passages in evidence law, Judge Van Orsdel articulated the "general acceptance" standard:

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, 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.[18]

Although many courts embraced *Frye*'s general acceptance standard,[19] it had its detractors and its shortcomings in practice.[20]

In 1975, Congress signed the Federal Rules of Evidence (FRE) into law.[21] Rule 702 articulated a "helpfulness" standard that departed from the common law's stricter "beyond the ken" of an ordinary fact finder standard.[22] Legal scholars characterized this rule as a "relevancy test."[23] As applied, the test often meant that a witness's technique automatically qualified whenever the witness did.[24] Neither the advisory committee's commentary nor Rule 702 mentioned *Frye*. As a result, "in principle, under the Federal Rules no common law of evidence remain[ed]."[25] The failure to clarify whether Rule 702 superseded *Frye* produced confusion among federal and state courts during the 1970s and 1980s that ultimately led to *Daubert* and its progeny.

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related instances over the past century).

15. *E.g. New England Glass Co. v. Lovell*, 61 Mass. 319 (1851); *Clark v. Rockland Water Power Co.*, 52 Me. 68 (1860); *Buffum v. Harris*, 5 R.I. 243 (1858).

16. *See* Faigman et al., *supra* n. 10, at § 1-2.1, 4.

17. 293 F. 1013 (D.C. Cir. 1923).

18. *Id.*

19. *See U.S. v. Addison*, 498 F.2d 741 (D.C. Cir. 1974); *People v. Kelly*, 549 P.2d 1240 (Cal. 1976); *Reed v. State*, 391 A.2d 364 (Md. 1978).

20. *See* Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence:* Frye v United States, *a Half-Century Later*, 80 Colum. L. Rev. 1197, 1208–28 (1980).

21. *See* Pub. L. No. 93-595, 88 Stat. 1926, 1926–49 (1975).

22. Federal Rule 702 states that, "If scientific, technical, or other specialized knowledge will assist the tried of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise."

23. *See* Charles T. McCormick, *Handbook of the Law of Evidence* 363–64 (West 1954); Paul C. Giannelli, Daubert*: Interpreting the Federal Rules of Evidence*, 15 Cardozo L. Rev. 1999 (1994) (discussing the relevancy approach's origin).

24. *See* Paul C. Giannelli & Edward J. Imwinkelried, *Scientific Evidence* § 1-6, 30 (3rd ed., Lexis 1999).

25. Edward W. Cleary, *Preliminary Notes on Reading the Rules of Evidence*, 57 Neb. L. Rev. 908, 915 (1978).

A. Daubert *and Its Progeny*

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,[26] the U.S. Supreme Court partially clarified whether the Federal Rules superceded *Frye*, when it "held that *Frye* had been superseded by the [FRE] and that expert testimony could be admitted if the district court deemed it both relevant and reliable."[27] *Daubert* obligated trial judges to screen expert testimony as "gatekeepers" and make certain it was "not only relevant, but reliable."[28] *Daubert* instructed judges not merely to assess whether a technique or theory was generally accepted, but also whether it could be tested or falsified, whether it possessed an identifiable error rate, and whether the technique or theory underlying the expert's opinion had undergone peer review.[29] Nevertheless, *Daubert* failed to address whether this new prism also applied to "technical" and "specialized" knowledge—the two other forms of expert testimony recognized in Rule 702.

The Supreme Court answered this question in *Kumho Tire Co. v. Carmichael*,[30] holding that *Daubert* "applies not only to testimony based on 'scientific' knowledge, but also to testimony based on 'technical' and 'other specialized' knowledge."[31] The Supreme Court felt it would be onerous for trial judges to apply different rules to areas of knowledge, absent a "clear line that divides . . . one from the others."[32] Moreover, *Kumho Tire* established another significant principle: The gatekeeper's need to address the "task at hand" rather than the standard reliability of a generally and broadly defined area of expertise.[33]

Congress amended Rule 702 in 2000 to codify *Daubert*, *Kumho Tire*, and *General Electric Co. v. Joiner*.[34] Rule 702 now reads,

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Like *Daubert* and its progeny, Rule 702 forces courts to question the empirical underpinnings of all expert testimony and to exclude opinions which are "connected to

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26. 509 U.S. 579.

27. *U.S. v. Scheffer*, 523 U.S. 303, 311 n. 7 (1998). There was nothing innovative about a trial judge possessing the authority to make an admissibility determination. Rules 104(a) and 702 supported this conclusion, and trial judges barred expert testimony long before *Daubert*. The majority's decision, however, not only identified this power, but also stressed that trial judges were obligated to employ this power when confronted with scientific expert testimony.

28. 509 U.S. at 589.

29. *See id.* at 589–93.

30. 526 U.S. 137 (1999).

31. *Id.* at 141.

32. *Id.* at 148.

33. *See* D. Michael Risinger, *Defining the "Task at Hand": Non-Science Forensic Science after* Kumho Tire Co. v. Carmichael, 57 Wash. & Lee L. Rev 767 (2000) (describing this subtle principle in *Kumho Tire*).

34. 522 U.S. 136 (1997) (holding that abuse of discretion is the proper standard of review for district court evidentiary rulings).

existing data only by the *ipse dixit* of the expert."[35]

B. Daubert's Potential Impact on Forensic Science

Daubert's potential impact on forensic science was obvious. Federal district judge Nancy Gertner recognized this when she commented that *Daubert* and its offspring "plainly invite a reexamination even of 'generally accepted' venerable, technical fields."[36] For years the forensic science community hung its hat on *Frye*'s general acceptance standard—a standard that did not require production of empirical research or error rate data to substantiate a forensic expert's conclusions.[37] Instead, *Frye* encouraged and permitted the development of "forensic science" guilds that established "general acceptance"—not with empirical research—but with "nose counting" and campaigning.[38] Forensic science's so-called fundamental principle—individuality—is neither testable nor falsifiable.[39]

Daubert was so potentially devastating to forensic sciences that, when the Supreme Court granted certiorari in *Kumho Tire* to decide whether *Daubert* applied to the "technical" and "specialized knowledge" components of Rule 702, a conglomerate of law enforcement associations drafted an amicus brief urging the Supreme Court not to extend *Daubert*. They argued that the change could significantly impair law enforcement's ability to obtain convictions. The brief argued:

> [T]he great bulk of expert testimony provided by law enforcement officers *does not involve scientific theories, methodologies, techniques, or data in any respect*. . . . Instead, law enforcement officers testify about such things as accident reconstruction, fingerprint, footprint and handprint [identification], handwriting analysis, firearms markings and toolmarks and the unique characteristics of guns, bullets, and shell casings, and bloodstain pattern identification.[40]

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35. *General Elec.*, 522 U.S. at 146.

36. *U.S. v. Hines*, 55 F. Supp. 2d 62, 67 (D. Mass. 1999). *See also U.S. v. Hidalgo*, 229 F. Supp. 2d 961, 966 (D. Ariz. 2002) ("Courts are now confronting challenges to testimony, as here, whose admissibility had long been settled."); Randolph N. Jonakait, *The Meaning of* Daubert *and What That Means For Forensic Science*, 15 Cardozo L. Rev. 2103, 2117 (1994) ("if *Daubert* is taken seriously, then much of forensic science is in serious trouble").

37. Donald Kennedy, the Editor-in-Chief of Science, had this to say about fingerprinting: "It's not that fingerprint analysis is unreliable. The problem, rather, is that its reliability is unverified either by statistical models or fingerprint variation or by consistent data on error rates." Donald Kennedy, *Forensic Science: Oxymoron?* 302 Sci. 1625, 1625 (2003). It was evident well before *Daubert* that the forensic science community did not prioritize empirical research efforts to substantiate their claims. *See* James W. Osterburg, *A Commentary on Issues of Importance in the Study of Investigation and Criminalistics*, 11 J. Forensic Sci. 261, 261 (1966).

38. *See Dennis v. Pertec Computer Corp.*, 927 F. Supp. 156, 160 (D.N.J. 1996) ("In rejecting the *Frye* test, the Supreme Court [in *Daubert*] declined to adhere to the traditional protocol of 'nose-counting' and, instead, opted to broaden the parameters of admissible scientific evidence to include novel opinions."). The forensic community spent much time and energy making certain the criminal justice system treated forensic identifications as absolute scientific facts, impervious to error or subconscious biases. *See* Craig M. Cooley, *Forensic Science and Capital Punishment Reform: An "Intellectually Honest" Assessment*, 17 Geo. Mason U. Civ. Rights L.J. 299, 413–21 (2007); Julie Johnson-McGrath, *Witness for the Prosecution: Science Versus Crime in Twentieth-Century America*, 22 Leg. Stud. Forum 183 (1998).

39. *See* Keith Inman & Norah Rudin, *Principles and Practice of Criminalistics: The Profession of Forensic Science* 123 (CRC Press 2000) (noting that "the theory of uniqueness is not falsifiable").

40. Br. Amicus Curiae of Ams. for Effective Law Enforcement et al., *Kumho Tire*, 526 U.S. 137 (emphasis added). Similarly, in *Mich. Millers Mut. Ins. Corp. v. Benfield*, 140 F.3d 915 (11th Cir. 1998), the

Simply put, after claiming for more than a century that what they practice constituted objective and infallible science,[41] many forensic science communities did an about face when the Supreme Court decided *Daubert* and claimed they were not practicing science after all. Instead, they premised their conclusions and identifications on their experience and specialized training.

Yet at the same time, just after the Supreme Court decided *Daubert*, the forensic science community "had an epiphany in regards to articulating standards. After claiming for decades the forensic science or crime lab setting did not permit the development of standards, the community did [another] about face and claimed that standards were not only necessary, but also achievable."[42] Many of the Scientific Working Groups (SWGs) were created after *Daubert*. As one of the authors previously noted, "One can only hope the forensic science community did not create the SWGs to provide scientific window dressing for the courts in light of *Daubert*."[43]

Daubert (and *Kumho Tire*) had potential to fundamentally alter the way forensic science went about its business. It gave the defense community the weaponry for which it yearned during the 1970s and 1980s, a period when courts rarely excluded the State's forensic science experts or evidence. With *Daubert* and its progeny, defense attorneys found themselves with a tool to see state forensic experts or evidence excluded whenever the state failed to present sufficient empirical and error rate data to substantiate the conclusions or identifications of its experts. If courts faithfully applied *Daubert*,[44] and excluded unfounded forensic experts or evidence, the forensic science community would have been forced to employ scientifically validated and reproducible techniques.[45]

C. *The Reality: Money Appears More Important Than Life and Liberty*

As Professors Risinger and Saks have discussed, there is an asymmetry between how courts apply *Daubert* in criminal cases and civil cases. Curiously, despite what is at stake in criminal cases—i.e., liberty or life[46]—courts continue to apply a "watered down" version of *Daubert* (or circumvent *Daubert* altogether) when they address a criminal defendant's request to exclude the prosecution's forensic evidence or experts.[47]

International Association of Arson Investigators submitted an amicus brief to the Eleventh Circuit asking the court to interpret their testimony as non-scientific rather than scientific so they could avoid *Daubert*'s "exacting standards" for admitting scientific testimony. *See* Br. for the Intl. Assn. of Arson Investigators, *Benfield*, 140 F.3d 915. Ironically, the most prominent fire and arson-related journal said this about the amicus brief: "[T]he amicus curiae brief that was filed on behalf of the IAAI didn't concentrate on or even claim that there was a demonstrable substitute source of reliability for this type of evidence. Instead, it simply declared that such evidence was needed in the war on crime." Vincent Brannigan & Jose Torero, *The Expert's New Clothes: Arson 'Science' after* Kumho Tire, http://firechief.com/mag/firefighting_experts_new_clothes/ (July 1, 1999).

41. For historical considerations regarding forensic science, see Cooley, *supra* note 38, at 413–21.

42. *Id.* at 354–55.

43. *Id.* at 356.

44. It should be noted that many states embraced *Daubert* and its rationale after the Supreme Court handed it down. *See* Heather Hamilton, *The Movement from* Frye *to* Daubert*: Where Do the States Stand?* 38 Jurimetrics J. 201, 208–09 (1998).

45. *See* December 2007 submission to the NAS by the U.S. Secret Service.

46. *See Mitchell v. U.S.*, 526 U.S. 314, 328 (1999) ("Another reason for treating civil and criminal cases differently is that 'the stakes are higher' in criminal cases, where liberty or even life may be at stake, and where the Government's 'sole interest is to convict.'" (citation omitted)).

47. According to Professor Risinger, "the heightened standards of dependability imposed on expertise

For instance, consider fingerprint challenges by defendants. Of the thirty-nine challenges reviewed by Professor Saks, where the court ultimately admitted fingerprinting evidence under *Daubert* and *Kumho Tire*, "the number of cases in which the courts conscientiously applied *Daubert* and *Kumho Tire* [was]... zero."[48] Similarly, many of the post-*Daubert* decisions (prior to *Kumho Tire*) regarding handwriting identification followed the following reasoning: "Forensic handwriting examination flunks the *Daubert* test. Because it flunks *Daubert*, it is not science. Because it is not science, it need not pass the *Daubert* test. A much looser 'test' of soundness applies. Under that test, it is admissible."[49]

Ironically, when prosecutors move to exclude criminal defendants' forensic experts or evidence pursuant to *Daubert*, courts generally side with the prosecution and hold that defendants do not meet *Daubert*'s exacting standards. As Professor Risinger's research demonstrated, prosecutors enjoyed a success rate of ninety-two percent in trial courts and ninety-eight percent in appellate courts.[50] No other litigant, civil or criminal, comes close to matching the prosecution's success rate.[51]

When one considers how courts apply *Daubert* in civil cases, the paradox becomes even more conspicuous. Again Professor Risinger demonstrates that unlike criminal defendants, civil defendants have been successful in excluding plaintiffs' expert testimony via *Daubert* challenges.[52] Moreover, when civil defendants introduced expert testimony that plaintiffs challenged pursuant to *Daubert*, courts generally denied such challenges and admitted the civil defendants' expert testimony. Thus,

> it seems that civil defendants win their *Daubert* dependability challenges most of the time, and that criminal defendants virtually always lose their dependability challenges. And when civil defendants' proffers are challenged by plaintiffs, those defendants usually win, but when criminal defendants' proffers are challenged by the prosecution, the criminal defendants usually lose.[53]

Simply put, although "these numbers do not directly establish disparate standards

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proffered in civil cases has continued to expand, but... expertise proffered by the prosecution in criminal cases has been largely insulated from any change in pre-*Daubert* standards or approach." D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?* 64 Alb. L. Rev. 99, 149 (2000). By no means is this novel. By executive order, the first Bush Administration implemented higher standards for expert testimony in civil cases, whereas federal prosecutors were allowed to argue for lower standards in DNA cases. *See* Paul C. Giannelli, *"Junk Science": The Criminal Cases*, 84 J. Crim. L. & Criminology 105 (1993).

48. *See* Michael J. Saks, *The Legal and Scientific Evaluation of Forensic Science (Especially Fingerprint Expert Testimony)*, 33 Seton Hall L. Rev. 1167, 1171 (2003). The handwriting identification field represents the one forensic science field in which criminal defendants have enjoyed moderate post-*Daubert* success. *See* D. Michael Risinger, *Handwriting Identification*, in Faigman et al., *supra* n. 10, at ch. 4 (discussing the handwriting cases).

49. Michael J. Saks, *The Aftermath of* Daubert*: An Evolving Jurisprudence of Expert Evidence*, 40 Jurimetrics J. 229, 237 (2000).

50. Risinger, *supra* n. 47, at 105–09 (noting that in 67 cases, the "[g]overnment proffered expertise was found only once to be so undependable as to require exclusion (and reversal)").

51. *See* Elizabeth L. DeCoux, *The Admissibility of Unreliable Expert Testimony Offered by the Prosecution: What's Wrong with* Daubert *and How to Make it Right*, 2007 Utah L. Rev. 131, 132–33.

52. *See* Risinger, *supra* n. 47, at 108–11.

53. *Id.* at 110.

of dependability in the [criminal and civil] contexts,"[54] they suggest a greater interest by courts in protecting civil defendants' economic interests rather than criminal defendants' liberty or life interests. Furthermore, the judiciary's inability or unwillingness to faithfully apply *Daubert* to prosecutorial forensic evidence allows the forensic science community to bypass critical steps and procedures that would ensure a technique's reliability and validity. Judge Nancy Gertner reflected upon this (potentially deadly) phenomenon best when she wrote:

> [W]hen liberty hangs in the balance—and, in the case of the defendants facing the death penalty, life itself—the standards should be higher than . . . [those] imposed across the country. The more courts admit this . . . evidence without requiring documentation, proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more.[55]

III. FORENSIC SCIENCE AND WRONGFUL CONVICTIONS

Judicial failure to vet prosecutorial forensic evidence under *Daubert* is troubling on several levels, particularly as hundreds of prisoners have been exonerated with newly discovered DNA and non-DNA evidence since the Supreme Court's 1993 decision.[56] Although a number of these injustices involved eyewitness misidentification,[57] false confessions,[58] jailhouse snitches,[59] and incompetent defense counsel,[60] an uncomfortable link ties theses injustices to unreliable and fraudulent forensic science.[61] For instance, when the Innocence Project's Barry Scheck and Peter Neufeld examined 62 of the first 67 DNA exonerations, they concluded that a third of them involved "tainted or fraudulent science."[62] When Professor Saks and his colleague Jonathan J. Koehler reviewed these and other DNA exonerations, 63 percent involved forensic science testing

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54. *Id.* at 108.

55. *U.S. v. Green*, 405 F. Supp. 2d 104, 109 (D. Mass. 2005).

56. *See* Barry Scheck et al., *Actual Innocence: Five Days to Execution and Other Dispatches from the Wrongly Convicted* (Signet 2000) (examining 62 of the first 67 DNA exonerations); Garrett, *supra* n. 3 (discussing 208 DNA exonerations); Samuel R. Gross et al., *Exonerations in the United States 1989 through 2003*, 95 J. Crim. L. & Criminology 523 (2005) (identifying and discussing 340 exonerations between 1989 and 2003); Innocence Project, www.innocenceproject.org (accessed Apr. 12, 2008) (noting that DNA evidence has helped to exonerate 215 prisoners since 1989).

57. *See* Margery Malkin Koosed, *The Proposed Innocence Protection Act Won't—Unless It also Curbs Mistaken Eyewitness Identifications*, 63 Ohio St. L.J. 263, 272 (2002) (citing eyewitness misidentification as the greatest contributing factor to miscarriages of justice).

58. *See* Steven A. Drizin & Richard A. Leo, *The Problem of False Confessions in the Post-DNA World*, 82 N.C. L. Rev. 891 (2004).

59. *See* Clifford S. Zimmerman, *From the Jailhouse to the Courthouse: The Role of Informants in Wrongful Convictions*, in *Wrongly Convicted: Perspectives on Failed Justice* 55–76 (Saundra D. Westervelt & John A. Humphrey eds., Rutgers U. Press 2001).

60. *See* Barry Scheck et al., *Actual Innocence: When Justice Goes Wrong and How to Make it Right* 237–49 (Signet 2001) (discussing how poor lawyering played a role in various wrongful convictions).

61. *See* Cooley, *supra* n. 38; Craig M. Cooley, *Reforming the Forensic Community to Avert the Ultimate Injustice*, 15 Stan. L. & Policy Rev. 381 (2004); Bennett L. Gershman, *Misuse of Scientific Evidence by Prosecutors*, 28 Okla. City U. L. Rev. 17 (2003); Paul C. Giannelli, *Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs*, 86 N.C. L. Rev. 163, 165 (2007) ("The extent of forensic science's role in convicting the innocent is difficult to gauge, although it is clearly substantial.").

62. Scheck et al., *supra* n. 60, at 246.

errors and 27 percent involved false or misleading testimony by forensic experts.[63] Chicago Tribune reporters in 2004 conducted an exhaustive investigation on state-funded crime laboratories and determined that more than a quarter of 200 DNA and death row exonerations since 1986 involved "faulty crime lab work or testimony."[64] Moreover, of the 340 (DNA and non-DNA) exonerations that Professor Samuel Gross and his University of Michigan colleagues examined, 24 involved forensic scientists who committed perjury.[65] Finally, in the first study to explore forensic science testimony by prosecution experts in the trials of innocence people, University of Virginia Law Professor Brandon Garrett and Innocence Project Co-Director Peter Neufeld found that in 139 trials where forensic evidence supported the exoneree's conviction, 61 percent involved improper testimony by the prosecution's forensic expert.[66]

Courts have started to question the forensic science system's proclaimed accuracy and reliability.[67] For instance, Sixth Circuit Court of Appeals Judge Boyce Martin has called crime labs "unreliable."[68] Elsewhere, Federal District Court Judge Jed Rakoff wrote: "False positives—that is, inaccurate incriminating test results—are endemic to much of what passes for 'forensic science.'"[69] And Judge Gertner referenced the 63 percent figure from the Saks and Koehler study, noting that "recent reexaminations of relatively established forensic testimony have produced striking results."[70]

Even public officials have acknowledged the issues connected with unreliable and fraudulent forensic science. For instance, according to former Massachusetts Governor Mitt Romney's Council on Capital Punishment:

> Serious problems, including both inadvertent errors . . . as well as deliberate and conscious

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63. *See* Michael J. Saks & Jonathan J. Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 Sci. 892, 892 fig. 1 (2005) (reviewing 86 DNA exoneration cases and noting "Percentages exceed 100% because more than one factor was found in many cases.").

64. Maurice Possley et al., *Scandal Touches Even Elite Labs: Flawed Work, Resistance to Scrutiny Seen Across U.S.*, Chi. Trib. at 1 (Oct. 21, 2004).

65. Gross et al., *supra* n. 56, at 543.

66. *See* Brandon L. Garrett & Peter J. Neufeld, *Improper Forensic Science and Wrongful Convictions*, 95 Va. L. Rev. ___ (forthcoming 2009) (article on file with the authors). Professor Garrett's previous research found a similar percentage of cases that were affected by improper forensic science. *See* Garrett, *supra* n. 3, at 81 (concluding that of the first 200 DNA exonerations, forensic evidence missteps played a role in 57 percent of the wrongful convictions).

67. *See U.S. v. Crisp*, 324 F.3d 261, 273 (4th Cir. 2003) (Michael, J., dissenting); *Ramirez v. State*, 810 So. 2d 836, 853 (Fla. 2001) ("In order to preserve the integrity of the criminal justice system . . . particularly in the face of rising nationwide criticism of forensic evidence in general . . . state courts . . . must . . . cull scientific fiction and junk science from fact."); *People v. Saxon*, 871 N.E.2d 244, 256 (Ill. App. 2007) (McDade, J., dissenting) (noting that "1/3 of the wrongful convictions" have been "linked to the misapplication of forensic disciplines" which is defined as where "forensic scientists and prosecutors presented fraudulent, exaggerated, or otherwise tainted evidence to the judge or jury which led to the wrongful conviction") (citing www.innocenceproject.org); *State v. Clifford*, 121 P.3d 489, 503 (Mont. 2005) (Nelson, J., concurring) (noting how "long-accepted forensic science evidence has recently received greater public scrutiny not only because the 'experts' proffering the evidence were either astonishingly inept or downright corrupt, but also because of recent scientific developments such as DNA tests which have revealed the limitations of forensic techniques such as hair identification analysis . . . .") (citation omitted); *State v. Quintana*, 103 P.3d 168, 170 (Utah App. 2004) (Thorne, J., concurring) ("[M]ost evidence points to a lack of consistent training of [fingerprint] examiners and an absence of any nationally recognized standard to ensure that examiners are equipped to perform the tasks expected of them.").

68. *Moore v. Parker*, 425 F.3d 250, 269 (6th Cir. 2005) (Boyce, J., dissenting).

69. *U.S. v. Bentham*, 414 F. Supp. 2d 472, 473 (S.D.N.Y. 2006).

70. *Green*, 405 F. Supp. 2d at 109 n. 6 (citing Saks & Koehler, *supra* n. 63).

> acts of wrongdoing, have arisen in crime laboratories, medical-examiner offices, and forensic-service providers around the country. This not only undermines the public trust in the criminal justice system, but can contribute significantly to erroneous verdicts in death penalty cases.[71]

Likewise, Illinois Governor George H. Ryan noted in his 2002 capital punishment commission report:

> The quality and professionalism of the forensic work being performed by scientists in crime labs across the country has been the subject of increasing debate. Recently, in some high-publicized cases, it has been alleged that incompetence or even intentional misconduct has resulted in defendants being accused or convicted of crimes they did not commit.[72]

A wide variety of forensic science disciplines has contributed to the nation's cases of wrongful conviction—and in some instances, the wrongful convictions involved multiple forensic errors. We discuss several cases handled by the Innocence Project, its partners, and private defense attorneys to offer real-life examples of how limited, unreliable and fraudulent forensic evidence can result in an injustice or criminal trials not worthy of confidence. Injustices and overturned convictions take an emotional and economic toll on the criminal justice system. If reforms are not identified and implemented, the criminal justice system's integrity will be further compromised.[73] Nevertheless, the reforms presented in this Article are intended to reduce the probability of wrongful convictions, without reducing the probability of accurate convictions.

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71. *Report of the Governor's Council on Capital Punishment*, 80 Ind. L.J. 1, 23 (2005).

72. Ill. Dept. Corrects., *Report of the Governor's Commission on Capital Punishment* 52, www.idoc.state.il.us/ccp/ccp/reports/commission_report/chapter_03.pdf (Apr. 15, 2002).

73. The authors identified several categories of cases for this Article. Most of the cases we identify are "exonerations" in which the person exonerated was "factually" or "actually" innocent. Many of these cases involve the DNA exonerations. *See* Stanley Z. Fisher, *Convictions of Innocent Persons in Massachusetts: An Overview*, 12 B.U. Pub. Int. L.J. 1, 5 n. 13 (2002) (discussing the different between "factual" innocence and "legal" innocence). Next, we identify cases in which limited, unreliable or fraudulent forensic science undermined the criminal trial's truth-seeking function, such that a reviewing court (state or federal) awarded the defendant a new trial. Although some of these cases cannot be deemed true exonerations, the authors nevertheless view them as injustices because the criminal process (i.e., trial judge, prosecutor, forensic science community, or defense counsel) failed to afford the defendant a fundamentally fair trial. In turn, this hindered efforts of victims seeking closure and justice while taxpayers must absorb the costs of further proceedings. For examples of these types of cases, please see the section concerning comparative bullet lead analysis. *See infra,* nn. 471–99. Third, we identified cases in which limited, unreliable or tainted forensic science forced the defendant to endure an initial trial and several retrials and in which the defendant ultimately accepted an *Afford* plea or pled no contest to forgo another trial. By pleading no contest or accepting the *Alford* plea, however, the defendants did not admit their guilt. Once more, the authors view these cases as injustices because the criminal process allowed limited, unreliable or tainted forensic evidence to affect the trials such that questions concerning the defendant's culpability could not be adequately answered. Similarly, the emotional and economic costs generated by these retrials are intolerable. For examples of these types of cases, please see the section pertaining to burn pattern analysis. *See infra*, nn. 424–42. Fourth, we incorporated one case in which the State relied on fraudulent forensic science to secure a death sentence, which a federal court vacated because of the forensic fraud. *See infra*, nn. 598–615. The authors deem this an injustice because the victim had to endure another sentencing hearing and Oklahoma tax payers paid for the re-sentencing hearing.. Finally, the authors incorporated one case involving a person who may have been wrongly executed by the State of Texas. Significant scientific evidence of his innocence only surfaced after his execution in February 2004. *See infra*, nn. 411–16. Please note that the cases discussed in this Article merely represent a portion of the injustices or overturned convictions identified by the authors.

A. *Bite Mark Identification*

1. Overturned Capital Convictions

a. Ray Krone (Arizona, 1992–2002)

Two Arizona juries convicted Krone for the 1991 murder of Kim Ancona. Krone's first jury sentenced him to death in 1992.[74] The Arizona Supreme Court overturned his initial conviction in 1995,[75] but a second jury convicted in 1996 and sentenced him to life in prison. Ancona's "killer left very little behind . . . no fingerprints . . . no semen . . . the blood at the scene matched Ancona's . . . [and] no DNA."[76] Yet the offender did leave a singular piece of evidence: bitemarks on Ancona's neck and left breast. Prosecutors premised their case on the bitemarks. Ray Lawson, a well-respected forensic dentist, testified that Krone's bite pattern matched those found on Ancona's breast.[77] The bitemarks were critical because, aside from inconclusive hair evidence, "there was very little other evidence to suggest Krone's guilt."[78] As the Arizona Supreme Court conceded, "[w]ithout the bite marks, the State arguably had no case."[79]

In 2002, Krone's post-conviction attorneys requested DNA testing on saliva recovered from Ancona's tank top. The testing not only excluded Krone but implicated Kenneth Phillips—an Arizona inmate already in prison for attempted child molestation.[80] Phillips currently is being prosecuted for Ancona's murder and prosecutors are once again seeking the death penalty.[81] When Krone was released in April 2002, Maricopa County prosecutors indicated their belief that the State had convicted the wrong man.[82] Lawsuits by Krone against Phoenix and Maricopa County resulted in settlements totaling $4.4 million.[83]

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74. *State v. Krone*, 897 P.2d 621 (Ariz. 1995).

75. The Arizona Supreme Court overturned Krone's initial conviction and death sentence because prosecutors failed to timely disclose a "crucial exhibit"—i.e., a video made by forensic dentist, Dr. Ray Rawson, which "attempted to show a match between Krone's teeth and Ancona's wounds by overlaying the two." *Id.* at 622, 624.

76. *Id.* at 621–22.

77. *See* Raymond D. Rawson, *The Scientific Status of Bitemark Comparisons*, in *Modern Scientific Evidence* 163–87 (David L. Faigman et al. eds., West 1997). It should be emphasized that Dr. Rawson was not the only State's expert who linked the bitemarks to Krone. "Another State dental expert, Dr. John Piakis, also said that Krone made the bite marks." *Krone*, 897 P.2d at 623.

78. *Id.* at 622 ("Hair found on Ancona's body was consistent with Ancona's and Krone's.").

79. *Id. See also id.* at 624 ("The bite marks on the victim were critical to the State's case. Without them, there likely would have been no jury submissible case against Krone.").

80. *See* Henry Weinstein, *Death Penalty Foes Mark a Milestone*, L.A. Times 1A (Apr. 10, 2002).

81. *Phillips v. Araneta*, 93 P.3d 480 (Ariz. 2004); *State ex rel. Thomas v. Foreman*, 118 P.3d 1117 (Ariz. 2005).

82. Weinstein, *supra* n. 80. Senator John Huppenthal called Krone's conviction "a truly tragic case. In a way, it's a lesson for us all that this can happen in a modern society. When we think we have foolproof systems where this would never, never happen, it has happened." Howard Fisher, *Execution Supporter Apologizes to Ex-con*, Ariz. Daily Star A5 (Feb. 21, 2006).

83. *See Arizona: $3 Million For Exoneration*, N.Y. Times A31 (Sept. 29, 2005) (noting that the City of Phoenix will pay $3 million, while Maricopa County agreed to pay $1.4 million).

b. Greg Wilhoit (Oklahoma, 1987–1993)

In 1987, an Oklahoma jury convicted Wilhoit of murdering his estranged wife, Kathy Wilhoit.[84] Prosecutors presented a mostly circumstantial case[85] premised on bitemarks recovered from Kathy's body.[86]

In 1990, the Oklahoma Court of Criminal Appeals remanded Wilhoit's case to the trial court for an evidentiary hearing to determine whether Wilhoit "should be afforded a new trial based upon the newly discovered evidence and possible ineffective assistance of counsel."[87] During the evidentiary hearing, Wilhoit's attorneys presented "[e]leven well-recognized forensic odontologists" who "examined the bite mark evidence and state[d] that the bite mark on Mrs. Wilhoit does not match Mr. Wilhoit's teeth."[88] During his second trial, all eleven forensic dentists testified that Wilhoit's bite pattern could not have created the bitemark on his wife. After these experts testified, the trial judge issued a directed verdict of innocence.[89]

2. Non-Capital Overturned Convictions

a. James O'Donnell (New York, 1998–2000)

In 1998, a New York jury convicted O'Donnell of attempted sexual assault. A New York City resident identified O'Donnell after seeing a police sketch in the local newspaper. The victim subsequently identified O'Donnell when police presented her a photographic line-up.[90] At trial, aside from the eyewitness evidence, prosecutors presented a bitemark expert who testified that the bitemark left on the victim's hand matched O'Donnell's teeth impressions.[91]

In 1999, O'Donnell's appellate attorney uncovered a police report that referred to a sexual assault kit that a nurse had prepared at the medical center. The kit included a paper towel used to swab the bitemark on the victim's hand, as well as fingernail scrapings. DNA testing of the swab and fingernail clippings excluded O'Donnell,[92] and with this evidence, O'Donnell moved to vacate his conviction and sentence. The trial

84. *Wilhoit v. State*, 816 P.2d 545 (Okla. Crim. App. 1991).

85. According to Wilhoit's trial judge, the "evidence tending to prove . . . Wilhoit, perpetrated [the murder] was circumstantial." *Id.* at 547.

86. The "most important item of circumstantial evidence tending to prove that [Wilhoit] was the perpetrator . . . was the testimony of Dr. Richard Glass and Dr. Keith Montgomery, rendering their respective opinions concerning the bite mark evidence obtained by investigators and the identity of the person making said mark." *Id. See also id.* at 550 ("In Mr. Wilhoit's case it seems to have been universally recognized both before trial and since that time that the bite mark issue was the most important issue in the case."). Doctors Glass and Montgomery testified that bite marks are as exact as fingerprints and that the mark on Kathy matched Wilhoit's teeth perfectly. *See* Stephanie Salter, *Free, Free at Last*, S.F. Chron. D6 (Sept. 29, 2002).

87. *Wilhoit*, 816 P.2d at 545.

88. *Id.* at 548.

89. *See* Salter, *supra* n. 86.

90. *See* Innocence Project, *Know the Cases: James O'Donnell*, http://www.innocenceproject.org/Content/228.php (accessed Apr. 12, 2008).

91. *See* Innocence Project, *Cases Where DNA Revealed that Bite Mark Analysis Led to Wrongful Arrests and Convictions*, http://www.innocenceproject.org/Content/394.php (accessed Apr. 12, 2008).

92. *O'Donnell v. State*, 808 N.Y.S.2d 266, 268 (N.Y. App. Div. 2d Dept. 2005).

judge granted his request in 2000.[93]

b. Daniel Young Jr. & Harold Hill (Illinois, 1992–2005)

In October 1990 someone brutally raped and murdered Kathy Morgan and set her apartment on fire. The case remained unsolved for 18 months until police arrested Hill on an unrelated charge. Investigators eventually charged Young and Harold Hill. At Young's trial, evidence presented included "the testimony of a forensic odontologist who concluded that Young had caused a bite mark found on . . . Morgan's body."[94] The jury found Young guilty of all charges. At Hill's trial prosecutors also called on the same forensic dentist, who "testified that his analysis found that Young and Hill had left marks on Morgan's badly burned body."[95] The Illinois state and federal courts repeatedly affirmed and re-affirmed Hill and Young's convictions on direct appeal, state post-conviction, and federal habeas.[96] Young and Hill's convictions were finally overturned, and all charges dropped in February 2005, after new DNA tests failed to link either of them to the rape or the bitemark.[97] Following their release, the forensic dentists who implicated Hill and Young alleged that prosecutors pressured him to make his testimony more damning than he wanted.[98]

c. Roy Brown (New York, 1992–2006)

In 1992, a New York jury convicted Brown of stabbing and strangling Sabrina Kulakowski. An autopsy also revealed "seven sets of bite marks" on Kulakowski's body.[99] The bitemarks were consistent and assumed to have originated from one assailant, but only one of the bitemarks had sufficient detail to be reliably compared to Brown's. That bitemark originated from an individual whose upper front six teeth were all intact; two of Brown's six upper teeth were missing.[100] Nonetheless, the prosecutor retained a local dentist who, notwithstanding the obvious discrepancies between Brown's teeth and the bitemark, concluded that Brown could have left the bitemark.[101] In an attempt to bolster his case, the prosecutor sought Dr. Lowell Levine's services. When Levine—who was New York's leading forensic dentist at the time—compared the bitemark with Brown's bite pattern, he excluded Brown. Disappointed with Levine's

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93. *O'Donnell v. State*, 782 N.Y.S.2d 603, 606 (N.Y. Ct. Cl. 2004) ("Mr. O'Donnell has proven, by clear and convincing evidence, his innocence of the crimes with which he was charged.").

94. *U.S. ex rel. Young v. Snider*, 2001 WL 1298704 at *2 (N.D. Ill. Oct. 25, 2001); *Young v. Walls*, 311 F.3d 846, 847 (7th Cir. 2002) ("[Young's] detailed confession was corroborated by a confederate plus a match between Young's dental pattern and a bite mark on Morgan's body.").

