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Mandating Meaningful Forensic Discovery: A Proposal to Fuel the Engine of Truthfulness

Marjorie McDiarmid
West Virginia University, marjorie.mcdiarmid@mail.wvu.edu

MANDATING MEANINGFUL FORENSIC DISCOVERY: A PROPOSAL TO FUEL THE ENGINE OF TRUTHFULNESS

MARJORIE ANNE MCDIARMID*

I. INTRODUCTION

After years of disclosure of forensic frauds,[1] discrediting of previous forensic techniques,[2] and exonerations of innocents incarcerated for crimes they did not commit,[3] in 2009, at the behest of Congress,[4] the National Academies of Science[5] published a thoughtful, but devastating critique of the practice of forensic science in the criminal courts of the United States. Its report—*Strengthening Forensic Science in the United States: A Path Forward*[6]—called for congressional and administrative action to correct the problems identified. Despite efforts by three leading senators, no comprehensive legislation was passed.[7] The Obama administration, on the other hand, took a number of steps to address issues raised in the report.[8]

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* Steptoe & Johnson Professor of Law and Technology at the West Virginia University College of Law; JD, *cum laude*, Columbia University School of Law (1970), LLM, Harvard Law School (1974). Faculty member: West Virginia University LLM in Forensic Justice. Founder of the West Virginia Clinical Law Program Innocence Project.

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1. *See* discussion *infra* Part II.D.

2. *See* discussion *infra* Parts II.A-B.

3. *See Misapplication of Forensic Science*, INNOCENCE PROJECT, https://www.innocenceproject.org/causes/misapplication-forensic-science/ [https://perma.cc/P7SX-CGZJ] (last visited May 14, 2018).

4. Science, State, Justice, Commerce, and Related Agencies Appropriations Act of 2006, Pub. L. No. 109-108, 119 Stat. 2290 (Nov. 22, 2005).

5. The National Academies of Science through the National Research Council is a private research group operating under a charter granted by Congress. It conducts many studies of, and publishes recommendations on, an array of public issues.

6. *See generally* NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009), *available at* https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf *[https://perma.cc/XVX5-S7FM] [hereinafter NAS REPORT]*.

7. Senator Jay Rockefeller authored the Forensic Science and Standards Act, S. 2022, 113th Cong., 2d Sess. (2014). That bill was reported from committee in 2014, but never made it to the Senate floor. Senators Patrick Leahy and John Cornyn authored Criminal Justice and Forensic Science Reform Act, S. 2177, 113th Cong., 2d Sess. (2014). That bill died in committee.

8. The administration created two entities to seek remedies to the problems identified in the NAS Report. *See* notes 10 and 11 *infra*. In addition, the President's Council of Advisors on Science issued a thorough report with substantive recommendations in this field. *See generally* PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY, FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS (2016), *available at* https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic

In one of the Trump administration's first actions, on April 10, 2017, Attorney General Jeffrey Sessions announced[9] his intention not to renew the charter of the National Commission on Forensic Science.[10] In doing so, Sessions removed one of the two[11] entities fashioned by the Obama administration to address the shortcomings of forensic science in the United States.

With abdication now on the part of both Congress and the Executive, this paper suggests that it is time to give the Judiciary—judges and lawyers—the tools to address an important subset of the issues raised in the NAS Report.

Before the Sessions decision, the National Commission had recommended that the Department of Justice[12] dramatically increase the scope of the Department's policy with respect to pre-trial discovery of forensic material in federal criminal cases. Justice had agreed[13] to do so. As we will see below, that increase in scope is critical to addressing problems of forensic malpractice and fraud[14] in this country. However, the problem with this recommendation is that it is an internal policy of the last administration of the Department of Justice, subject to exactly the same change of administration that killed the entity that proposed it.[15] What is needed is a systemic change to Rule 16 of the Rules of Criminal Procedure,[16] both at the federal and state level.[17] This Article will

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_science_report_final.pdf [https://perma.cc/MV4C-J8X4] [hereinafter the PCAST REPORT].

9. *Attorney General Jeff Sessions Announces New Initiative to Advance Forensic Science and Help Counter the Rise in Violent Crime*, DEP'T OF JUSTICE (Apr. 10, 2017), https://www.justice.gov/opa/pr/attorney-general-jeff-sessions-announces-new-initiatives-advance-forensic-science-and-help [https://perma.cc/RA2L-98AS].

10. The National Commission on Forensic Science was a creation of the Department of Justice under the Federal Advisory Committee Act. U.S. Dep't of Justice, Charter of the National Commission on Forensic Science (Apr. 23, 2015), *available at* https://www.justice.gov/archives/ncfs/file/624216/download [https://perma.cc/8A2S-DMJC]. The Commission was created as part of the federal response to the crisis in forensic science identified by the NAS Report.

11. The other entity is the Organization of Scientific Area Committees (OSAC) which is a joint creature of the Department of Justice and the National Institute of Science and Technology. *See* Dep't of Justice & Nat'l Inst. of Standards and Tech., Memorandum of Understanding in Support of the National Commission of Forensic Science and the Organization of Scientific Area Committees (2015), *available at* https://www.justice.gov/archives/ncfs/file/761051/download [https://perma.cc/895U-ZEUR] [hereinafter Memo of Understanding].

12. *See* NAT'L COMMISSION OF FORENSIC SCIENCE, VIEWS OF THE COMMISSION PRETRIAL DISCOVERY OF FORENSIC MATERIALS (Aug. 11, 2015), *available at* https://www.justice.gov/ncfs/file/786611/download [https://perma.cc/2T7U-G4CM].

13. *See* U.S. Dep't of Justice, Memorandum for Department Prosecutors (Jan. 5, 2017), *available at* https://www.justice.gov/archives/ncfs/page/file/930411/download [https://perma.cc/QJX5-S8D7] [hereinafter Yates Memo].

14. *See* discussion *infra* Parts II.C-D.

15. As we will see *infra* text accompanying notes 250-57, no action appears to have been taken to implement the Justice Department policy issued in the waning days of the Obama administration.

16. FED. R. CRIM. P. 16. Rule 16 together with provisions in Rule 16 and Rule 12 governs

explore the need for this change[18] and the history[19] and shortcomings[20] of the current Rule 16. Finally, it will propose amendments to the Rule to address these problems.[21]

The first question is whether there is a problem with forensic science which needs to be addressed. That question was answered in 2009. As noted above, the National Academies of Science[22] studied the state of forensic science beginning in 2005. The NAS Report paints a dismal picture of current forensic theory and practice.[23] In his prepared testimony to the Senate Judiciary Committee on the Report, the Report committee's co-chair--the Honorable Harry Edwards--characterized the current state of forensic science as, "[a] system plagued by a paucity of good research, fragmentation, inconsistent practices, and weak governance."[24]

I will set forth a taxonomy of the problems identified because, as I will suggest below, different problems are more or less amenable to amelioration by expanded discovery. Broadly, problems with forensic science can be broken into four: (1) unsupported claims of individualization[25] (e.g., the fact that the defendant owns bullets, hairs, teeth, etc., that are like those found at the crime scene means that he was at the crime scene), (2) unsupported claims that evidence points to the fact that a crime has occurred (e.g., arson), (3) work done by unqualified, untrained or sloppy technicians which invites the possibility of error (e.g., use of unaccredited laboratories or maintenance of the elected coroner

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pretrial discovery in criminal cases.

17. Many states pattern their rules of procedure on the analogous federal rule.

18. *See* discussion on taxonomy of forensic problems *infra* Part II.

19. *See* discussion on current interpretation of Rule 16 *infra* Part IV.

20. *See* discussion on current interpretation of Rule 16 *infra* Part IV.

21. *See* discussion on amendment of Rule 16 *infra* Part VII.

22. The Academy is chartered by Congress and is a not-for-profit organization whose purpose it is to study scientific questions. The Academy has created the National Research Council to conduct research which can be used in advising the federal government. References to the report on forensics sometimes refer to it as the NAS report and sometimes call it the NRC report, reflecting the two groups.

23. NAS REPORT, *supra* note 6, at xx ("The forensic science system, encompassing both research and practice, has serious problems that can only be addressed by a national commitment to overhaul the current structure that supports the forensic science community in this country.")

24. Harry Edwards, *Strengthening Forensic Science in the United States: A Path Forward*, NAT'L ACAD. OF SCI., ENG'G, MED. (Mar. 18, 2009), http://www.nationalacademies.org/OCGA/111Session1/testimonies/OCGA_149970 [https://perma.cc/9WJ7-YR2K]. The NAS report went on to state, "With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." NAS REPORT, *supra* note 6, at 7.

25. The use of the term "individualization" to describe this claim occurs in Simon A. Cole, *Individualization Is Dead, Long Live Individualization! Reforms of Reporting Practices for Fingerprint Analysis in the United States*, 13 L., PROBABILITY & RISK 117, 117 (2004).

system), and (4) deliberate fraud by technicians (e.g., testifying that blood found at the scene of a crime matches that of the defendant when it does not or testifying that the technician has conducted laboratory tests which, in fact, the technician has not conducted).

II. TAXONOMY OF PROBLEMS WITH FORENSIC SCIENCE

A. Claims of Individualization

The first problem actually embeds two questions: first, how do we know that something is like something else, and, second, is this similarity, if it exists, meaningful. For too many of the forensic sciences, neither of these questions are answered. On the first question, examiners, for example, have been unable or unwilling to articulate the criteria for a "match" in even such a venerable field as fingerprint identification.[26]

On the second question, few meaningful studies have been conducted on whether genuinely matching evidence is sufficiently rare to tell us anything about the likelihood that finding such a match supports a claim of proof of presence at the crime scene. For example, if oxygen is present in the defendant's blood and is also found at the crime scene, we would not say that the presence of oxygen linked the defendant to the crime because oxygen is everywhere. Similarly, if extremely large numbers of lead bullets had identical chemical composition, then the fact that the defendant has bullets with the same chemical composition as those found at the crime scene tells us nothing about whether the defendant is linked to the crime. Yet, up until 2005 when the claim was discredited in another NAS study—Forensic Analysis: Weighing Bullet Lead Evidence[27]—technicians for the Federal Bureau of Investigation were claiming that analysis of bullet composition could enable them to trace a bullet found at the scene of a crime to an individual box of bullets found in the possession of the defendant.[28] The NAS report refuted those claims.[29]

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26. *See* United States v. Llera Plaza, 188 F. Supp. 2d 549, 564 (E.D. Pa. 2002); *see generally* SCIENTIFIC WORKING GROUP ON FRICTION RIDGE ANALYSIS, STUDY AND TECHNOLOGY, DOCUMENT #10: STANDARDS FOR EXAMINING FRICTION RIDGE IMPRESSIONS AND RESULTING CONCLUSIONS (LATENT /TENPRINT) (2013), *available at* http://clpex.com/swgfast/documents/examinations-conclusions/130427_Examinations-Conclusions_2.0.pdf [https://perma.cc/2EYU-S9PW].