95. Steve Mills & Jeff Coen, *12 Years Behind Bars, Now Justice at Last*, Chi. Trib. 1 (Feb. 1, 2005).

96. *E.g. Young*, 311 F.3d at 847; *Hill v. State*, 671 N.E.2d 737 (Ill. 1996) (table).

97. *See* Mills & Coen, *supra* n. 95.

98. *Id.*

99. *People v. Brown*, 618 N.Y.S.2d 188, 188 (N.Y. Co. Ct. 1994), *aff'd*, 600 N.Y.S.2d 593 (N.Y. App. Div. 4th Dept. 1993).

100. *See* William Kates, *Man Officially Cleared of Murder Charges*, AP (Mar. 5, 2007).

101. *Brown*, 618 N.Y.S.2d at 188 ("[E]vidence of bite marks found on the deceased together with dental impressions of the defendant established the bite patterns to be identical insofar as measurements were concerned. In addition, the bite marks of the victim's assailant had three missing teeth which were identical in location with missing teeth as reflected in the defendant's dental impressions.").

findings, the prosecutor ordered Levine to immediately return the evidence and not to draft a report.[102] The prosecutor never informed Brown's defense attorneys of Levine's exculpatory conclusions.

In 2003, Brown contacted the Sheriff's Department that investigated Kulakowski's murder, and requested a copy of an alleged statement from a jailhouse informant which was supposedly given prior to trial, yet never disclosed to the defense. Although the clerk failed to discover the alleged statement, the clerk forwarded Brown a list of all police statements—including 11 affidavits which Brown and his defense attorneys never received. Four of the newly discovered affidavits appeared to implicate a man named Barry Bench, whose brother dated Kulakowski for nearly 20 years until shortly before her murder. On December 24, 2003, Brown wrote a letter to Bench, in which he confronted Bench with the incriminating evidence, and told him he intended to seek DNA testing to prove that Bench had murdered Kulakowski. Five days after Brown mailed the letter, Bench committed suicide by lying down in the path of an oncoming Amtrak train.[103]

In 2004, the Innocence Project accepted Brown's case, and had DNA tests performed on several saliva stains on Kulakowski's shirt. The DNA tests excluded Brown—and identified a single male donor. Bench's daughter provided Brown's attorneys with a DNA sample, that, when tested, revealed Bench was the source of the saliva. Authorities subsequently exhumed Bench's body for further DNA testing, which confirmed that Bench was the source and killer.[104]

Nevertheless, the trial judge initially refused to release Brown because he was so impressed by the local dentist's testimony at the original trial.[105] A new judge eventually vacated Brown's conviction in January 2007, and officially cleared him on March 5, 2007, when Cayuga County District Attorney James Vargason stated he would not retry him.[106]

d. Willie Jackson (Louisiana, 1989–2006)

A Louisiana jury convicted Jackson in 1989 of attempted aggravated rape and first-degree robbery. The trial judge sentenced him to 30 years "hard labor" for the attempted aggravated rape conviction and 10 years for the first-degree robbery.[107] At trial, prosecutors' forensic dentist, Dr. Robert E. Barsley, "testified that [Jackson's] dental patterns matched the bite marks left on the victim."[108] Jackson proclaimed his

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102. Innocence Project, *Proven Innocent by DNA, Roy Brown Is Fully Exonerated*, http://www.innocenceproject.org/Content/424.php (Mar. 5, 2007).

103. *Id.*

104. *Id.*

105. *Id.*

106. *See* Kates, *supra* n. 100.

107. *State v. Jackson*, 570 So. 2d 227, 228 (La. App. 1990).

108. *Id.* at 229. Specifically, Dr. Barsley testified:

> Q. What, Doctor, are your conclusions relative to your analysis of the models taken from Willie Jackson, and the bite marks that were found on Beverly Short?
>
> A. My conclusion is that this bite mark on her back, that Mr. Jackson inflicted this bite mark.

Jackson v. Day, 1996 WL 8083 at *2 (E.D. La. Jan. 9, 1996).

innocence from the beginning and presented several alibi witnesses who placed him in Natchez, Mississippi, at the time of the offense.[109]

Four days after Jackson's trial, his brother, Milton Jackson, confessed that he was the victim's assailant. With Milton's confession, Jackson filed a new trial motion in which he alleged additional facts to support his claim that Milton was the actual perpetrator.[110] A forensic dentist (retained after Jackson's trial) concluded that "the bite marks in question on the victim's body match[ed] identically with Milton Jackson's dental pattern."[111] Nevertheless, the trial judge denied his new trial motion and the Louisiana Court of Appeals affirmed Jackson's convictions.[112]

When Jackson filed a writ of habeas corpus petition in federal court, the district judge initially denied his petition in large part on Dr. Barsley's testimony: "In light of the victim's identification and the testimony of Dr. Barsley, this Court is unable to conclude that the verdict would have been different even if counsel had retained . . . a forensic odontologist."[113] However, in May 1996, after Jackson filed a motion for reconsideration under Federal Rule of Civil Procedure 54(b), the district judge withdrew his initial denial and granted Jackson's writ of habeas corpus because his trial counsel provided ineffective assistance of counsel.[114] The district judge held that because Dr. Barseley's testimony "was fundamental in securing [Jackson's] conviction,"[115] and that Jackson's conviction "was supported only by" Dr. Barseley's testimony and the victim's identification,[116] trial counsel acted unreasonably when he failed to petition the trial judge for the necessary funds to hire a forensic dentist.[117] Jackson's victory was short lived; in 1997, the Fifth Circuit Court of Appeals summarily reversed (in an unpublished opinion) the district judge's opinion.[118]

Jackson continued to fight his conviction. In 2003, a Louisiana state court judge ordered DNA testing in Jackson's case. In 2004, the DNA tests excluded Jackson and implicated his brother, Milton. In July 2005, a Louisiana state court judge granted Jackson a new trial because of the new DNA tests.[119] In April 2006, additional DNA tests confirmed the initial tests: They implicated Milton and exonerated Jackson. On May 26, 2006, New Orleans prosecutors dropped all charges against Jackson.[120] Prosecutors have yet to decide whether Milton will be charged because he is already serving a life sentence for an unrelated 1998 rape.[121]

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109. *Jackson*, 570 So. 2d at 228.
110. *Id.* at 229.
111. *Id.*
112. *Id.*
113. *Jackson*, 1996 WL 8083 at *2.
114. *Jackson v. Day*, 1996 WL 225021 (E.D. La. May 2, 1996).
115. *Id.* at *2.
116. *Id.* at *5 n. 9.
117. *Id.* at *2.
118. *Jackson v. Day*, 121 F.3d 705 (5th Cir. 1997).
119. *See* Joe Darby, *New Trial Ordered; DNA Evidence Cited—Fingers Pointing to Jailed Man's Brother*, N.O. Times-Picayune 1 (July 23, 2005).
120. *See* Paul Purpura, *Long Nightmare Ending for Wrongly Convicted Man—DNA Brings Dismissal of Case after 16 Years*, N.O. Times-Picayune 1 (May 26, 2006).
121. *Id.*

3. The Wrongly Accused

a. Edmund Burke (Massachusetts, 1998)

Police arrested Burke in December 1998 for brutally murdering a 75-year-old woman. The assailant "savagely" beat, strangled, stabbed, and twice bit the victim.[122] Burke became a suspect after the victim's daughter suggested that investigators interview Burke because he lived near the park where the murder occurred and because he was "very odd."[123] Suspicion of Burke increased after a K-9 tracking dog traced the victim's scent to a location near Burke's residence.[124]

When police questioned Burke, he voluntarily provided a saliva sample and a mold of his bite pattern, as well. Dr. Lowell Levine, a well-respected forensic dentist from New York, examined Burke's bite pattern and "formed an initial opinion that Burke could not be excluded as the source of the bite marks, but stated that he would need to see enhanced photographs in order to render a final opinion."[125] After he compared the mold of Burke's teeth with the enlarged photographs of the bite marks, Dr. Levine opined that "Burke's teeth matched the bite mark on the victim's left breast to a 'reasonable degree of scientific certainty.'"[126] The DNA analyst completed testing on the saliva lifted from the bitemarks shortly after Dr. Levine rendered his identification. The DNA tests excluded Burke as the source of the saliva from the bitemark.[127]

Despite the DNA results, police still arrested Burke and detained him for 41 days.[128] Investigators eventually identified the true perpetrator, Martin Guy—a previously convicted murderer. A Massachusetts jury convicted Guy in 2006 and the trial judge sentenced him to life in prison.[129]

b. Dale Morris (Florida, 1997)

In October 1997, police arrested and charged Morris with brutally murdering 9-year-old Sharra Lee Ferger. Police alleged Morris sexually assaulted and stabbed Ferger 46 times on October 2, 1997.[130] During the autopsy, the medical examiner identified a bitemark on her shoulder. Police arrested Morris after Ken Martin, a forensic odontologist, concluded that Martin's bite pattern matched the bitemark on Ferger's shoulder.[131] Prominent forensic odontologist Richard Souviron supported Martin's

122. *Burke v. Town of Walpole et al.*, 405 F.3d 66, 71 (1st Cir. 2005).

123. *Id.* at 72.

124. *Id.*

125. *Id.* at 73.

126. *Id.*

127. *Burke*, 405 F.3d at 73.

128. *Id.* at 84.

129. *See* Peter Schworm, *Conviction Brings Justice in Mother's Slaying, But Toll on Family Endures*, Boston Globe 1 (Sept. 28, 2006).

130. *See* Andy Gotlieb et al., *Bite Marks Lead to Arrest*, Tampa Trib. 1 (Oct. 17, 1997); Bill Thompson, *Dentist Defends His Advice in Slaying*, Tampa Trib. 1 (Mar. 3, 1998).

131. *See* Gotblieb et al., *supra* n. 130. Pasco County Sheriff Lee Cannon commented: "His bite mark and teeth [were] very identifiable." *Id.* After prosecutors cleared Morris, and Morris filed a wrongful conviction suit, Cannon claimed, in a deposition, that "never in his 12 years with the Tampa Police Department or in his three years as a state prosecutor had he based a case on bite marks." Chase Squires, *Pasco Sheriff Deflects*

findings.[132] No other physical evidence or eyewitness linked Morris to the offense. Morris consistently proclaimed his innocence.

Morris's attorneys hired two forensic dentists—Dr. Phil Levine of Florida and Dr. Lowell Levine of New York—both of whom disagreed with Martin and Souviron's identification.[133] Moreover, once DNA analysts tested the saliva and semen stains, the results excluded Morris. With no other evidence linking Morris to Ferger's murder, prosecutors released Morris from jail and dropped all charges in February 1998. Morris spent four months in jail.[134] Despite the exculpatory DNA results, Martin stood by his opinion that Morris inflicted the bitemark.[135]

New DNA tests in 2001 led to charges against two men in Ferger's murder—Gary Elishi Cochran, Ferger's uncle, and Gary Steven Cannon, a family friend.[136] Cochran pled guilty to first-degree murder in December 2006, while Cannon went to trial and was convicted in September 2005.

B. Hair Identification

1. Overturned Capital Convictions

a. Ronald Williamson (Oklahoma, 1988–1999)

In 1988, an Oklahoma jury convicted Williamson and his co-defendant, Dennis Fritz, for Debbie Carter's 1982 murder. The jury sentenced Williamson to death.[137] Forensic evidence played a "critical part" of the prosecution's case against Williamson.[138] The "only physical evidence" that linked Williamson to Carter's murder were hairs which were said to be "microscopically consistent" with Carter's hairs.[139]

Blame for Wrong Arrest in Killing, St. Pete. Times 6 (Feb. 3, 2000). Cannon stated: "I had said, 'No, we're not going to make the arrest based on one examination of the bite mark.'" *Id.* Cannon stated, however, that the prosecutor—Phil Van Allen—pressured him to arrest Morris with only the bitemark. Cannon stated: "Pressured, no . . . I don't respond well to people pressuring me. Highly suggesting to me, maybe, in a way demeaning, that I didn't understand, you know, that: 'You don't understand, sheriff, you've got probable cause. What is your problem?' That kind of pressure, yes." *Id.*

132. *See* Thompson, *supra* n. 130. Said Souviron, "My determination is that Dr. Martin did a wonderful job. It's one of the best prepared cases I have ever seen. . . . Absolutely, this is the man." Squires, *supra* n. 131 (quoting Souviron's comments to Pasco County Sheriff Lee Cannon).

133. *See* Thompson, *supra* n. 130. Philip J. Levine stated: "That particular bite mark was too diffuse for you to connect anybody to that mark." Ian James, *Dentist Comments on Bite-Mark Analysis*, St. Pete. Times 1 (Mar. 4, 1998).

134. *See* Ian James, *Suspect in Girl's Murder Freed after Four Months*, St. Pete. Times 1A (Feb. 28, 1998). Sheriff Cannon stated: "All of the evidence that has been collected . . . none of that evidence links Dale Morris to the crime." *Id.*

135. *Id.* Said Martin, "People said I gave them bad advice, but I gave them pretty good advice—it's just how (authorities) acted on it." Thompson, *supra* n. 130.

136. *See* Chase Squires, *Years of Work Yield Two Murder Indictments*, St. Pete. Times 1 (June 23, 2001). DNA tests on two hairs lifted from Ferger's body linked Gary Cochran. *See* Todd Leskanic, *9-Year-Murder Inquiry—Solved—Guilty Plea Ends Case With Multiple Twists*, Tampa Trib. 1 (Dec. 30, 2006).

137. *Williamson v. State*, 812 P.2d 384 (Okla. Crim. App. 1991).

138. *Williamson v. Reynolds*, 904 F. Supp. 1529, 1560–61 (E.D. Okla. 1995) ("In Petitioner's case the forensic evidence was a critical part of the prosecution."). *See Williamson v. Ward*, 110 F.3d 1508, 1520 (10th Cir. 1997) (making a similar observation).

139. *Williamson*, 904 F. Supp. at 1552.

Melvin Hett, a forensic chemist with the Oklahoma State Bureau of Investigation, testified that two hairs found on a washcloth were microscopically consistent with Williamson's scalp hairs and that two hairs found on Carter's bedding were microscopically consistent with Williamson's pubic hairs.[140] The "clear implication" from Hett's testimony "was that 4 of the hairs found at the victim's apartment belonged to" Williamson.[141] During closing arguments, prosecutors emphasized Hett's testimony, and (misleadingly) argued that the hairs "matched." Hett also testified that hair samples from Glen Gore, the prosecution's key witness, did not match the questioned hairs.[142] The blood evidence, however, contradicted Hett's conclusions.[143]

On direct appeal, the Oklahoma Court of Criminal Appeals (OCCA) relied on the hair evidence when it affirmed Williamson's conviction and death sentence.[144] The OCCA also rejected Williamson's claim that the trial judge denied him his due process rights when he refused to provide funds to his attorney to hire a hair expert.[145] In rejecting the claim, the OCCA stated that "'scientific evidence *is ordinarily not vulnerable to inaccurate resolution* and in itself does not ordinarily call for a defense expert.'"[146] The OCCA also rejected Williamson's argument that the hair evidence rendered his trial fundamentally unfair because hair evidence is "one of the most unreliable of all scientific tests."[147] The OCCA denied Williamson's post-conviction petitions, as well.[148]

In his federal habeas corpus petition, Williamson once again alleged that the hair evidence rendered his trial fundamentally unfair, especially because the trial judge denied his request to hire an independent hair expert. Unlike the Oklahoma state courts, the federal district court sided with Williamson on both issues. First, the district court

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140. *Williamson*, 812 P.2d at 391, 399, 404. *See also Williamson*, 904 F. Supp. at 1553–55 (describing Hett's testimony). As Judge Seay noted: Hett "did not explain which of the 'approximately' 25 characteristics were consistent, any standards for determining whether the samples were consistent, how many persons could be expected to share this same combination of characteristics, or how he arrived at his conclusions." *Id.* at 1554.

141. *Id.* at 1557.

142. *Id.* at 1554. Hett's testimony was in this respect misleading: Hett only compared samples from Gore with hairs already determined to be consistent with those of Carter, Fritz, and Williamson. Hett failed to explain why he did not compare Gore's hair samples with other unidentified samples. *Williamson*, 110 F.3d at 1522 n. 15. Gore testified at Williamson's preliminary hearing. *See Williamson*, 812 P.2d at 392 (discussing Gore's preliminary hearing testimony). At Williamson's trial, however, Gore refused to testify. When called to the witness stand by the prosecution, Gore gave his name and then said: "I refuse to answer any more questions whatsoever. If the Court wishes to find me in contempt, you can do so at this time and dismiss me." *Id.* at 402. After examining Gore, the trial court declared him an unavailable witness under the relevant Oklahoma statute and then permitted prosecutors to read his preliminary hearing testimony to the jury. *Id. See also Williamson*, 904 F. Supp. at 1549–50 (discussing Gore's testimony).

143. *Id.* at 1554.

144. *Williamson*, 812 P.2d at 397 ("Hair evidence placed Appellant at the decedent's apartment . . . ."). The OCCA also rejected Williamson's chain of custody argument regarding the hair evidence. Despite the fact Williamson "correctly note[d] that there [was] a gap in time from the date of the collection of the bedding from the scene until it was turned over to" the crime lab, the OCCA still rejected his argument because the "State adequately showed that hairs found to be consistent with those from the Appellant were taken from the washcloth and the bedding." *Id.* at 398, 399.

145. In making this claim, Williamson relied on *Ake v. Okla.*, 470 U.S. 68 (1985). *See Williamson*, 812 P.2d at 395–96.

146. *Id.* at 396 (citation omitted) (emphasis added).

147. *Id.* at 404–05.

148. *Williamson v. State*, 852 P.2d 167 (Okla. Crim. App. 1993).

held that the hair evidence "was irrelevant, imprecise and speculative, and its probative value was outweighed by its prejudicial effect."[149] Second, the district court held that the "prosecutor's mischaracterization of the hair evidence misled the jury, the trial court and the appellate court to believe 'microscopically consistent' equates with reliability and to conclude there was a 'match' . . . ."[150] Finally, the district court held that the denial of Williamson's "request for forensic expert assistance seriously affected the fundamental fairness and accuracy of the trial."[151] Due to these and other constitutional violations, the district judge vacated Williamson's conviction and death sentence in 1995.[152] In 1997, the Tenth Circuit Court of Appeals affirmed the district judge's decision.[153]

In preparing for a possible new trial, prosecutors submitted bodily fluids and hair samples from Williamson and Fritz for DNA testing. Williamson's defense attorney, Mark Barrett, also wanted to interview Gore and obtain samples from him for DNA testing. Gore refused Barrett's request to provide hair and bodily fluid samples. Barrett also asked Gore about his earlier statements against Williamson. During several conversations with Barrett, Gore recanted his previous testimony. In April 1999, the DNA tests excluded Williamson and Fritz; shortly thereafter, prosecutors dismissed all charges against Williamson and Fritz.[154] On the same day prosecutors publicized the DNA results, Gore disappeared from his work release program in Purcell, Oklahoma. Approximately one week later, Gore contacted an attorney and surrendered to law enforcement officials. Subsequent DNA testing implicated Gore. An Oklahoma jury convicted Gore and sentenced him to death in 2004.[155]

b. Charles Fain (Idaho, 1984–2001)

An Idaho jury convicted Fain in 1983 of murdering nine-year-old Daralyn Johnson and sentenced him to death.[156] Fain passed a polygraph examination and several witnesses claimed he was in Redmond, Oregon, at the time of the murder. But an FBI hair examiner provided the most damaging evidence when he testified that pubic hairs found on Johnson's clothing were microscopically similar to Fain's hair samples.[157]

On direct appeal, the Idaho Supreme Court (ISC) relied on the hair evidence when it rejected Fain's claim that the evidence adduced at the preliminary hearing was

149. *Williamson*, 904 F. Supp. at 1558. The district court also noted there was an "apparent scarcity of scientific studies regarding the reliability of hair comparison testing. The few available studies reviewed by this court tend to point to the method's unreliability." *Id.* at 1556.

150. *Id.* at 1557.

151. *Id.* at 1561.

152. *Id.* at 1560.

153. *Williamson*, 110 F.3d at 1520.

154. *See 2 Men Go Free—Thanks to DNA Evidence*, Orlando Sent. A16 (Apr. 16, 1999).

155. On direct appeal, however, the Oklahoma Court of Criminal Appeals overturned his conviction and sentence due to the fact the trial court erred when it refused to admit Gore's alternative suspect evidence. *See Gore v. State*, 119 P.3d 1268 (Okla. Crim. App. 2005).

156. *State v. Fain*, 774 P.2d 252 (Idaho 1989).

157. *Id.* at 255. *See also* Henry Weinstein, *Condemned Man Could Go Free after DNA Testing*, L.A. Times A1 (Aug. 19, 2001).

insufficient to permit the magistrate to bind him over for trial.[158] Although it refused to overturn Fain's conviction, the ISC reversed his death sentence.[159] On remand, however, the trial court reinstated his death sentence.[160]

At the request of Fain and the Idaho Attorney General in 2000, the hair samples recovered from Johnson's body underwent mitochondrial DNA testing and excluded Fain. Al Lance, Idaho's Attorney General, conceded that the DNA test was "significant because the [hair] testimony of [the] FBI agent at trial . . . may have been a factor in the jury's decision to find Fain guilty."[161] Lance added:

> Our system of criminal justice requires that defendants be found guilty beyond a reasonable doubt. Although the jury made that finding in 1983, the jurors may have believed that the hairs could have been Fain's. We cannot know how much weight the jury gave to the FBI agent's testimony. However, it is clear from this new evidence that the hairs were not Fain's. This fact raises the critical question: Would the jury have reached the same verdict had the jury known the hairs were not Fain's?[162]

An Idaho state court judge granted Fain a writ of habeas corpus in August 2001.[163] Dave Young, the current Canyon County District Attorney, declined to re-prosecute Fain.

c. *Rudolph Holton* (Florida, 1986–2003)

In 1986, a Florida jury convicted Holton of murdering Katrina Graddy and sentenced him to death.[164] Holton presented alibi evidence, but it could not overcome the prosecutors' evidence—which included hair analysis. Prosecutors presented an FBI hair examiner who testified that a hair recovered from Graddy's mouth "had to" have originated from Holton.[165] During closing arguments, prosecutors also argued that the hair "had to" have come from Holton and not Graddy.

When DNA testing became available, prosecutors blocked Holton's request, calling his request "a delaying tactic."[166] When DNA analysts tested the hairs, they learned that the hairs belonged to Graddy. In November 2001, a Florida trial judge granted Holton's new trial motion on this "newly discovered evidence" and because prosecutors failed to disclose exculpatory evidence.[167] In December 2002, the Florida

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158. *Fain*, 774 P.2d at 255 ("A sample of Fain's pubic hair was found to be similar to pubic hairs found in the victim's panties . . . .").

159. *Id.* at 270.

160. *State v. Fain*, 809 P.2d 1149 (Idaho 1991).

161. Northwestern U. Sch. L., Bluhm Leg. Clinic, *Center on Wrongful Convictions: Meet the Exonerated: Charles I. Fain*, http://www.law.northwestern.edu/wrongfulconvictions/exonerations/idFainSummary.html (accessed Apr. 12, 2008) (providing link to statement by Idaho Attorney General Al Lance regarding the Charles Fain case).

162. *Id.*

163. *See* Weinstein, *supra* n. 157.

164. *Holton v. State*, 573 So. 2d 284 (Fla. 1990).

165. *See* Howard Troxler, *Holton Case Shows It's Time to Bring the Death Penalty to Justice*, St. Pete. Times 1B (Feb. 12, 2003).

166. *See id.*

167. According to the trial judge, "The State presented evidence based on the medical technology available at the time of [Holton's] trial. Subsequent advancements in DNA testing now show that this testimony was incorrect. Consequently, the evidence which may have been relied on by the jury is false. The argument made

Supreme Court affirmed the trial judge's new trial order.[168] In January 2003, prosecutors dropped all charges against Holton. According to prosecutors, "Due to the unreliability of witness testimony and the lack of physical evidence, the state of Florida cannot proceed to trial."[169]

d. William Gregory (Kentucky, 1993–2000)

William Gregory was the first DNA exoneree in Kentucky and the first person nationally to be exonerated by mitochondrial DNA testing. A rape and an attempted rape took place about one month apart in the Kentucky apartment complex in which William Gregory lived. Gregory, convicted of both crimes, received consecutive sentences tallying 70 years.[170]

The assailant in both crimes left behind hairs of negroid origin. One victim claimed that an African American never visited her apartment, meaning that the hair had to come from her assailant.[171]

The Innocence Project represented Gregory and secured mitochondrial testing on recovered hairs. One excluded Gregory as the source, and thereafter, the prosecution insisted on testing the rest of the hairs before releasing Gregory. They, too, were exclusionary, and Gregory was released.[172]

e. "Central Park Jogger" Case (Antron McCray, Kevin Richardson, Yusef Salaam, Raymond Santana, and Korey Wise, New York, 1990–2002)

New York City was rocked by a headline-grabbing scandal during the spring of 1989, when five youths were arrested for a brutal Central Park rape and gang assault that nearly resulted in the victim's death. Antron McCray, Kevin Richardson, Yusef Salaam, Raymond Santana, and Korey Wise were accused of "wilding"—allegedly unleashing an unrestrained string of mayhem and bedlam in the Park on the night of April 19 that they punctuated with the victim's rape. The 28-year-old jogger was discovered unconscious, with a fractured skull, a severe case of hypothermia, and she had lost three quarters of her blood.[173]

All five of the arrested teenagers—ranging from ages 14 to 16—confessed to the crime, four of them on videotape. Notably, however, the confessions were marked by significant factual differences. But these differences were discounted in the face of corroborating evidence that a hair was found on one of the teens that "matched and

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during the trial is now unsupported." *State v. Holton*, Nos. 86-08931, 86-15176 at 14 (Fla. 13th Cir. Sept. 2001) (copy of opinion available at http://www.oranous.com/innocence/RudolphHolton/HoltonDigital_.pdf).

168. *State v. Holton*, 835 So. 2d 269 (Fla. 2002) (Table).

169. CNN.com, *Charges Dropped against Florida Inmate after 16 Years on Death Row*, http://www.cnn.com/2003/LAW/01/24/death.row.release/index.html (Jan. 24, 2003).

170. Innocence Project, *Know the Cases: William Gregory*, www.innocenceproject.org/Content/164.php (accessed Apr. 12, 2008).

171. *Id.*

172. *Id.*

173. Innocence Project, *Know the Cases: Raymond Santana*, www.innocenceproject.org/Content/255.php (accessed April 12, 2008).

resembled" the victim's. Hair on the victim's clothes was alleged to have come from one of the teens.[174]

The convictions unraveled in early 2002, however, when a convicted murderer and rapist named Matias Reyes claimed sole responsibility for the rape. DNA testing of the rape kit and other crime scene evidence revealed profiles matching Reyes, and mitochondrial testing of the hair found on one of the defendants was shown to have no connection to the crime.[175] Yet the combination of faulty forensic analysis and confessions that revealed themselves as unreliable sent five youths to prison, where they remained into their adult years.

2. Arnold Melnikoff's Cases

a. Jimmy Ray Bromgard (Montana, 1987–2002)

In 1987, a Montana jury convicted Bromgard of raping an eight-year-old girl; the trial judge sentenced him to more than 130 years in prison.[176] A significant portion of the prosecution's case rested on hair evidence. At trial, Arnold Melnikoff, who at the time directed Montana's state crime lab, testified that he found Bromgard's hair samples "to be indistinguishable from certain samples recovered from the victim's bedding."[177] More importantly, Melnikoff "testified that in his experience the odds were one in one hundred that two people would have head hair *or* pubic hair so similar that they could not be distinguished by microscopic comparison and the odds of *both* head and pubic hair from two people being indistinguishable would be about one in ten thousand."[178] Bromgard's attorney never challenged Melnikoff's hair testimony.[179] As evidenced by a news article published the day after Bromgard's trial, Melnikoff's testimony was the linchpin to the prosecution's successful case.[180]

The Montana Supreme Court denied all of Bromgard's state-court appeals.[181] The Innocence Project began working on Bromgard's case in 2000. Students located the evidence and worked with Bromgard's post-conviction attorney to have it released for DNA testing. Prosecutors agreed to the testing and sent the victim's underwear to a

174. *Id.*

175. *Id.*

176. *State v. Bromgard*, 862 P.2d 1140 (Mont. 1993).

177. *Id.* at 1141 ("Forensic scientist Arnold Melnikoff of the State Crime Lab testified that both head hair and pubic hair taken from the victim's bedding were microscopically comparable to the samples provided by Bromgard."); *see also State v. Bromgard*, 901 P.2d 611, 612 (Mont. 1995) ("In addition, it was established that head and pubic hair samples taken from Bromgard matched head and pubic hairs taken from L.T.'s bed.").

178. *Bromgard*, 862 P.2d at 1141.

179. Charlie Gillis, *Scandal in the Forensic Labs: Hundreds of Cases Undergoing Review in Montana*, Natl. Post B1 (Feb. 1, 2003). According to Bromgard and his lawyers, his trial attorney "met with him once before trial, hired no investigators or scientific experts, filed no motions to suppress evidence, made no opening statement, failed to prepare Mr. Bromgard for his testimony and, after indicating he would appeal, did not." Adam Liptak, *DNA Will Let a Montana Man Put Prison Behind Him, but Questions Linger*, N.Y. Times A22 (Oct. 1, 2002).

180. During his post-conviction appeal, Bromgard "alleged that several jurors were prejudiced against him." *State v. Bromgard*, 948 P.2d 182, 183 (Mont. 1997). "In support of this claim he referred to a *Billings Gazette* article, published the day after his trial, which claimed that several jurors were convinced of his guilt on the second day of the three-day trial after they heard evidence relating to hair samples." *Id.*

181. *Bromgard*, 948 P.2d 182; *Bromgard*, 901 P.2d 611; *Bromgard*, 862 P.2d 1140.

private laboratory for testing. In September 2002, the results excluded Bromgard as a possible contributor of the spermatozoa recovered from the victim's underwear.[182] On October 1, 2002, Yellowstone County prosecutors dropped all charges against Bromgard.[183] In the aftermath of Bromgard's overturned conviction, the FBI re-examined the original evidence hair samples and determined that the hairs recovered from the victim's bedding were in fact microscopically dissimilar to Bromgard's samples.[184]

b. Paul Kordonowy (Montana, 1990–2003)

In January 1990, a Montana jury found Kordonowy guilty of aggravated burglary and sexual intercourse without consent in connection with a 1987 rape.[185] The prosecution's case rested primarily on the physical evidence because the victim's poor eyesight prevented her from positively identifying her attacker.[186] Melnikoff provided hair identification testimony for the prosecution. He testified, without statistical support to his assertions, "that with caucasian head and pubic hair, he could microscopically distinguish an individual's respective head and pubic hair from another individual's respective head and pubic hair in ninety-nine out of 100 cases."[187] Melnikoff's testimony connected Kordonowy to the crime scene.[188]

Following Jimmy Ray Bromgard's exoneration in October 2002,[189] the Innocence Project requested the Montana Attorney General's Office to review all of Melnikoff's cases.[190] While the Montana Attorney General's Office refused to conduct a comprehensive review of Melinkoff's cases, it did review Kordonowy's case and tested the semen evidence from the case. In May 2003, the DNA tests excluded Kordonowy.[191] Shortly thereafter, the Montana Attorney General's Office filed a motion to vacate Kordonowy's 1990 rape conviction. Kordonowy remains in prison for another rape charge to which he pled guilty.

c. Chester Bauer (Montana, 1983–1997)

A Montana jury convicted Bauer in 1983 of sexual intercourse without consent and

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182. Innocence Project, *Know the Cases: Jimmy Ray Bromgard*, http://www.innocenceproject.org/Content/61.php (accessed Apr. 12, 2008).

183. *See* Liptak, *supra* n. 179.

184. Gillis, *supra* n. 179.

185. *State v. Kordonowy*, 823 P.2d 854 (Mont. 1991).

186. *Id.* at 855–56 ("Because of her hearing and sight impairment, however, K.B. could not go beyond this description and positively identify her attacker.").

187. *Id.* at 856.

188. *Id.*

189. *See supra* nn. 178–86 and accompanying text (discussing Bromgard's case and overturned conviction).

190. Personal communication between Craig Cooley and Innocence Project Co-Director Peter Neufeld, April 16, 2008.

191. *See* Mont. Dept. Just., *News Release: DNA Analysis Clears Prisoner of 1987 Rape, Remains Imprisoned on 1989 Rape*, http://doj.state.mt.us/news/releases2003/05012003.asp (accessed Apr. 13, 2008). ("The new report by Forensic Science Associates of Richmond, CA, concluded that Kordonowy was 'eliminated as a co-contributor to the male DNA' recovered from a Sidney woman who was raped in 1987. The sample did not contain any of four markers that would be expected had Kordonowy committed that crime.").

aggravated assault; the trial judge sentenced him to more than 40 years in prison.[192] Much like in Bromgard's case, Melnikoff "testified that pubic hair and head hair found at the crime scene were similar to Bauer's pubic and head hair . . . [and] that the chances of another person having the same type of pubic and head hair were one in ten thousand."[193] The Montana Supreme Court described Melnikoff's hair testimony as "other independent evidence of Bauer's guilt."[194]

On September 22, 1997, the convictions "were vacated on the basis of DNA test results that excluded Bauer as the assailant and other 'newly discovered evidence' of actual innocence."[195] Bauer is still in prison serving time on an unrelated offense.

d. Michael Green (Ohio, 1988–2001)

In 1988, an Ohio jury convicted Green of rape. DNA testing exonerated Green in 2001.[196] Prosecutors wrongfully convicted Green in large part because of Joseph Serowik, a Cleveland Police Department crime lab analyst.[197] At trial, Serowik testified that the man who used a washcloth to wipe himself after raping the victim had the same blood type as Green. Serowik also testified that the semen on the washcloth could have only been left by 16 percent of the male population. Independent forensic experts, however, concluded that no man could have been excluded as a possible source of the semen on the washcloth.[198] More significant, though, was Serowik's faulty assumption that only the rapist's semen or bodily fluid was on the washcloth.[199]

As to hair evidence, Serowik testified that a hair found on the washcloth matched Green's hair samples; indeed, he noted that 1 in 40,000 people would be expected to match the hair. Max Houck, a retired FBI hair expert hired by Green's civil attorneys, called Green's testimony spurious because hair analysts do not have access to a database and cannot accurately calculate probabilities. Houck also stated:

> Joseph Serowik demonstrates a fundamental lack of knowledge about conducting forensic hair examinations. Mr. Serowik was allowed to conduct hair examinations without proper education, training, supervision, or protocols . . . . He conducted these examinations in numerous cases, repeatedly made the same mistakes, and did not seek any training by qualified experts in forensic hair examinations.[200]

Following the revelations in Green's case, an independent audit of Serowik's cases

192. *State v. Bauer*, 683 P.2d 946, 948 (Mont. 1984).

193. *Id.* at 951.

194. *Id.*

195. *State v. Bauer*, 39 P.3d 689, 691 (Mont. 2002).

196. Mark Gillispie, *Experts Fault Job Done by Police Lab Tech, Boss*, Plain Dealer (Cleveland, Ohio) A1 (June 16, 2004). The real perpetrator ultimately came forward and confessed after the Cleveland Plain Dealer chronicled Green's ordeal.

197. *Id.* (quoting Ed Blake).

198. *Id.*

199. *Id.* During a deposition relating to Green's civil law suit against the Cleveland Police Department crime lab, Serowik testified he thought it was in "the realm of possibility" that only the rapist's fluids were on the washcloth because it never touched the victim's body. Whereupon Nick Brustin, one of Green's attorneys, asked Serowik: "Was it appropriate in 1988, based upon your understanding of accepted protocols for testifying, to testify about what might be in the realm of possibility?" Upon which Serowik replied: "No." *Id.*

200. Gillispie, *supra* n. 196 (quoting Max Houck).

exposed potentially significant flaws in the cases of Thomas Siller and Walter Zimmer. In January 2007, the Innocence Project and the Ohio Innocence Project moved to vacate the two convictions.[201] The outcome of those motions remains pending.

C. *Serological/Blood Typing/DNA Cases*

1. Overturned Non-Capital Convictions

a. Timothy Durham (Oklahoma, 1993–1997)

In 1993, an Oklahoma jury convicted Durham of sexually assaulting an 11-year-old girl, and a trial judge sentenced him to 3,000 years in prison.[202] Prosecutors premised their case on evidence including forensic testimony that Durham's hair microscopically matched hair recovered from the victim,[203] and a DNA test (DQ-alpha) which reportedly demonstrated Durham's genotype matched the semen donor's genotype.[204] In his defense, Durham presented eleven witnesses who placed him in another state when the assault occurred. The jury rejected his alibi defense.

New DNA testing in 1997 proved Durham did not share the DQ-alpha genotype found in the semen. The tests also excluded him at several other genetic loci.[205] The original DNA result turned out to be a false positive caused by misinterpretation. The DNA analyst failed to completely separate male from female DNA during differential extraction of the semen stain. When the actual offender's alleles combined with the victim's, the mixed profile produced a genotype that matched Durham's. The DNA analyst misinterpreted the mixed profile as a single source profile, and thus mistakenly incriminated Durham.[206] Prosecutors dropped all charges and released Durham from prison in 1997.[207]

b. Troy Brown (Nevada, 1994–2006)

In 1994, a Nevada jury convicted Brown of sexually assaulting a nine-year-old girl.[208] At trial, prosecutors premised their entire case on DNA evidence because the

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201. Innocence Project, *Press Release: DNA Proves a Notorious Analyst Engaged in Fraud and Misconduct Leading to Two More Wrongful Convictions, Innocence Project Says*, http://www.innocenceproject.org/Content/212.php (Jan. 26, 2007).

202. *See* Scheck et al., *supra* n. 56, at 204–21; Brian Barber, *Closing the Door on the Past; Once Known as a Rapist, Tulsan Wants to Clear His Name*, Tulsa World A1 (Mar. 2, 1997).

203. The hair examiner described a unique straightening characteristic exhibited in one of the Caucasoid head hairs she examined. According to the hair examiner, Durham's head hair exhibited the same characteristic. The hair examiner said she had never seen two different hairs exhibit this characteristic, and that she used this characteristic to infer that they matched one another. On cross-examination, the hair examiner conceded that no journal article or research existed regarding the "straightening" characteristic. For all she knew, the humidity in the lab where she performed her examination could have produced the "straightening" characteristic. *See* Scheck et al., *supra* n. 56, at 215–17.

204. William C. Thompson et al., *How the Probability of a False Positive Affects the Value of DNA Evidence*, 48 J. Forensic Sci. 47 (2003).

205. *Id.*

206. *Id.*

207. *See* Bill Braun, *New Trial Granted in Rape Case*, Tulsa World A1 (Jan. 3, 1997).

208. *Brown v. State*, 934 P.2d 235 (Nev. 1997).

victim failed to identify Brown from a photographic line-up.[209] The prosecutor's DNA analyst tested the semen recovered from the victim's underwear and concluded it matched Brown's DNA and that "only 1 in 3,000,000 people had the same DNA code as the one tested."[210] The DNA analyst offered statistical conclusions regarding the likelihood that the semen came from one of Brown's four brothers who lived very or moderately near the vicinity where the assault occurred. The DNA analyst "testified that there is a 25 percent chance that two brothers 'share both alleles at a single locus in common,' which she calculated as a 1 in 6500 chance that these two brothers' DNA would match a five loci."[211]

Once Brown entered federal court, his federal habeas attorneys retained renowned DNA statistician Dr. Laurence D. Mueller. After Dr. Mueller issued his report, the district judge granted Brown a writ of habeas corpus because the prosecutor's DNA analysts grossly miscalculated the DNA's statistical significance. According to the district judge, "the most egregious misstatement" made by the DNA analyst "relate[d] to the probability of the DNA evidence coming from one of Petitioner's four brothers, two of which [lived in the same vicinity as the victim] at the time of the assault and two of which were within the region, residing in Loa, Utah."[212] According to Dr. Mueller's report, the DNA analyst's "statistical probability [of 1 in 6500] represented the lowest probability possible among siblings . . . and [was] incorrectly calculated."[213] Most notably, the DNA analyst failed to consider that Brown's four brothers lived in the general vicinity of the attack when it occurred. Dr. Mueller opined that had the DNA analyst properly considered this fact, this would have changed the likelihood that "one or more brothers would match a single loci on the DNA chain" from 1 in 6500 to 1 in 256.[214] Moreover, Dr. Mueller determined that "the chance of a single sibling matching Troy Brown's DNA profile is 1 in 263 and the chance that among two brothers, one or more would match is 1 in 132. Applying the formula to four brothers, the chance increases to 1 in 66."[215] As the district judge acknowledged: "A 1 in 66 probability is significantly different than a 1 in 6500 probability."[216] In the end, the district court held that "absent the DNA testimony and even after weighing the evidence in favor of the prosecution, there [is] sufficient conflicting testimony to a raise a reasonable doubt in the mind of any rational trier of fact."[217]

c. Bernard Webster (Maryland, 1983–2002)

A Maryland jury convicted Webster in 1983 of the July 1982 rape of Sally Ann

209. *Id.* at 281–82.
210. *Id.* at 282.
211. *Brown v. Farwell*, 3:03-cv-00712-PMP-VPC at 8 (D. Nev. Dec. 12, 2006) (opinion on file with authors).
212. *Id.*
213. *Id.*
214. *Id.*
215. *Id.* at 9.
216. *Brown*, 3:03-cv-00712-PMP-VPC at 9.
217. *Id.*

Bowen.[218] Concepcion Bacasnot, a forensic serologist with the Baltimore Police Department crime lab, testified about the semen evidence recovered from the bedspread on which the rape occurred. She testified that the semen's contributor had type AB blood. Webster is type A, Bowen type B, and Bowen's husband type O. She also testified she found type A and type B antigens in the rape kit's vaginal washings, even though her report stated type AB; Bacasnot attributed the discrepancy to a typographical error. Bacasnot further testified that the semen's contributor must and only could have been a type A secretor; Webster was a type A secretor. Bacasnot's testimony was specious because it is scientifically impossible to distinguish, in a mixed stain, whether a semen donor was a type A or type AB secretor.[219] Moreover, her misleading testimony was designed to bolster the prosecution case against Webster.[220]

In 2002, a Maryland trial judge ordered DNA testing on three slides located at the hospital where doctors treated Bowen. In October 2002, the results excluded Webster as the source of the spermatozoa found on the slides. Prosecutors conducted their own DNA testing at the Baltimore Police Department crime lab with new samples from Bowen and her husband. These results excluded Webster and Bowen's husband as the source of the spermatozoa.[221] Prosecutors dropped all charges and released Webster from prison shortly thereafter. The State of Maryland awarded Webster $900,000 for his 20 years in prison.[222]

d. George Rodriguez (Texas, 1987–2005)

In February 1987, in Houston, Texas, two Latino men forced a 14-year-old girl into a car and drove her to a house where they subsequently raped her. After the rape, they forced her into the car again and left her on a roadside. Police quickly apprehended one of the assailants, Manuel Beltran, who confessed and identified his accomplice as Isidro Yanez. Despite Beltran's confession, police focused on Rodriguez because he and Beltran were friends, the victim said one of the assailants called the other assailant

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218. *Webster v. State*, 474 A.2d 1305, 1319 (Md. 1984).

219. Innocence Project, *Know the Cases: Bernard Webster*, www.innocenceproject.org/Content/290.php (accessed Apr. 13, 2008). DNA specialist Edward Blake reviewed Bacasnot's testimony and reports; he said that "this scientific fact . . . is known by every competent and honest forensic scientist." Stephanie Hanes, *Ex-Crime Lab Chemist's Work Questioned*, Balt. Sun 1B (Feb. 22, 2003) [hereinafter Hanes, *Ex-Crime Lab*]. Blake also said that any "competent and honest forensic scientist" would know the scientific explanation she gave was untrue, and that her "misrepresentation was a violation of her witness oath and falls within the definition of material perjury." *Police Review Cases Worked on by Criticized Chemist*, AP (Mar. 12, 2003). After Webster's exoneration, his defense attorneys learned that Bacasnot left the Baltimore City Police Department crime lab shortly after she acknowledged, in open court, she did not understand the science of her forensic tests and that her blood work in a death-penalty case was "worthless." Stephanie Hanes, *Chemist Quit Crime Lab Job after Hearing, Papers Show; She Acknowledged Report was 'Worthless' in 1987*, Balt. Sun 1B (Mar. 19, 2003).

220. Blake stated: "Ms. Bacasnot's false testimony in this case is clearly designed to bootstrap the State's case theory . . . . Such false testimony in this case can not be expected to be isolated. Rather, it reflects a fundamental lack of candor and integrity that can only result from systemic tolerance or systemic encouragement." Hanes, *Ex-Crime Lab*, *supra* n. 219.

221. Innocence Project, *supra* n. 219.

222. *See* Julie Bykowicz, *Hard Test for Freedom; DNA Evidence Rarely Offers Convicted Prisoners a Clear Route to Exoneration*, Balt. Sun 1B (Oct. 22, 2006).

George, and the victim identified him (and Yanez) in a photo line-up.[223] Rodriquez proclaimed his innocence because he had, what appeared to be, an air-tight alibi: He was working at a factory that made bed frames at the time of the rape, and timesheets supported his alibi.[224] Police did not officially charge Rodriguez until a Houston Police Department (HPD) crime lab analyst submitted a report "to the City's police department that she had recovered a single hair from the victim's clothing that could have come from Rodriguez."[225]

Prosecutors premised their case at trial on the victim's identification and the physical evidence. Investigators submitted two forms of physical evidence to the HPD. First, they submitted hairs collected from the victim's clothing and the crime scene, including hairs from the victim, Beltran, Rodriguez, and Yanez. Second, they submitted vaginal and rectal swabs and the victim's white panties.[226] An HPD crime lab analyst testified that a hair recovered from the victim was "microscopically consistent with" Rodriguez's pubic hair samples. Christy Kim, an HPD serologist, reported that she detected semen on several items including the rectal swab and white panties. She also reported that she detected ABO type A activity on the rectal swab and panties. Finally, she further reported the following ABO types and secretor status for the victim and each of the suspects: the victim was a type O non-secretor; Yanez was a type O secretor; Beltran was a type A secretor; and Rodriguez was a type O non-secretor. Based on her results, Kim concluded that *only* Beltran and Rodriguez could have contributed the semen she excluded Beltran as a potential contributor. Kim's exclusion of Yanez "was incorrect and was based on a fundamental misinterpretation of the ABO typing and Lewis secretor testing results."[227] Moreover, Kim failed to report that "most of the male population could not be eliminated as a potential contributor to the semen evidence . . . based merely on ABO typing."[228]

At trial, besides his mistaken identification defense, Rodriguez's primary defense was to establish that Yanez was the second assailant and not him. In opening arguments, however, the prosecutor told the jury: "You will hear scientific evidence which shows that beyond a doubt Isidro Yanez could not have committed the offense, and you will hear scientific evidence that there is physical evidence that is consistent with the defendant committing the offense."[229] Because Kim was on maternity leave at the time, prosecutors had her supervisor James Bolding presented her results at trial. He told the jurors that neither the victim nor Rodriguez could be eliminated as possible contributors

223. Innocence Project, *Know the Cases: George Rodriguez*, http://www.innocenceproject.org/Content/246.php (accessed Apr. 13, 2008).

224. Steve McVicker, *DNA Sets Inmate Free after 17 Years—But Houstonian May Face New Trial in 1987 Rape Case*, Hous. Chron. 1 (Oct. 9, 2004).

225. *Rodriguez v. City of Houston*, 2007 WL 1189639 at *1 (S.D. Tex. Apr. 19, 2007).

226. *See* Michael R. Bromwich, *Final Report of the Independent Investigator for the Houston Police Department Crime Laboratory and Property Room* 197 (June 13, 2007) [hereinafter *Bromwich Report*].

227. *Id.* at 199.

228. *Id.; see also id.* at 200 (noting that Kim "provided absolutely no information in her report about the relative insignificance of [Rodriguez's] inclusion."). Michael Bromwich, the independent investigator appointed to investigate the HPD, wrote this about Kim and her fellow HPD serologists: "This case and many others that we reviewed demonstrate that serologists in the Crime Lab during the 1980s . . . simply did not grasp basic technical and interpretive principles of forensic serology." *Id.*

229. *Id.* at 200 (quoting the trial transcript). .

of the "bodily fluid" found on the panties and rectal swab. He also said Beltran could not be eliminated as a possible contributor of the semen evidence. More importantly, Bolding had the following exchange with the prosecutor regarding whether Yanez could be a potential contributor of the semen:

> Q: Okay, and is he a possible donor of that semen?
>
> A: No, sir, he is not.
>
> Q: And would you tell the jury why, please?
>
> A: Again, because he is a secreter [sic] and the grouping would be O, one would predict his genetics would show up as a donor in a sexual assault or intercourse. None of those O secretions did show up by the testing by Ms. Kim.[230]

During cross-examination, Bolding reiterated that Yanez was eliminated as a possible contributor.[231] Bolding's testimony effectively nullified Rodriguez's defense—that Yanez was the second assailant.[232] As a result, the jury convicted Rodriguez of aggravated sexual assault of a child and aggravated kidnapping, and the trial judge sentenced him to 60 years for each offense. The Texas Court of Criminal Appeals affirmed his convictions and sentences on direct appeal.[233]

In 2002, the Innocence Project began representing Rodriguez. In 2003, a Texas trial judge ordered DNA testing on the hair recovered from the victim's underwear that was consistent with Rodriguez's pubic hair samples. The mitochondrial DNA (mtDNA) results excluded Rodriguez. More importantly, the results could not exclude Yanez.[234] Besides the mtDNA results, the Innocence Project submitted an affidavit prepared by a panel of six serological experts, which stated that Bolding's testimony contained "egregious misstatements of conventional serology" revealing that he "lacked a fundamental understanding of the most basic principles of blood typing analysis or he knowingly gave false testimony to support the State's case against Mr. Rodriguez."[235] In August 2005, the Texas Court of Criminal Appeals (CCA) vacated his conviction. The CCA found that "the prosecutor unknowingly relied on this inaccurate evidence to

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230. *Id.* at 202. Bolding's as well as Kim's, reasoning is fundamentally flawed. Both reasoned that Yanez, as a type O secretor, could be excluded as the semen donor because only ABO type A activity—and no ABO type O activity—was detected in the semen. Such reasoning fundamentally misconstrues basic serological principles. Because ABO type O antigens are a precursor to ABO type A and B antigens, some level of ABO type O activity is present in *every* sample that includes ABO antigenic activity. Accordingly, Yanez, as an ABO type O secretor, could *never* been eliminated as a possible contributor in a scenario involving more than one contributor to an evidence sample.

231. *Id.*

232. *Id.* ("Rodriguez's defense at trial was that Yanez, not he, was the second rapist.").

233. *Rodriguez v. State*, 766 S.W.2d 358, 360 (Tex. App. Texarkana Dist. 1989).

234. *Ex parte Rodriguez*, 2005 WL 2087750 at *1 (Tex. Crim. App. Aug. 31, 2005) ("The court has entered findings of fact that DNA testing, unavailable at the time of Applicant's trial, on the unknown pubic hair recovered from the victim's underwear excluded the Applicant and the co-defendant, but did not exclude Yanez or his maternal blood relatives as possible contributors."); Innocence Project, *supra* n. 223.

235. *Bromwich Report*, *supra* n. 226, at 203 (quoting affidavit); *see also Rodriguez*, 2005 WL 2087750 at *1 ("The trial court also found that testimony from the Houston Crime Lab Serology Section Supervisor was inaccurate scientific evidence and Yanez should not have been excluded as a contributor of semen collected from the victim.").

argue that [Rodriguez], rather than Yanez, committed these offenses."[236] The CCA also found that Rodriguez "was denied due process based on the admission of inaccurate serological evidence during his trial."[237] In 2005, the District Attorney moved to dismiss all charges.[238] In 2006, Rodriguez filed a federal civil rights law suit against the City of Houston and Harris County.[239] His suit is still pending.

e. Josiah Sutton (Texas, 1999–2004)

A Texas jury convicted Sutton in 1999 of aggravated sexual assault.[240] At trial, Sutton's conviction rested "in large part on the results of a DNA test based on serological evidence taken from [him]."[241] Christy Kim, a DNA analyst from the Houston Crime Lab, testified she analyzed a semen sample recovered from the backseat of the car where the sexual assault occurred. Kim said the sample contained two profiles—Sutton's and that of another, unidentified man. Kim also analyzed a semen stain recovered from the victim. According to Kim's report, the DNA profile generated from the semen sample matched Sutton's DNA, and that Sutton's DNA type "can be expected to occur in 1 out of 694,000 people among the black population."[242] While Kim did not introduce this statistic at trial, she repeatedly implied that every DNA pattern is unique; she then testified she identified Sutton's DNA pattern from the semen sample.[243] Kim's testimony left jurors with the mistaken impression that Sutton's DNA was unique, and that therefore the DNA evidence uniquely identified him as one of the assailants.[244] The Texas Court of Appeals affirmed Sutton's conviction.[245]

Sutton's case took a fortuitous turn in 2003 when two Houston reporters investigating the Houston Crime Lab sent transcripts and reports from numerous cases to a group of forensic experts. Among them was Dr. William Thompson, a lawyer and DNA expert from the University of California-Irvine.[246] Thompson reviewed Kim's testimony, reports, and statistical calculations. He concluded that she offered inaccurate and grossly misleading testimony, and that she severely miscalculated the statistical likelihood that another African-American would have a DNA profile similar to Sutton's. According to Thompson's calculations, the frequency of African-American men who

236. *Rodriguez*, 2005 WL 2087750 at *1.

237. *Id.*

238. Innocence Project, *supra* n. 223.

239. *See Bromwich Report*, *supra* n.226, at 203.

240. *Sutton v. State*, 2001 WL 40349 at *1 (Tex. App. Houston Dist. Jan. 18, 2001).

241. *Id.*

242. Kim's lab report and notes can be located at http://www.scientific.org/archive/DNA%20Rpt%20&%20Notes.PDF (accessed Apr. 13, 2008).

243. Kim's testimony can be located at http://www.scientific.org/archive/Christy%20Kim%20Testimony.pdf (accessed Apr. 13, 2008).

244. Sutton filed a pre-trial motion for re-testing, but the trial judge denied this motion. Sutton also asked trial counsel to have the samples independently re-tested; trial counsel, however, failed to file a pre-trial motion requesting funds for re-testing, and instead asked Sutton's family to provide the money for the re-testing. When Sutton's family failed to produce the necessary amount for re-testing, trial counsel dropped the issue and never had the evidence re-tested. *See Sutton*, 2001 WL 40349 at *1.

245. *Id.*

246. Innocence Project, *Know the Cases: Josiah Sutton*, http://www.innocenceproject.org/Content/268.php (accessed Apr. 13, 2008).

would be included as possible contributors to the vaginal semen stain was 1 in 15.[247] Thompson's findings prompted prosecutors to retest the evidence, which produced conclusive, exculpatory evidence. The semen source came from a single man, not two, and it did not come from Sutton.[248] In March 2003, prosecutors dismissed all charges against Sutton. In May 2004, Texas Governor Rick Perry granted Sutton a pardon based on his actual innocence.[249] The State of Texas also agreed to pay Sutton $118,000 for his wrongful conviction.[250] In June 2006, police arrested Donnie Lamon Young and charged him with rape after the Texas Department of Public Safety entered his DNA into the state's DNA databank and his DNA matched the DNA collected from the crime scene.[251]

f. Brandon Lee Moon (Texas, 1988–2005)

A Texas jury convicted Moon in 1988 of two counts of aggravated sexual assault. The trial judge sentenced Moon to 75 years in prison.[252] Glen David Adams, a serologist from the Texas Department of Public Safety (DPS), testified at trial for the prosecution. Adams tested the rape kit material and the other items recovered from the crime scene (e.g., a bathrobe and bed comforter). He also tested samples taken from Moon, the victim, the victim's husband, and the victim's son. Adams testified that his results indicated Moon was a possible—if not the likely—contributor to the semen because a non-secretor deposited the semen. According to Adams, Moon was a non-secretor, while the victim's husband and son were secretors.[253] Adams also testified that Moon's blood type only occurred in 15 percent of the population.[254]

After his conviction, Moon vigorously litigated to have the biological evidence retested using DNA technology unavailable in 1987. In 1989, a Texas trial judge granted Moon's request for DNA testing. The results, released in 1990, excluded Moon as the contributor of the semen recovered from the comforter. The laboratory that conducted the testing never compared the results to the victim or the victim's husband and son, however, because these samples were never sent to the laboratory. As a result, the laboratory described the results as inconclusive.[255] The DPS conducted DQ-Alpha DNA

247. Thompson's report can be located at http://www.scientific.org/archive/Thompson%20Report.PDF (accessed Apr. 13, 2008).

248. Innocence Project, *supra* n. 246.

249. *See* Roma Khanna, *HPD Makes Arrest In Iconic DNA Case—New Suspect's DNA Match in '98 Rape Further Clears Name of Wrongly Convicted Man*, Hous. Chron. A1 (June 22, 2006).

250. *Id.*

251. *Id.*

252. *Ex parte Moon*, 2005 WL 767819 at *1 (Tex. Crim. App. Apr. 6, 2005).

253. *See* Steve McVicker, *In Time For Christmas: Freedom after 16 Years—Lawyers for a Man Wrongly Sent to Prison Say DNA Cleared Him in November 2002*, Hous. Chron. A1 (Dec. 21, 2004).

254. *See* Gary Scharrer, *Exonerated—El Pasoan Has Spent 17 Years in Prison*, El Paso Times 1A (Dec. 21, 2004).

255. Innocence Project, *Know the Cases: Brandon Moon*, http://www.innocenceproject.org/Content/222.php (accessed Apr. 13, 2008); McVicker, *supra* n. 253. In 1999, U.S. District Court Judge Harry Lee Hudspeth denied Moon's federal habeas petition for relief based on the Lifecodes results, but aptly observed: "If Petitioner had shown that the DNA recovered from the bedspread originated from a man but did not originate from him, *this might be a different case*." *Moon v. Johnson*, No.EP-97-CA-74-H (W.D. Tex., March 29, 1999), at 9 (emphasis added) (opinion on file with the authors).

tests in 1996 that yielded DNA profiles from the semen on the comforter, robe, and victim's vaginal slides, but which, remarkably, were never compared to the DNA profiles of Moon, the victim, the victim's husband, or her son—even though DPS had requested the samples. DPS did not disclose the test results to Moon until 2004.[256]

In 2001, after Texas enacted its post-conviction DNA statute, Moon filed another motion for further post-conviction testing. In 2002, a Texas trial judge granted Moon's *pro se* request and in October 2002 law enforcement forwarded the evidence to the DPS. According to DPS lab notes, the DPS completed STR testing by November 8, 2002, because it notified the El Paso District Attorney's Office *on the same day* that DNA of Moon and the victim's son did not match the semen from the bathrobe or bed comforter.[257] DPS analysts obtained two male profiles—one on the comforter and one on the bathrobe. Both samples contained a mixture of the victim's DNA and that of an unknown male. The DPS failed to issue a formal report, however, until April 24, 2003—and it only sent the report to the El Paso District Attorney's Office. Moon and his Innocence Project attorneys did not learn of the exculpatory results until fall 2004—nearly two years after DPS concluded Moon could not have been the semen contributor.[258]

In November 2004, Moon's Innocence Project attorney located the victim's ex-husband, who allowed comparison of his DNA profile to the DNA profiles that DPS had developed. The tests confirmed the semen stain on the bed comforter came from him. Moreover, they not only proved Moon's innocence, they revealed substantial errors regarding Adams's serological tests and testimony. At trial, Adams testified that his tests definitively excluded the victim's husband as a possible contributor of the semen because he was a non-secretor. As Barry Scheck, one of Moon's post-conviction attorneys, stated: "He [made] a serious error. Scientifically he had no basis for saying that those stains came from a non-secretor."[259] Prosecutors released Moon in December 2004,[260] and the Texas Court of Criminal Appeals granted Moon's writ of habeas corpus in April 2005.

g. Jerry Watkins (Indiana, 1986–2000)

In 1986, an Indiana jury convicted Watkins of murdering and raping 11-year-old Margaret ("Peggy") Sue Altes; the trial judge sentenced him to 60 years in prison after

256. *See* Innocence Project, *supra* n. 255. On December 13, 1996, DPS Analyst Donna Stanley wrote a memo in which she stated: "It is imperative to obtain a blood sample from Brandon Moon and the victim's husband in order to resolve this case. An additional blood sample from the victim is also needed." (memorandum on file with the authors).

257. *See* McVicker, *supra* n. 253.

258. *Id.*

259. Tammy Fonce-Olivas, *Moon Evidence Flaw Spurs State Inquiry*, El Paso Times 1A (Jan. 22, 2005). In the aftermath of Moon's exoneration, the El Paso Times obtained personnel files from the DPS under the Texas Public Information Act. The DPS documents revealed that Adams was questionably qualified to perform serological testing; he received a "D in his college serology course at Texas Tech University"; and he faced a "significant backlog" because of his inexperience and likely incompetence. Shortly before the DPS assigned Moon's case to him, his supervisor made the following comment in one of his evaluations: "Glen needs to apply himself much more into gaining a better understanding of basic forensic serology. He also needs to develop better work coordination into planning and organizing his work . . . ." *Id.*

260. *Moon*, 2005 WL 767819.

his jury refused to sentence him to death.[261]

The prosecution's case against Watkins was "thin" because "[n]o physical evidence linked Watkins to the crime."[262] Prosecutors premised their case on questionable blood testing, among other evidence. At trial, a forensic serologist introduced blood evidence showing that Peggy Sue had type A blood and Watkins had type O blood.[263] Semen recovered from Peggy Sue's vaginal swab, however, tested positive for type B blood, "which would be consistent with blood types B or AB, but is definitely not consistent with Watkins' blood type O."[264] The serologist, however, offered an unsupported theory to explain why the blood type evidence did not exclude Watkins as a semen donor. She said Watkins's blood typing test produced an incorrect result,[265] and that she "couldn't really eliminate a blood type of any particular type for the semen donor."[266] Furthermore, she theorized that the type B result produced by Watkins's blood typing test could have resulted "from bacterial contamination occurring in the days before Peggy Sue's body was discovered."[267] Relying on the bacterial contamination theory, prosecutors argued the "blood tests could not eliminate any male, including Watkins, as the source of the semen."[268]

The Indiana Supreme Court affirmed Watkins's conviction and sentence.[269] In 1992, during state post-conviction proceedings, the trial judge granted Watkins's request to have the semen evidence tested with new DNA technology. In 1993, "the DNA testing showed the victim's body contained semen which—to a certainty—could not have come from Watkins."[270] Despite the results, the trial judge denied Watkins relief, "concluding the DNA evidence was only cumulative of evidence at trial of inconclusive blood tests that suggested the possibility of a blood type not consistent with either Watkins or the victim."[271] The Indiana Court of Appeals affirmed the denial of post-conviction relief.[272]

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261. *Watkins v. Miller*, 92 F. Supp. 2d 824, 827 (S.D. Ind. 2000); *Watkins v. State*, 528 N.E.2d 456, 457 (Ind. 1988).

262. *Watkins*, 92 F. Supp. 2d at 829, 834 ("the case against Watkins was so thin at trial"); *id.* at 834 ("there was little evidence tying Watkins to Peggy Sue's murder").

263. *Id.* at 835.

264. *Id.*

265. In particular, she said that the evidence of Watkins's blood type (type B) was "very spurious" and "erratic." *Id.*

266. *Watkins*, 92 F. Supp. 2d at 835.

267. *Id.*

268. *Id. See also id.* at 838 ("At trial, the state managed to use the theory of 'bacterial contamination' to discredit the blood test results. The state then argued to the jury that those test results were inconclusive on any issue.").

269. *Watkins*, 528 N.E.2d at 457.

270. *Watkins*, 92 F. Supp. 2d at 827 ("In fact . . . [the DNA] results prove beyond a reasonable doubt that someone other than Jerry Watkins raped the victim when she was murdered.").

271. *Id.*

272. *Watkins v. State*, 1996 WL 42093 (Ind. App. Jan. 29, 1996). The court stated:

> In other words, the jury was fully aware of the proposition that there was an incompatible blood type, although Watkins could not be definitely excluded by the test results introduced at trial. Likewise, the DNA tests provide the same information: Watkins cannot be definitely excluded as a perpetrator but the results suggest the possibility of the participation of another perpetrator. Thus, the probative value of the results of both tests is similar.

Id. at **5–6.

In 1997, Watkins filed a writ of habeas corpus in federal court. In 2000, after Watkins's appointed attorneys filed an amended habeas petition, the district judge granted Watkins a writ of habeas corpus.[273] The district judge granted the writ because prosecutors failed to disclose exculpatory/impeachment evidence and the 1993 DNA results represented "compelling evidence that he [was] actually innocent of murdering Peggy Sue."[274] With respect to the DNA evidence, the district judge held that the Indiana state court opinions "reflect[ed] a clear misunderstanding of the DNA evidence."[275] The new DNA evidence was not merely "cumulative"; instead, it "completely" changed the "picture" of the prosecution's case.[276] The new DNA evidence undeniably demonstrated Watkins was not the assailant who raped Peggy Sue.[277] As the district judge noted: "Whatever one thinks of the state's 'bacterial contamination' theory at trial, the new DNA evidence definitively excludes the possibility that Watkins and only Watkins raped and killed the victim."[278] The district judge also dismissed, as "farfetched," the State's new two rapist theory.[279]

In July 2000, after the State initially appealed the district judge's ruling to the Seventh Circuit Court of Appeals, the State dismissed its appeal after "further DNA tests show[ed] that the male portions of vaginal swabs taken from [Peggy Sue] . . . could not have come from Watkins."[280] Prosecutors dismissed all charges and freed Watkins in July 2000.[281]

h. Herman Atkins (California, 1988–2000)

In 1988, a California jury convicted Atkins of robbery, rape, forcible copulation,

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273. *Watkins*, 92 F. Supp. 2d at 856-57.

274. *Id.* at 828. The district judge noted that the prosecution's discovery violations were numerous and "systematic." *Id.* at 843 ("The state has offered neither excuse nor explanation for the prosecutor's multiple failures, which can fairly be described as systematic.").

275. *Id.* at 827.

276. *Id.* at 839 ("Thus, when one understands the DNA evidence and the state's case against Watkins, the DNA evidence cannot reasonably be treated as merely 'cumulative.' It changes the picture completely.").

277. *Watkins*, 92 F. Supp. 2d at 836 ("[T]he record permits simply no basis for reasonable dispute, and the importance of [the 1993 DNA] evidence cannot be overstated. The . . . results mean that semen from someone other than Jerry Watkins was deposited in Peggy Sue Altes' body at the time of her death."); *id.* at 837 ("The DNA results do not merely 'suggest the possibility.' They prove conclusively—beyond any reasonable doubt—that someone who was not Jerry Watkins raped the victim at the time of her death."); *id.* at 839 ("The state's theory that Watkins alone raped Peggy Sue and then killed her—the only theory argued to the jury—is excluded by the DNA evidence beyond any reasonable doubt."); *id.* at 840 ("With the addition of the DNA evidence, and under a standard of proof beyond a reasonable doubt, this court is confident that no reasonable juror would find Watkins guilty of murdering Peggy Sue Altes.").

278. *Id.* at 838.

279. According to the State, the new DNA evidence did not exonerate Watkins; rather, it simply proved Watkins committed the rape-murder with another (yet identified) assailant. The district judge ridiculed the State's new theory:

> Thus, under the state's new two rapists theory, a jury would have to believe beyond a reasonable doubt that Watkins withstood repeated questioning by the police, coordinated an elaborate false alibi with his wife, but then confessed a horrific crime to a total stranger in a jail holding cell—and that he made this remarkable confession without ever mentioning that another person was involved. "Farfetched" is a generous description of this theory.

Watkins, 92 F. Supp. 2d at 838.

280. *Watkins v. Miller*, 110 F. Supp. 2d 841 (S.D. Ind. 2000).

281. *See DNA Evidence Frees Man Convicted of 1984 Rape, Murder*, Chi. Trib. 17 (July 22, 2000).

and for using a handgun during the commission of these offenses. The trial judge sentenced him to more than 45 years in prison.[282] Prosecutors presented James Hall, a serologist from the California Department of Justice. Hall testified that someone with blood type A and PGM 2+1+ deposited the semen recovered from the vaginal swabs. Coincidentally, Atkins and the victim shared these characteristics. Moreover, Hall testified that only 4.4 percent of the population have blood type A *and* PGM 2+1+.[283] Hall's testimony clearly implied that Atkins contributed the semen. During closing arguments, the prosecutor hammered home this point when he argued that Hall's testimony was "evidence [that] can't be used to say this is exactly [Atkins], but it excludes a large percentage of the people, and does not exclude [Atkins], and that's corroboration."[284]

Atkins, with the Innocence Project's assistance, sought post-conviction DNA testing throughout the 1990s. Riverside County prosecutors repeatedly opposed post-conviction DNA testing because they were convinced of Atkins' guilt. In a motion to oppose DNA testing, one prosecutor argued: "Rather than a quest for the truth, the defendant's motion is simply the desperate ploy of a convicted predator who has exhausted all legal remedies."[285] In January 1999, however, prosecutors agreed to submit the evidence for DNA testing. Edward Blake, a veteran DNA analyst from Forensic Science Associates in Richmond, California, performed the testing. Blake's tests excluded Atkins as the source of the semen.[286] Moreover, Blake took significant issue with Hall's serological testimony at trial. Blake said all the evidence on the vaginal swabs and the victim's sweater could have come from the victim and could not be used to point to the source of the semen. Blake said Hall's testimony represented "a fundamental misrepresentation of the scientific evidence and, therefore, constitutes scientific fraud."[287] Furthermore, the report Hall drafted after he performed his tests, and the one disclosed to trial counsel, was "questionable," "lacked specificity[,] and was arguably misleading."[288] Prosecutors dropped all charges and released Atkins in February 2000.

D. Fingerprint Identification

1. Non-Capital Overturned Convictions

a. Stephan Cowans (Massachusetts, 1997–2004)

Cowans was convicted of attempted homicide in 1997 for the non-fatal shooting of

282. Innocence Project, *Know the Cases: Herman Atkins*, http://www.innocenceproject.org/Content/50.php (accessed Apr. 13, 2008).

283. *Id.*

284. *See* Fred Dickey, *Worst-Case Scenario; The Story of Herman Atkins' Years Imprisoned as an Innocent Man Might Scare the Hell Out of You. It Should*, L.A. Times 16 (June 25, 2000).

285. *Id.* (quoting Riverside County Deputy District Attorney Anne E. Corrado).

286. *Id.*

287. *Id.* (quoting Edward Blake).

288. *Atkins v. Co. of Riverside*, 151 Fed. Appx. 501, 505, 506 (9th Cir. 2005) (unpublished).

a Boston police officer.[289] At trial, the prosecution's case was premised on two eyewitnesses, and a fingerprint lifted from a glass. The victim-police officer testified "he had no doubt that [Cowans] was the person who shot him," while another witness placed Cowans near the scene when the shooting occurred.[290] The print was recovered from a residence the offender broke into as he fled the scene. The offender held a mother and daughter hostage for approximately ten minutes. During this interval, the offender drank a glass of water before he fled the residence.[291] A latent print was recovered from the glass. Two Boston Police Department (BPD) latent print examiners, Dennis LeBlanc and Rosemary McLaughlin, testified that the latent print was created by Cowans.[292] Two defense examiners reportedly confirmed LaBlanc and McLaughlin's identification.[293] Cowans was convicted and sentenced to forty-five years in prison, which was later reduced to thirty years.[294]

Cowans proclaimed his innocence from the very beginning. Thus, once he was sent to prison, he set out to prove his innocence. In order to save money for post-conviction DNA testing, Cowans worked biohazard duty in prison.[295] The DNA results excluded Cowans. Based on the DNA evidence, the Boston and Massachusetts State Police re-examined the fingerprint and concluded it was erroneous. Cowans was offered an apology and freed in January 2004.[296] Subsequent investigation revealed the latent print actually belonged to one of the family members who was held hostage.[297]

An external audit of LeBlanc's identification revealed LeBlanc "discovered his mistake" well before trial, yet "concealed it all the way through trial."[298] LaBlanc and

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289. *Commonwealth v. Cowans*, 756 N.E.2d 622 (Mass. App. 2001).

290. *Id.* at 625.

291. Despite spending far more time with the offender than the victim-police officer, the mother and daughter were unable to identify Cowans in the line-up. *See id.* ("Lacy viewed a photographic array and the lineup but did not positively identify anyone.").

292. *Id.* ("A fingerprint left on the glass mug was matched to the defendant."); Jack Thomas, *Two Police Officers are Put on Leave: Faulty Fingerprint Evidence is Probed*, Boston Globe B1 (Apr. 24, 2004).

293. *See* David Weber & Kevin Rothstein, *Man Freed after 6 Years: Evidence Was Flawed*, Boston Herald 4 (Jan. 24, 2004).

294. Thomas, *supra* n. 292.

295. *See* Flynn McRoberts & Steve Mills, *U.S. Seeks Review of Fingerprint Techniques; High Profile Errors Prompt Questions*, Chi. Trib. 1 (Feb. 21, 2005). DNA samples were recovered from the glass, a hat left at the shooting scene, and a sweatshirt left at the invaded home. *See* Simon A. Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. Crim. L. & Criminology 985, 1014–15 (2005). The Commonwealth initially opposed post-conviction DNA testing, partly because it failed to see how Cowans could prove his innocence, given the fact he was linked to the offense by fingerprint evidence. The New England Innocence Project, however, persuaded the Commonwealth to allow the DNA testing.