27. *See generally* COMMITTEE ON SCIENTIFIC ASSESSMENT OF BULLET LEAD ELEMENTAL COMPOSITION COMPARISON, FORENSIC ANALYSIS: WEIGHING BULLET LEAD EVIDENCE (2004) [hereinafter BULLET LEAD EVIDENCE].

28. *See Scientist and National Academy of Science (NAS) Discredit Comparative Bullet Lead Analysis (CBLA)*, SIRCHIE (Aug. 7, 2014), http://www.sirchie.com/blog/scientist-and-national-academy-of-sciences-nas-discredit-comparative-bullet-lead-analysis-cbla/#.Wv8cJkgvw2w [https://perma.cc/A8KA-QT6V].

29. *Id.*

> The available data do not support any statement that a crime bullet came from a particular box of ammunition. In particular, references to "boxes" of ammunition in any

Despite the absence of scientific support for the claims that examiners can properly identify a match or that a match is meaningful, evidence in most of the forensic disciplines based on these assumptions has been permitted and has been relied upon to convict largely unchallenged by the judicial system.[30]

B. Is There a Crime?

The second problem--posed by the use of erroneous forensic science to determine whether a crime has occurred at all--is best illustrated by the revolution in the study of fire which has occurred within the last thirty years.[31] Unlike the role of forensic science in most crimes, where forensics are used to attempt to identify the perpetrator of a crime that has been proven by other means to have occurred (theft, supported by the report of the victim, for instance), arson is frequently charged solely based on the conclusions of the forensic investigation.[32]

The revolution in proper arson investigation came about because scientists, from outside the forensic field, were funded with an infusion of federal money in the 1970s.[33] Those funds were used to conduct controlled experiments in fire

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> form should be avoided as misleading under Federal Rule of Evidence 403.
>
> Compositional analysis of bullet lead data alone also does not permit any definitive statement concerning the date of bullet manufacture.
>
> Detailed patterns of the distribution of ammunition are unknown, and as a result, experts should not testify as to the probability that the crime scene bullet came from the defendant. Geographic distribution data on bullets and ammunition are needed before such testimony can be given. BULLET LEAD EVIDENCE, *supra* note 27, at 7.

In the face of this conclusion, the FBI abandoned lead bullet testing. *FBI Laboratory Announces Discontinuation of Bullet Lead Examinations*, FBI (Sept. 1, 2005), https://archives.fbi.gov/archives/news/pressrel/press-releases/fbi-laboratory-announces-discontinuation-of-bullet-lead-examinations [https://perma.cc/A9XX-KLMS].

30. Douglas Starr, *Forensics gone wrong: When DNA snares the innocent*, SCI. (May 7, 2016, 10:00 AM), http://www.sciencemag.org/news/2016/03/forensics-gone-wrong-when-dna-snares-innocent [https://perma.cc/NEM2-JGK6] (Greg Hampikian discusses prosecution and jury believing DNA evidence as a false or misconstrued match.).

31. *See* John J. Lentini, *The Evolution of Fire Investigation and its Impact on Arson Cases*, 27 CRIM. JUST. 12, 13 (2012).

32. *Id.*; Paul Bieber, *Arson and "Junk Science,"* CRIME REPORT (Apr. 3, 2012), https://thecrimereport.org/2012/04/03/2012-04-arson-and-junk-science/ [https://perma.cc/8YHR-SEKJ] ("Arson cases are often based on forensic evidence presented in court as irrefutable science, but which in fact has either never been tested or already proven to be unreliable.").

33. Douglas Starr, *Spark of Truth: Can Science Bring Justice to Arson Trials*, DISCOVER (Oct. 24, 2011), http://discovermagazine.com/2011/nov/12-spark-truth-science-bring-justice-arson-trials [https://perma.cc/92ZA-4XFG]. For a description of the National Institute of Science and Technology fire research facility, see *National Fire Research Laboratory*, NIST, https://www.nist.gov/el/fire-research-division-73300/national-fire-research-laboratory-73306 [https://perma.cc/H9KD-F2KS] (last visited May 18, 2018).

behavior, leading to the rejection of many beliefs that had been firmly held by arson investigators. The result of those experiments has overturned what was previously believed about the observations that would support a conclusion that a fire was deliberately set.[34]

The real world consequences of those discredited old beliefs is set forth in the report of the Texas Forensic Commission, which looked into the convictions of Cameron Todd Willingham (executed in 2004) and Ernest Ray Willis (exonerated in that same year).[35] That report contrasts the arson investigator's testimony at the trials of these two men with the findings of fire science. Each piece of evidence relied on in those trials to support the conclusion of arson is now known to be completely consistent with an accidental fire.[36] Despite the fact that the U.S. Justice Department has recognized the validity of these new findings as far back as 2000,[37] people are still incarcerated and, in Willingham's case killed, on the basis of these discredited beliefs.[38]

C. Lack of Qualifications and Sloppy Practice

The third type of forensic science problem is posed by unqualified or sloppy practitioners. Apart from outright fraud, substantial injustice can occur through lack of expertise and sloppy work. Two major investigations of crime labs in large metropolitan regions in the last several years illustrate the problems that flow from lack of expert qualifications and improper or deficient use of appropriate scientific methods.[39] The first of these arose in a scandal at the

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34. *See generally* Lentini, *supra* note 31 (discussing evolving fire investigation methods).