296. *See* Jonathan Saltzman & Mac Daniel, *Man Freed in 1997 Shooting of Officer: Judge Gives Ruling after Fingerprint Revelation*, Boston Globe A1 (Jan. 24, 2004).

297. *See* David S. Bernstein, *The Jig Is Up*, http://www.bostonphoenix.com/boston/news_features/other_stories/multi_4/documents/03827954.asp (May 14, 2004). It also was reported that one of the "elimination" cards was mislabeled. According to a Suffolk County District Attorney's Office disclosure document obtained by the Phoenix:

> The name and signature on one of the fingerprint cards . . . were *not* the name and signature of the individual from whom that particular set of elimination fingerprints had in fact been taken. The set of fingerprints were in fact those of *another* individual from whom elimination fingerprints had been taken.

Id. (emphasis in original).

298. McRoberts & Mills, *supra* n. 295.

McLaughlin were not prosecuted because a grand jury refused to indict them.[299] In yet another astonishing move, Police Commissioner Kathleen O'Toole shut down the entire BPD fingerprint unit and turned latent work over to the state police.[300] Finally, reports surfaced that the BPD Identification Unit had long been a "dumping ground" and "punishment duty" for troubled cops.[301] Tragically, on October 26, 2007, Stephan Cowans was found dead in his home. Police said he had been shot to death, and an investigation is continuing.[302] In early March 2008, the BPD also opened a reinvestigation of the Cowans case, in part a result of pressure resulting from an examination of the Cowans case by the Boston Phoenix newspaper.[303]

b. Ricky Jackson (Pennsylvania, 1997–2001)

Jackson was convicted in 1998 of stabbing Alvin Davis to death. Jackson became an immediate suspect because he and Davis were sexual partners prior to the murder, but Jackson denied any involvement in Davis's death.

After further investigation, an investigator identified a bloody fingerprint on a box fan found at the crime scene. The investigator, "who had training as a fingerprint examiner, compared the fingerprints from the fan with those of Jackson and determined that they were a match."[304] The investigator's identification was verified by two members of the International Association of Identification, and the investigator incorporated the fingerprint evidence into his probable cause affidavit.[305] Although the "fingerprint match was the only evidence identified which linked Jackson to" Davis's murder, the trial judge issued an arrest warrant for Jackson.[306]

At trial, the "central piece of evidence against [Jackson] was the fingerprint identification."[307] The jury ultimately convicted Jackson of first-degree murder. Jackson was sentenced to life imprisonment without parole. However, a few days after Jackson's conviction, George Wynn and Vernon McCloud, two fingerprint experts who testified on Jackson's behalf, drafted a letter to the International Association for Identification (IAI). The letter notified the IAI president that the investigator who identified Jackson's prints, along with two other IAI members, testified "to the erroneous identifications of three latent prints which they claimed were prints made by the fingers

299. *See* Maggie Mulvihill, *No Charges vs. Hub Cops in Frame Case*, Boston Herald 2 (June 24, 2004).

300. *See* Suzanne Smalley, *Police Shutter Print Unit*, Boston Globe B1 (Oct. 14, 2004).

301. *See* Maggie Mulvihill & Franci Richardson, *Unfit Cops Put in Key Evidence Unit*, Boston Herald 2 (May 6, 2004).

302. *See* David Abel, *A Future Reclaimed, a Windfall, a Life Lost*, Boston Globe (Mar. 3, 2008).

303. *See* David S. Bernstein, *More Than a Few Loose Ends*, Boston Phoenix (Mar. 5, 2008).

304. *Jackson v. Pararo*, 2002 WL 32341800 at *1 (E.D. Pa. Oct. 28, 2002).

305. The affidavit stated, in pertinent part, that the investigator,

> a Court Recognized Expert Latent Fingerprint Examiner, conducted an examination of the latents with the known ten-print fingerprint card of Richard Jackson, B/M DOB* 02-01-57. As a result, the prints made in blood left on the fan which had been found on top of the victim were positively identified as being the fingerprints of the defendant, Richard Jackson.

Id. at *2.

306. *Id.*

307. *Id.*

and palm of the defendant Richard Jackson."[308] Wynn and McCloud wanted the IAI to bring ethical charges against the investigator as well as the two other IAI members. The IAI "ultimately concluded that [the investigator] and the two other investigators had erroneously identified the fingerprints on the box fan as those of Jackson."[309]

In January 2000, the FBI reported that the latent fingerprints discovered on the box fan were "not the left index or left middle fingerprints, or any of the other fingerprints of Richard C. Jackson. The latent palm prints are not the right palm print or the left palm print of Jackson."[310] As a result of the FBI and IAI reports, the prosecutor requested an order of nolle prosequi against Jackson. Jackson was released on December 23, 1999,[311] and all charges against him were dismissed on March 7, 2000.[312]

c. Gene Bibbins (Louisiana, 1987–2003)

In 1987, a Louisiana jury convicted Bibbins of raping a 13-year-old Baton Rouge girl.[313] At trial, prosecutors averred that semen samples recovered from the victim's rape kit came from a "B secretor"—the same blood type as Bibbins and nearly seven percent of the population. Moreover, the victim testified and identified Bibbins as her assailant.[314]

In 1998, Bibbins began to write to the Innocence Project in an effort to prove his innocence through DNA testing. The Innocence Project agreed to take his case and eventually located physical evidence that could be subjected to DNA testing. The DNA tests proved his innocence, and on March 7, 2003, a Louisiana trial judge exonerated Bibbins and vacated his convictions.[315] Emanuel Gordon has since been identified as the actual perpetrator.[316]

After his exoneration, Bibbins filed a federal 1983 action against the city of Baton Rouge. In a significant development, during discovery, Bibbins learned that Annie Michelli, a fingerprint examiner for the Baton Rouge Police Department, either fabricated evidence or erred in her analysis, and failed to disclose exculpatory fingerprint evidence to Bibbins's trial counsel. It is "undisputed . . . Michelli examined a set of latent fingerprints lifted from the crime scene and concluded in her report that the fingerprints were unidentifiable."[317] At trial, Michelli testified "she was unable to identify Bibbins as a match to the fingerprint sample."[318] More importantly, Michelli

308. *Id.*

309. *Jackson*, 2002 WL 32341800 at *2.

310. *Id.*

311. Calling the prints "the keystone of the prosecution's case," Delaware County District Attorney Patrick L. Meehan stated that without them, "there's no credible basis for us to accuse him." Anne Barnard, *Convicted in Slaying, Man Wins Freedom: An FBI Investigation Found That Fingerprints at a Murder Scene Were Not Those of Richard Jackson*, Phila. Inquirer B1 (Dec. 24, 1999).

312. *See* Mary Anne Janco, *Case Withdrawn against Pa. Man Convicted, Jailed in 1997 Murder*, Phila. Inquirer B1 (Mar. 8, 2000).

313. *Bibbins v. City of Baton Rouge*, 489 F. Supp. 2d 562 (M.D. La. 2007).

314. *Id.* at 567.

315. *Id.*

316. *Id.* at 567 n. 2.

317. *Id.* at 572.

318. *Bibbins*, 489 F. Supp. 2d at 572.

"also testified . . . she double checked her results with the Louisiana state crime lab and that the state crime lab reached *the same results*."[319] The state crime lab, however, did not reach the same results; "it is undisputable" that Sybil Guidry, a fingerprint examiner for the Louisiana state crime lab, examined the prints and reported "a contrary result"—not only were Bibbins's prints identifiable, they did not match the prints lifted from the crime scene.[320] Thus, the district judge held that it was "undisputed that Michelli's testimony in this regard was incorrect."[321]

The district judge ruled that Michelli violated Bibbins's constitutional rights when she failed to disclose that her report conflicted with Guidry's report. As the district judge explained:

> In the case at bar, there is evidence that Michelli's report conflicted with Guidry's report. There is also evidence that Michelli believed Guidry was her supervisor—although Guidry testified to the contrary—and that she compared her report to that of Guidry's report. Thus there his evidence that Michelli was in possession of Guidry's report. This alone proves nothing, but in this case there is more. The evidence shows that Guidry's report exculpated Bibbins. Thus, the inference is that Michelli was in possession of exculpatory evidence.[322]

The district judge also held that the evidence supported "a finding that Michelli knew of the exculpatory report, recognized that her findings contradicted that report, and withheld disclosure of the exculpatory report so that her findings could not be contradicted."[323] The district judge supported this conclusion by holding that Michelli's "false testimony may be considered as circumstantial evidence on the issue of withholding exculpatory evidence."[324] The district judge ultimately denied Michelli qualified immunity because she acted objectively unreasonable when she violated Bibbins's "clearly established right" to have access to exculpatory reports. As the district judge noted: "Deliberate withholding of exculpatory evidence can never constitute *reasonable* conduct."[325]

2. The Wrongly Accused

a. Michael Cooper (Arizona, 1998)

Police arrested Cooper for a series of 1988 Tucson, Arizona, rapes.[326] Cooper became a suspect when identification technician, Terry O'Sullivan, attributed latent prints from two different crime scenes to Cooper.[327] Prior to his identification, O'Sullivan "had not done any substantial fingerprint work for at least six (and possibly

319. *Id.* (emphasis added); *see also id.* at 573 ("Michelli testified that her fingerprint conclusions matched that of the state crime lab's conclusions.").

320. *Id.* at 572.

321. *Id.* at 573.

322. *Bibbins*, 489 F. Supp. 2d at 573.

323. *Id.*

324. *Id.* at 573–74.

325. *Id.* at 575.

326. *Cooper v. Dupnik*, 963 F.2d 1220 (9th Cir. 1992); *see also* James E. Starrs, *More Saltimbancos on the Loose? Fingerprint Experts Caught in a World of Error*, 12 Sci. Sleuthing Newsltr. 1, 1 (1988).

327. *Cooper*, 963 F.2d at 1228. The record indicated that Scott performed his examination "hastily and without following proper procedure." *Id.*

nine) years."[328] Tucson Crime Lab supervisor, Gene P. Scott, confirmed O'Sullivan's identification. Like O'Sullivan, Scott "was not a certified latent fingerprint examiner."[329] O'Sullivan and Scott both identified "eleven or twelve" corresponding points of similarity.[330] Investigators used the identification to arrest and interrogate Cooper.

As investigators interrogated Cooper, one investigator developed misgivings about Cooper's guilt. When he expressed his opinion to his supervisor, he was told: "[S]omething very close to fingerprints do not lie. Get your ass back in there."[331] Interrogators also asked identification technician Mary Kay McCall to confront Cooper with the fingerprint evidence, and to tell him his prints were lifted from two crime scenes.[332] McCall's information did not produce a confession from Cooper. After the interrogation, McCall double-checked the match and began to question whether it was correct. Concerned an error had been made, McCall contacted O'Sullivan and Scott and asked them to re-examine the prints. O'Sullivan and Scott "ignored her and declined to reexamine the exemplars."[333] However, after the prints were re-examined, it was "concluded that they did not have a match after all" because there were "sufficient discrepancies to cancel the points of comparison."[334] When asked for an explanation for the misidentification, Scott stated: "I just screwed up."[335] In May and July 1986, the Arizona Department of Public Safety and FBI Crime Laboratories verified that the prints did not belong to Cooper.[336] Scott and O'Sullivan were demoted, and McCall was suspended for two days without pay.[337] The Ninth Circuit eventually ruled that Cooper's arrest and interrogation violated his federal civil rights.[338]

b. Andrew Chiory (England, 1996)

Chiory was charged with burglary in 1996 in London, England. Investigators lifted two latent prints from the crime scene that were ultimately attributed to Chiory. Besides being "triple checked" by reviewing examiners, the latent prints passed the United Kingdom's 16 corresponding points of similarity requirement. Chiory spent more than 60 days in jail before the misidentifications were exposed. Despite a widespread external investigation, authorities have yet to publicly explain why the error occurred.[339]

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328. *Id.*

329. *Id.* According to a "fingerprint expert for the Arizona Department of Public Safety (the "DPS"), both Scott and O'Sullivan had applied for the position of latent print examiner with the DPS but had not passed the required competency tests." The fingerprint examiner "described Scott's and O'Sullivan's actions as 'incomprehensible.'" *Id.* at n. 2.

330. *Cooper*, 963 F.2d at 1233.

331. *Id.* at 1232.

332. *Id.*

333. *Id.*

334. *Id.* at 1233.

335. *Cooper*, 963 F.2d at 1234.

336. *Id.*

337. Starrs, *supra* n. 335, at 6.

338. *Cooper*, 963 F.2d at 1237–38.

339. Stephen Grey, *Yard in Fingerprint Blunder*, London Sunday Times 4 (Apr. 6, 1997); Duncan Campbell, *Fingerprint Proof Flawed: Expert Casts Doubt on 'Highly Reliable' Evidence as Police Launch Inquiry into*

c. Brandon Mayfield (United States, 1998)

On March 11, 2004, a bomb exploded in a Madrid train station that killed 191 and injured approximately 2000 people.[340] Spanish authorities discovered a bag of detonators in close proximity to the explosion site that contained a fingerprint. It did not match any in their databank,[341] so Spanish authorities forwarded the print to several law enforcement agencies, including the FBI. After searching its fingerprint database, the FBI located a possible match to the prints of Brandon Mayfield, an attorney in Portland, Oregon.[342] Even though evidence suggested that Mayfield had not been out of the United States for many years, three highly qualified FBI examiners (current and retired) concluded that the print was a "100 percent positive identification," and so informed the Spanish authorities on April 2, 2004.[343] Federal authorities arrested Mayfield on May 6, 2004.

The FBI's identification was incorrect. Spanish authorities eventually came across an Algerian suspect named Ouhnane Dauod whose prints more closely "matched" the prints found on the bag.[344] The final piece of evidence came when Spanish authorities "found traces of Daoud's DNA in a rural cottage outside Madrid where investigators believe the terrorist cell held planning sessions and assembled the backpack bombs used in the attack."[345] Mayfield ultimately was released after spending two weeks in jail and received a rare apology from the FBI.[346]

In the aftermath of the Mayfield misidentification, the FBI commissioned an International Review Committee to determine how and why the misidentification occurred. The Committee opined that the reviewing examiners may have been influenced by irrelevant information pertaining to Mayfield's background as a lawyer.[347] As Professor Simon Cole noted: The Mayfield error "was probably the most highly publicized fingerprint error ever exposed."[348]

Identification Error, The Guardian (London) 5 (Apr. 7, 1997).

340. *See* Elaine Sciolino, *Ten Bombs Shatter Trains in Madrid, Killing 192*, N.Y. Times A1 (Mar. 12, 2004).

341. *See* Susan Schmidt & Blaine Harden, *Lawyer's Fingerprint Linked to Bombing Bag, Detonators Found in Stolen Van in Spain*, Wash. Post A3 (May 8, 2004).

342. *See id.*

343. Robert B. Stacey, *A Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, 54 J. Forensic Identification 706, 710 (2005).

344. *See* Susan Schmidt, *Oregon Lawyer's Status Remains Murky*, Wash. Post A2 (May 22, 2004).

345. Tomas Alex Tizon et al., *Critics Galvanized by Oregon Lawyer's Case*, L.A. Times A13 (May 22, 2004).

346. *See* David Heath & Hal Bernton, *Portland Lawyer Released in Probe of Spain Bombings*, Seattle Times A1 (May 21, 2004).

347. Mayfield converted to Islam, his wife was Egyptian, and he represented one of the "Portland Seven," a group of Muslim men convicted of terrorist conspiracy, in a child custody case. *See* Robert B. Stacey, *Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, http://www.fbi.gov/hq/lab/fsc/backissu/jan2005/special_report/2005_special_report.htm (Jan. 2005).

348. Cole, *supra* n. 295, at 985.

3. Defendants Who Pled to A Lesser Sentence to Avoid Another Trial

a. Kerry Max Cook (Texas, 1977–1996)

Kerry Max Cook was convicted and sentenced to death in 1978 for Linda Jo Edwards's brutal rape and murder.[349] A fingerprint lifted from Edwards's patio door was the only physical evidence linking Cook to Edwards's residence (where she was killed).[350] More significantly, the fingerprint expert testified "that the print was approximately six to twelve hours old."[351] This meant "the print could have been left between 8:00 p.m. on June 9, 1977, and 8:00 a.m. the next morning."[352] This time frame, coincidentally, was the same time frame in which the prosecutors argued that Edwards had to have been murdered.[353]

The fingerprint expert's testimony was false. In 1978, the fingerprint expert admitted, in writing and in response to a 1978 grievance filed against him, that "his 'expert opinion' regarding the age of the fingerprints was not in fact an expert opinion" and "was a mistake which could not be supported by any scientific evidence or by any other latent fingerprint expert."[354] More importantly, the fingerprint expert conceded "that the district attorney had pressured [him] to present the false and misleading evidence against [his] wishes."[355] The fingerprint examiner's affidavit, however, was not disclosed to Cook until 1992, immediately before his second trial.[356]

After Cook's third trial and second conviction and death sentence, the Texas Court of Criminal Appeals once again vacated his conviction and death sentence because "[p]rosecutorial and police misconduct . . . tainted th[e] entire matter from the outset."[357] The fabricated fingerprint evidence was simply one incident in a series of incidents which rendered his initial trial fundamentally unfair. In 1999, Cook pled no contest (and admitted no guilt) to second degree murder to avoid a fourth capital prosecution and to walk away from prison and death row.[358] Within weeks of pleading no contest, DNA tests confirmed that semen lifted from Edwards's undergarments could not have originated from Cook, but instead came from James Mayfield, the original suspect in the

349. *See Cook v. State*, 741 S.W.2d 928 (Tex. Crim. App. 1987).

350. *Id.* at 932 ("In his opinion the print from the patio door belonged to no other person than appellant.").

351. *Id.*

352. *Id.*

353. *Cook v. State*, 940 S.W.2d 623, 632 (Tex. Crim. App. 1996) (Baird, J., concurring and dissenting) ("[T]he misrepresentation was critical because it placed [Cook] at the apartment at the time of the victim's death.").

354. *Id.* at 626.

355. *Id.*

356. Following the United States Supreme Court's vacating and remanding of the Texas Court of Criminal Appeal's (TCCA) judgment, *Cook v. Texas*, 488 U.S. 807 (1988), the TCCA reversed the judgment and remanded Cook's case to the trial court. *See Cook v. State*, 821 S.W.2d 600 (Tex. Crim. App. 1991). In 1992, Cook's first retrial ended in a mistrial after the jury was unable to reach a verdict. Cook was tried for a third time in 1994 and was once again convicted and sentenced to death. *See Cook*, 940 S.W.2d 623.

357. *Id.* at 627; Evan Moore, *Justice Under Fire*, Hous. Chron. A1 (June 11, 2000) ("Cook's multiple trials constitute 'the most egregious, documented case of prosecutorial misconduct in the history of the state.'") (quoting Cook's defense attorney, Paul Nugent).

358. *See* Evan Moore, *Cloud of Doubt; Freed from Death Row after DNA Test, Cook Wants Pardon to Erase Murder Conviction*, Hous. Chron. A18 (Sept. 12, 1999).

case.[359]

E. Fiber Analysis

1. Jeffrey Rodriguez (California, 2001–2007)

In the Rodriguez case, Mark Moriyama of the Santa Clara District Attorney's crime laboratory asserted—both in written reports and in testimony—that oil-like deposits on Rodriguez's jeans connected Rodriguez to a robbery outside an auto parts store.[360] His first trial ended in a hung jury—although 11 of 12 jurors voted to acquit. In his second trial, Rodriguez was convicted. In that trial:

> Moriyama testified that the stain "has all the characteristics of a motor oil—all the chemical characteristics" and detailed the elaborate tests that led to his conclusion. Deputy District Attorney John Luft suggested to jurors that Rodriguez got the motor oil stain on his pants from brushing up against a dumpster in back of Kragen's where neighbors dumped motor oil. The motor oil stain was a "concrete fact" based on "scientific evidence," Luft said.[361]

Later, in consideration of a potential re-trial, other government experts from outside the lab—both at the California Department of Justice and the federal government's Bureau of Alcohol, Tobacco and Firearms, deemed Moriyama's findings regarding the oil-like deposits insupportable.[362] Based upon the questions raised by those subsequent analyses of the deposits, the District Attorney decided not to re-try the case against Rodriguez. Later, after Rodriguez petitioned, the courts ultimately declared. Rodriguez factually innocent of the crime.[363]

The Northern California Innocence Project called for an investigation of Moriyama's work to assess whether the lab had relied on errant analysis to convict Rodriguez in the first place, and whether problems with fiber analysis may have tainted other cases the lab handled.[364] Several months later, the DA's office published a report in response to the NCIP's allegation.[365] However, that report did not provide an objective analysis of Moriyama's forensic work. Rather than focusing on whether a problem occurred, and, if so, why and what remedial measures might be appropriate, the report instead defended the propriety of Rodriguez's conviction and the role of Moriyama's testimony therein.

In particular, the report did not adequately explain how Moriyama's forensic analysis deviated so dramatically from the examinations of other analysts who looked at

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359. *See* Susan Montoya, *DNA on Clothing Is Not Cook's; Underwear Stain Traced to Slain Tyler Woman's Ex-boyfriend*, Austin American-Statesman B1 (Apr. 17, 1999).

360. Moriyama's lab report, and transcripts of his relevant testimony, are on file with the authors.

361. *Internal Probe Fails to Dispel Cloud from County Crime Lab*, San Jose Mercury News 18A (Nov. 9, 2007) [hereinafter *Internal Probe*].

362. Letter and attachments from Santa Clara County District Attorney Delores Carr to Kathleen Ridolfi of the Northern California Innocence Project, dated Sept. 26, 2007, and on file with the authors.

363. Unpublished order on file with the authors; *see also* Leslie Griffy, *DA Loses: Judge Declares Convict Factually Innocent*, San Jose Mercury News 1B (Dec. 20, 2007).

364. Alleging document on file with the authors.

365. Report on file with the authors.

the same fiber evidence and could not corroborate his conclusions. The DA's report also failed to provide guidance that might prevent recurrence of a forensic error.

The investigative shortcomings troubled many, including the editorial board of the San Jose Mercury News. It wrote on November 9th of last year that Ms. Carr "could have turned the complaint over to an outside expert or the state Attorney General's Office. That would have signaled to the community that when it comes to addressing problems with prosecutions, her office has nothing to hide and no one to protect."[366]

F. Arson Cases

1. Overturned Capital Convictions

a. Madison Hobley (Illinois, 1988–2003)

In 1990, an Illinois jury convicted Hobley of first-degree murder for an apartment fire that claimed seven lives. The jury sentenced him to death.[367] Hobley's conviction rested heavily on Chicago arson investigators' assessment that burn-patterns indicated the fire originated in front of Hobley's apartment.[368] Arson investigators offered this opinion even though recovered debris from the patterns in question tested negative for gasoline.[369] The Illinois Supreme Court affirmed Hobley's conviction and death sentence.[370]

In 1998, however, the Illinois Supreme Court granted Hobley an evidentiary hearing to address several of his constitutional claims.[371] In 2001, Dr. Russell Ogle, a fire scientist hired by Hobley's post-conviction attorneys, re-evaluated the arson evidence. According to Dr. Ogle, the arson investigators failed to consider several key

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366. *Internal Probe*, *supra* n. 361.

367. *State v. Hobley*, 637 N.E.2d 992 (Ill. 1994).

368. "Fire Marshall Francis Burns . . . testified that the extreme heat outside of [Hobley's] apartment . . . and the damage sustained at that location, evidenced that an accelerant had been poured on the floor outside the door of [Hobley's] apartment." *Hobley v. State*, 696 N.E.2d 313, 319 (Ill. 1998). Likewise, "[Detective] Mikus testified that a flammable liquid was poured in front of apartment 301. As evidence of this, he noted a circular pour and burn pattern outside the apartment door with a four to six foot diameter, and that the roof and baseboards had been completely burned." *Id.* at 320. The State also relied on an alleged confession from Hobley. Hobley, however, adamantly denied he had confessed. Rather, Hobley continually asserted that Chicago detectives physically tortured him in order to extract a confession. *See Hobley*, 637 N.E.2d at 997–98.

369. The "State's expert testified that a peculiar burn pattern on the floor in front of the door showed gasoline had been poured there, but that the water used to extinguish the fire could have washed away all traces of gasoline." *Id.* at 997. *See also Hobley*, 696 N.E.2d at 319 ("Tests of the area outside of [Hobley's] apartment . . . revealed no traces of gasoline."). Hobley's defense attorneys tried to counter the State's experts by introducing their own fire expert:

> John Campbell, an expert in the field of fire investigation and analysis, testified that gasoline poured in the hallway outside of apartment 301 could not have been the cause of the damage to that area. Rather, the damage outside of apartment 301 was the result of a "chimney effect," which caused the fire to burn hotter and gain intensity as it traveled up the stairwell. The fire "mushroomed out" at the upper level of the stairwell, which acted like a firebox. In Campbell's opinion, accelerant actually burned only in the stairwell at a point above the entry to the building. He further opined that the fire happened exactly as defendant described it.

Id. at 323.

370. *Hobley*, 637 N.E.2d 992.

371. *Hobley*, 696 N.E.2d 313.

variables. Dr. Ogle opined that the fire originated in the stairwells and that the suspected pour pattern in front of Hobley's apartment actually was caused by the apartment complex's ventilation system.[372] Although a Cook County trial judge denied Hobley's post-conviction petition for a new trial, summarily dismissing Dr. Ogle's testimony and the alleged *Brady* violations,[373] Dr. Ogle's report, nonetheless, played a role in Governor George Ryan's decision to pardon Hobley on January 9, 2003.[374] According to Governor Ryan, "Madison Hobley was convicted on the basis of flawed evidence. He was convicted because the jury did not have the benefit of all existing evidence, which would have served to exonerate him."[375]

b. Ernest Willis (Texas, 1987–2004)

In 1987, a Texas jury convicted Willis of first-degree murder for purposely setting a 1986 fire that resulted in two deaths. The jury sentenced him to death.[376] Prosecutors premised their entire case on their arson experts' testimony. In particular, the arson experts testified that the "burn patterns and degree of burning indicated that a flammable liquid was poured on the floor of the house throughout the living and dining areas, in front of the bedroom door jams, around the front and back door entrances, and beneath and on top of a sofa in the living area."[377] The burn patterns and degree of burning also "indicated that the fire originated in the living area of the house and quickly, if not simultaneously, ignited the dining room and kitchen."[378] Willis proclaimed his innocence and told police he was sleeping on the sofa when the fire started.[379] The arson experts, however, said Willis's "version of the events d[id] not conform to the physical evidence relating to the fire."[380] One arson investigation testified that "if anyone was sleeping on the sofa in the living area, as [Willis] contended to have been, he would have been burned."[381] Another arson investigator "stated that if [Willis] had been on the sofa when the fire was set, [Willis] would have been burned, perhaps fatally so."[382]

Although the Texas Department of Public Safety (DPS) crime lab "detected

372. *See* Steve Mills, *Expert Disputes Cops' Testimony on Gas Can in '87 Fire Fatal to 7*, Chi. Trib. 5A (June 21, 2000).

373. *See* Steve Mills, *Retrial Denied in Fire Deaths; Plea Is Rejected for Man Found Guilty in Killings*, Chi. Trib. 1 (July 9, 2002).

374. *See Excerpts from Gov. Ryan's Speech*, Chi. Trib. 18 (Jan. 11, 2003).

375. *See* Northwestern U. Sch. L., Bluhm Leg. Clinic, http://www.law.northwestern.edu/wrongfulconvictions/issues/deathpenalty/clemency/dePaulAddress.html (Jan. 10, 2003) (quoting Governor Ryan's January 10, 2003 speech at DePaul University College of Law). Hobley was one of several Chicago-area defendants who claimed Chicago detectives tortured them to elicit false confessions. *See U.S. v. Gilmore*, 37 F. Supp. 2d 1078, 1094 (N.D. Ill. 1999) ("It is now common knowledge that in the early to mid-1980s Chicago Police Commander Jon Burge and many of the officers working under him regularly engaged in the physical abuse and torture of prisoners to extract confessions."); Susan Bandes, *Patterns of Injustice: Police Brutality in the Courts*, 47 Buff. L. Rev. 1275, 1288–1305 (1999) (describing in detail the patterns of torture).

376. *Willis v. State*, 785 S.W.2d 378 (Tex. Crim. App. 1989).

377. *Id.* at 380–81.

378. *Id.* at 381.

379. *Id.* at 380.

380. *Id.* at 381.

381. *Willis*, 785 S.W.2d at 381.

382. *Id.*

unknown volatile components on [Willis's] pants . . . no known accelerant was positively identified on the pants."[383] In fact, DPS failed to identify any accelerants on any of the clothes Willis wore the night of the fire.[384] Furthermore, DPS failed to identify accelerant on the carpet samples from the house, and prosecutors "never produced any evidence regarding the type of accelerant used to start the fire, according to the State's theory."[385]

The Texas Court of Criminal Appeals (TCCA) affirmed Willis's conviction and death sentence.[386] In doing so, the TCCA relied heavily on the burn-pattern evidence. For instance, Willis claimed that the jury reasonably could have concluded that either of the victims set the fire in order to commit suicide or that Willis's cousin set the fire. The TCCA dismissed Willis's sufficiency of the evidence claim because his "version of events surrounding the arson [was] wholly incompatible with any of these theories."[387] The TCCA added:

> Because an accelerant was poured beneath and on top of the sofa upon which [Willis] claimed to have been sleeping, and because the fire was set in the room where the sofa was located, it is inconceivable that either of the other three occupants started the fire without seriously burning or killing [Willis].[388]

During his state post-conviction hearing, Willis presented evidence that another man, David Long, confessed to starting the fire.[389] Willis also presented Marshall Smyth, an experienced fire investigator and mechanical engineer, to undermine the prosecution's fire theory. Smyth's "testimony corroborate[d] Long's accounts, show[ed] that the State's theory of the case was mistaken and support[ed] Willis's version of the events."[390] Smyth also testified that the prosecution's "pour pattern theory was physically impossible, and that the burn damage to the house could not have been caused by an accelerant such as gasoline."[391] Instead, the burn damage was "the result of 'flashover' conditions throughout the house during various points of in the fire."[392] In June 2000, following five days of hearing, the state trial judge recommended granting relief to Willis. On December 13, 2000, however, the TCCA denied Willis all relief.[393]

Willis subsequently filed a writ of habeas corpus petition in federal court. In August 2004, the district judge granted Willis's writ of habeas corpus.[394] Once granted,

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383. *Id.*

384. *Willis v. Cockrell*, 2004 WL 1812698 at *10 (W.D. Tex. Aug. 9, 2005) ("The clothes Willis wore on the night of the fire were submitted to the State's lab; no accelerant was found on the clothes.").

385. *Id.*

386. *Willis*, 785 S.W.2d 378.

387. *Id.* at 382.

388. *Id.*

389. The State of Texas executed Long for an unrelated capital murder charge before Willis's post-conviction hearing. Notably, Texas prosecutors convicted Long of a very similar arson-murder in Bay City, Texas. *See Willis*, 2004 WL 1812698 at *10 n. 44.

390. *Id.* at *10. In particular, according to the State's "pour pattern" theory, Willis "had to spread accelerant in or near bedrooms and exits for the fire to burn as it did." If this were true, Willis could not have run out of the house, as Willis and witnesses testified, "because the floor would have been in flames." *Id.*

391. *Id.*

392. *Id.*

393. *Willis*, 2004 WL 1812698 at *2.

394. *See id.* The district judge did not grant the writ based on Willis's "innocence" because he received

the State of Texas had two options: (1) It could appeal to the Fifth Circuit Court of Appeals; or (2) it could retry Willis. The Texas Attorney General's capital crimes section decided against appealing to the Fifth Circuit, while Peco County District Attorney, Ori White, declined to re-prosecute Willis after he reviewed reports completed by Gerald Hurst and Marshall Smyth. Hurst and Smyth concluded that the State's theory that the burn patterns were caused by a liquid accelerant equated to "voodoo" science. Hurst, in particular, opined that the State's fire expert's testimony was "worse than merely absurd; it [was] unconscionable."[395] Smyth stated that "there [was] not a single item of physical evidence in this case which support[ed] a finding of arson."[396] Thus, after spending nearly twenty years on Texas's death row, Willis walked away a free man from the nation's most prolific machinery of death in October 2004.[397]

2. A Possibility of Wrongful Execution

a. Cameron Todd Willingham (Texas, 1992–2004)

On May 2, 2006, the Innocence Project petitioned the Texas Forensic Science Commission[398] to examine Earnest Willis's case—and juxtapose it to Cameron Todd Willingham's case.[399] That body was established in part to examine allegations of serious forensic negligence or misconduct that substantially affected the integrity of arson testimony presented at Willingham's trial.[400]

Willingham was convicted of arson murder in 1992 and was executed by Texas in February 2004. In the fire that resulted in his conviction, Willingham's three young children perished. Willingham steadfastly maintainted his innocence, asserting that the fire was wholly accidental. Nevertheless, a Texas jury sentenced him to death and the State of Texas carried out the death sentence.[401]

A panel of arson experts reviewed the arson evidence underlying Willingham's conviction, as juxtaposed with the evidence in Willis's case, and deemed the two results incompatible.[402] They asserted their belief that the Willingham fire, like the Willis fire,

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relief on other grounds. *Id.* at *8 ("Due to other relief given on different grounds, it is not necessary for this Court to resolve the parties' dispute regarding Willis's claim of innocence.").

395. Douglas McCollum, *The Accidental Defenders*, Am. Law. (Jan. 1, 2005). Hurst added: "I couldn't find any trace of evidence that this was arson. It was a joke. It kind of blew me away." Scott Gold & Lianne Hart, *Inmate Freed after 17 Years on Death Row*, L.A. Times A14 (Oct. 7, 2004) (quoting Gerald Hurst). With respect to the alleged arson indicators that lead to Willis's conviction and death sentence, Hurst stated: "All of their indicators [that it was arson] are basically old wives' tales by today's standards. . . . Those were the bad old days of fire investigation, and it's just really unfortunate that he wound up on death row because of it." *Id.*

396. *Id.* According to DA White: "[Willis] simply did not do the crime . . . . The justice system actually worked in this case. But admittedly, it worked very slowly. I'm sorry it wasn't quicker. I'm sorry this man was on death row for so long and that there were so many lost years." *Id.* (quoting DA Ori White).

397. *Id.*

398. *See* Tex. Code Crim. P. § 38.01 (2005).

399. *See* Innocence Project, *Innocence Project Submits Two Arson Cases to Texas Commission and Requests System-Wide Review*, http://www.innocentproject.org/Content/402.php (May 2, 2006); *see also* Ralph Blumenthal, *Faulty Testimony Sent 2 to Death Row, Panel Finds*, N.Y. Times (May 3, 2006).

400. *See* Tex. Code Crim. P. § 38.01.

401. For a detailed recounting of the Willingham case, see Steve Mills and Maurice Possley, *Man Executed on Disproved Forensics*, Chi. Trib. (Dec. 9, 2004).

402. *See* Innocence Project, *supra* n. 399.

was accidental, and that Willingham may have been wrongfully executed. Attendant to its call for an investigation in May 2006, the Innocence Project submitted a report that the experts prepared on the two cases.[403] The Forensic Science Commission, which only in 2007 received funding to conduct investigatory work and otherwise organize, still is considering whether to investigate the Willis and Willingham cases.

3. The Wrongly Accused

a. Terri Hinson (North Carolina, 1996)

In 1996, prosecutors charged with purposely setting the fire that killed her son and nearly killed her daughter.[404] Hinson denied setting the fire, and claimed from the very beginning the fire was accidentally set. According to Hinson, she was suddenly awakened by her daughter's screaming in the early morning hours of October 20, 1996. When Hinson raced upstairs to her daughter's room, she noticed her son's room was consumed by fire. The smoke and fire were so intense that Hinson could not reach her son or daughter. Hinson raced downstairs and called 911. Emergency personnel extinguished the fire and airlifted Hinson's children to the local hospital where her son eventually died.

Local fire investigators did not believe Hinson's story, because they believed evidence pointed to the fire's ignition by an accelerant. To wit, fire investigators noticed a V-shaped pattern in the room of Hinson's son, and it rose up the wall from a pile of burned clothes and debris.[405] State and federal fire investigators also found another V-shaped burn pattern in her son's closet. Indeed, the fire investigators concluded that the point of origin was in her son's bedroom closet. Once the fire investigators filed their reports, prosecutors charged Hinson with first-degree murder.

Hinson posted bail, and thereafter located Dr. Gerald Hurst, a Ph.D chemistry graduate from Cambridge University and globally respected fire analyst. Dr. Hurst agreed to assist Hinson *pro bono*.[406] After Dr. Hurst reviewed all of the documents, reports, and photos, he concluded that the state and federal fire investigators were wrong.[407] According to Dr. Hurst, the fire not only originated in Hinson's attic, which was directly above her son's bedroom closet, but was accidentally set by faulty wiring in the attic.[408]

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403. The report is available at www.innocenceproject.org/docs/ArsonReviewReport.pdf (accessed Apr. 16, 2008).

404. *See* Anne Saker, *The Day Her World Changed*, News & Observer (Raleigh, N.C.) A1 (Nov. 15, 1998).

405. *See* Anne Saker, *The Investigation Leads to Her, But She Knows It's a Mistake*, News & Observer (Raleigh, N.C.) A1 (Nov. 16 1998). Also see Matthew A. White & Frank J. Malter's October 24, 1996 final report, available at http://www.truthinjustice.org/sbirept.htm.

406. *See* Anne Saker, *On the Internet, Terri Finally Finds the Help She Seeks*, News & Observer (Raleigh, N.C.) A1 (Nov. 18, 1998). Hinson required pro bono services because the $1,500 allotted to her by the trial judge was quickly exhausted by an unqualified fire investigator Hinson's attorney hired to investigate the case for the defense.

407. *See* Anne Saker, *Accused Mother Slowly Builds Defense, In Part Upon New Friendship*, News & Observer (Raleigh, N.C.) A1 (Nov. 19, 1998). Dr. Hurst's report can be located at http://www.truthinjustice.org/hurstrept.htm [hereinafter *Hurst Report*].

408. Dr. Hurst commented in his report: "If agents White and Malter had looked more closely for electrical

Armed with Dr. Hurst's testimony, Hinson's defense attorneys requested a pretrial conference with Lee Bollinger, the prosecutor, and Special Agent Matt White of the State Bureau of Investigation.[409] After this meeting, and after consulting with additional fire experts, Bollinger dropped all charges on April 1, 1997, because he "had an ethical responsibility to dismiss . . . charges" he could not prove.[410]

4. Defendants Who Pled to a Lesser Sentence to Avoid Another Trial

a. Dennis Counterman (Pennsylvania, 1988–2006)

In 1990, a Pennsylvania jury convicted Counterman for the 1988 arson fire that killed his three children and seriously injured his wife.[411] At trial, the Commonwealth's arson expert, after interpreting a burn pattern on the stairway and dining room, concluded that Counterman intentionally set the fire with an accelerant. The arson expert "concluded from the burn pattern . . . that approximately one gallon of liquid accelerant was used in starting the fire."[412] Another Commonwealth expert "similarly concluded that an accelerant was used," and testified "that a highly flammable liquid was poured on the stair area of the Counterman residence, through the dining room, and into the kitchen."[413] The Pennsylvania Supreme Court relied on the experts' testimony when it affirmed Counterman's conviction and death sentence in 1998.[414]

In 2001, a Pennsylvania trial judge awarded Counterman a new trial because the prosecutors concealed evidence which would have cast "substantial doubt" on the credibility of Janet Counterman, the prosecution's key witness and Counterman's wife.[415] To prepare for Counterman's retrial, prosecutors and Counterman's defense

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causes, they might have noted the broken wire of the Attic Romex cable bent into the closet hole. This wire, as was later reported by insurance investigators, had three independent areas of damage which could constitute signatures of an electrical origin." *Hurst Report*, *supra* n. 407. Dr. Hurst added:

> Clearly, there is no physical evidence in the Terri Hinson case that will support the conclusions of the prosecution experts with respect to an incendiary origin of the fire. The methods used by the investigators in reaching their negative corpus arson determination do not withstand elementary scientific scrutiny based on widely accepted principles of fire investigation. The interpretation of the burn patterns by the experts for the prosecution and the insurance company ignores even the most fundamental rules promulgated in the most authoritative and generally acknowledged fire investigation reference work, NFPA 921. The failure to recognize that a fire burning downward into the wooden ceiling would be followed by an upward fire, which would eradicate the original downward pattern and replace it with an upward pattern, is an egregious oversight.

Id.

409. *See* Anne Saker, *As the Prosecutor Watches, Chemist Confronts Investigator*, News & Observer (Raleigh, N.C.) A1 (Nov. 21, 1998).

410. *See* Victoria Cherrie, *Murder Case Dropped; Mother Freed*, Morning Star (Apr. 22, 1998); Anne Saker, *Terri is Free and Vindicated, But Triumph is Bittersweet*, News & Observer (Raleigh, N.C.) (Nov. 22, 1998).

411. *Commonwealth v. Counterman*, 719 A.2d 284 (Pa. 1998).

412. *Id.* at 291.

413. *Id.*

414. *Id.* at 304 ("Furthermore, the scientific evidence established that the fire was intentionally set and that a flammable liquid was used as an accelerant.").

415. At trial, Janet Counterman testified that her children never set fires. In state post-conviction hearings, however, Counterman's lawyers uncovered evidence that Janet Counterman told other people the oldest child set fires and liked to play with lighters. In particular, the defense discovered reports that indicated the child had a history of fire-setting and that Janet Counterman reported this information to other people, including the police and prosecutors. These reports never were disclosed to the defense before trial. *See* Todd Richissin,

attorneys hired their own arson experts. Both experts concluded that the prosecution's theory of how the fire started could not "properly [be] supported by today's [arson investigation] standards."[416] Without the burn pattern evidence and Janet Counterman's testimony,[417] prosecutors, in October 2006, offered Counterman an "Alford plea"[418] where he would plead to three counts of third-degree murder and endangering the welfare of children without conceding guilt, but acknowledging that prosecutors had sufficient evidence from which a jury could possibly find him guilty. Counterman accepted the plea and the trial judge sentenced him to time served.[419]

b. John Henry Knapp (Arizona 1975–1987)

In 1975, an Arizona jury convicted Knapp for the 1973 arson fire that killed his two daughters.[420] The jury sentenced him to death.[421] His first trial ended in a hung jury.[422] During both trials, arson investigators declared it impossible that the fire was accidental, as Knapp asserted. To the fire investigators, there were revealing signs of a "flammable liquid fire" (i.e., arson).[423] The fire investigators, absent training in the chemistry of fire, nevertheless concluded that Knapp intentionally set the fire with an accelerant.

Before the prosecutor's fire expert testified, fire scientists initiated research regarding a phenomenon known as "flashover."[424] The prosecutor's arson expert never considered the "flashover" phenomenon, even though the hallmarks of a "flashover" fire

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1988 Pa. Case is Model for Death Penalty Foes; Defense Fumbled, Prosecutors Cheated, Balt. Sun 1A (Mar. 28, 2002).

416. Debbie Garlicki, *Death Row to Freedom; Dennis Counterman Released after Plea Agreement in Children's Deaths*, Morning Call (Allentown, Pa.) A1 (Oct. 19, 2006). George Umberger, a retired state police fire marshal and the prosecution's post-conviction expert, reported that the burn patterns perhaps indicated an ignitable liquid was used, but that "[i]t just is not a provable hypothesis with the evidence available." *Id.* Burn pattern analysis was so troubled during the 1980s that "Counterman's own arson expert . . . admitted that the fire was intentionally set, and acknowledged that the burn patterns on the floor of the building were consistent with a pour pattern." *Counterman*, 719 A.2d at 304.

417. After Counterman's trial, Janet Counterman's mental health gradually deteriorated. By the time Mr. Counterman's conviction and death sentence were overturned in 2001, Janet was too mentally unstable to testify at Counterman's re-trial. Likewise, the post-conviction trial judge and the Pennsylvania appellate court prohibited prosecutors from using Janet Counterman's initial trial testimony at Counterman's re-trial because the prosecutor's various discovery violations prevented Counterman's initial defense attorneys from effectively cross-examining her. *See* Debbie Garlicki, *Ruling Upheld in Fire Deaths Case; Allentown Man Getting New Trial, But What Wife Said at First Hearing Can't Be Used, Judges Order*, Morning Call (Allentown, Pa.) B1 (Aug. 4, 2005).

418. *N.C. v. Alford*, 400 U.S. 25 (1970).

419. *See* Garlicki, *supra* n. 417.

420. *State v. Knapp*, 562 P.2d 704 (Ariz. 1977).

421. *Id.* at 706.

422. *Id.* at 709.

423. *Id.* at 707. Knapp's wife also claimed the fire was accidental. Arson investigators did not take her claims seriously, as well, because of the burn patterns. *Id.* ("Although their statements were not inconsistent with each other, nor with statements they had made the day of the fire, they were inconsistent with the way the police and David Dale believed the evidence showed that the fire was ignited."). *See also* Roger Parloff, *Triple Jeopardy: A Story of the Law at Its Best—and Worst* 231 (Little Brown & Co. 1996) (noting that one of the State's fire experts testified that the burn patterns evidenced at the scene "could only have been caused by flammable liquids").

424. Flashover is the "final stage of the process of fire growth; when all combustible fuels within a compartment are ignited, the room is said to have undergone a flashover." John D. DeHaan, *Kirk's Fire Investigation* 626 (5th ed., Prentice Hall 2002).

are strikingly similar to those of a flammable-liquid fire.[425] Thereafter, in affirming Knapp's conviction and death sentence on direct appeal, the Arizona Supreme Court placed great emphasis on the scientific evidence that demonstrated Knapp intentionally set the fire with an accelerant.[426]

During state post-conviction proceedings, Knapp's attorneys presented substantial evidence to demonstrate that the fire was accidental and that the "flashover" phenomenon caused the significant damage to the room in which the children perished. Knapp's new evidence discredited the prosecution's arson expert and a medical examiner.[427] In 1987, after Knapp's attorneys presented this newly discovered evidence to an Arizona trial judge, the trial judge vacated Knapp's conviction and death sentence, and awarded him a new trial.[428] But his third trial also ended in a hung jury.

In November 1992, nearly two decades after the fatal fire and immediately before his fourth trial, Knapp, in a move recommended by his attorneys, pled no contest—a resolution in which the defendant admits no wrongdoing, but allows prosecutors to record a conviction—in exchange for the 14 years in prison he already served.[429]

5. Individuals Who Received an Immediate Parole

a. Sonia Cacy (Texas, 1993–1998)

In 1993, a Texas jury convicted Cacy of purposely setting the 1991 fire that killed her uncle. The trial judge sentenced her to 55 years in prison.[430] Cacy survived the fire,

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425. *See* Parloff, *supra* n. 423, at 219–38 (discussing the flashover concept).

426. For instance, the Arizona Supreme Court held that the trial court did not abuse its discretion when it refused to allocate funding to the defense so its fire expert could conduct appropriate tests regarding the flashover. According to the court

> In view of the *overwhelming evidence that a flammable liquid was used as an accelerant*, we do not think the trial judge can be said to have abused the discretion afforded him by A.R.S. § 13-1673(B) in limiting the amount of money to be spent by the defense on a questionable experiment that would not have legally exonerated the appellant, but only offered a weak alternative theory to the trier of fact.

Knapp, 562 P.2d at 713 (emphasis added).

427. For instance, Knapp's attorneys discredited the medical examiner's testimony concerning the low levels of carbon monoxide discovered in the children's blood. Low levels indicated nothing with respect to whether a victim was caught in a flashover fire. Parloff, *supra* n. 423, at 230–32. Likewise, his attorneys were able to demonstrate that the State's forensic chemist provided misleading, if not entirely false, testimony whether a chromatograph was "consistent with" Coleman fuel (i.e., a liquid accelerant). *Id.* at 227–30. Contrary to the State's chemist's original trial testimony, the chromatograph was "not consistent with" and "did not match" a chromatograph of Coleman fuel. *Id.*

428. According to the trial court,

> [T]he foundation of the state's case rested upon the opinion of expert witnesses that the fire damage and the carboxyhemoglobin level's in the children's blood could only have been caused by an accelerant such as a flammable liquid having been poured throughout the room.... The new scientific information relating to the flashover phenomenon and carboxyhemoglobin studies directly impact on the State's basic premise and offer a strong alternative explanation to the State's theory of an arson-caused fire.

Id. at 234.

429. *See id.* at 396, 402–03. Knapp took the plea because he allegedly confessed to setting the fire. He later recanted his confession. *See Knapp*, 562 P.2d at 710–12 (discussing Knapp's alleged confession).

430. *Cacy v. State*, 901 S.W.2d 691 (Tex. Crim. App. 1995).

yet singed her hair as she escaped her uncle's residence. Cacy claimed her uncle accidentally started the fire either because he fell asleep with a burning cigarette, which he did often, or because he "was known to be rather careless with fire."[431]

At trial, prosecutors argued Cacy started the fire by dousing gasoline on her uncle. A forensic chemist testified he identified traces of gasoline on her uncle's clothing. Prosecutors also presented two fire investigators who spoke of burn patterns on the kitchen floor that could have only been caused by gasoline. Finally, the prosecutors argued that Cacy "had to have been in direct contact with a flame to singe her hair."[432] To explain Cacy's singed hair, John Kenley, a *volunteer fireman* and part-time fire investigator, told jurors that gasoline fires typically produce a "fireball." The fireball "rises up to the point that it hits the ceiling in the house, then it'll have the tendency to come back."[433] Kenley testified that Cacy's hair was singed as the fireball descended from the ceiling.[434] Prosecutors never identified a motive as to why Cacy wanted her uncle dead.

In 1995, Dr. Gerald Hurst learned of Cacy's case and offered his services *pro bono*. Dr. Hurst assembled a team of three chemists, a pathologist, and two lawyers. Dr. Hurst's team initially discovered that the forensic chemist erred when he reported and testified that he identified gasoline; the chemist never detected gasoline.[435] Dr. Hurst's team also concluded that the burn patterns on the floor were not caused by gasoline, but by the curtains and a polyurethane mattress that caught fire and fell to the ground. Finally, Dr. Hurst concluded that Kenley's "fireball" theory was highly flawed; had Cacy been present during a "flashover" fire, she would have suffered great bodily harm and even death.[436] Dr. Hurst called Cacy's case "the flimsiest case [he had] ever seen."[437]

In 1998, Dr. Hurst prepared a lengthy report for the Texas Board of Pardons and Paroles. The report not only outlined his conclusions, it alleged that the prosecution

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431. *Id.* at 702. For instance, shortly before the fatal fire, local fire investigators responded to three fires at her uncle's residence. *Id.* at 694–95. As the Texas Court of Criminal Appeals even noted: "There was even evidence that [the victim] displayed an odd fascination with the third fire, staring at its flames as if in a trance." *Id.* at 702.

432. *Id.*

433. Laurie P. Cohen, *'Scared of Science'*, Wall. St. J. A1 (July 22, 1997).

434. *Cacy*, 901 S.W.2d at 702–03 ("The State argues that [Cacy] must have contacted the flame when she first doused [the victim] with accelerant and set the blaze, further theorizing that the ensuing fireball bounced off the ceiling to singe the hair on top of [Cacy's] head."). Although this testimony struck the court of appeals as "incredible," it nonetheless held that the "jury could have rationally found that [Cacy] was the source of the accelerant because of her singed hair." *Id.* at 703; *see also id.* at 702 ("The jury could also have seized on Appellant's singed hair to conclude that Appellant was the ultimate source of the accelerant.").

435. According to Richard Henderson, a member of Dr. Hurst's team, he has shown the gas-chromatograph charts produced by the prosecution's chemist "to hundreds of students around the country as part of a training exercise . . . [and] [n]o one, including those at the FBI academy, has ever found gasoline in that sample." Michael Daecher, *Forensic Fraud: No Motive, No Witness, and 99 Years in Jail: The Curious Conviction of Sonia Cacy*, Tex. Observer (Aug. 28, 1998). As Dr. Hurst noted: "This case was a house of cards. It all rested on an imaginary analysis for gasoline." John MacCormack, *Chemist Tests Put Twist on Death—Convicted Woman Seeking New Trial*, San Antonio Exp.-News (July 1, 1996).

436. Dr. Hurst opined that the "fireball theory was worthy of Saturday morning cartoons." Cohen, *supra* n. 446. The trial judge also questioned Kenley's testimony: "The state theory was that she poured the chemical and the flame was so intense it bounced back and singed her hair . . . [if that had happened] . . . the pajamas she was wearing would have melted on her body." *Id.* (quoting Pecos County, Texas, District Judge Gonzales).

437. John MacCormack, *Woman Says Bad Evidence Led to 99-year Prison Term—Murder Defense Points Finger at Bexar Medical Examiner's Office*, San Antonio Exp.-News 8B (May 8, 1996).

manufactured the gasoline evidence.[438] After the Pardons Board reviewed Dr. Hurst's report, the Board, in an unprecedented action, granted Cacy's parole request the *first time* she became eligible for parole.[439] The Parole Board paroled Cacy on November 23, 1998.[440]

G. *Firearms Identification*

1. Overturned Capital Convictions

a. Charles F. Stielow (New York, 1915–1918)

In 1915, a New York jury convicted Stielow of capital murder and sentenced him to death for murdering Charles Phelps and his housekeeper.[441] At trial, the State offered Albert H. Hamilton's testimony. Hamilton, a self-professed firearms expert, concluded "that the four bullets taken from the bodies of Phelps and his housekeeper had been fired from the revolver owned by Stielow."[442] As the New York Supreme Court commented, bullet identification evidence served as a "strong link connecting the defendant with the crime; but the opinion of the state's expert that the bullets were fired from this particular revolver must have had a convincing influence upon the jury, particularly in view of the fact that no experts were sworn on behalf of the defendant on this feature of the case."[443]

On direct appeal, the appellate court affirmed the conviction and death sentence.[444] The New York courts also denied Stielow's first post-conviction motion for a new trial, which challenged the voluntariness of his confession.[445] In his second new trial motion, Stielow presented the affidavits of three firearms experts "who sa[id] that the defects or imperfections as described by the state's experts d[id] not exist, and that there [was] no correspondence between the markings on the bullets and the condition of the

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438. *See* Daecher, *supra* n. 435 (describing evidence apparently fabricated to appear as if the victim's clothing was doused with gasoline).

439. Anne Saker, *Texas Woman Freed*, News & Observer (Raleigh, N.C.) A3 (Nov. 24, 1998).

440. *Id.*

441. *People v. Stielow*, 112 N.E. 1069 (N.Y. 1916).

442. Edwin M. Borchard, *Convicting the Innocent* 242 (De Capo Press 1932); *see also People v. Stielow*, 160 N.Y.S. 555, 558 (1916) ("The defendant was the owner of a 22-caliber revolver. The bullets were extracted from both bodies, and contained certain irregularities conforming to an irregularity in the barrel of the defendant's revolver."). Notably, the trial court prohibited Hamilton and the State's other expert from giving "their opinion as to whether or not, by reason of the correspondence of the markings and defects or imperfections, the bullets were fired from the revolver; but on cross-examination one of the experts was asked that question and answered in the affirmative." *People v. Stielow*, 161 N.Y.S. 599, 602 (1916).

443. *Id.* at 605.

> The defendant had present at the trial an expert who had an opportunity to and did examine the revolver and bullets; but it is now claimed that he was a chemical expert, not qualified to test the accuracy of the evidence given by the state's experts. This is not a satisfactory answer. These defects or imperfections in the revolver are such that any person, particularly a man accustomed to the use of a microscope, as the defendant's expert was, could have discovered them, if they existed, by the use of a magnifying instrument.

Id.

444. *Stielow*, 112 N.E. 1069.

445. *Stielow*, 160 N.Y.S. 555.

revolver."[446] The New York Supreme Court rejected Stielow's newly discovered evidence claim because he had access to an expert at trial and because his post-conviction experts had "no experience or observation in any line which would especially qualify them to enable them to say that the defects or imperfections would not show upon the bullets."[447]

When George H. Bond was appointed as a special prosecutor to evaluate Stielow's conviction, he "made a careful study of the ballistics testimony."[448] Bond also test-fired bullets from Stielow's revolver. He then photographed the discharged bullets and had the photographs enlarged. The difference was apparent; the bullets extracted from the bodies could not have been fired from Stielow's revolver.[449] In 1916, the New York Governor commuted Stielow's death sentence. In 1918, the Governor ordered Stielow's release, declaring him an innocent man, after reviewing Bond's work and the real culprit's confession.[450]

2. The Wrongly Accused

a. Rickey Ross (California, 1989)

In May 1989, police arrested Rickey Ross, a Los Angeles County Sheriff's Deputy, for soliciting and accompanying a prostitute.[451] At the time, police were investigating a slew of prostitute murders in and around Los Angeles County. In three cases, the offender gunned down the prostitutes with a handgun.[452] As a result, immediately after police arrested Ross, the Los Angeles Police Department (LAPD) crime laboratory performed tests on his firearm to determine whether it was associated with the prostitute murders.

Two LAPD police officers—Officer Jim Fountain and Detective Jimmy L. Trahin—performed the tests and concluded that Ross's firearm discharged the fatal bullets. Detective Trahin left no room for doubt; in his report, he wrote that the bullets discharged from Ross's gun were "positive" matches to the bullets recovered from the prostitutes, and that the fatal bullets could have only been discharged by Ross's firearm "and no other weapon."[453] As one Sheriff's Deputy said: "We wouldn't put an active-duty sheriff's deputy in jail for a homicide on an 'iffy' [identification]."[454] With the

446. *Stielow*, 161 N.Y.S. at 604.

447. *Id.* at 605. With respect to Stielow's expert, his expertise was in *forensic chemistry* rather than firearms identification. The New York Supreme Court, however, was not concerned with this distinction. From the court's perspective, the "defects or imperfections in the revolver are such that any person, particularly a man accustomed to the use of a microscope, as the defendant's expert was, could have discovered them, if they existed, by the use of a magnifying instrument." *Id.*

448. Borchard, *supra* n. 442, at 251.

449. *Id.* at 252.

450. *Id.* at 253.

451. *See* Martin Yant, *Presumed Guilty: When Innocent People Are Wrongly Convicted* 70–72 (Prometheus Bks. 1991) (detailing Ross's case); David Freed, *LAPD Probing What Went Wrong with Ballistics Tests on Ross' Gun*, L.A. Times 26 (May 16, 1989).

452. *See* Bob Baker & Paul Lieberman, *Faulty Ballistics in Deputy's Arrest: Eagerness to 'Make' Gun Cited in LAPD Lab Error*, L.A. Times 1 (May 22, 1989).

453. *Id.* (quoting Detective Trahin's report).

454. Freed, *supra* n. 451.

identification, prosecutors filed murder charges against Ross—alleging he murdered the three prostitutes with his firearm.

Prosecutors, however, dismissed all charges after three independent experts concluded that the evidence "overwhelmingly exclude[d]" the possibility that Ross's firearm discharged the fatal bullets.[455] In the aftermath of the error, Charles Morton, one of the independent forensic scientists who identified the error, urged the LAPD to hire civilian *scientists* to conduct forensic examinations because: "Too often [law enforcement] get caught up in doing the work of the prosecution. . . . They don't ask, 'Is there anything that excludes this guy?'"[456] In 1997, Ross lost his civil suit against the LAPD when a jury concluded the LAPD did not violate his civil rights when it erred in its firearms analysis.[457]

H. Comparative Bullet Lead Analysis

The technique of Comparative Bullet Lead Analysis (CBLA) recently received significant scrutiny, as the Washington Post and CBS's *60 Minutes*, with the support of the Innocence Project, undertook a national investigation of bullet lead analysis techniques.

The methodology dates to the aftermath of President John F. Kennedy's assassination in 1963, and was the province of the Federal Bureau of Investigation. According to the Washington Post, "The technique used chemistry to link crime-scene bullets to ones possessed by suspects on the theory that each batch of lead had a unique elemental makeup."[458]

But by 2004, the *National Academy of Sciences*' National Research Council [NRC] reported in *Forensic Analysis: Weighing Bullet Lead Evidence*[459] that the FBI's technique was not supportable and was "misleading under federal rules of evidence."[460] The next year the FBI ceased using CBLA. Still, even though the FBI voiced concerns about CBLA in in-house memos, it informed defense attorneys via a memo in September 2005 that it "still firmly supports the scientific foundation of bullet lead analysis."[461] The recent national media coverage has spurred reinvestigation of CBLA cases that is ongoing. Within this context, below, we offer examples of CBLA cases and the pitfalls of the methodology, as applied.

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455. *Id.*

456. Baker & Lieberman, *supra* n. 452 (quoting Charles Morton, an independent forensic scientist).

457. *City News Services* (Oct. 7, 1997).

458. John Solomon, *FBI's Forensic Test Full of Holes*, Wash. Post A1 (Nov. 18, 2007). For more related information on the reporting efforts of CBS and the Washington Post, see "Silent Injustice," available on the Washington Post's Website at http://www.washingtonpost.com/wp-srv/nation/specials/silent-injustice/index.html?day=2 (accessed Apr. 16, 2008).

459. Natl. Research Council, *Forensic Analysis: Weighing Bullet Lead Evidence* (2004) [hereinafter *NRC Report*]. The report is available at http://books.nap.edu/openbook.php?record_id=10924&page=R1 (accessed Apr. 16, 2008).

460. Solomon, *supra* n. 458.

461. *Id.*

1. *Gemar Clemons* (Maryland, 2002–2006)

Clemons was convicted in 2004 of second-degree murder.[462] Clemons's conviction was premised in part on CBLA. At trial, an FBI expert opined that the bullets extracted from the victim's body were "analytically the same" as a set of bullets found in Clemons's residence.[463] Clemons objected to the FBI expert's testimony, arguing that CBLA's underlying premises were invalid and not generally accepted. The trial judge overruled his objection and admitted the CBLA testimony.

On direct appeal, the Maryland Court of Appeals overturned Clemons's conviction. The court concluded that the trial judge committed reversible error when it admitted the CBLA testimony because two of the three fundamental premises of CBLA were not generally accepted by the scientific community.[464] The court was also troubled by the fact there was little research in terms of error rate, and the research which had been performed demonstrated a questionable rate of error.[465] Clemons currently is awaiting retrial.

2. *Edward Lykus* (Massachusetts, 1973–2005)

Lykus was convicted in 1973 for kidnapping, extortion, and first-degree murder.[466] The victim was shot three times, likely from a .38 caliber Colt revolver recovered from Lykus's residence. Forensic examiners were unable to determine whether the bullets recovered from the victim's body were discharged from Lykus's .38 caliber Colt revolver.[467] Thus, "in an attempt to establish a link between the bullets found in the body of the victim and the bullets recovered from [Lykus's] house," the prosecution introduced CBLA evidence.[468] The prosecution presented an FBI expert whose CBLA

462. *Clemons v. State*, 896 A.2d 1059 (Md. 2006).

463. *Id.* at 1067.

464. *Id.* at 1079. The entire CBLA "process is premised upon three assumptions: the fragment being analyzed is representative of 'the composition of the source from which it originated'; the source from which the sample is derived is compositionally homogeneous; and 'no two molten sources are ever produced with the same composition.'" *Id.* at 1076 (quoting William A. Tobin, *Comparative Bullet Lead Analysis: A Case Study in Flawed Forensics*, 28 Champion 12, 13–14 (July 2004)). As the court noted, the "assumptions regarding that uniformity or homogeneity of the molten source and the uniqueness of each molten source that provide the foundation for CBLA have come under attack by the relevant scientific community of analytical chemists and metallurgists." *Id.* In terms of the homogeneity assumption, the court referred to a 1991 FBI symposium where "various experts in the field cautioned that the variability (of the elemental mix) within a production run . . . has not been addressed in a comprehensive study." *Clemons*, 896 A.2d at 1076 (internal quotations omitted). The court also referred to a 2002 study which also debunked the homogeneity assumption. *See* Eric Randich et al., *A Metallurgical Review of the Interpretation of Bullet Lead Compositional Analysis*, 127 Forensic Sci. Intl. 174, 182 (2002). With respect to the uniqueness assumption, the court referenced the abovementioned 2002 study, which determined that "multiple indistinguishable shipments of lead alloys from secondary lead refiners to the ammunition manufacturers are made each year and over a period of many years." *Id.* at 174. Likewise, the court highlighted the fact that "FBI researchers discovered two sets of bullets manufactured seven months and fifteen months apart respectively that were analytically indistinguishable." *Clemons*, 896 A.2d at 1077.

465. *Id.* at 1078 (citing Robert D. Koons and Diana M. Grant, *Compositional Variation in Bullet Lead Manufacture*, 47 J. Forensic Sci. 950 (2002), which identified an error rate between twenty-five and thirty-three percent).

466. *Commonwealth v. Lykus*, 327 N.E.2d 671 (Mass. 1975).

467. *Id.* at 673 ("due to oxidation on the bullets there were not sufficient microscopic marks for identification"); *Commonwealth v. Lykus*, 2005 WL 3804726 at *2 (Mass. Super. Dec. 30, 2005).

468. *Lykus*, 2005 WL 3804726 at *16.

tests "revealed that the bullets were 'similar in composition.'"[469] In particular, the bullets shared seven trace elements in common besides lead: antimony, copper, iron, bismuth, silicone, silver, and tin. With this finding, the FBI expert concluded "that although it was possible that the bullets found in the victim's body were different than the bullets recovered from the victim's house, such a possibility was 'remote.'"[470]

Lykus's convictions were affirmed on direct appeal and after his first state post-conviction proceedings.[471] Lykus, however, did not attack the admissibility of the CBLA testimony during these proceedings. Instead, Lykus filed another state post-conviction petition attacking the CBLA evidence after the NRC published its 2004 report, which called into question certain practices and statistical assertions associated with CBLA testimony.[472]

While the Connecticut Court of Appeals initially commented that the "NRC Report . . . d[id] not expressly repudiate [CBLA] evidence,"[473] the court of appeals nevertheless held that the NRC Report "directly refute[d]" the FBI expert's conclusion that the likelihood the bullets recovered from the victim came from another source besides the box of bullets found in Lykus's residence was "remote."[474] The NRC Report clearly stated that "the available data do not support any statement that a crime bullet came from, or is likely to have come from, a particular box of ammunition."[475] In short, the court of appeals concluded that "there [was] no scientific basis" for the FBI expert's "remote" possibility testimony.[476]

Despite the "voluminous" and "overwhelming" evidence against Lykus,[477] the court of appeals granted Lykus a new trial because if the information regarding CBLA evidence had been available to Lykus's jury, it "almost certainly would 'probably have been a real factor in the jury's deliberations.'"[478] The court of appeals also stated that, because the CBLA evidence was produced and presented by an FBI expert, this "placed an additional imprimatur on it."[479] Lykus currently is awaiting retrial.

3. *Shane Ragland* (Kentucky, 2000–2006)

Ragland was convicted of murder in 2000 after the victim was shot in the head as he sat on his front porch.[480] The bullet recovered from the victim was fired from a .243 caliber rifle. Once Ragland became the prime suspect, Commonwealth and FBI investigators seized a .243 rifle and ammunition from two part-time residences. The Commonwealth's firearms examiner was unable to conclusively link the bullet recovered

469. *Id.*

470. *Id. See also Lykus*, 327 N.E.2d at 673 ("Ammunition for the gun was also discovered in the defendant's apartment and this ammunition, like the bullets found in the victim's body, was of a rare type.").

471. *Commonwealth v. Lykus*, 546 N.E.2d 159 (Mass. 1989); *Lykus*, 327 N.E.2d at 672.

472. *Lykus*, 2005 WL 3804726 at *16; *see also* NRC Report, *supra* n. 459.

473. *Lykus*, 2005 WL 3804726 at *16.

474. *Id.* at *17.

475. *Id.* (quoting NRC Report, *supra* n. 459, at 113).

476. *Id.* at *19.

477. *Id.* at *1 (The "evidence against the defendant was voluminous and, ultimately, overwhelming.").

478. *Lykus*, 2005 WL 3804726 *18.

479. *Id.* at *19.

480. *Id.*

from the victim to the rifle discovered at Ragland's residence because it was too fragmented. Consequently, the Commonwealth relied on CBLA evidence to link the fatal bullet to the ammunition discovered at Ragland's residence.

Ragland challenged the admissibility of the CBLA evidence prior to trial. As a result, the trial judge held an admissibility (or *Daubert*) hearing to determine whether CBLA evidence was sufficiently reliable to be introduced at his trial. After hearing testimony from an FBI CBLA expert and an ex-FBI CBLA expert, the trial judge permitted the Commonwealth to introduce the CBLA testimony at trial.[481] The trial judge focused its ruling on the general acceptance (or reliability) rather than the validity of the FBI expert's conclusions.[482]

The Commonwealth introduced the CBLA evidence via the FBI expert's testimony. The FBI expert subjected three bullets found in the Ragland rifle, 16 bullets from the box of ammunition, and a fragment of the bullet which killed the victim to CBLA. At trial, the FBI expert testified that "one of the bullets recovered from the rifle and nine of the bullets found in the ammunition box were 'analytically indistinguishable' in metallurgical composition from the bullet that killed [the victim]."[483]

The primary issue on direct appeal was whether the trial judge committed reversible error when it admitted the CBLA testimony. The Kentucky Supreme Court ruled the trial judge committed reversible error,[484] and the court refused to remand for a new *Daubert* hearing because of the assertions in the 2004 NRC Report.

The NRC Report raised such "serious" questions about the validity of the conclusions rendered by CBLA experts; as the Court explained:

> If the FBI Laboratory that produced the CBLA evidence now considers such evidence to be of insufficient reliability to justify continuing to produce it, a finding by the trial court that the evidence is both scientifically reliable and relevant would be clearly erroneous, and a finding that the evidence would be helpful to the jury would be an abuse of discretion.[485]

Ragland is currently awaiting retrial.

I. Forensic Pathology

1. The Wrongly Accused

a. James Andros (New Jersey, 2001–2002)

On March 31, 2001, Andros, a 12-year veteran with the Atlantic City Police Department, arrived home around 4:00 a.m. and found his wife, Ellen Andros, unconscious in front of the family computer. Frantic, Andros called 911 and tried to resuscitate her, but it was too late. When police arrived and investigated her death, they

481. *Id.* at 575–77.

482. *Id.* at 577 ("[T]he trial court concentrated on the reliability of the ICP as a scientific methodology for determining the presence and amounts of trace elements in lead bullets, but did not address the validity of the opinions Lundy expressed that were based on those determinations.").

483. *Id.* at 574.

484. *Id.* at 580.

485. *Ragland*, 191 S.W.3d at 580.

reported no signs of struggle or foul play.[486] Later that day, Dr. Elliot M. Gross, an assistant medical examiner for Atlantic County, New Jersey, performed an autopsy and concluded that Ellen's "sudden death ... was the result of 'asphyxia due to suffocation.'"[487]

Dr. Gross's autopsy report "prompted a homicide investigation which uncovered evidence of great marital discord between" Andros and Ellen.[488] Investigators arrested and prosecutors indicted Andros for first-degree murder on April 6, 2001.[489] By the time investigators arrested Andros, they had "Dr. Gross' supplemental report which again concluded that Ellen was a victim of homicide."[490] Andros maintained his innocence.

In December 2002, shortly before Andros's case was scheduled to go to trial, prosecutors retained another forensic pathologist, Dr. Donald Jason, to review the evidence and to testify at trial. After he "reviewed the evidence Dr. Jason concluded that Ellen Andros . . . died from a spontaneously dissecting coronary artery, a natural cause of death."[491] Once Dr. Gross and his supervisor reviewed his (Dr. Gross's) initial autopsy report and Dr. Jason's findings, they, too, agreed with Dr. Jason that Ellen died from natural causes, and that Dr. Gross erred in his initial diagnosis.[492] When prosecutors realized Andros was innocent, on December 4, 2002, they promptly dropped all charges against him.[493] Atlantic County, New Jersey officials fired Dr. Gross shortly after his mistake surfaced.[494]

J. Lip Print Identification

1. Non-Capital Overturned Convictions

a. Lavelle Davis (Illinois, 1997–2006)

An Illinois jury convicted Davis in 1997 of first-degree murder, armed violence, and attempted robbery; the trial judge sentenced him to more than 65 years in prison.[495] Prosecutors premised their case on conflicting eyewitness testimony and physical evidence. Investigators claimed they linked Davis to the murder via a lip print lifted from a piece of duct tape found near the scene. At trial, prosecutors presented lip-print identification testimony from a *fingerprint* examiner and a *document* examiner who had never conducted a lip print examination.[496] The fingerprint examiner testified that "lip

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486. *See* Andrew Jacobs & Marc Santora, *New Report in Wife's Death Clears Former Police Officer*, N.Y. Times B1 (Dec. 5, 2002).

487. *Andros v. Gross*, 2005 WL 3500058 at *1 (D.N.J. Dec. 21, 2005).

488. *Id.*

489. *Id.* at *3.

490. *Id.*

491. *Id.* at *1.

492. *Andros*, 2005 WL 3500058 at *1.

493. *Id. See also* Jacobs & Santora, *supra* n. 486.

494. *See* Andrew Jacobs, *Assistant Coroner Fired after Revised Finding*, N.Y. Times B5 (Dec. 11, 2002).

495. *People v. Davis*, 710 N.E.2d 1251, 1257 (Ill. App. 1999).