35. *See generally* REPORT OF THE TEXAS FORENSIC SCIENCE COMMISSION: WILLINGHAM/WILLIS INVESTIGATION (2011), *available at* http://www.fsc.state.tx.us/documents/FINAL.pdf [https://perma.cc/6TQC-H7CG] [hereinafter WILLINGHAM/WILLIS INVESTIGATION]. Texas has a state agency, the Forensic Commission, charged with monitoring the claims of forensic science in that State.

36. *Id.* at 21-37.

37. U.S. DEP'T OF JUSTICE, FIRE AND ARSON SCENE EVIDENCE: A GUIDE FOR PUBLIC SAFETY PERSONNEL (2000), *available at* https://www.ncjrs.gov/pdffiles1/nij/181584.pdf [https://perma.cc/H2P5-VXYU] (citing the NAT'L FIRE PROTECTION ASSOCIATION (NFPA 921), GUIDE FOR FIRE AND EXPLOSION INVESTIGATIONS (1992) as the "benchmark" for arson determinations).

> In 1992, the National Fire Protection Association (NFPA) issued *NFPA 921: Guide for Fire and Explosion Investigations*, a consensus document reflecting the knowledge and experience of fire, engineering, legal, and investigative experts across the United States. This document is continuously reviewed, public proposals and comments are solicited, and a revised edition is produced every 3 to 5 years. It has become a benchmark for the training and expertise of everyone who purports to be an expert in the origin and cause determination of fires. *Id.* at 6.

38. WILLINGHAM/WILLIS INVESTIGATION, *supra* note 35, at 10.

39. *See News and Information*, HPDLABINVESTIGATION.ORG, http://www.hpdlabinvestigation.org/ [https://perma.cc/2LAX-6AM9] [hereinafter Houston Lab Investigation] (last visited May 18, 2018); MICHIGAN STATE POLICE FORENSIC SCIENCE DIVISION, AUDIT OF THE DETROIT POLICE DEPARTMENT FORENSIC SERVICES LABORATORY FIREARMS UNIT (2008), *available*

Houston Police Crime Lab.[40] That investigation found a few instances of deliberate fraud by two technicians at the lab,[41] but most of the 599 cases that outside investigators identified as requiring corrective action were caused by lack of proper performance and sloppy work.[42] These cases were selected because the defendants involved were all in prison, four on death row.[43] The investigators described the scope of the cases requiring corrective action as follows:

> Based on the findings of our review of 850 serology cases processed by the Crime Lab between 1980 and 1992 and which relate to a defendant who currently is in prison, we make the following recommendations.
>
> HPD must determine whether evidence currently exists and can be located in the following categories of cases:
>
> (1) Cases (274) in which evidence was screened positively for blood or semen, but no ABO typing was performed;
> (2) Cases (139) in which the Crime Lab performed ABO typing on

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at http://www.sado.org/content/pub/10559_MSP-DCL-Audit.pdf [https://perma.cc/32GS-NFRH] [hereinafter DETROIT REPORT].

40. Problems in the lab were originally identified by local news media, which in consultation with outside experts, carried a series of stories criticizing the lab. That publicity lead to a request by the Chief of Police for an outside investigation. *See* Houston Lab Investigation, *supra* note 39. The Houston lab, as a result of this investigation was removed from the supervision of the police department and is now an independent forensic laboratory. Its reputation has markedly improved. *See* HOUS. FORENSIC SCI. CTR., http://www.houstonforensicscience.org/ [https://perma.cc/6FQU-8D8M] (last visited May 18, 2018).

41. MICHAEL R. BROMWICH, FINAL REPORT OF THE INDEPENDENT INVESTIGATOR FOR THE HOUSTON POLICE DEPARTMENT CRIME LABORATORY AND PROPERTY ROOM 5, 153-57 (2007), *available at* http://www.hpdlabinvestigation.org/reports/070613report.pdf [https://perma.cc/QC2N-VR3S] [hereinafter HOUSTON REPORT].

42. *Id.* at 12, 92.

43. The Houston Report stated the following:

> We identified major issues in the DNA analysis performed by the Crime Lab in four death penalty cases . . . . The Crime Lab's historical DNA casework reflects a wide range of serious problems ranging from poor documentation to serious analytical and interpretive errors that resulted in highly questionable results being reported by the Lab. The profound weaknesses and flawed practices that were prevalent in the Crime Lab's DNA work include the absence of a quality assurance program, inadequately trained analysts, poor analytical technique, incorrect interpretations of data, the characterizing of results as "inconclusive" when that was not the case, and the lack of meaningful and competent technical reviews. Furthermore, the potential for the Crime Lab's analysis of biological evidence to result in a miscarriage of justice was amplified exponentially by the Lab's reported conclusions, frequently accompanied by inaccurate and misleading statistics, that often suggested a strength of association between a suspect and the evidence that simply was not supported by the analyst's actual DNA results.

Id. at 4-5.

> evidence samples, but no comparison to known reference samples was made;
> (3) Cases (6) in which DNA analysis performed contemporaneously by an outside laboratory failed to include the suspect; and
> (4) All cases (180) we identified as containing a major issue with the reliability of the Crime Lab's work or the accuracy of its reported results.[44]

The report goes on to recommend efforts at corrective action.[45] The outside investigators summarized their findings as follows:

> We found that the serology work that the Crime Lab did actually perform during the 1980-1992 period was generally unreliable. We found major issues calling into question the reliability of the serology work performed by the Crime Lab or the accuracy of the results it reported in 180 -- 21% -- of the serology cases we reviewed that relate to a defendant who is currently in prison. This is an extraordinarily high and extremely disturbing proportion of cases in which to find problems of this magnitude.[46]

In a section entitled Detailed Case Studies, the investigators reviewed four specific convictions which were based in significant part upon the evidence supplied by the laboratory.[47] Two of the defendants involved had been exonerated before the external investigation occurred.[48] In one of the cases studied, the defendant was still incarcerated.[49] In all cases, the investigators identified serious deficiencies on the part of the lab including statistically faulty and misleading testimony and errors in conducting tests.[50] In both of the cases where the defendants were exonerated, the investigators concluded that proper forensic testing would have and ultimately did result in identification of the true perpetrator.[51] Thus, not only did errors lead to the conviction of an innocent person, but those same errors also left the true perpetrator free to further prey upon the community.[52]

The second investigation occurred in Detroit where the firearms section of the crime lab was investigated at the request of the chief of police by an independent investigator and by the Michigan State Patrol.[53] In this investigation, 250

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44. *Id.* at 11-12.
45. *See generally id.*
46. *Id.* at 11.
47. *Id.* at 187-217.
48. *Id.* at 202-03, 214-16 (cases of Rodriguez and Sutton cases).
49. *Id.* at 193 (Napper case).
50. *Id.* at 187-233.
51. *Id.* at 203-04, 217-19.
52. *Id.* at 187-233.
53. *See generally* DETROIT REPORT, *supra* note 39. This audit was performed by an independent investigator in conjunction with the Michigan State Police.

randomly selected closed cases were re-tested.[54] In those cases, the investigators identified twenty cases in which the Detroit lab had wrongly identified bullets as coming from a particular gun.[55] This type of error, denominated a Class I error, potentially results in an innocent person being convicted.[56] From that same sample of 250 cases, the investigators found five errors in which the Detroit lab had failed to link bullets to the gun which had, in fact, fired them.[57] This is a Class II error, potentially resulting in a guilty party being cleared.[58] The overall error rate on these randomly selected cases was 10%.[59] More troubling, the same tests were run on thirty-three recently *adjudicated* cases.[60] Here the error rate was even higher, 12%, and all the errors were Class I.[61] Thus, from thirty-thee cases, four showed errors by the Detroit lab which wrongly linked bullets to a particular firearm and, thus, a potentially innocent defendant.[62] Finally, the Michigan State Crime lab ran tests on eighty firearms in cases which were then *pending* in the courts.[63] The same pattern prevailed with a 10% overall error rate, with nine Class I errors and one Class II error.[64]

The report of the investigators attributed these errors to a failure to adhere to recognized standards, a lack of training, improper supervision, lack of support, and bad working conditions.[65] The standards against which the Detroit lab was measured are found in the accreditation criteria for forensic laboratories.[66]

D. Fraud

The final source of error in our taxonomy is fraud. I am using that term here

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54. *Id.* at 4-5.
55. *See id.* at 5-8.
56. *Id.* at 4-5.
57. *Id.* at 5-8.
58. *Id.* at 4, 8.
59. *Id.* at 4 (as applicable to firearms cases).
60. *Id.* at 9-11.
61. *Id.* at 8-9. There were no Class II errors among the adjudicated cases.
62. *Id.*
63. *Id.* at 9.
64. *Id.* at 9-10.
65. *Id.* at 4-5.
66. ASCLAD/LAB is a forensic lab accrediting agency provided those standards. *Id.* at 4. One of the beneficial byproducts of the NAS Report is that the National Commission on Forensic Science has recommended (in May 2015) and the U.S. Justice Department has agreed that by 2020 U.S. Attorneys must use, whenever practicable, accredited forensic testing entities when they request testing of evidence. *See* Dep't of Justice, Office of the Attorney General, Memorandum for Heads of Department Components (Nov. 23, 2015), *available at* https://www.justice.gov/ncfs/file/799001/download [https://perma.cc/S8AZ-UVA2]. On the other hand, accreditation by itself does not guarantee a lab free of problems. *See* Mark Hansen, *Crime labs under the Microscope after a string of shoddy, suspect and fraudulent results*, ABA J. (Sept. 2013), http://www.abajournal.com/magazine/article/crime_labs_under_the_microscope_after_a_string_of_shoddy_suspect_and_fraudu/ [https://perma.cc/FDK5-H7M6].

in its technical sense: a deliberate lie told with the intent to deceive. Below are four examples of intentional forensic fraud which occurred in four jurisdictions throughout the country.[67]

The first of these to come to light was the misconduct of Fred S. Zain, first of the West Virginia State Police crime lab and then, briefly, of the Bexar County lab in Texas.[68] Trooper Zain was consistently able to "find" traces of blood or semen matching the blood group of the defendant at crime scenes.[69] In fact, he was so good at it, that after he moved from West Virginia to Texas, West Virginia police and prosecutors sent him cases where other technicians had failed to find evidence supporting the police theory of the crime.[70]