496. *Id.* at 1258 ("Gray specializes in latent print analysis, a type of impression evidence, which includes

prints, like fingerprints and other impression evidence, are unique and can be used to positively identify someone."[497] Likewise, the document examiner "testified that lip prints are unique and that lip print comparison is an accepted form of identification."[498] He also asserted that he was "unaware of any dissent . . . regarding the methodology used to make a positive identification of a lip print."[499] Notably, both examiners "testified that *the FBI* and the Illinois State Police consider[ed] lip prints as means of positive identification."[500]

The Illinois Court of Appeals affirmed Davis's conviction and concluded "that the method employed to identify lip prints, a side-by-side comparison, is reliable."[501] Davis continued to challenge his conviction, and in March 2006, an Illinois trial judge overturned his conviction following an evidentiary hearing. Therein, Davis's attorneys presented several experts who concluded there were "no scientific studies that have conclusively established the accuracy and reliability of lip print identification."[502] Likewise, the experts concluded that "[t]here is no comparison between lip prints and fingerprints[,]" and that "ridges on fingerprints *are not* the same as creases on lips. They are totally different."[503]

Davis's attorneys also introduced a letter from Stephen B. Meagher, the Unit Chief of the FBI's Latent Print Unit, which stated that "the FBI Laboratory has not conducted any validation studies of lip print identification and has determined that it will not perform lip print analysis."[504]

K. Forensic Fraud/Misconduct/Incompetence

1. Pamela Fish, Chicago Police Department, Serology Unit

a. John Willis (Illinois, 1992–1999)

An Illinois jury convicted Willis of a series of rapes that occurred in local beauty salons around Chicago. Police dubbed Willis the "Beauty Shop Rapist."[505] In the first case, the assailant attacked the victim and forced her to perform oral sex. She spat the assailant's semen into a toilet paper wrapper which investigators recovered. Prior to his 1991 trial, Willis's trial counsel and the prosecution both requested that the wrapper be examined by the Chicago Police Department's Serology Unit. Serologist Pamela Fish

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fingerprints, shoe prints, and lip prints . . . this was the first time she was asked to conduct a lip print comparison . . . .").

497. *Id.* at 1256.

498. *Id.*

499. *Id.* at 1258.

500. *Davis*, 710 N.E.2d at 1259 ("As the experts testified, the method they employed to identify the lip print was the same as the well-accepted method of fingerprint identification, which is accepted as a means of positive identification by the forensic science community, the FBI, and the Illinois State Police.").

501. *Id.*

502. *People v. Davis*, 2006 WL 2641753 (Ill. Cir. Mar. 7, 2006).

503. *Id.*

504. *Id.*

505. *See* Scheck et al., *supra* n. 60, at 124.

analyzed the semen evidence. At trial, she said her DNA tests were inconclusive; they could not positively identify or rule out Willis as a possible donor.[506] Fish also drafted a report summarizing her results. Despite the lack of conclusive forensic evidence, the jury convicted Willis primarily because the victim identified him as her assailant. The trial judge sentenced him to 100 years in prison.[507]

Curiously, the bizarre sexual assaults continued to occur after Willis's conviction. In 1994, police arrested another man, Dennis McGruder, for a 1992 rape and robbery that displayed the same modus operandi that the perpetrator in Willis's case exhibited. Willis's appeal based on this evidence, however, was denied. Nevertheless, the new rapes led Willis's appellate attorney to request Fish's raw laboratory notes from his case. Once disclosed, Willis's attorney discovered that Fish's ABO blood typing test had in fact excluded Willis as a possible donor of the semen.[508] Fish's raw notes showed Willis had type B blood, while the semen-stained toilet paper wrapper was type A.[509]

In 1993, a jury convicted Willis of sexually assaulting another woman in a similar fashion. At trial, the trial judge prohibited Willis from presenting evidence that linked McGruder to the crime for which he was being tried. Prior to Willis's second trial, police arrested McGruder for a series of rapes and robberies. Moreover, it was revealed that McGruder lived in the same vicinity where the beauty shop rapes occurred. Additionally, the trial judge prohibited Willis from testifying about a conversation he had with McGruder in jail where McGruder confessed to the crime that sent Willis to prison.

Willis was exonerated in February 1999 when new DNA tests revealed he could not have committed the rapes. The DNA tests identified McGruder as the source of the semen. McGruder ultimately pled guilty to two assaults.[510] Willis settled his federal civil rights lawsuit for $2.5 million in 2004.[511]

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506. *Id.*

507. *See* Maurice Possley & Jeremy Manier, *Police Crime Lab on the Hot Seat: Evidence Favoring Defendant Omitted*, Chi. Trib. 1 (Oct. 9, 1998).

508. Scheck et al., *supra* n. 60, at 160–61.

509. Dr. Richard Saferstein, Director of the New Jersey State Police Laboratory, criticized Fish's disclosed report and testimony: "For whatever reasons, whether carelessness, negligence, ignorance or fraud . . . Fish incorrectly reported her laboratory findings." Possley & Manier, *supra* n. 507. Dr. Robert Kirschner, a retired Cook County deputy medical examiner, also criticized Fish and the Chicago Police Department Crime Lab: "I think the lab is competent, but honesty may not always totally overlap," Kirschner said. "In this case it appears the technical part of it was done accurately, but it was intentionally interpreted incorrectly." *Id.* Nevertheless, Illinois State Police crime lab officials concluded that Fish's testimony was "acceptable" under Chicago Police Crime Lab guidelines. *See* Steve Mills & Maurice Possley, *State Police Plan Review of 9 Cases: Questions Raised About Lab Worker's Reports, Testimony*, Chi. Trib. 1 (Jan. 18, 2001). Likewise, the Chicago Police Department conducted its own investigation and concluded: "There was no finding of misconduct on the part of anybody within the Chicago Police Department or anybody who used to work here." Possley & Manier, *supra* n. 507 (quoting Chicago police spokesman Pat Camden). Finally, weeks after a trial judge vacated his conviction and prosecutors dropped all charges against Willis, the Illinois State Police promoted Fish to a supervisory position. *See* Maurice Possley & Ken Armstrong, *Lab Tech in Botched Case Promoted; Testimony Helped Wrongfully Convict Man of Rape*, Chi. Trib. 1 (Mar. 19, 1999). According to the Illinois State Police: "Due to her job performance with the state—she's been very efficient and effective—she's very deserving of a promotion . . . . She supervises about 40 people . . . I assume she will be checking the works of others, signing off on reports." *Id.* (quoting Lincoln Hampton, a spokesman for the Illinois State Police).

510. Innocence Project, *Know the Cases: John Willis*, http://*www.innocenceproject.org/Content/296.php* (accessed Apr. 16, 2008).

511. Dan Mihalopoulos, *$2.5 million Deal in Rape Case Suit*, Chi. Trib. 3 (Mar. 9, 2004).

b. Omar Saunders, Larry Ollins, Calvin Ollins, and Marcellius Bradford (Illinois, 1986–2001)

Cook County State's Attorney Dick Devine said it best when he described Lori Roscetti's murder investigation and prosecution as a "real failure of the system."[512] Roscetti, a Rush University Medical Student, was kidnapped, raped, and murdered on October 18, 1986. Investigators had no leads for more than three months, until they arrested Marcellius Bradford, a teenager from the Chicago area. After hours of abusive questioning, Bradford finally confessed and implicated Larry Ollins, Ollins's 14-year-old cousin Calvin, and Omar Saunders.[513] Once Calvin was arrested, he too was subjected to hours of abusive interrogation, which eventually produced (another coerced) confession implicating himself as well as Larry, Saunders, and Bradford.[514]

Bradford pled guilty to aggravated kidnapping, in exchange for his testimony against Larry Ollins. Bradford received a 12-year sentence.[515] At Larry Ollins's trial, Fish testified she identified semen from a vaginal swab recovered from Roscetti, and that the semen was "consistent with blood samples taken from both Ollins and [Calvin Ollins]."[516] Fish also testified the results of the test were "consistent with 37% of the male population of the United States."[517] At Bradford's trial, Fish testified that enzymatic blood testing excluded him as a possible donor, but the "PGM markers found in the sample taken from [Roscetti] . . . match[ed] those of Calvin and Larry Ollins."[518] Finally, during Calvin and Saunders's trials, Fish testified she did not identify any semen stains on Roscetti's clothing.[519]

Saunders was convicted of murder, two counts of aggravated criminal sexual assault, armed robbery, and aggravated kidnapping. He was sentenced to life imprisonment for the murder charge. His conviction was affirmed on direct appeal.[520] Larry Ollins was convicted of murder, aggravated criminal sexual assault, armed robbery, and aggravated kidnapping. He too received a life sentence for the murder conviction. His conviction was affirmed on direct appeal.[521] Calvin Ollins was convicted of murder, aggravated criminal sexual assault, and aggravated kidnapping. He was sentenced to natural life for the murder conviction. His sentence was also affirmed on direct appeal.[522]

In 1998, Calvin, Larry, and Saunders contacted the Innocence Project, but when the Innocence Project contacted the Chicago Police Department, it was informed

512. Maurice Possley & Steve Mills, *3 Roscetti Inmates Set to Be Freed; DNA Results Spur State to Drop Case*, Chi. Trib. 1 (Dec. 5, 2001).

513. *Ollins v. O'Brien*, 2005 WL 730987 at *2 (N.D. Ill. Mar. 28, 2005).

514. *People v. Ollins*, 606 N.E.2d 192, 196 (Ill. App. 1992).

515. *Ollins*, 2005 WL 730987 at *2.

516. *People v. Ollins*, 601 N.E.2d 922, 924 (Ill. App. 1992) ("[T]he characteristics of [Larry Ollins's] blood sample matched the semen found in the victim.").

517. *Id.*

518. *People v. Saunders*, 603 N.E.2d 32, 34 (Ill. App. 1992).

519. *See* Victoria Pierce, *A Lesson on the Justice System—Inmates Tell How DNA Helped Exonerate Them*, Chi. Daily Herald 1 (Feb. 2, 2002).

520. *Saunders*, 603 N.E.2d at 37.

521. *Ollins*, 601 N.E.2d at 927.

522. *Ollins*, 606 N.E.2d at 202.

evidence in the case was destroyed.[523] When Kathleen T. Zellner was appointed to represent the four defendants, however, she contacted a friend in the Cook County Circuit Court Clerk's office to determine whether the evidence actually was destroyed. Her contact located the rape kit, which included the vaginal swab and the semen.[524]

Zellner and Cook County prosecutors subsequently agreed to send the semen evidence and vaginal swab, along with Calvin, Larry, Saunders, and Bradford's DNA, to Edward Blake's private forensic laboratory in California. Blake's results excluded all four.[525] Blake's initial report was submitted to the appellate court, which subsequently remanded the case to the trial judge, and the trial judge ordered the release of additional hair and semen evidence which prosecutors wanted tested.[526] Blake's additional tests also excluded Larry, Calvin, Saunders, and Bradford.[527] More importantly, when Blake examined Fish's original lab notes, he noticed that all four defendants should have been immediately excluded as possible semen donors because none of them had a blood type that matched the semen samples. In particular, Roscetti's killers were "O-secretors," while Larry, Calvin, Bradford, and Saunders were all "non-secretors."[528]

After the additional tests also excluded all four, on December 5, 2001, the trial judge vacated their convictions[529] and prosecutors "nolle prossed" all charges against them. On February 4, 2002, police arrested Eddie Harris and Duane Roach for Roscetti's murder.[530] Harris and Roach provided tissue samples that matched the semen stains recovered from Roscetti. Harris and Roach eventually confessed, and accepted 75-year plea sentences in order to avoid the death penalty.[531] Governor George Ryan pardoned Calvin, Larry, Bradford, and Saunders on October 17, 2002.[532] Since their release, the City of Chicago settled Calvin's wrongful conviction suit for $1.5 million and

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523. Margaret Cronin Fisk, *Lawyers Free Chicago Trio after Retesting of Lab Sample: Technician Had Testified In Earlier Bad Conviction*, Natl. L.J. A6 (Dec. 17, 2001).

524. *Id.*

525. *Ollins*, 2005 WL 730987 at *3 ("In 2001, criminalist Dr. Edward Blake concluded that the semen on the underwear of Lori Roscetti did not come from Bradford, Larry Ollins, Larry Saunders or Calvin Ollins.").

526. In particular, prosecutors requested additional testing, including examinations of 22 stains identified on Roscetti's clothing. Cronin Fisk, *supra* n. 523. As noted, Fish testified she failed to identify any semen stains on Roscetti's clothing.

527. *Ollins*, 2005 WL 730987 at *3.

> After the testing, Calvin Ollins, Larry Ollins, Marcelia Bradford and Omar Saunders were excluded as the source of the spermatozoa recovered from a vaginal swab remnant. Further testing established there was another spermatozoa source on Lori Roscetti's underwear. The Roscetti Four were also excluded as the source of the second spermatozoa sample. More testing was conducted on additional semen stains and hairs collected from the crime scene, this testing also excluded any of the Roscetti Four as sources of the evidence.

Id. (citations omitted).

528. Cronin Fisk, *supra* n. 523. *See* Innocence Project, *Know the Cases: Marcellius Bradford*, http://www.innocenceproject.org/Content/57.php (accessed Apr. 16, 2008) ("Crime lab analyst Pamela Fish testified that semen found on the victim's body could have belonged to the Ollinses, but a recent examination of her notes by a DNA expert showed that none of the four men's blood types matched the crime scene samples.").

529. *Ollins*, 2005 WL 730987 at *4 ("Bradford, incarcerated for another crime, was released after his sentence for that crime was completed.").

530. *2 Men are Indicted in Roscetti Slaying*, Chi. Trib. 16 (Feb. 23, 2002).

531. Frank Main & Stefano Esposito, *2 get 75 years for '83 Slaying of Med Student; Man Awaits Reward for Turning in Brother in Roscetti Murder*, Chi. Sun Times 5 (Dec. 17, 2004).

532. Maurice Possley, *Roscetti 4 Thank Ryan for Pardon*, Chi. Trib. 1 (Oct. 18, 2002).

Bradford's suit for $900,000.[533]

c. Billy Wardell and Donald Reynolds (Illinois, 1988–1997)

Two women were raped by three men in May 1986, near the University of Chicago campus.[534] Police arrested Wardell and Reynolds after the victims identified them as their assailants. Prior to trial, Reynolds requested DNA testing on the semen and blood evidence recovered from one of the victims.[535] The trial judge denied the request because, at the time, DNA testing did not meet "the necessary legal requirements of the law."[536]

At trial, the victims identified Wardell and Reynolds. Fish testified that semen recovered from one of the victims presumably came from Reynolds, and that only *38 percent* of the black male population shared Reynolds's blood group characteristics.[537] Despite having several solid alibi witnesses, the jury convicted Wardell and Reynolds of aggravated criminal sexual assault, attempted aggravated criminal sexual assault, armed robbery, and attempted armed robbery.[538]

During post-conviction proceedings, Wardell and Reynolds's attorneys requested discovery from the Chicago Police Department Crime Laboratory. The reports disclosed by the laboratory startled their attorneys because they showed that Fish provided false or grossly misleading testimony, and that prosecutors failed to disclose an exculpatory forensic report. Fish's own lab notes revealed that her semen testing "results . . . showed that the semen could have come from over 80% of the black male population."[539] Maria Pulling, a lab technician, drafted the (undisclosed) exculpatory report "which concluded that certain hairs found in [Reynolds's] underwear . . . did not match those of the victims."[540] In a post-conviction affidavit, Pulling, herself, admitted that the report "should have gone to those who requested it, and to the defense because it was exculpatory."[541]

Wardell and Reynolds eventually petitioned for post-conviction DNA testing. The DNA testing "proved that Wardell and Reynolds were not guilty of the offenses charged."[542] Their convictions were vacated on November 17, 1997, after they spent 11.5 years in prison. The State of Illinois granted them clemency and pardoned them;[543] Reynolds and Wardell settled their federal civil rights suits against the City of Chicago for $45,000 a piece.[544]

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533. *2nd Man Settles Suit for Wrongful Jailing*, Chi. Trib. 3 (Dec. 12, 2006).

534. *People v. Wardell*, 595 N.E.2d 1148, 1150 (Ill. App. 1992).

535. *Id.* at 1151.

536. *Id.* The trial judge stated: "I do not believe that there is enough information available to either substantiate the validity of this test and the probative value of this test. . . . [A]s it stands right now I believe it is still in its embryonic stage." *Id.*

537. *Wardell v. City of Chicago*, 75 F. Supp. 2d 851, 853–54 n. 1 (N.D. Ill. 1999).

538. *Wardell*, 595 N.E.2d at 1151.

539. *Wardell*, 75 F. Supp. 2d at 853–54 n. 1.

540. *Wardell v. City of Chicago*, 2001 WL 1345960 at *1 (N.D. Ill. Oct. 31, 2001).

541. *Wardell*, 75 F. Supp. 2d at 855.

542. *Id.* at 854.

543. *Id.*

544. Frank Main, *2 Freed by DNA to Get $45,000 Each From City*, Chi. Sun Times 14 (Mar. 27, 2003).

d. Marlon Pendleton (Illinois, 1996–2006)

An Illinois jury convicted Pendleton of aggravated criminal sexual assault and armed robbery for a 1992 rape; the trial judge sentenced him to 20 years.[545] Fish did not testify at Pendleton's trial, even though she tested the vaginal swabs from the victim's rape kit. Despite the fact Pendleton proclaimed his innocence and repeatedly demanded DNA testing, Fish unilaterally determined there was an insufficient amount of seminal fluid to perform DNA testing.[546]

In 2006, after he unsuccessfully pursued his appeals for a decade, Pendleton's post-conviction attorneys from Northwestern University School of Law sought and won the right to test the seminal fluid. In November 2006, the results excluded Pendleton. More importantly, the DNA analyst who performed the testing, opined that, contrary to Fish's claim, there was in fact a sufficient amount of seminal fluid to perform DNA testing in the mid-1990s when Fish analyzed the evidence.[547] On November 30, 2006, Pendleton walked out of prison for the first time in 10 years, and on December 8, 2006, an Illinois trial judge vacated his conviction and prosecutors officially dismissed all charges.[548]

2. Joyce Gilchrist, Oklahoma City Police Department, Serology Unit

a. Jeffrey Pierce (Oklahoma, 1986–2001)

In 1986, an Oklahoma jury convicted Pierce of first-degree rape, oral sodomy, anal sodomy, second-degree burglary, and assault with a deadly weapon.[549] The trial judge sentenced him to 34 years on the rape charge, 11 years each for the sodomy counts, and four and five years respectively for the burglary and assault counts.[550] At trial, prosecutors supported their case with forensic evidence. Oklahoma City Police Department (OCPD) chemist, Joyce Gilchrist, testified that 28 scalp hairs and three pubic hairs recovered from the crime scene or victim were "microscopically consistent with" the characteristics of Pierce's hair.[551] Gilchrist also testified there was an insufficient amount of seminal fluid to conduct blood typing tests. Moreover, even

545. Innocence Project, *Know the Cases: Marlon Pendleton*, http://www.innocenceproject.org/Content/234.php (accessed Apr. 16, 2008).

546. *See* Maurice Possley, *'Always Knew I Was Innocent': Imprisoned in a 1992 Sexual Assault, Marlon Pendleton is Told By His Attorneys That New DNA Tests Show That He Was Not the Assailant*, Chi. Trib. 1 (Nov. 24, 2006) ("He repeatedly demanded that DNA tests be performed on the evidence, but Chicago police crime lab analyst Pamela Fish said that there was insufficient evidence to be tested, according to her report.").

547. *Id.* ("The expert who conducted the most recent testing, Brian Wraxall, said Wednesday that he believes that there was enough material at the time.").

548. Innocence Project, *supra* n. 545.

549. *Pierce v. State*, 786 P.2d 1255, 1257–58 (Okla. Crim. App. 1990). When police arrested Pierce, he waived objection to a body search, and allowed them to collect body fluids and head and pubic hair samples. Pierce premised his waiver, in part, on the claim made by police "that if the hairs did not match he would be released." *Pierce v. Gilchrist*, 359 F.3d 1279, 1282 (10th Cir. 2004). *Five minutes* after police collected his hair samples, police told Pierce "that a forensic chemist [Gilchrist] had matched his hairs to evidence collected from the Woodlake rape scene." *Id.*

550. *Pierce*, 786 P.2d at 1258.

551. *Id.*

though she did not perform blood typing tests, she nonetheless told the jury that the offender's blood type was either type O or a non-secretor. Pierce was a non-secretor.[552]

Furthermore, during a pretrial discovery hearing, prosecutors agreed to send all the physical evidence to the Serological Research Institute in Emeryville, California (SERI) for independent testing. Gilchrist disregarded the court order because she knew SERI did not conduct hair examinations; she assumed SERI would not analyze the hair evidence in Pierce's case, either.[553] Yet defense counsel and SERI analysts arranged to have the hair evidence examined by another laboratory.[554]

Gilchrist's negligence denied Pierce an opportunity to independently evaluate the hair evidence, and the Oklahoma Court of Criminal Appeals later affirmed Pierce's conviction. Although that court said it would not "take Gilchrist's breach of the law lightly,"[555] it ruled her conduct harmless "under the facts of the case."[556]

In February 2001, the Oklahoma Indigent Defense System's DNA Project asked Laura Schile, the new supervisor of the OCPD's DNA lab, to re-examine the evidence Gilchrist evaluated in Pierce's case to determine whether DNA testing was possible.[557]

Schile re-examined the slides Gilchrist had evaluated. At trial, Gilchrist claimed that several slides contained sperm and semen. When Schile re-examined these slides, "she could find sperm on only one of the slides."[558] Schile requested that three OCPD DNA analysts re-examine the slides as well. The OCPD analysts "found evidence of sperm on only one of the slides."[559] The OCPD submitted six of the slides to the Oklahoma State Bureau of Investigation (OSBI). The OSBI reviewed the slides and "determined sperm was not present on any of the submitted slides."[560]

FBI examiners also re-examined the hair samples Gilchrist testified about at trial. To the FBI's surprise, *none* of the hair samples matched Pierce's hair samples.[561] More importantly, DNA analysts from the SERI performed genetic testing on the one slide which had sperm and determined the sperm did not come from Pierce. As a result,

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552. *Id. See also Gilchrist v. City*, 173 Fed. Appx. 675, 680 (10th Cir. 2006) (unpublished) ("In 198[6], Gilchrist's serological analysis and courtroom testimony had helped prosecutors convict Pierce of rape, sodomy, burglary, and assault with a dangerous weapon.").

553. *Pierce*, 786 P.2d at 1261.

554. *Id.*

555. *Id.* The court noted:

> We find that Gilchrist absolutely violated the terms of a Court Order. Instead of following either the letter of the Order or taking steps to have the Order changed or clarified by the court, she took it upon herself to determine the portions of the Order with which she wished to comply. This was not her decision to make. She was under a direct order from the court to provide *all* of the physical evidence to SERI. The failure to abide by a valid order by a trial court will generally have serious consequences and will always be considered error.

Id.

556. *Id.*

557. *Gilchrist*, 173 Fed. Appx. at 679.

558. *Id.*

559. *Id.*

560. *Id.* at 680.

561. *Pierce*, 359 F.3d at 1283 ("With regard to Mr. Pierce's case specifically, Special Agent Deedrick concluded that none of the hairs taken from Plaintiff's body exhibited the same microscopic characteristics as those found at the crime scene."); *see also* Ed Godfry & Diana Baldwin, *Exonerated Inmate Freed—After 15 Years in Prison, Man Wants to See His Sons*, The Oklahoman 1A (May 8, 2001).

"Pierce was found factually innocent of committing the crimes for which he was charged and convicted. Pierce was freed from incarceration and his sentence and conviction were vacated."[562] In January 2007, the Oklahoma City Council agreed to settle Pierce's federal civil rights lawsuit for $4 million.[563]

b. Curtis Edward McCarty (Oklahoma, 1986–2005)

In 1986, a jury convicted McCarty of Pam Willis's 1982 rape-murder, and sentenced him to death.[564] McCarty, however, maintained his innocence from the very beginning. McCarty's conviction was based "primarily on . . . circumstantial [forensic] evidence" offered by Gilchrist.[565] The Oklahoma Court of Criminal Appeals (OCCA) reversed McCarty's conviction and death sentence in part because of Gilchrist's improper testimony and unethical conduct.[566] The OCCA reprimanded Gilchrist because she failed to timely disclose the hair evidence and her reports to McCarty's defense expert.[567] The OCCA also noted that Gilchrist's report writing was incomplete and inaccurate,[568] and criticized her for testifying beyond her expertise.[569]

Nevertheless, prosecutors retried McCarty in 1989, and for the second time a jury convicted him of first-degree murder and rape and sentenced him to death.[570] The OCCA affirmed his "entirely circumstantial" conviction,[571] but reversed his death sentence. Gilchrist again offered hair and blood testimony, which the OCCA said supported McCarty's conviction.[572] Significantly, Gilchrist testified "she could

562. *Gilchrist*, 173 Fed. Appx. at 680. After it reviewed the evidence and Gilchrist's testimony in Pierce's case, the SERI analysts concluded Gilchrist gave erroneous testimony and "show[ed] a total disregard for the results of her analysis and a prejudice against the defendant." *Id.*

563. *See* Marie Price, *Oklahoma City Agrees to $4M Settlement with Man Exonerated by DNA Evidence*, J. Rec. (Okla. City) (Jan. 25, 2007).

564. *McCarty v. State*, 765 P.2d 1215, 1216–17 (Okla. Crim. App. 1988).

565. *Id.* at 1217.

566. The OCCA found the record "replete with error committed during both stages of the trial . . . ." *Id.* at 1222.

567. Gilchrist initiated her hair tests on December 15, 1982, but failed to complete them until Friday, March 14, 1986; the trial was scheduled to begin on Monday, March 17, 1986. Consequently, McCarty's expert was denied "a fair and adequate opportunity to conduct a competent independent examination." *Id.* Moreover, prosecutors "took advantage of [their] own tardiness to discredit whatever examination was made by [McCarty's expert]," in that "Ms. Gilchrist testified that Mr. Wilson could not have made a competent forensic examination in the length of time he had the hair slide." *Id.* at 1217–18.

568. McCarty's expert highlighted that Gilchrist's report revealed that none of the pubic hairs recovered from Willis's body matched McCarty's hair samples. At trial, however, Gilchrist claimed "she failed to include in her conclusion that a pubic hair found on [Willis] was consistent with [McCarty's] pubic hair." *McCarty*, 765 P.2d at 1218. The OCCA said her conduct "resulted in a trial by ambush, as defense counsel was deprived of an accurate forensic report, which is essential to intelligent cross-examination." *Id.*

569. The OCCA focused on Gilchrist's response to prosecutor Barry Albert's question of whether "based on her expertise and examination of the forensic evidence . . . [she had] an opinion as to whether Mr. McCarty was physically present during the time violence was done to Miss Wills." Gilchrist testified that "he was in fact there." As OCCA noted, "Ms. Gilchrist herself testified that forensic science techniques had not advanced to the point where a person could be positively identified through blood types, secretor status, or hair examination." The OCCA found it "inconceivable why Ms. Gilchrist would give such an improper opinion, which she admitted she was not qualified to give." *Id.*

570. *McCarty v. State*, 904 P.2d 110 (Okla. Crim. App. 1995).

571. *Id.* at 119 ("The foregoing discussion amply demonstrates the evidence relied upon by the State to convict Appellant was entirely circumstantial.").

572. *Id.* at 116–17.

determine whether hairs found were associated with the events in this case."[573] The OCCA said that while her comment "may have bordered upon impropriety," the court could not find that it was "so significant as to mislead the jury."[574] In 1996, another jury sentenced McCarty to death for a third time, which the OCCA affirmed.[575]

In 2003, after state and federal authorities completed their Gilchrist investigations, McCarty filed another post-conviction petition in which he claimed his actual innocence and that Gilchrist's improprieties rendered his trial fundamentally unfair.[576] Prosecutors waived any procedural bars and "consented to an evidentiary hearing on several of [McCarty's] claims 'due to the serious allegations raised.'"[577] After the evidentiary hearing, the trial judge reversed McCarty's conviction and death sentence because Gilchrist withheld evidence, most likely lost or intentionally destroyed important and potentially pivotal evidence, provided flawed laboratory analysis and documentation of her work, testified in a manner that exceeded acceptable limits of forensic science, and altered lab reports and handwritten notes in an effort to prevent detection of misconduct.[578]

For instance, the trial judge found that Gilchrist added incriminating hairs to the hair samples she sent McCarty's expert in 1989.[579] Furthermore, the trial judge found that Gilchrist purposely destroyed physical evidence "in order to prevent DNA testing."[580] Finally, although the trial judge found that the new DNA evidence established that McCarty could not have deposited the sperm found on or in Willis, it did not prove his innocence. Still, the judge concluded that the evidence would have been

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573. *Id.* at 126.

574. *Id.*

575. *McCarty v. State*, 977 P.2d 1116, 1140 (Okla. Crim. App. 1998).

576. As the OCCA noted, "The allegations predominantly revolve around the now notorious actions of former Oklahoma City Police Chemist Joyce Gilchrist." *McCarty v. State*, 114 P.3d 1089, 1090 n. 1 (Okla. Crim. App. 2005). McCarty filed for post-conviction relief in 1999, but the OCCA denied relief. *See McCarty v. State*, 989 P.2d 990, 998 (Okla. Crim. App. 1999).

577. *McCarty*, 114 P.3d at 1090.

578. *Id.* at 1092. The OCCA reaffirmed the trial court's findings when it noted:

> The record is more than adequately supported by numerous findings of the Review Board, pertaining to Ms Gilchrist, including: dishonesty in communications with her supervisor; mishandling evidence and case files as laboratory supervisor; failing to follow proper peer review procedures; testifying in a manner that resulted in criticism of her work in the field of forensic science; and engaging in flawed and improperly documented casework analysis.

Id. at 1092 n. 17.

579. When McCarty's expert reviewed item 40, he concluded it was "similar to" McCarty's hair. The trial judge, however, "voiced serious doubts" concerning whether Gilchrist sent McCarty's expert the proper evidence: "This Court cannot conclude that the slides marked # 39 and # 40 consistently contained the same samples." *Id.* at 1093 n. 19. The trial judge concluded "that Gilchrist added hairs to item 39 to incriminate [McCarty], stating she was concerned that the samples sent to the defense expert 'were contaminated either deliberately or accidentally.'" *Id.*

580. *McCarty*, 114 P.3d at 1092 n. 12. An Oklahoma County District Court Judge entered an order on January 12, 1999, and granted the State's request to destroy the evidence in McCarty's case. An Oklahoma County Assistant District Attorney received the physical evidence on March 9, 1999, however, which he apparently forwarded to Gilchrist. Shortly thereafter, Gilchrist sent a memo to the Attorney General's Office indicating she possessed the evidence and "there was sufficient hair evidence to conduct DNA analysis." Yet two months later, Gilchrist told her superiors and defense counsel the evidence was missing. The trial judge, like the Review Board, "found the circumstantial evidence indicated . . . Gilchrist . . . destroyed the evidence in order to prevent DNA testing." *Id.*

critical to the jury.[581] The OCCA affirmed the trial judge's reversals in 2005. After the reversal, additional forensic tests further bolstered McCarty's innocence claim. For instance, DNA tests on biological material underneath the victim's fingernails excluded him as a possible contributor. Likewise, forensic examiners determined that a bloody footprint that was deposited on the victim could not have come from McCarty. In May 2007, the trial judge freed McCarty after he dismissed his nearly 22-year-old murder charge because of the additional evidence of innocence and because the case was inescapably tainted by Gilchrist's misconduct.[582] Oklahoma County District Attorney David Prater decided not to appeal the trial judge's decision, saying: "We just could not overcome the previous findings of bad faith."[583]

c. Alfred Brian Mitchell (Oklahoma)

An Oklahoma jury convicted Mitchell of first-degree murder, rape, and forcible anal sodomy in connection with Elaine Scott's January 1991 murder.[584] Physical evidence played a critical role regarding the rape and forcible sodomy charges. The rape and forcible sodomy convictions, in turn, significantly impacted Mitchell's penalty hearing and served as aggravating factors that contributed to the jury's assignment of a death sentence.[585]

At trial, the medical examiner testified he took vaginal and rectal swabs during Scott's autopsy, analyzed them, and found no evidence of sperm; he testified he "saw nothing that looked like sperm, semen or ejaculate in the pubic or vaginal region."[586]

The medical examiner forwarded the swabs and pubic combings to the Oklahoma City Police Department Crime Laboratory for further testing. Gilchrist performed the serological testing. At trial, she testified she evaluated the swabs and combings and compared them with samples obtained from Mitchell, Phillip Taylor, and Michael Harjochee.[587] Unlike the medical examiner, Gilchrist claimed she identified six sperm on the vaginal swab, but was unable to identify a possible donor.[588] Likewise, contrary to the medical examiner's findings, Gilchrist testified she identified ten sperm on the rectal swab; she further testified that the sperm donor had the same blood type as Mitchell and Taylor.[589] She also stated that blood, semen, and sperm recovered from the sheet in which medicolegal investigators transported Scott's body were consistent with

581. *Id.* at 1094 ("That the Defendant *was not* the individual who left sperm in and on the victim would have changed the State's theory of the case and would have been critical to the jury.") (emphasis in original). In December of 2001, the Medical Examiner's office found a vaginal slide taken from Willis's body which contained a sperm fraction.

582. Jay F. Marks & Ken Raymond, *Ex-Death Row Inmate Freed*, The Oklahoman 1A (May 12, 2007).

583. *Id.* For more information on this case, see the Innocence Project's online profile, available at http://www.innocenceproject.org/Content/576.php (accessed Apr. 16, 2008).

584. *Mitchell v. State*, 884 P.2d 1186, 1191–92 (Okla. Crim. App. 1994).

585. In the sentencing phase, the jury recommended a death sentence for the murder after finding: (1) The murder was "especially heinous, atrocious, or cruel"; (2) The murder was "committed for the purpose of avoiding or preventing a lawful arrest or prosecution"; and (3) There was a "probability that [Mitchell] would commit criminal acts of violence that would constitute a continuing threat to society." *Id.* at 1191.

586. *Mitchell v. Ward*, 150 F. Supp. 2d 1194, 1222 (W.D. Okla. 1999).

587. *Id.* Taylor and Harjochee supposedly dated Scott and had intercourse with her shortly before her death.

588. *Id.* at 1222–23.

589. *Id.* at 1223.

Mitchell and Taylor, as were the semen stains on Scott's panties.[590]

Gilchrist's results also differed with the Serological Research Institute (SRI) and the FBI. To wit, "neither the FBI nor . . . the Serological Research Institute found sperm on the vaginal or rectal swabs."[591] Thus, the FBI testing supported Mitchell's claim that he did not rape Scott.

Nevertheless, jurors ultimately believed Gilchrist's testimony and convicted Mitchell of rape and forcible sodomy.

On direct appeal, the Oklahoma Court of Criminal Appeals also sided with Gilchrist when it wrote:

> Mitchell essentially claims that the evidence is insufficient because Gilchrist's findings and testimony cannot be trusted and are not corroborated. This Court cannot distinguish between Gilchrist's veracity and that of other experts. Gilchrist's findings indicated the presence of sperm in the vaginal and anal canals (the latter consistent with Mitchell). Sperm consistent with Mitchell was also found on the medical examiner's transport sheet in the area where Scott's genitals lay during transport. A jury could reasonably infer that even slight penetration was necessary for sperm to be found in both canals, and the evidence was sufficient to support these convictions.[592]

Gilchrist's flawed testimony was not exposed until Mitchell filed his writ of habeas corpus petition in federal court. Once filed, the federal district judge granted him discovery. During discovery, Mitchell's attorneys obtained Gilchrist's handwritten notes regarding two telephone conversations she had with the FBI's DNA analyst; both conversations occurred more than a year before Mitchell's trial. The written notes revealed that the FBI's DNA analyst informed Gilchrist that: (1) he identified DNA on Scott's panties which matched Scott's DNA and *excluded Mitchell*; (2) he identified DNA on the vaginal swab which matched Taylor's DNA and *excluded Mitchell*; and (3) he was unable to find DNA on the rectal swabs.[593] Prosecutors failed to disclose Gilchrist's exculpatory handwritten notes to Mitchell's trial attorneys.[594]

The discovery of Gilchrist's handwritten notes prompted the federal district judge to hold an evidentiary hearing to determine whether Gilchrist knowingly presented false evidence. The FBI DNA analyst testified that he compared samples from the vaginal swabs, rectal swabs, and Scott's panties to samples obtained from Scott, Mitchell, Taylor, and Harjochee. According to the DNA analyst: "None of . . . [the] testing revealed the presence of [Mitchell's] DNA in the unknown samples."[595] The DNA analysts also testified that "Taylor's DNA was present on at least three of the tests run on the sample from Ms. Scott's panties."[596] Finally, the DNA analyst conceded he drafted a poorly written report; he testified there was "no way to tell from his report that: (1) he

590. *Id.*

591. *Mitchell*, 884 P.2d at 1199.

592. *Id.*

593. *Mitchell*, 150 F. Supp. 2d at 1224–25.

594. Prosecutors also failed to disclose copies of the DNA "autoradiographs" developed by the FBI DNA analyst. Instead, "the prosecution turned over only the formal FBI report discussed above which, *at best*, is unclear and ambiguous." *Id.* at 1226 (emphasis in original).

595. *Id.* at 1225.

596. *Id.* at 1226.

obtained no DNA profile results from the rectal swabs; (2) he obtained no DNA profile results unlike the victim for the vaginal swabs; and (3) he obtained no DNA profile results unlike the victim or Taylor for the panties."[597] Gilchrist also testified at the evidentiary hearing; her testimony evinced more inconsistencies and questionable evidence. At trial, Gilchrist testified that her blood tests matched both Taylor and Mitchell. Her evidentiary hearing testimony, however, revealed "that even this testimony was, at least, misleading" because she testified that "her PGM subtyping excluded Mitchell as the donor of the [blood] samples she tested."[598]

Although the district judge overturned Mitchell's rape and sodomy conviction, he refused to vacate his death sentence because the "jury had sufficient evidence to justify its conclusion that the three aggravating circumstances it found were present, even without the rape and sodomy convictions."[599] When Mitchell appealed to the Tenth Circuit Court of Appeals, the circuit panel reversed the district judge's decision regarding the death sentence and vacated Mitchell's death sentence because "the rape and sodomy evidence impacted all three of the aggravating circumstances found by the jury."[600] At Mitchell's re-sentencing hearing, an Oklahoma jury sentenced him to death once again; however, the Oklahoma Court of Criminal Appeals recently reversed the reimposition of the sentence and remanded the case to the district court.[601]

d. Robert Miller (Oklahoma, 1988–1997)

An Oklahoma jury convicted Miller in 1988 of raping and murdering two elderly women in 1986 and 1987; the jury sentenced him to death. At trial, prosecutors presented two serological experts—one of whom was Gilchrist. Even though Gilchrist testified that one of her tests excluded Miller as a potential donor, the exculpatory result was an artifact because it was accidentally created when the victim's blood mixed with seminal fluid.

Gilchrist's testimony was suspect because Gilchrist attributed the result to contamination before she completed her testing, and she failed to conduct experiments to validate her theory. In effect, Gilchrist presented an untested theory as a scientific fact.[602] Moreover, Gilchrist testified that hairs found at the crime scene were microscopically consistent with Miller's hairs. In so doing, she also excluded another suspect named Ronald Lott.[603]

Miller sought DNA testing on appeal to prove his innocence. Although initial tests conducted in 1992, 1994, and 1995 produced inconclusive results, Miller's innocence

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597. *Id.*

598. *Mitchell*, 150 F. Supp. 2d at 1227 n. 48.

599. *Id.* at 1230 ("There is absolutely no question that, even absent the rape and sodomy charges and convictions, this is an appropriate case for the death penalty.").

600. *Mitchell v. Gibson*, 262 F.3d 1036, 1065 (10th Cir. 2001).

601. *Mitchell v. State*, 136 P.3d 671, 713 (Okla. Crim. App. 2006).

602. The Innocence Project website summarizes the serological testimony, including Gilchrist's work, at www.innocenceproject.org/Content/219.php (accessed Apr. 16, 2008).

603. *See* Diana Baldwin & Ed Godfrey, *Hair Analysis Under Scrutiny*, The Oklahoman 1A (June 3, 2001) ("Oklahoma City police chemist Joyce Gilchrist linked [Miller] to the rape and murder of two elderly women by comparing hairs under a microscope. She eliminated another suspect, Ronald Lott, by the same hair comparisons.").

claim crystallized in 1996 when PCR-based DNA tests excluded him as a possible donor of the blood and semen. These tests not only excluded Miller, they identified the true perpetrator—Ronald Lott.[604] The 1996 DNA results earned Miller a new trial in 1997. At his re-trial, a jury acquitted him of all charges. Before his re-trial, prosecutors (who were well aware the DNA tests implicated Lott) approached Lott and informed him he would face the death penalty unless he implicated Miller in the murders; Lott refused the deal.[605] Prosecutors ultimately charged, and an Oklahoma jury ultimately convicted, Lott of the two murders and sentenced him to death.[606] In Lott's direct appeal opinion, the Oklahoma Court of Criminal Appeals acknowledged Miller's wrongful conviction.[607]

3. Dr. Michael West, Forensic Odontologist

a. Tony Keko (Louisiana, 1992–1994)

Keko's wife, Louise, was murdered in 1991. The County Sheriff and his investigators "believed that Keko was guilty, but they did not have enough evidence against him to establish probable cause."[608] After their initial investigation "failed to reveal new evidence against Keko," investigators hired Dr. Michael West, a controversial forensic dentist,[609] to determine whether investigators overlooked physical evidence during the autopsy.[610] Investigators exhumed Louise's body 14 months after burial, and Dr. West examined her corpse using a "blue-light" technique of his own creation.[611] Allegedly, Dr. West discovered a bitemark on Louise's shoulder and subsequently informed investigators "he needed dental study models of *all of the*

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604. *See Gilchrist*, 173 Fed. Appx. at 679 (After Oklahoma officials fired Gilchrist, they thoroughly investigated all her cases; their investigation "indicated Gilchrist erred in her analysis of hair samples in the murder case of Robert Miller. . . . Gilchrist had incorrectly determined the hair samples were consistent with Miller and had wrongly ruled out another suspect as a possible hair donor.").

605. *See Mitchell*, 136 P.3d at 713.

606. *Lott v. State*, 98 P.3d 318 (Okla. Crim. App. 2004) (affirming conviction and death sentence).

607. The court wrote:

> Robert Miller was arrested, charged, and ultimately convicted of the rapes and murders of Mrs. Fowler and Mrs. Cutler. Subsequent to Miller's arrest, Grace Marshall was attacked and raped in her home on March 22, 1987. Eleanor Hoster was attacked and raped in her home on May 7, 1987. Both Mrs. Marshall and Mrs. Hoster were elderly ladies who lived alone. With the exception that Mrs. Marshall and Mrs. Hoster were not killed after being raped, there were striking similarities between the attacks on the four women. Appellant was arrested, charged, and ultimately plead guilty to committing the rapes against Mrs. Marshall and Mrs. Hoster.
>
> In approximately 1992, during Robert Miller's appeal period, Miller was excluded as the source of semen in the Fowler/Cutler cases through DNA testing. DNA testing subsequently implicated Appellant as the source of the semen. While Appellant was incarcerated for the Marshall/Hoster crimes, he was charged with two counts of malice aforethought murder or in the alternative first degree felony murder for the murders of Mrs. Fowler and Mrs. Cutler.

Id. at 327.

608. *Keko v. Hingle*, 1999 WL 508406 at *1 (E.D. La. July 8, 1999).

609. *See* Mark Hansen, *Out of the Blue*, 82 ABA J. 50 (Feb. 1996).

610. *Keko*, 1999 WL 508406 at *1.

611. *Id.* at *2 ("Dr West . . . claim[ed] that by shining a 'blue light' on skin he could identify the presence of human bite marks.").

suspects . . . in order to attempt to identify Louise Keko's attacker."[612]

When investigators met with Dr. West in October 1992, however, "they gave him only [Keko's] dental impressions," and provided him "with information designed to lead him to the conclusion that Keko was the killer."[613] After comparing Keko's bite pattern to the bitemark on Louise's shoulder, Dr. West opined that the bitemark on Louise's shoulder matched Keko's bite pattern.[614] Investigators used Dr. West's identification to obtain an arrest warrant for Keko.[615]

At trial, Dr. West testified that, "indeed, and without doubt," the bitemark on Louise's shoulder matched Keko's bite pattern. The trial judge permitted his testimony despite the fact Keko's experts could not review the alleged bitemark. According to Dr. West, he photographed the bitemark and removed the skin area which housed the bitemark and placed it into a preservative. Two weeks later, however, Dr. West claimed that the preservative allegedly destroyed the bitemark, and that the photograph failed to adequately capture the bitemark.[616] As the Fifth Circuit Court of Appeals noted: "Dr. West's evidence provided the only direct evidentiary link at trial connecting Keko to the crime."[617] The jury convicted Keko and the trial judge sentenced him to life in prison.

In December 1994, after serving two years and one month of his sentence, district court judge Michael Kirby ordered a new trial because prosecutors failed to disclose the fact that three influential forensic science organizations had discredited Dr. West's blue-light technique and his testimony in previous cases.[618] In November 1996, Judge Kirby barred Dr. West's testimony in Keko's retrial.[619] Without Dr. West's testimony, prosecutors dismissed all charges on July 27, 1998.[620]

b. Larry Maxwell (Mississippi, 1990)

Police arrested Maxwell in 1990 for three Mississippi stabbing deaths, and prosecutors charged him with capital murder. Prosecutors requested Dr. West's services to determine whether certain wounds on the bodies and a slash mark on a door were caused by a particular butcher knife. After he examined the bodies with his controversial blue-light technique and also inspected the door and butcher knife, Dr. West concluded that the butcher knife, "indeed, and without doubt," caused the wounds on two of the victims, as well as the slash mark on a door. Dr. West also concluded that the knife's

612. *Id.* (emphasis added).

613. *Id.* at *1.

614. *Id.* at *2. *See also Keko v. Hingle*, 318 F.3d 639, 643 (5th Cir. 2003) ("[H]is report stated that 'indeed and without doubt' the bite marks he observed on the exhumed body of Louise Keko matched Tony's dental impressions.").

615. *Keko*, 1999 WL 508406 at *1.

616. Steve Cannizaro, *Murder Witness' Fairness Questioned*, N.O. Times-Picayune B1 (May 10, 1996); Jonna Weiss, *Forensic Tests are Questioned in Murder Case*, N.O. Times-Picayune B1 (Sept. 30, 1994).

617. *Keko*, 318 F.3d at 641 n. 2.

618. *Keko*, 1999 WL 508406 at * 1 ("Keko was released from jail and granted a new trial based on the court's determination that the prosecution had withheld information regarding the qualifications of its chief witness, Dr. West.").

619. *See* Steve Cannizaro, *Buras Man May Beat Murder Rap Second Time*, N.O. Times-Picayune B1 (Dec. 21, 1996).

620. *Keko*, 1999 WL 508406 at *1.

broken handle caused bruises on Maxwell's hand.

The prosecution's case was premised entirely on Dr. West's testimony; there was no other direct or physical evidence that connected Maxwell to the murders. Maxwell's defense experts were unable to analyze the alleged wounds and bruises because Dr. West failed to adequately document them. According to Dr. West, he supposedly photographed the wounds and bruises, but when he overexposed the film the photos were destroyed. The only documentation Dr. West had were freehand sketches on photocopies of Maxwell's hands.

After an admissibility hearing regarding Dr. West's testimony, the trial judge ruled that Dr. West could only testify that the butcher knife was consistent with the wounds. Consequently, the prosecution ultimately dismissed the murder charges, and Maxwell was released in April 1993 after spending two years in jail.[621]

c. *Kennedy Brewer* (Mississippi, 1995–2008) *and Levon Brooks* (Mississippi 1990–2008)

In 1995, a Mississippi jury convicted Brewer of murdering his girlfriend's three-year-old daughter and sentenced him to death.[622] Brewer maintained his innocence from the very beginning. At trial, the prosecutor argued Brewer manually strangled the victim as he raped her; he said forensic evidence supported his claim. While forensic experts identified semen on the victim's vagina, a forensic serologist testified the amount was too small for DNA testing.[623] The most damaging physical evidence, however, were the 19 bitemarks identified on the victim's body by Dr. West.[624] The medical examiner who conducted the autopsy, Dr. Steven Hayne, testified that he found several marks on the victim's body that he believed to be bitemarks. As has often been the case in Mississippi, Dr. Hayne called in Dr. West to analyze the marks. Dr. West concluded that 19 marks found on the victim's body were "indeed and without a doubt" inflicted by Brewer.[625] He further asserted that all 19 marks were made only by Brewer's top two teeth and that somehow the bottom teeth had made no impression. Dr. West testified that *only* Brewer could have left the bitemarks.[626] He claimed a degree of certainty that exceeded the limitations of bite mark analysis, which never has been scientifically validated.[627] In response, the defense introduced Dr. Richard Souviron, a licensed dentist and founding member of the American Board of Forensic Odonotology. He testified that the marks were not human, but rather were insect bites that the body sustained during the many days it sat in water.[628] Dr. Souviron argued that it would be

621. *See* Marcia Coyle, *"Expert" Science Under Fire in Capital Cases*, Natl. L.J. A1 (July 11, 1994).

622. *Brewer v. State*, 725 So. 2d 106, 112 (Miss. 1998).

623. *Id.* at 115.

624. *Id.* at 116. *See also* Hansen, *supra* n. 623 (discussing Dr. West's controversial technique).

625. Jerry Mitchell, *Wrongly Convicted Miss. Inmate Freed*, Clarion-Ledger (Jackson, Miss.) (Mar. 13, 2008).

626. *Brewer*, 725 So. 2d at 116 ("When West performed the direct comparison test, none of the dental impressions from the individuals matched the wounds on the three-year-old's body except Brewer's.").

627. Innocence Project, *Know the Cases: Kennedy Brewer*, http://www.innocenceproject.org/Content/1176.php (accessed Apr. 19, 2008).

628. Two days after the victim disappeared, her body was found in a creek about 500 yards from her home. *See* Innocence Project, *supra* n. 627.

all-but-impossible to leave repeated bite mark impressions with only the top two teeth.[629]

The Mississippi Supreme Court affirmed Brewer's conviction and death sentence on direct appeal.[630] However, in 2001, Brewer's post-conviction attorney petitioned the trial judge to order DNA testing on the semen recovered from the victim's vagina.[631] The trial judge ordered the DNA testing and the results excluded Brewer.[632] Brewer petitioned the Mississippi Supreme Court to overturn his conviction because of this newly discovered DNA evidence. Although the court described Brewer's newly discovered DNA evidence as "quite compelling," the court refused to consider the merits of Brewer's claim, and instead remanded the case back to the trial judge for an evidentiary hearing.[633] The trial judge eventually granted Brewer a new trial in 2002 after it conducted an evidentiary hearing.[634]

Despite the awarding of a new trial in 2002, Brewer sat in jail for another five years awaiting re-trial; he was finally released on bail in September 2007.[635] In 2008, at the Innocence Project's behest, Mississippi officials uploaded the 2001 DNA profile into a DNA databank, which resulted in a cold "hit" to a sex offender named Justin Johnson. When authorities approached Johnson with the DNA results, he confessed not only to the murder which put Brewer on death row, he confessed to the murder which landed Levon Brooks in prison for life.[636] Brewer was officially exonerated on February 15, 2008.[637]

Brooks followed soon behind on March 13, 2008, with his own unexpected exoneration. He was convicted for the rape and murder of Courtney Smith, a child abducted from her grandmother's home whose body was left in a nearby pond, much in the way that Brewer's alleged victim had been abandoned. Brooks became a suspect in part because he had briefly dated Smith's mother. At trial, Dr. West attested that a single bite mark on Courtney's hand was made by Brooks, but Johnson's confession put that assessment in great doubt. So, too, did Johnson's insistence that he did not bite the victims in either incident.[638] The Innocence Project is continuing to investigate the reach of Dr. Hayne and Dr. West's analyses, to the extent they may have resulted in other wrongful convictions in Mississippi and elsewhere.

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629. Innocence Project, *Know the Cases: Kennedy Brewer*, http://www.innocenceproject.org/Content/1176.php (accessed Apr. 19, 2008).

630. *Brewer*, 725 So. 2d at 116.

631. *Brewer v. State*, 819 So. 2d 1169, 1172 (Miss. 2002).

632. *Id.* at 1172–73.

633. *Id.* at 1173–74. The court made clear that the "DNA evidence does not prove conclusively that Brewer did not murder the victim." *Id.* at 1174. Even though DNA evidence effectively contradicted Dr. West's bitemark testimony (and ultimately the State's theory), the court still relied on Dr. West's bitemark testimony when it stated that there was "sufficient evidence in the record, circumstantial and otherwise, indicating Brewer's involvement." *Id.* at 1173 n. 1 ("Dr. Michael West, the State's expert forensic odontologist, testified that it was his opinion that the bite marks on the victim were inflicted by Brewer.").

634. *See* Sheri Williams, *DNA Wins Inmate New Trial*, Clarion-Ledger (Jackson, Miss.) 1B (Sept. 6, 2002).

635. *See* Shaila Dewan, *Despite DNA Result, Prosecutor Retries a '92 Rape-Murder Case*, N.Y. Times A1 (Sept. 6, 2007).

636. *See* Steve Mills, *DNA Voids Murder Conviction; 2nd Man Also Freed in Cases in Mississippi*, Chi. Trib. 4 (Feb. 16, 2008).

637. *Id.*

638. *See* Mitchell, *supra* n. 625.

4. Dr. Allan J. Warnick

a. Jeffrey Moldowan & Michael Cristini (Michigan, 1990–2003, 2004)

Maureen Fournier was brutally raped and assaulted on or about August 9, 1990. When police found her, she was lying in a street in downtown Detroit. Fournier informed police she was abducted the night before and raped by four individuals whom she knew. Fournier identified the four individuals as Michael Cristini, Jim Cristini, Tracy Tapp, and Jeffrey Moldowan. Cristini and Moldowan ultimately were the only individuals prosecuted, based in part on the testimony of Dr. Allan J. Warnick, the chief forensic odontologist for the Wayne County Medical Examiner's Office. He stated that bite marks identified on Fourier's neck "were consistent with Moldowan's dentition, and that the bite marks on her right arm and right side were consistent with those of Michael Cristini."[639] Dr. Pamela Hammel, Dr. Warnick's colleague, testified as a prosecution rebuttal witness and corroborated Dr. Warnick's opinions. A jury convicted Moldowan and Christini in May 1991of kidnapping, assault with intent to commit murder, and two counts of first-degree criminal sexual conduct. Moldowan was sentenced to four concurrent terms of 60 to 90 years, while Christini received four terms of 50 to 75 years.[640]

Moldowan and Cristini challenged their convictions for more than 10 years before they obtained relief.[641] In 2001, the Michigan Supreme Court reversed Moldowan's conviction because the bite mark testimony was unreliable. The court stated: "In this case the prosecutor's two [bite mark] expert[s] . . . have either recanted testimony which concluded that bite marks on the victim were made by [Moldowan] or presented opinion evidence which has now been discredited.[642]

Cristini's conviction was also reversed by a state post-conviction trial judge in 2002. Cristini and Moldowan both were retried without the bite mark evidence. Cristini was acquitted in 2004, while Moldowan was acquitted in 2003.[643] Moldowan has filed a federal civil rights lawsuit against Dr. Warnick and several other police officers.[644]

b. Carol Ege (Michigan, 1993–2005)

As the Michigan Court of Appeals noted: "This is a troubling case."[645] Cindy Thompson was murdered in February 1984. Because the "initial investigation was deficient," investigators failed to charge anyone with Thompson's murder for more than nine years.[646] Despite the fact there were "other[ ] . . . logical suspects" and "no

639. *Moldowan v. City of Warren*, 2006 WL 3106090 at *2 (E.D. Mich. Oct. 31, 2006).

640. *Id.*

641. *See e.g. People v. Moldowan*, 538 N.W.2d 683 (Mich. 1995) (Table).

642. *People v. Moldowan*, 643 N.W.2d 570 (Mich. 2002).

643. *See Moldowan*, 2006 WL 3106090 at *2 (Moldowan "was re-tried without the bite mark evidence and acquitted on retrial in 2003."); Gene Schabath, *Man Freed in Second Rape Trial; Jury Finds He Was Wrongly Convicted in '91 Macomb Case*, Detroit News 5D (Apr. 9, 2004) (discussing Cristini's acquittal).

644. *Moldowan*, 2006 WL 3106090 at *2.

645. *People v. Ege*, 1996 WL 33359075 at *1 n. 1 (Mich. App. Sept. 17, 1996).

646. *Id.*

physical evidence" which linked Ege, in April 1993, police arrested Ege and prosecutors charged her with Thompson's murder.[647] The only physical evidence that linked Ege to Thompson's murder was a *suspected* bite mark on Thompson's cheek.[648]

At trial, the medical examiner testified he "discovered a blunt force injury to the left cheek which caused him to request the aid of a forensic odontologist."[649] The medical examiner requested Dr. Allan J. Warnick's services. Dr. Warnick never examined Thompson's body "because Thompson's body was too badly decomposed upon exhumation nine years after the murder."[650] Instead, he viewed an autopsy photograph that allegedly captured the left cheek mark. At trial, Dr. Warnick testified that "out of the 3.5 million people residing in the Detroit metropolitan area, [Ege] was the only one whose dentition could match the individual who left the possible bite mark on [Thompson's] cheek."[651]

Despite the fact the "credibility of much of [the State's] evidence was called into question,"[652] the jury convicted Ege of first-degree murder. Ege's conviction was affirmed on direct appeal.[653] Ege challenged the bite mark evidence's admissibility during state post-conviction proceedings. While the state post-conviction trial judge held that Dr. Warnick's statistical testimony lacked sufficient foundation to be reliable and admissible, the trial judge ruled that her claim was procedurally barred because her trial counsel failed to render a contemporaneous objection at trial.[654]

In federal habeas proceedings, the district court considered Ege's procedurally barred bite mark claim because she demonstrated cause and prejudice.[655] Ege demonstrated "cause" because her trial counsel was ineffective for failing to challenge

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647. *Id. See also Ege v. Yukins*, 485 F.3d 364, 367 (6th Cir. 2007).

> The initial police investigation, concluded in April 1984, yielded no definitive evidence. Eight years later, however, the investigation was reopened as a result of persons coming forward with evidence allegedly incriminating Ege. During the course of this reopened investigation, in 1992–1993, evidence that had been collected at the murder scene in February 1984 was submitted to the Michigan state crime lab for the first time. None of the evidence submitted to the crime lab connected Ege to the crime. The lab results yielded fingerprints of Davis and Thompson and hairs of Thompson and others, but no similar trace evidence connected to Ege.

Id.

648. *Id.* ("The initial autopsy report had concluded that the mark was livor mortis.").

649. *Ege*, 1996 WL 33359075 at *7.

650. *Ege*, 485 F.3d at 368.

651. *Ege v. Yukins*, 380 F. Supp. 2d 852, 869 (E.D. Mich. 2005). Dr. Warnick testified:

> Q: Okay. With regard to—let me ask you a question. Let's say you have the Detroit Metropolitan Area, three, three and a half million people. Would anybody else within that kind of number match like she did?
>
> A: No, in my expert opinion, nobody else would match up.

Id. at 864 n. 1. Ege's pathology expert opined "that the mark on Thompsons' cheek was livor mortis and not a bite mark." Ege's forensic dentist, Dr. Irvin Sopher, agreed with the pathology expert and "added that even if it were a bite mark, the pattern did not align with [Ege's] dentition." *Ege*, 485 F.3d at 368.

652. *Id.* at 377.

653. *Id.* at 368. Ege did not challenge the bite mark testimony's admissibility on direct appeal.

654. *People v. Ege*, No. 93-125655-FC, slip op. at 4–5 (Oakland Co. Cir. Jan. 11, 2000).

655. Federal courts may not consider a claim from a state court petitioner, if the petitioner failed to present the claim in accordance with the state's procedural rules. *See Wainwright v. Sykes*, 433 U.S. 72 (1977). Procedurally barred claims may be considered, however, if the petitioner demonstrates cause and prejudice. *See Coleman v. Thompson*, 501 U.S. 722, 750 (1991).

the bite mark evidence.[656] Ege demonstrated "actual and substantial" prejudice because Dr. Warnick's opinion "was unreliable and grossly misleading" and "carried an aura of mathematical precision pointing overwhelmingly to the statistical probability of guilt, when the evidence deserved no such credence."[657]

The district court supported its conclusion by referencing "post-conviction evidence" that demonstrated Dr. Warnick's reputation had been "thoroughly . . . cast into disrepute" because "several convictions based on his testimony have been undermined and overturned."[658] The district court added: "This case presents another."[659] The district court granted Ege's writ of habeas corpus in July 2005, which the Sixth Circuit Court of Appeals affirmed in April 2007.[660]

c. Anthony Otero (Michigan, 1994)

Otero was arrested in October 1994 and charged with sexually assaulting and murdering a woman. Dr. Allan J. Warnick examined the victim's body and "concluded that wound pattern injuries on the body were consistent with human bite marks."[661] Following his arrest, Otero allowed Dr. Warnick to take impressions of his teeth and to review his dental records. After he compared Otero's impressions with the bite marks identified on the victim, Dr. Warnick drafted a report to the Detroit Police Department in which he "opined that upon finding five unique points of identity between a bite mark and [Otero's] teeth, the chances of someone else having made the mark would be 4.1 billion to one."[662] Thereafter, in December 1994, police arrested Otero. During his preliminary hearing, Dr. Warnick testified that "[Otero] was the only person in the world who could have inflicted the bitemarks on Airasolo's body."[663]

On January 30, 1995, the Detroit Police Crime Laboratory disclosed a DNA report that excluded Otero as a possible source of DNA obtained from vaginal and rectal swabs taken from the victim's body.[664] Following the disclosure of the DNA report, prosecutors released Otero from custody in April 1995 after he posted a $60,000 cash bond. Prosecutors did not officially drop all charges against Otero until Dr. Richard Souviron, a forensic odontologist from Florida, re-examined the bite marks and Otero's bite pattern and concluded that the "injuries were too indistinct to be used to include or

656. *Ege*, 380 F. Supp. 2d at 875–76 ("Since the bite mark evidence was the only physical evidence connecting the petitioner to the crime scene at the time of the murder, challenging its admissibility likely would have been a sound decision with no adverse consequence."). Certain ineffective assistance of counsel claims may establish "cause" pursuant to the cause and prejudice analysis. *See Murray v. Carrier*, 477 U.S. 478, 488 (1986).

657. *Ege*, 380 F. Supp. 2d at 879–80. The district court also was concerned about Dr. Warnick's methodology. *Id.* at 878–79. The district court added: "[A]lthough bite mark identification evidence is much less scientifically reliable than many other types of physical or scientific evidence, if believed it is highly probative of guilt." *Id.* at 879.

658. *Id.* at 857.

659. *Id.*

660. *Ege*, 485 F.3d 364.

661. *Otero v. Warnick*, 614 N.W.2d 177, 178 (Mich. App. 2000).

662. *Ege*, 380 F. Supp. 2d at 871 (discussing Dr. Warnick's opinion in Otero's case).

663. *Otero*, 614 N.W.2d at 178.

664. *Id.*

exclude any suspect."[665] In the end, the Michigan Court of Appeals made this observation regarding Dr. Warnick: "[Dr.] Warnick, for whatever reason, crossed the line between prosecution and persecution, turning a system of justice into a system of oppression. In so doing, he trampled upon the rights of [Otero] and caused him enormous, horrific harm."[666]

d. Ricky Amolsch (Michigan, 1994)

Jane Marie Fray was murdered in August 1994. An autopsy revealed she was stabbed nearly two dozen times, strangled with a ligature, and bitten on her face. Once Amolsch became a suspect, Dr. Allan J. Warnick "performed an oral examination of Amolsch, charted his dentition, took bite registrations and impressions of the maxillary and mandibular teeth, and took intra and extra oral photographs."[667] Dr. Warnick "ultimately concluded that the bite marks on Fray's face matched Amolsch's dentition."[668] Consequently, police arrested Almolsch and prosecutors charged him with first-degree murder. While Almolsch sat in jail awaiting trial, another suspect surfaced. Another forensic odontologist re-examined the bite mark on Fray's face with the second suspect's dentitions and concluded that the "the bite marks on Fray's face matched the dentition of the second [suspect] as opposed to that of Amolsch."[669]

Prosecutors released Almolsch after he spent 10 months in jail. The Michigan Court of Appeals once again commented on Dr. Warnick's competence and motivation: "We agree that Amolsch's allegations in his case are horrific and, if true, call into question Warnick's judgment, Warnick's competence and perhaps even Warnick's motivation."[670]

5. Dr. Louis Robbins, Forensic Anthropologist

a. Stephen Buckely (Illinois, 1984–1987)

In 1984, prosecutors charged Buckley, Rolando Cruz, and Alex Hernandez with 11-year-old Gina Nicarico's 1983 murder in Naperville, Illinois.[671] Despite "intense pressure and intimidation . . . Buckley steadfastly maintained his innocence and demonstrated no knowledge of the crime."[672]

At first, investigators had no physical evidence linking Buckley to Nicarico's murder. Investigators lifted a bootprint from the kicked-in front door of the Nicaricos' home,[673] but three examiners (from three different agencies) concluded that Buckley's

665. *Id.* at 178–79.
666. *Id.* at 182 (quoting Otero's brief).
667. *Amolsch v. Warnick*, 1999 WL 33446484 at *1 (Mich. App. Apr. 27, 1999).
668. *Id.*
669. *Id.*
670. *Id.* at **1, 5.
671. Thomas Frisbie & Randy Garret, *Victims of Justice* 48 (Avon Bks. 1998).
672. *Buckley v. Co. of DuPage*, 1989 WL 64321 at *3 (N.D. Ill. June 9, 1989).
673. *Id.* at *1.

boots could not have created the shoeprint.[674] For instance, John Gorayczyk, the sergeant in charge at the DuPage County Crime Laboratory's identification section "concluded that they did not match."[675] Ed German of the Illinois Department of Law Enforcement Crime Laboratory also failed to make a positive identification.[676] Finally, Robert Olson of the Kansas Bureau of Identification Crime Laboratory concluded that Buckley's boot and the Nicarico bootprint had some "similar class characteristics, but the paucity of sufficient similar individual characteristics precluded a positive identification."[677] Nonetheless, despite three exclusionary determinations by three qualified experts, prosecutors sought out Robbins who "obtained a 'positive identification.'"[678]

At Buckley's first trial, the "cornerstone" of the prosecutors' case was the "manufactured boot 'evidence.'"[679] Robbins, German, and Olson provided the bootprint evidence. Moreover, German and Olsen's opinions "were significantly at variance from their original reports and notes."[680] Despite the unreliable and false bootprint testimony, the trial judge declared a mistrial when the jury failed to produce a verdict against Buckley.[681] Immediately thereafter, prosecutors announced their intention to re-try Buckley even though "a highly respected FBI footprint expert" concluded, in June 1986, that "Buckley's shoes did not make the Nicarico bootprint."[682]

Prior to Buckley's second trial, however, Robbins fell terminally ill and passed away. Shortly thereafter, in March 1987, prosecutors dropped all charges against Buckley because they could find no other expert to link Buckley's boots to the Nicarico bootprint.[683]

b. Dale Johnston (Ohio, 1984–1990)

An Ohio jury convicted Johnston in 1984 for Annette Cooper and Todd Schultz's murders and sentenced him to death.[684] Initially, no physical evidence linked Johnston to the murders. Investigators recovered an alleged foot or bootprint from the riverbank where the bodies were discovered, but William Bodziak, the FBI's top impression examiner, could not determine whether a boot or bare foot had created the impression.[685]

Despite Bodziak's conclusion, prosecutors sought Robbins's assistance; Robbins

674. *Id.* at *2.

675. *Id.*

676. Notably, when German initially examined the boots, he concluded and wrote in his notes that Buckley's "could have at best" made the bootprint on the door and that "*another shoe could very well have made the prints.*" *Id.* (emphasis added). However, in "his official report he simply concluded that plaintiff's boot 'could have' made the prints and omitted the remainder of his prior conclusions." *Buckley*, 1989 WL 64321 at *2.

677. *Id.*

678. *Buckley v. Fitzsimmons*, 509 U.S. 259, 262 (1993).

679. *Buckley*, 1989 WL 64321 at *5.

680. *Id.*

681. *Id.*

682. *Id.* at *6.

683. *Id.* at *7; Barbara Mahany & John Schmeltzer, *Nicarico Death Suspect Freed—With Key Witness Ailing, Buckley Charges Dropped*, Chi. Trib. 1 (Mar. 6, 1987).

684. *State v. Johnston*, 529 N.E.2d 898 (Ohio 1988); *State v. Johnston*, 1986 WL 8798 at *1 (Ohio App. 4 Dist. Aug. 6, 1986).

685. *See* Mark Hansen, *Believe It or Not*, ABA J. 64, 66 (June 1993).

not only confirmed the print was a bootprint, but she linked Johnston's boots to the bootprint.[686] In 1986, the Ohio Court of Appeals reversed Johnston's conviction on other grounds.[687] While Johnston awaited his second trial in 1990, the Ohio Court of Appeals suppressed the boot evidence because the boots had been unlawfully seized.[688] Shortly thereafter, prosecutors dismissed all charges because, without the boots and Robbins's testimony, there was no evidence linking Johnston to the murders.

6. Janice Roadcap, Forensic Serologist, Pennsylvania State Police Crime Laboratory

a. Barry Laughman (Pennsylvania, 1988–2004)

Authorities arrested and charged Laughman for the 1987 rape-murder of an 85-year-old woman.[689] Prosecutors sought the death penalty against Laughman. According to detectives, Laughman (a mildly retarded man) confessed to the murder after a lengthy interrogation.[690] Despite the fact investigators "had a tape recorder," they failed to record Laughman's confession.[691]

The physical evidence also cast serious doubts on the confession. Janice Roadcap, a chemist for the Pennsylvania State Police, tested evidence found at the crime scene and reported that the perpetrator had type-A blood; Laughman, however, was a type-B secretor.[692] Once Roadcap learned of "the incongruous lab results," she "added writing in the margins to her original lab notes indicating that swabs taken of the semen 'were moist when placed in vials. Breakdown of B antigens could have occurred.'"[693]

At trial, besides introducing Laughman's confession, prosecutors had Roadcap explain to the jury why Laughman could still be the perpetrator despite the irreconcilable lab results. Roadcap raised several untested hypotheses to reconcile the conflicting lab results. For instance, she surmised that bacteria could have damaged the B antigens. She also surmised that the victim's (type A) vaginal secretions could have masked Laughman's blood. Finally, she asserted that the antibiotics the victim took for a urinary tract infection could have changed the blood type. Yet Roadcap never tested the validity of these hypotheses.[694] Nevertheless, Roadcap's testimony proved persuasive because the jury convicted Laughman of first-degree murder, rape, robbery, and burglary. Laughman received a life sentence.[695]

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686. *See* William S. Lofquist, *Whodunit? An Examination of the Production of Wrongful Convictions*, in *Wrongly Convicted: Perspectives on Failed Justice* 174–96 (Saundra D. Westervelt & John A. Humphrey eds., Rutgers U. Press 2001) (discussing Johnston's case).

687. *Johnston*, 1986 WL 8798, *aff'd*, Johnston, 529 N.E.2d 898.

688. *State v. Johnston*, 580 N.E.2d 1162, 1166–70 (Ohio App. 1990).

689. *Laughman v. Commonwealth*, 2006 WL 709222 at *1 (M.D. Pa. Mar. 17, 2006).

690. *Id.* ("At the time of this second questioning, [Laughman] was twenty-four years old with an IQ of 69–71, which was lower than 97.5 % of the population. He was classified as 'a moron' under then existing mental health classifications.").

691. *Id.*

692. *Id.*

693. *Id.* (quoting Roadcap's original report).

694. *See* Pete Shellem, *Who Killed Edna Laughman?* Patriot-News (Harrisburg, Pa.) A01 (June 1, 2003).

695. *Laughman*, 2006 WL 709222 at *2.

In June 2003, a state trial judge granted Laughman's DNA testing motion; the results, which came back in November 2003, excluded Laughman as a possible source of the semen.[696] Prior to the DNA testing, several forensic experts sharply criticized Roadcap's testimony and unscientific approach. For instance, Dr. Richard Saferstein, former director of the New Jersey State Police Crime Laboratory, explained: "She [kept] saying it's possible. Well, anything's possible .... We have to talk in terms of reasonable probability. These are outrageous statements."[697]

Dr. Cyril Wecht, a renowned forensic pathologist, similarly summarized:

> She says maybe his B was simply weak. I think what's weak here is her whole argument .... It was her scientific duty to see to it that every one of those swabs were tested to confirm her findings .... Instead of having this be exculpatory, they come up with these totally scientifically unfounded reasons.... That's just a disgrace that they proceeded with this without further testing .... The first tragedy is that this happened to an 85-year-old woman. The second tragedy here is what happened to this case.[698]

Prosecutors released Laughman from prison on November 21, 2003, and dismissed all charges on August 26, 2004, after the trial judge granted a new trial.[699]

b. Stephen Crawford (Pennsylvania, 1974–2002)

In 1974, a Pennsylvania jury convicted Crawford of murdering Eddie Joe Mitchell on September 12, 1970.[700] Investigators discovered Mitchell in Crawford's father's garage. At the time of the offense, Crawford was 14 years old and Mitchell was 13. Investigators recovered 18 partial sets of (finger and palm) prints from a station wagon parked in the garage next to a second car under which investigators discovered Mitchell's body. Of the 18 sets, only eight "were deemed capable of identification."[701]

Fingerprint examiners failed to immediately link these prints to Crawford. After three different fingerprint examiners evaluated the prints for more than two years (and nearly 400 hours), the third examiner finally linked a partial palm print to Crawford on September 22, 1972; in December 1972, the examiner linked another partial palm print to Crawford; and in July 1974, five months after Crawford's arrest, the examiner linked a third partial palm print to Crawford.[702]

Because investigators recovered the palm prints from Crawford's father's vehicle (which was parked in Crawford's father's garage), they enlisted the ATF's assistance to "determine whether the print was left at or near the time of the murder."[703] ATF examiners informed the investigators "there was no way in which the prints could be

696. *Id.* ("In a report dated November 5, 2003, the DNA analyst concluded that, 'Barry Laughman is excluded as a source of the DNA obtained from this sample.'"). *See also* Travis Lau, *"The System Works"; Convict Free on Bail after DNA Casts Doubt on Guilt*, York Dispatch (York, Pa.) (Nov. 24, 2003).