Zain's testimony was instrumental in convicting a man named Glen Dale Woodall for two widely publicized rapes in Huntington, West Virginia.[71] Unfortunately for Trooper Zain's credibility, DNA testing became available within several years after the Woodall conviction, and Mr. Woodall's attorney was able to convince the West Virginia Supreme Court of Appeals to grant his motion for post-conviction DNA testing by two independent labs.[72] Those DNA tests excluded Mr. Woodall as the rapist.[73] The results also made it "highly unlikely" that Zain's testimony on blood type was accurate.[74] After the appointment of a Special Judge to investigate and a thorough audit of the crime lab, it was established that Trooper Zain had committed systematic fraud in many cases by altering the record of test results from those actually obtained.[75] The

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67. The Innocence Project estimates that forty-five percent of DNA exonerations involve some problem with forensic evidence. *Misapplication of Forensic Science*, *supra* note 3. They do not identify how many of those involved fraud. *Id.* The National Registry of Exonerations says that nearly one-quarter of exonerations involve "[f]alse or misleading forensic evidence" ranging from "simple mistakes to invalid techniques to outright fraud." NAT'L REGISTRY OF EXONERATIONS, EXONERATIONS IN THE UNITED STATES, 1989-2012, at 63 (2012), *available at* https://www.law.umich.edu/special/exoneration/Documents/exonerations_us_1989_2012_full_report.pdf [https://perma.cc/U39P-RPWM].

68. Sau Chan, *Scores of Convictions Reviewed as Chemist Faces Perjury Accusations: Forensics: Fred Zain's expert testimony and lab tests helped put scores of rapists and murderers behind bars. But college transcript shows he flunked some chemistry classes and barely passed others. He is also accused of evidence-tampering*, L.A. TIMES (Aug. 21, 1994), http://articles.latimes.com/1994-08-21/news/mn-29449_1_lab-tests-fred-zain-double-murder [https://perma.cc/HU4C-5XQF].

69. *Id.*

70. *In re* Investigation of the W. Va. State Police Crime Lab., Serology Div. (*WV Crime Lab Investigation*), 438 S.E.2d 501, 512-13 (W. Va. 1993).

71. State v. Woodall, 385 S.E.2d 253, 258 (W. Va., 1989).

72. *WV Crime Lab Investigation*, 438 S.E.2d, at 503 n.2.

73. U.S. DEP'T OF JUSTICE, CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL xvii (1996) [hereinafter CONVICTED BY JURIES]. This report is an excellent source on early DNA exonerations.

74. *Id.*

75. ASCLAD/LAB, INVESTIGATION REPORT: WEST VIRGINIA STATE POLICE CRIME

West Virginia Supreme Court of Appeals entered a series of corrective orders after this experience, the first of which held that in any case where Zain's work was involved, there was a presumption of fraud:

> It is believed that, as a matter of law, any testimonial or documentary evidence offered by Zain at any time in any criminal prosecution should be deemed invalid, unreliable, and inadmissible in determining whether to award a new trial in any subsequent habeas corpus proceeding.[76]

A similar case arose out of the Oklahoma City crime lab.[77] In another rape case, Joyce Gilchrist, a chemist in the Oklahoma City crime lab, testified at the trial of Mr. Jeffrey Pierce that samples of his hair matched hairs found at the crime scene and suppressed the fact that an enzyme found in Mr. Pierce's blood precluded him as the source of semen found at the scene.[78] Post-conviction DNA testing established that Mr. Pierce was not the rapist.[79] In another case, the Oklahoma Court of Criminal Appeals found that Ms. Gilchrist had "provided flawed laboratory analysis and documentation of her work."[80] The Court also found that Ms. Gilchrist had "altered lab reports and handwritten notes in an effort to prevent detection of misconduct."[81] In yet another case, the U.S. Court of Appeals for the Tenth Circuit set aside the death penalty in part because the defense did not receive, pre-trial, a lab report from the Federal Bureau of Investigation showing that no DNA evidence linked the defendant with semen found at the crime scene.[82] The court also found that the defense did not receive copies of Ms. Gilchrist's notes of her conversation with the FBI agent confirming that the defendant was excluded by this DNA test.[83] Not only was this exculpatory evidence withheld, but Ms. Gilchrist then went on, on the basis of

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LABORATORY, SEROLOGY DIVISION, SOUTH CHARLESTON, WEST VIRGINIA 7 (1993), *available at* https://www.convictingtheinnocent.com/wp-content/uploads/2016/04/daivs-d-crime-lab.pdf [https://perma.cc/DB3J-HDF8].

> In some instances, results recorded on the case worksheets differed from the results recorded on the data sheets. This took the form either of a conclusive result recorded on the case worksheet with a different conclusive result recorded on the data sheet, or of a conclusive result recorded on the worksheet when the data sheet reflected an inconclusive or no result obtained . . . . Worksheets reflected alterations in entries which caused the result to differ from that on the data sheet, although the entry appeared to have originally agreed with the data sheet. In some instances both worksheets and data sheets showed alterations to the same result. No record was available to show when or by whom those alterations were made. *Id.* at 7.

76. *WV Crime Lab Investigation*, 438 S.E.2d at 506, 520.
77. *See generally* Pierce v. Gilchrist, 359 F.3d 1279 (10th Cir. 2004).
78. *Id.* at 1282.
79. *Id.* at 1282-83.
80. McCarty v. State, 114 P.3d 1089, 1092 (Okla. Crim. App. 2005).
81. *Id.*
82. Mitchell v. Gibson, 262 F.3d 1036, 1063-64 (10th Cir. 2001).
83. *See id.* at 1063.

inaccurate serology testimony, to link the defendant with that crime scene evidence.[84] In all of these cases, evidence of misconduct was in Ms. Gilchrist's files but was not made available until after the convictions were examined in post-conviction proceedings.[85] In a preliminary report by the Oklahoma State Bureau of Investigation reviewing the cases in which Gilchrist's work was implicated, 196 of 1,600 were identified as needing further review.[86]

More recently in 2011, a chemist at the Massachusetts forensic drug laboratory was found to have engaged in "dry labbing," that is, reporting results of tests that were never run.[87] This conduct has recently resulted in the overturning of 20,000 convictions in which her work was critical to a conviction at trial or a guilty plea.[88] Annie Dookhan's misconduct came to light as a result of an audit conducted after a change of management of the lab.[89] The audit revealed that evidence was missing from the secure locker at the laboratory and that Ms. Dookhan had forged the authorization from the custodian in charge.[90] Ms. Dookhan then admitted to "dry-labbing" for two years.[91] More recently, similar allegations have arisen concerning a New Jersey lab technician, Kamalkant Shah, accused of failing to conduct tests on material believed to be marijuana prior to preparing reports claiming that such tests were performed.[92]

In an example that falls somewhere between bad practice and fraud is that involving the North Carolina Bureau of Investigation.[93] The Bureau had a

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84. *Id.* at 1063-64.

85. *See generally McCarty*, 114 P.3d. 1089; Pierce v. Gilchrist, 359 F.3d 1279 (10th Cir. 2004); *Mitchell*, 262 F.3d 1036.

86. Diana Baldwin, *Gilchrist case report sent to governor*, NEWSOK (July 17, 2002, 12:00 AM), https://newsok.com/article/1056685/gilchrist-case-report-sent-to-governor? [https://perma.cc/28C6-2A7V] The report was sealed.

87. *See Supreme Judicial Court Dismisses Over 21,000 Cases Affected by the Breach at the Hinton State Laboratory Institute*, MASS.GOV (Apr. 20, 2017), http://www.mass.gov/courts/news-pubs/sjc/sjc-dismisses-thousands-of-cases-affected-by-hinton-state-laboratory-breach.html [https://perma.cc/AEX6-2FS6]

88. *See id.*; *see also* Bridgeman v. Dist. Attorney for the Suffolk Dist., 67 N.E.3d 673, 694-95 (2017).

89. OFFICE OF THE INSPECTOR GEN. COMMONWEALTH OF MASS., INVESTIGATION OF THE DRUG LABORATORY AT THE WILLIAM A. HINTON STATE LABORATORY INSTITUTE 2002-2012, at 64 (2014), *available at* http://www.mass.gov/eopss/docs/msp/crimelab/investigation-of-the-drug-laboratory-at-the-william-a-hinton-state-laboratory-institute-2002-2012.pdf [https://perma.cc/A25L-HYX6] [hereinafter HINTON REPORT].

90. *Id.* at 55, 65.

91. *Id.* at 5.

92. *See* Glenn A. Grant, Administrative Order to the Courts, Supreme Court of New Jersey (Apr. 25, 2016), *available at* https://www.judiciary.state.nj.us/notices/2016/n160426a.pdf [https://perma.cc/M693-MJBD].

93. CHRIS SWECKER & MICHAEL WOLF, AN INDEPENDENT REVIEW OF THE SBI FORENSIC LABORATORY 3 (2004), *available at* http://www.ncids.com/forensic/labs/Swecker_Report.pdf [https://perma.cc/D4KU-M8NV].

practice[94] of reporting preliminary tests for blood but not disclosing the fact that subsequent, more accurate tests either established that no blood was present or were inconclusive. This practice resulted in at least one case in the conviction of a man subsequently exonerated by the North Carolina Innocence Commission.[95] In a way this example is the most alarming of all. This was not one technician stretching the truth to obtain a conviction. This was apparently a conscious decision by an entire lab to hide the truth about the results of their work when those results might be helpful to the defense.

III. FAILURE OF THE CRIMINAL COURTS

For purposes of this discussion, the most telling feature of the problems discussed above is that none of them came to light as a result of trial court litigation. The unsubstantiated claims of scientific method (bullet lead and arson) were debunked by scientific inquiry from outside the forensic community.[96] The cases of fraud were identified in post-conviction proceedings (either habeas or civil litigation)[97] or by administrative findings.[98] The problems of shoddy work in the labs were identified by supervisors and confirmed by outside investigators.[99] One can make an argument, as we will discuss below, that trial courts are a poor forum to explore the underlying validity of scientific claims. But surely fraud, lack of qualification, and failures to follow procedure should be grist for the kind of cross-examination with which all trial lawyers are familiar. Why have they not been discovered at the trial court level?