697. Shellem, *supra* n. 694.

698. *Id.* (quoting Cyril Wecht).

699. *Id. See also Charges Dropped against Man Freed from Prison by DNA Test*, AP (Aug. 24, 2004).

700. *Commonwealth v. Crawford*, 364 A.2d 660 (Pa. 1976).

701. *Crawford v. Commonwealth*, 2005 WL 2465863 at *1 (M.D. Pa. Oct. 6, 2005).

702. *Crawford*, 364 A.2d at 662.

703. *Crawford*, 2005 WL 2465863 at *2.

dated."[704] Despite the ATF's inability to date the prints, investigators still uncovered critical evidence when they visited the ATF laboratory; one of the investigators observed "brownish-red particles" on one of the palm prints, which he suspected was blood.[705] Investigators took the palm print to Janice Roadcap, who reported she identified small particles of human blood *only* on the ridges (and not the valleys) of the print.[706] Roadcap's lab report, which prosecutors disclosed to Crawford's attorneys, read in pertinent part: "This reaction was only along the ridges of the fingerprint pattern."[707] Notably, investigators "gave Roadcap permission to destroy the print, if necessary."[708] However, before they gave her permission, investigators failed to "photograph the print microscopically to show the location of the brownish-red particles."[709] Roadcap's testing destroyed the print and the alleged blood particles.

The presence of blood particles only on the ridges of the palmprint was essential to the prosecution's case because it laid the foundation for the prosecution's fingerprint expert to opine that Crawford deposited the prints at or near the time Mitchell was murdered. At trial, the fingerprint expert testified:

> The manner in which the blood appeared negated the possibility that the [blood] was already on the surface of the car when the hand was placed on it, and also negated the possibility that the [blood] was placed on the print after the print was left on the car . . . [and] that . . . the [blood] on the palm print . . . was on the hand that left the print on the car . . . [the blood] had to be placed there during or about the time of the commission of the crime.[710]

The fingerprint examiner also explained that had the palm print "been placed on the car over the blood, a smeared print would have resulted, *and blood would have appeared in the valleys of the print.*"[711] He also claimed that "had the blood spattered onto a previously made print, it would have caused the ridges to dissolve when hit by the blood, and would have left a distorted print."[712] Besides the palm prints and the fingerprint expert's opinion of when Crawford made the print, prosecutors failed to produce other evidence "to establish that [Crawford] was inside the garage at the time of the killing."[713]

The jury Crawford and the trial judge sentenced him to life in prison. The Pennsylvania Supreme Court overturned his conviction 1976 because the fingerprint expert testified outside his realm of expertise when he dated the fingerprint.[714] A second

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704. *Crawford*, 364 A.2d at 664; *Crawford*, 2005 WL 2465863 at *2.

705. *Crawford*, 2005 WL 2465863 at *2.

706. *Crawford*, 364 A.2d at 663 ("the foreign matter on the palm print" was "identified as blood of human origin").

707. *Crawford*, 2005 WL 2465863 at *2.

708. *Id.* at *3 n. 7.

709. *Id.*

710. *Crawford*, 364 A.2d at 663. The fingerprint expert offered this opinion despite conceding, on cross-examination, that "scientifically there was no way to 'date' the prints." *Id.*

711. *Id.*

712. *Id.*

713. *Id.* at 662.

714. *Id.* at 664 ("Officer Simpson admitted that his expertise was limited to the field of lifting and identifying prints, and also admitted that this opinion was beyond the realm of that expertise.").

jury found Crawford guilty of first-degree murder in February 1977. Following the verdict, the trial judge granted Crawford's motion for a new trial because prosecutors failed to disclose potentially exculpatory evidence; namely, a confession by another suspect.[715] At his third trial, prosecutors hired renowned forensic expert, Herb MacDonell; MacDonell, like the fingerprint expert in Crawford's first trial, testified that because Roadcap only identified blood on the ridges, the blood must have been on Crawford's hand when he touched the car.[716] For a third time, a jury convicted Crawford of first-degree murder and the trial judge sentenced him to life in prison.[717]

Over the next two decades, Crawford attacked his conviction and proclaimed his innocence; his attempts proved futile until October 2001 when, by sheer luck, two youths discovered a briefcase which contained, among other things, Roadcap's original lab report from Crawford's case.[718] The document differed significantly from the lab report Crawford's attorneys had received. The original report noted blood particles on the ridges and *in the valleys* of the palm print. Specifically, Roadcap wrote that the blood particles identified were "greater along the ridges of the fingerprint, however, numerous particles *in the valleys* also gave [positive] reactions."[719] Prosecutors did not use this report when they prosecuted Crawford; instead, prosecutors relied on an altered version.[720] Roadcap failed to disclose her original report to prosecutors; as a result, prosecutors never disclosed her original report to defense counsel during Crawford's numerous criminal proceedings.[721]

Prosecutors came into possession of Roadcap's original report on May 20, 2001. After they studied the report's contents, prosecutors conceded in June 2002 that Crawford was entitled to a new trial,[722] and the trial judge released him from prison on $1 bail.[723]

Shortly thereafter, in July 2002, prosecutors dropped all charges. Prosecutors expressed concerns about whether they could prosecute Crawford due to the passage of time, death of witnesses, the potential trauma to the victim's family, and concluded that the State's interests were vindicated by Crawford's 28-year incarceration.[724]

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715. *Crawford.*, 2005 WL 2465863, at *3.

716. *See* Pete Shellem, *1970 slaying; Prosecutors: Notes Don't Clear man; But DAs Admit Testimony Differed From Lab Reports in Crawford Case*, Patriot-News (Harrisburg, Pa.) A01 (Feb. 20, 2003).

717. *Id.*

718. The briefcase belonged to one of the original investigators who passed away in 1994. Pete Shellem, *Is This Man INNOCENT?; Crawford's Hopes Rest with Judge, Notes*, Patriot-News (Harrisburg, Pa.) A01 (June 2003).

719. *Crawford*, 2005 WL 2465863 at *2 (emphasis added) (quoting Roadcap's original report).

720. *Id.*

721. *Id.*

722. *See* Pete Shellem, *Slaying Retrial Not Certain for Man in Prison for 28 Years*, Patriot-News (Harrisburg, Pa.) A01 (June 25, 2002). For instance, when Herb McDonell learned of Roadcap's original report and findings, he said the presence of blood particles in the valleys would have changed his opinion that the blood was on Crawford's hand when it came into contact with the car. *See* Pete Shellem, *1970 Slaying; Prosecutors: Notes Don't Clear Man; But DAs Admit Testimony Differed from Lab Reports in Crawford Case*, Patriot-News (Harrisburg, Pa.) A01 (Feb. 20, 2003).

723. *Id.*

724. *See* Pete Shellem, *30-year Saga Ends; DA Drops Crawford Murder Charges*, Patriot-News (Harrisburg, Pa.) A01 (July 17, 2002).

IV. POLICY REFORMS

Most forensic disciplines developed over time without an undergirding in the traditional scientific method. Although we would like to believe that the courts can, and do, catch the flaws in much of what is proffered as forensic testimony, the numerous cases we delineate above demonstrate that neither the *Daubert* test, nor *Frye*'s, have proven capable of keeping such evidence out of the courtroom or preventing it from being accorded undue weight.[725] Such evidence has contributed to wrongful convictions and prosecutions, only a small portion of which we have summarized.

We must openly acknowledge that most forensic disciplines are not like DNA—whether we are referring to bite marks, morphological hair analyses or even fingerprints. They fail to match the science of DNA—a science that grew from our system of public health and that has measurable statistical underpinnings. DNA is different because we can quantify the probative value of DNA in a given case. We can compare loci and calculate probabilities. This is no small feat.

It is because of DNA's rigor, in fact, that we have exposed much of what we know to be shortcomings in other forensic science disciplines. Without post-conviction DNA testing (as well as a number of exonerations via other means), scores of innocent men and women might still be behind bars.

It should never be acceptable to proffer forensic evidence in criminal court without a technique or methodology grounded in the scientific method. But most forensic disciplines fail to adhere to the scientific method. In fact, analysts who practice in those disciplines often assert that they can "individualize." meaning they can compare a particular subject from a crime scene and match it to one and only one other reference sample, to the exclusion of any other in the world. But if adherence to the scientific method ever is to become reality, it will require a national effort and a sea-change in the way we treat forensic evidence in this country.

A. Possible Global Change Afoot

Fortunately, one such effort may well be underway. Congress called on the Attorney General to appoint "a National Forensic Science Commission . . . composed of persons experienced in criminal justice issues, including persons from the forensic science and criminal justice communities."[726]

That commission received the following charge:

> (1) assess the present and future resource needs of the forensic science community;
>
> (2) make recommendations to the Attorney General for maximizing the use of forensic technologies and techniques to solve crimes and protect the public;
>
> (3) identify potential scientific advances that may assist law enforcement in using forensic technologies and techniques to protect the public;

725. *See generally* Peter Neufeld, *The (Near) Irrelevance of* Daubert *to Criminal Justice and Some Suggestions for Reform*, 95 Am. J. Pub. Health 107 (2005).

726. 42 U.S.C. § 14136c(a) (2000).

(4) make recommendations to the Attorney General for programs that will increase the number of qualified forensic scientists available to work in public crime laboratories;

(5) disseminate, through the National Institute of Justice, best practices concerning the collection and analyses of forensic evidence to help ensure quality and consistency in the use of forensic technologies and techniques to solve crimes and protect the public;

(6) examine additional issues pertaining to forensic science as requested by the Attorney General;

(7) examine Federal, State, and local privacy protection statutes, regulations, and practices relating to access to, or use of, stored DNA samples or DNA analyses, to determine whether such protections are sufficient;

(8) make specific recommendations to the Attorney General, as necessary, to enhance the protections described in paragraph (7) to ensure—

(A) the appropriate use and dissemination of DNA information;

(B) the accuracy, security, and confidentiality of DNA information;

(C) the timely removal and destruction of obsolete, expunged, or inaccurate DNA information; and

(D) that any other necessary measures are taken to protect privacy; and

(9) provide a forum for the exchange and dissemination of ideas and information in furtherance of the objectives described in paragraphs (1) through (8).[727]

The Commission, which has assumed the name, "The Committee on Identifying the Needs of the Forensic Sciences Community," was seated within the National Academy of Sciences and held public meetings during 2007—four in Washington, D.C. and one in Massachusetts.[728]

The Committee's membership[729] draws broadly, thereby giving it a variety of viewpoints and useful perspectives from which to build consensus. It has heard from stakeholders across the country that contribute to our system of criminal justice, including members of law enforcement, academics and representatives of the scientific community. Discussion has been thorough and expansive.[730] Topics have included the technological underpinnings of computerized databases for forensic evidence, as well as the propriety of utilizing morphologic hair comparison without also exposing hair evidence to mitochondrial DNA analysis. A report summarizing the Committee's work is due to be published during the summer of 2008.

The body can go a long way toward setting the tone for a new future in forensic science. Other forensic disciplines need to catch up to DNA. According to a submission

727. *Id.* at § 14136c(b).

728. For more information on the Committee, please see the Committee's Webpage at http://www8.nationalacademies.org/cp/projectview.aspx?key=48741 (accessed Apr. 17, 2008).

729. For a membership roster, please see http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=48741 (accessed Apr. 17, 2008).

730. Mr. Oberfield personally attended all but the Committee's most recent meeting, held in Washington, D.C. in December 2007.

to the Committee by the U.S. Secret Service, Forensic Services Division, Enhancement and Speaker ID Section:

> Common sense is not a test for truth. Common sense may tell [examiners] that 12 "random" alignments along a seam of an article of clothing would never occur twice; this doesn't prove that it never occurs. A scientific approach and research are necessary to be able to say which features are meaningful for comparison and what they mean if they "match." The forensic community should demand more proof than the common sense conclusions.[731]

Looking to DNA's path from the medical lab to the courtroom may be instructive. DNA entered our courts many years after the National Institutes of Health conducted both basic and applied research that revealed the science's strengths—and also clearly defined its limits. That same kind of research has not transpired in many other forensic disciplines. They were created for court and their tires were first kicked there—rather than in more neutral settings where they could first be objectively assessed. As the Secret Service added:

> The motivations for these processes stem from the pressing needs of casework and unfortunately appear to develop on an ad-hoc basis, without proper research. . . . New methods simply are either not systematically assessed with ground truth data prior to unleashing them on casework; or the methods are "validated" at the same time they are being used on casework. Many times the use of new methods on casework (with no ground truth) is substituted for evaluating the method with data where the answer is 100% known.[732]

It has been left to courts to determine whether the forensic disciplines are legitimate—and often, as the long trail of wrongful convictions has demonstrated, the courts have failed at this task. Yet over time, the more frequently these methods have been admitted, the harder it has become to challenge them. Again, the Secret Service sheds light on the matter: "Passing *Daubert* challenges and having decisions held up on appeal are touted as proof of the validity of the exam. But, it is the forensic community, not the courts, who needs to validate its own procedures prior to using these procedures for casework."[733] The length of time a procedure has been employed does not indicate whether that procedure is in fact reliable or probative—or, if instead, it has been used repeatedly despite limitations that have not been clearly articulated.

Shortcomings widely present in forensics include: A failure to spell out clear technical boundaries of these forensic disciplines (what they can and, just as importantly, *cannot* show) as well as the quality controls and quality assurances employed to protect their integrity. What's more, they lack clear parameters of testimony connected to these tests that can promote both consistent and acceptable statements—rather than overreaching—on the stand and in report writing.

But the politics of change are challenging in this arena, as the Maryland murder trial of Brian Keith Rose clearly evidences In January 2006, the owner of a cellular

731. U.S. Secret Serv., Forensic Servs. Div., Enhancement & Speaker ID Sec., *NAS Project: Identifying the Needs of the Forensic Sciences Community Feedback—12/4/2007* (paper on file with the authors).

732. *Id.*

733. *Id.*

phone store in a Maryland mall, Warren T. Fleming, was shot and killed during a carjacking; Rose was accused of the crime and charged with capital murder.

According to the Baltimore Sun, prosecutors tied Rose to the shooting "through partial fingerprints lifted from the victim's Mercedes and a stolen Dodge Intrepid that they said the shooter used to drive away from the parking lot."[734]

When Rose's case came before Baltimore County Circuit Judge Susan M. Souder, she took the highly unusual step of excluding the fingerprint evidence on which the state had predicated its case. According to the Sun, "[I]n her ruling, the judge characterized fingerprinting as 'a subjective, untested, unverifiable identification procedure that purports to be infallible,'" and thus insufficient to underlie a capital murder charge.[735]

Following Judge Souder's decision, the State's case fell apart. But in April 2008, federal prosecutors, persuaded by state prosecutors, opted to charge Rose in federal court. The trial is expected to commence in a year, and Rose could face the death penalty.

"Ultimately, the issue of fingerprint admissibility will not go away," said Patrick Kent, who represented Rose in state court and who heads the Maryland state public defender's forensic unit. "The fact that the state has fled to the federal court does not change the fact that fingerprints simply are not admissible, have never been validated and have no place in a courtroom, be it at state or federal level."[736]

B. External and Independent Crime Laboratory Oversight

While the Committee on Identifying the Needs of the Forensic Science Community looks at the macro issues of forensics on a national scale, we also recognize that improvements in forensics are needed as well at more micro levels. Indeed, reforms like those we delineate below are the kinds that can help to remedy the systemic failings of *Daubert* and *Frye* to keep questionable forensic disciplines out of the courtroom.

C. The Importance of Independent, External Entities[737]

Government bodies can identify and empower oversight entities positioned independently and externally of forensic laboratories and other forensic provdiers. Oversight bodies—which can take on many forms that we will further delineate below—can illuminate the challenges of forensic laboratories and their employees that can only exacerbate the forensic struggles that can manifest in wrongful convictions.

Independent and external oversight bodies can monitor forensic laboratories' effectiveness, efficiency, reliability, accuracy, and ability to adhere to the highest scientific standards. The entities have the potential to promote increased cooperation and coordination among forensic laboratories and other agencies. Moreover, with oversight by independent and external entities, the courts and the public can have confidence that forensic concerns are addressed in a way that ensures forensic evidence offered in future

734. *See* Brent Jones, *Man Indicted by Federal Grand Jury in 2006 Killing at Mall*, Balt. Sun (Apr. 2, 2008).
735. *Id.*
736. *Id.*
737. This section is adapted from the April 2, 2008 testimony that Mr. Oberfield delivered to the California Task Force assigned to examine Crime Labs in the state. The testimony is on file with the authors.

cases will accurately contribute to determinations of guilt or innocence.[738]

The oversight entities we describe also are uniquely enabled to comment on state and local laboratories' broad-ranging forensic concerns, such as backlogs in analysis, staffing shortages, and training needs. Their objective voices could collectively relay those concerns to lawmakers. Such efforts can bolster the good-faith endeavors of the state's forensic community, which regularly juggles substantial caseloads while struggling for funding, equipment, and staffing.

D. What Result from an External and Independent Investigation?[739]

One way to achieve the improvements articulated above is through *investigation.* An oversight entity on its own—or via contract to another agency—can conduct independent investigations of allegations. As such, they help to strengthen and streamline criminal investigations and prosecutions—all while preventing future wrongful convictions.

Even though forensic error has proven a contributing factor to wrongful convictions, states have historically done little to investigate or remedy these problems when they do arise. Thus, critical opportunities to ensure the integrity of forensic evidence typically are ignored. Properly conducted, such examinations can isolate the root causes of problems—and lead to systemic remedies that can prevent their recurrence, thereby helping ensure the integrity of forensic evidence.

A 2007 Coverdell investigation conducted in New York demonstrates the great promise of investigation by independent and external oversight entities. According to a report describing the incident in question:

> The [New York City Police Department's] crime laboratory [revealed in 2007] that in 2002 two analysts in the Controlled Substances Analysis Section were removed from duty after erroneously identifying a test substance as cocaine, and a third analyst reported that a packet of cocaine was not a controlled substance. The NYPD lab also disclosed that it had failed to report the errors, as required, to the Laboratory Accreditation Board of the American Society of Crime Laboratory Directors (ASCLD/LAB) and to the [New York State] Commission on Forensic Science.[740]

As the report suggests, there was no significant reexamination of work conducted by analysts connected to the allegations to determine how far the problem reached and how many cases the so-called "dry-labbing" might have tainted.

But a more thorough and valuable investigation was yet to come. Under the specific authority of the state's Coverdell certification, the matter was referred to the

738. A recently released study by University of Virginia School of Law professor Brandon L. Garrett indicates that 113 (57%) of the nation's first 200 wrongful convictions proven by post-conviction DNA testing involved forensics at trial, including serological analysis of blood or semen, expert comparison of hair evidence, soil comparison, and bite mark evidence. Garrett, *supra* n. 3, at 81.

739. This section is adapted from testimony that Peter Neufeld delivered on behalf of the Innocence Project at the January 24, 2008 hearing of the U.S. Senate Committee on the Judiciary. That testimony is available at http://judiciary.senate.gov/testimony.cfm?id=3068&wit_id=6847 (accessed Apr. 17, 2008).

740. *See Report of the New York State Inspector General, Investigation of Drug Test Irregularities at the NYPD Forensic Laboratory in 2002*, http://www.ig.state.ny.us/pdfs/Investigation%20of%20Drug%20Test%20Irregularities%20at%20the%20NYPD%20Forensic%20Laboratory%20in%202002.pdf (accessed Apr. 21, 2008).

New York State Inspector General (IG).[741] The IG, in contrast to the NYPD: "[C]oncluded that misconduct had occurred, and recommended responses that went further than the original investigation, which it had found to be sorely lacking. It also referred possible criminal charges to the District Attorney's office."[742]

Unlike the authorities at the laboratory, the IG was in an objective and uncompromised position to report on the 2002 incidents and offer recommendations for the betterment of New York State's forensic stakeholders. The IG did not have to navigate the complicated political waters of revealing its own shortcomings—which was the very position in which the NYPD found itself. The IG's comparative independence and externality allowed for a more robust and thorough outcome. Indeed, we believe the investigation serves as an example that should be emulated across the country.

According to NYPD representatives, review of the casework implicated in the IG's report is underway,[743] and, in response to a request made at the New York State Commission on Forensic Science, the NYPD will report to the Commission, later this year, on the outcomes of its remedial measures.[744]

E. An Added Benefit: Oversight Entities Can Improve Compliance with an Important Federal Forensic Grant Program

As a precondition for receiving funds under the Paul Coverdell Forensic Science Improvement Grant Program,[745] each lab that receives Coverdell monies must have a government entity in place to conduct independent, external investigations upon receiving allegations of serious negligence or misconduct that substantially affect the integrity of forensic results.[746] Labs across the country receive significant funding under the Coverdell program. Its importance is unquestioned: For instance, New Hampshire

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741. According to the Inspector General's report:

> In order to ensure the reliability and credibility of the forensic laboratory accreditation program in New York State and to comply with the federal Paul Coverdell Forensic Science Improvement Grant Program, the Office of the New York State Inspector General (Inspector General) has been designated to investigate allegations of serious negligence or misconduct in public forensic laboratories, when the negligence or misconduct would substantially affect the integrity of forensic results.

Id. (footnote omitted).

742. *See Neufeld Testimony*, http://judiciary.senate.gov/testimony.cfm?id=3068&wit_id=6847 (accessed Apr. 17, 2008).

743. Such assertions were made by Dr. Peter Pizzola of the NYPD during a meeting of the New York State Commission on Forensic Science, held in New York City on April 15, 2008. Mr. Oberfield attended the meeting and heard Mr. Pizzola's comments.

744. *Id.*

745. Paul Coverdell Forensic Science Improvement Grants are awarded to states and units of local government to help improve the quality and timeliness of forensic science and medical examiner services. *See* Natl. Inst. Just., *Coverdell Forensic Science Improvement Grant Program*, http://www.ojp.usdoj.gov/nij/topics/forensics/nfsia/welcome.htm#description (Nov. 13, 2007).

746. Coverdell applicants must now submit with their applications:

> [A] certification that a government entity exists and an appropriate process is in place to conduct independent external investigations into allegations of serious negligence or misconduct substantially affecting the integrity of the forensic results committed by employees or contractors of any forensic laboratory system, medical examiner's office, coroner's office, law enforcement storage facility, or medical facility in the State that will receive a portion of the grant amount.

42 U.S.C. § 3797k(4).

noted in its 2005 funding application that it could not "provide statutorily mandated services to the public, law enforcement, and other interested parties" without the funding. Since 2004, recipient labs have been required to have independent investigative government entities to continue receiving the monies.[747]

Although the JFAA precondition to the Coverdell grants dramatically changed the national landscape by allowing the public to raise allegations of serious forensic negligence or misconduct, many jurisdictions lack the proper entity or process necessary for appropriately fielding them—even though the existence thereof is supposed to be a prerequisite to Coverdell funding.[748]

The National Institute of Justice (the branch of the U.S. Department of Justice that administers Coverdell grants) has been distributing the monies without enforcing the certification requirement. In the absence of NIJ review of oversight mechanisms, the Department of Justice's Office of the Inspector General has twice published strong reports rebuking both NIJ and the Office of Justice Programs (NIJ's parent agency within the DOJ) for its failures to provide applicants with guidance to comply with the new requirement.[749] And in January of this year, the U.S. Senate's Committee on the Judiciary held a hearing in Washington that included significant discussion of the oversight requirement. Therein, the chairman of that committee, Senator Patrick Leahy of Vermont, voiced his resolve to see enforcement bolstered.[750] Given these developments, enforcement of this requirement likely will be more robust in coming years.

F. What Constitutes Effective Independent and External Oversight?

There is no single way for a jurisdiction to institute effective independent and external oversight. Indeed, these oversight entities need not be housed within a state forensic science commission. In fact, jurisdictions around the country handle such matters in a variety of fashions, and their decisions reflect the distinct voices and opinions of crime lab stakeholders in each locality. But all of them are inherently, in their structure and positioning, independent and external of the labs they oversee.

1. In Massachusetts, for instance, the state has sited crime laboratory oversight with its State Auditor's office;[751]

2. Maryland passed a law last year that places oversight authority for crime labs under the state's department of health and mental hygiene;[752]

747. This change also arose out of the Justice for All Act, the omnibus federal legislation that paved the way for the Committee on Identifying the Needs of the Forensic Sciences Community, described above.

748. This language is adapted from a handout Mr. Oberfield crafted for distribution at a March 29, 2008, panel on which he participated during the 2008 Innocence Network Conference held in Santa Clara, California.

749. *Id.* Please see the two reports, published respectively in December 2005 and January 2008, at http://www.usdoj.gov/oig/reports/OJP/e0602/ and http://www.usdoj.gov/oig/reports/OJP/e0801/final.pdf.

750. See the U.S. Senate Committee on the Judiciary's Website concerning the hearing, at http://judiciary.senate.gov/hearing.cfm?id=3068 (accessed Apr. 17, 2008).

751. See the state auditor's website at http://www.mass.gov/sao/ (accessed Apr. 17, 2008).

752. See the bill text (as of yet uncodified but passed into law) at http://mlis.state.md.us/2007RS/bills/sb/sb0351e.pdf (accessed Apr. 17, 2008).

3. New York State has a Commission on Forensic Science,[753] and it has delegated the authority to conduct Coverdell investigations to the New York State Inspector General;[754]

4. Minnesota has implemented a Forensic Laboratory Advisory Board;[755]

5. And Texas has a Forensic Science Commission[756] that was created specifically to investigate allegations of serious forensic negligence or misconduct.

Uniting these varied oversight entities is a recognition that significant errors are more likely to be best understood and remedied by bodies that are distinctly separate from the employees or management of the labs they supervise. It is crucial to note that a state or locality need not create a new apparatus to provide external and independent oversight—although it may choose to do so. Many jurisdictions across the country instead have tasked existing entities with such oversight.

It is important that the oversight entity, however crafted, have a jurisdictional reach that extends to "forensic service providers." In police precincts and medical examination offices across the state, certain forensic disciplines are utilized with less oversight than they would receive if they were conducted under a crime laboratory's roof. Investigators at crime scenes, for instance, typically do not fall under a crime laboratory's watch. To wit, uncovered disciplines include fingerprints (at least in certain jurisdictions), forensic odontology, arson, ballistics, and other types of forensic evidence. These should be covered by whatever oversight system a jurisdiction initiates.

G. *Accreditation by a Laboratory Organization, Alone, Should Not Be Considered Sufficient External and Independent Oversight*

Still, the grant of accreditation by a laboratory accrediting organization such as the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB)[757] or Forensic Quality Services (FQS)[758] certainly encourages lab improvements and efficiencies. Indeed, accreditation can encourage quality controls and quality assurance safeguards, as well as examinations of technical data (and technicians). Nevertheless, in and of itself, such a grant of accreditation is insufficient to provide external and independent oversight.

Although unquestionably, such accrediting organizations fulfill critical roles in the overall improvement of the delivery of forensic services, they are not structured to provide laboratories with independent and external oversight. Indeed, routine internal audits and external inspections currently mandated by such organizations do not (nor are they meant to) substitute for independent and external oversight of a laboratory.[759]

The circumstances that prompted ASCLD/LAB's independent report on the Earl

753. *See* N.Y. Exec. Law § 49-B (Consol. 2007).

754. *See* N.Y. Exec. Law § 4-A (Consol. 2007).

755. *See* Minn. Stat. § 299C.156 (2007).

756. *See* Tex. Crim. Proc. Code Ann. § 38.01.

757. See the ASCLD/LAB website at www.ascld-lab.org (accessed Apr. 17, 2008).

758. See the Forensic Quality Services website at www.forquality.org (accessed Apr. 17, 2008). The vast preponderance of the accredited laboratories in the United States received that accreditation from ASCLD/LAB, rather than from FQS.

759. Neufeld, *supra* n. 742, at 111–12.

Washington case are illustrative. According to the written testimony of Peter Neufeld, delivered in concert with the January 2008 Senate Judiciary hearing on the Justice for All Act mentioned above:

> In 1984, Earl Washington was wrongly convicted and sentenced to death for the rape and murder of a young housewife in 1982. Although he came within nine days of execution, in 1993, he received a Governor's commutation to life based on early post-conviction DNA testing and in 2000, he received a Governor's pardon, following additional DNA testing, on the grounds of reasonable doubt. However, in both instances, the Governors explained that due to the qualified conclusions contained in the DNA reports from the Virginia Division of Forensic Science, Washington's guilt remained a possibility. . . .
>
> Finally, in 2004, in conjunction with a civil rights suit filed on behalf of Mr. Washington, additional DNA testing by an independent lab proved his complete factual innocence and the criminal responsibility of another man. DNA testing on the semen recovered from the victim came from one man, Kenneth Tinsley, a convicted serial rapist. The independent lab also concluded that the 2000 results generated by the Virginia crime lab on the same semen collected from the victim had been erroneous since the Virginia lab had wrongly excluded Mr. Tinsley as the source. . . .
>
> In September 2004, after the Innocence Project challenged the appropriateness of an internal review [by the Virginia state lab in connection with its apparent errors], Governor [Mark] Warner ordered an independent external audit of the case to be conducted by the American Society of Crime Lab Directors Laboratory Accreditation Board (ASCLD/LAB).
>
> In May 2005, ASCLD/LAB issued its report, finding that numerous errors were made in the 1993 and 2000 DNA testing by the Virginia Bureau of Forensic Science. . . . ASCLD/LAB recommended extensive remedial action including sweeping reviews of other cases. None of this would have occurred but for the independent external audit.[760]

It is significant that this report would not have issued as a regular course of ASCLD/LAB business, and was pursued only under significant public pressure. To date, the authors are unaware of other instances in which ASCLD/LAB has conducted a similarly extensive independent and external audit.

ASCLD/LAB is in the midst of a shift in its accreditation process[761]—and adopting international accreditation standards that, as part of their requirements, will require laboratories under its watch to share more information with accreditors on potential allegations of negligence misconduct. This information may also result in

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760. *See Neufeld Testimony*, http://judiciary.senate.gov/testimony.cfm?id=3068&wit_id=6847 (accessed Apr. 17, 2008).

761. According to the ASCLD-LAB Web site:

> The ASCLD/LAB-International Program is a new program which was approved by the Delegate Assembly by mail ballot in 2003. Effective April 1, 2004, ASCLD/LAB will receive applications for accreditation under the ASCLD/LAB-International program which is based on the ISO 17025 standards and the ASCLD/LAB-International Supplemental Requirements. The Supplemental Requirements are based on the essential elements of the ASCLD/LAB Legacy program and the ILAC G-19 standards.

See About ASCLD/LAB, http://www.ascld-lab.org/dual/aslabdualaboutascldlab.html (accessed Apr. 21, 2008).

ASCLD/LAB's issuance of reports on this negligence or misconduct that may incorporate root cause analysis.[762]

Nevertheless, it is concerning that ASCLD/LAB will not be requiring labs to switch over to the new accreditation process until after March 2009. Those laboratories that seek accreditation or reaccreditation before that time will not be subject to the increasing reporting requirements until they seek reaccreditation—which, for the labs that sneak in under the deadline, will not transpire until 2014.[763] Moreover, it remains unclear when laboratories will be *required* to report the allegations as part of the accreditation process or when ASCLD/LAB will make public reports on such investigations.[764] Of course, the broader public would benefit from the transparency the reports would provide and the confidence in laboratories that they might engender.

In spite of these shortcomings with the nature of independent and external oversight presently offered by lab accrediting bodies, we believe it is completely acceptable for an independent and external oversight entity to contract the role of investigations to such an accrediting body—much as Virginia did in the Washington case. We consider it crucial, however, that the independent and external oversight entity approve the findings of such an outsourced investigation before any of its recommendations are implemented.

H. Oversight Entities Should Adopt a Consistent Investigatory Process

Although we do not suggest a specific type of independent and external oversight entity, we offer a model *process* that the entity (or its contractee) could use for any investigation concerning serious forensic negligence or misconduct that might proceed under its watch. Any such investigation should:

1. Identify the source(s) and the root cause(s) of the alleged problems;

2. Identify whether there was serious negligence or misconduct;

3. Describe the method used and steps taken to reach the conclusions in parts 1 and 2;

4. Identify corrective action to be taken;

5. Where appropriate, conduct retrospective re-examination of other cases which could involve the same problem;

6. Conduct follow-up evaluation of the implementation of the corrective action, and where appropriate, the results of any retrospective re-examination;

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762. Mr. Oberfield attended an April 2, 2008, meeting of the California Crime Laboratory Task force in Sacramento, Calif., at which Frank Dolejsi, Chair of ASCLD/LAB, and Dean Gialamas, the President-Elect of the American Society of Crime Lab Directors (ASCLD), both spoke about the coming changes to the ASCLD/LAB accreditation process. The above is a summary of their comments.

763. According to a description of the ASCLD/LAB Legacy program (the protocol under which most laboratories still seek accreditation by ASCLD/LAB), "Full re-inspection [is] required every five years." *See Legacy Accreditation Process*, http://www.ascld-lab.org/legacy/aslablegacyprocess.html (accessed Apr. 21, 2008).

764. Indeed, the authors are unaware of a location where ASCLD/LAB has broadly disseminated the Earl Washington report. A copy of the report is available at http://www.scientific.org/archive/VirginiaProblems/ASCLDLAB-AuditReport.pdf (accessed Apr. 21, 2008).

7. Evaluate the efficacy and completeness of any internal investigation conducted to date;

8. Determine whether any remedial action should be adopted by other forensic systems; and

9. Present the results of Parts 1–8 in a public report.[765]

We also consider it crucial that oversight entities, in concert with laboratories, set up mechanisms for those within laboratories to report allegations of serious negligence or misconduct, as they are often the first eyes and ears that observe such potential issues when they arise. Indeed, such "whistleblowers" should be duly protected.

I. Certification of Technicians

But external and independent oversight is not enough alone. Lab technicians also must be well-educated and trained to accomplish the challenging and often life-and-liberty-affecting duties assigned to them. Creating certification standards is a means of bringing this goal to reality. Indeed, at present, "there is little to stop an . . . analyst from comparing fingerprints without any training in fingerprint comparison, or comparing medical X-rays without being a doctor."[766] As such, a robust certification process can foster improvements and consistency among forensic examiners. Thus, it should be encouraged.

V. CONCLUSION

When the U.S. Supreme Court decided *Daubert* in 1993, many litigants and evidence scholars presaged that if federal (and state) trial judges *faithfully* applied *Daubert*, they would have to exclude those forms of expert testimony that relied on experience, rather than empirical data, to substantiate the accuracy and reliability of their conclusions. Unfortunately, federal and state trial judges have *not* faithfully applied *Daubert*. As many of the Articles in this Symposium have discussed, the overwhelming majority of courts (federal and state) still routinely admit forensic evidence with little scrutiny. This occurs even though most of the non-DNA individualizing forensic disciplines have yet to generate meaningful error rates or base rate data regarding their respective fields. Moreover, considering the data presented in many of the Articles in this Symposium, it appears as if the vast majority of courts are *not* eager to change the *status quo*, even in the face of legitimate research that identifies a noticeable correlation between wrongful convictions and unreliable forensic evidence.

Although it is disheartening to know that the judiciary has not applied *Daubert* effectively to forensic evidence, this does not mean the criminal justice system is completely immobilized to prevent unreliable forensic evidence from undermining the criminal process and the criminal trial's truth-seeking function. To the contrary, the

765. This proposed process derives from a 2007 document of the U.S. Government Accountability Office, *Government Auditing Standards: January 2007 Revision*, available at http://www.gao.gov/govaud/d07162g.pdf (accessed Apr. 17, 2008) (see sections 3.01–3.39).

766. U.S. Secret Serv., *supra* n. 731.

legislative and executive branches of the criminal justice system have the necessary resources and know-how to implement meaningful forensic science reforms aimed at ensuring that, by the time forensic evidence is placed into the criminal process, its reliability and validity will have been thoroughly evaluated and empirically established. Macro level reforms include (among other things) developing independent and external oversight of forensic providers. Moreover, micro level reforms include comprehensive certification programs to ensure that our nation's crime laboratories are sanctuaries of science that employ highly educated technicians. These reforms, as mentioned, are aimed at reducing the probability of wrongful convictions, without reducing the probability of accurate convictions.

In the end, the legacy of wrongful conviction is compellingly long and troubling. But we have learned from it and are in position to do better. By instituting reforms that bolster forensic scientific standards, we can encourage fairness, justice, and courts free of wrongful conviction. Even if *Daubert* has not provided the safeguards it promised, we still can improve our criminal justice system for the benefit of us all.