Let's look first at a case in which trial counsel did uncover questionable practice on the part of a crime lab. Michigan has a medical marijuana statute which permits the possession of small quantities of many forms of marijuana including marijuana-infused products in solid form by medically approved

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94. *Id.*

95. The Innocence Inquiry Commission is unique to North Carolina. It is a State agency charged with adjudicating claims of actual innocence. If the commission is convinced of the applicant's innocence, it recommends to a three-judge panel that a finding of innocence be made. Gregory Flynt Taylor was exonerated using this procedure. *See* Robbie Brown, *Judges Free Inmate on Recommendation of Special Innocence Panel*, N.Y. TIMES (Feb. 17, 2010), https://www.nytimes.com/2010/02/18/us/18innocent.html [https://perma.cc/J7Z5-XPJ2]; *see also* Paul C. Giannelli, *Department, Scientific Evidence, The North Carolina Crime Lab Scandal*, 27 CRIM. JUST. 43, 43 (2012).

96. The National Academy of Sciences debunked the bullet lead analysis which had been conducted by the Federal Bureau of Investigation. *See generally* BULLET LEAD EVIDENCE, *supra* note 27. The modern fire science experiments were conducted under independent grants by the National Institutes of Science and Technology (NIST). *See supra* text accompanying notes 33, 37. The National Fire Protection Association Standard 921 Guide for Fire and Explosion Investigations as the "benchmark" for arson determinations grew from this research.

97. *See supra* text accompanying notes 70-86.

98. *See supra* text accompanying notes 87-95 (at least came about due to a change in administration in the lab).

99. *See supra* text accompanying notes 35-67.

patients.[100] Those products contain naturally-occurring Delta-9-Tetrahydrocannabinol (commonly referred to as THC), which is a constituent of marijuana.[101] The statute did not permit the possession of synthetic THC, which was still treated as a schedule I felony.[102] A holder of a medical marijuana card was charged with synthetic marijuana possession because he was apprehended with brown oil, which was sent to the crime lab.[103] He was originally charged with a misdemeanor to which he refused to plead.[104] The prosecutor withdrew that charge and substituted a felony based on a lab report, which said that the oil contained "delta-9-tetrahydrocannabinol Schedule 1 (origin unknown)."[105] Using the Michigan Freedom of Information Act, the defendant's counsel was able to discover an e-mail exchange among lab personnel on the proper policy for reporting results of tests showing THC when plant material could not be identified in the sample.[106] The correspondence contained messages from the Attorney General's office and references to a meeting with the state prosecutors' association.[107] Some of the lab technicians argued strongly that it was unlikely that holders of medical marijuana cards would possess synthetic THC when naturally occurring THC was both legal for them and much more easily obtained.[108] They also noted that the presence of non-psychoactive cannabinoids which occur in products made from marijuana should be used to conclude that the material was made from marijuana.[109] Other technicians argued that if they could not see plant material they should list the results as THC or THC of unknown origin.[110] The Attorney General's office weighed in in favor of the latter position which ultimately prevailed.[111] The lab reports thus left holders of medical marijuana cards subject to being charged with a felony when, in fact, the material which they possessed was a protected marijuana derivative.

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100. MICH. COMP. LAWS ANN. § 333.26424 (West 2018).

101. Alina Bradford, *What Is THC*, LIVE SCI. (May 18, 2017, 7:35 PM), https://www.livescience.com/24553-what-is-thc.html [https://perma.cc/QXY8-WGW6].

102. MICH. COMP. LAWS ANN. § 333.7212 (West 2018). The Michigan legislature subsequently reduced the penalty for synthetic THC to a misdemeanor. Effective January 4, 2017.

103. Lorincz v. Etue, No. 16-12290, 2017 WL 712949, at *1-9 (E.D. Mich. Feb. 23, 2017) (involving a 42 USC § 1983 law suit filed by the defendant against personnel at the crime lab).

104. *Id.*

105. *Id.* at *8. See also Exhibit 1, A in that case. The designation "Schedule 1 THC" could be read as referring only to synthetic THC as naturally occurring THC does not appear in Michigan Schedule 1.

106. Complaint at 3-4, *Lorincz*, 2017 WL 712949 (C.A. No. 2:16-cv-12290).

107. *See id.* at Exhibit E.

108. *See id.* at Exhibit G.

109. *See generally id.* at Exhibit H.

110. *See id.* at Exhibit B.

111. *See generally id.* at Exhibit D-H. The position of the Assistant Attorney General was that THC was a schedule I felony drug regardless of its origin. *Id.* at Exhibit E. That position was contrary to Michigan case law. *See* People v. Carruthers, 837 N.W.2d 16, 20-21 (Mich. Ct. App. 2013); People v. Campbell, 249 N.W.2d 870, 870-71 (Mich. Ct. App. 1976).

What turned a technical debate into a potential injustice was the failure of the lab to report the fact that it had discovered the presence of other cannabinoids consistent with a marijuana based origin for the THC in question, thus leaving the impression that there was no exculpatory evidence to indicate that the material was not synthetic THC.[112] When asked for the underlying data, the prosecutor in the case refused to turn it over pursuant to the rules of discovery, but said that it would only be available through the Freedom of Information Act.[113] What is notable in this success story[114] is that the attorney involved did not use the discovery available under the Rules of Criminal Procedure to uncover the relevant information. He used the separate Freedom of Information Act.[115] Had there not been that email chain, the practice of the lab might well have gone unrevealed.

Why were both the Zain and Gilchrist cases unearthed in post-conviction proceedings and in civil law suits? In wrongful conviction civil law suits, full civil discovery was available.[116] In one of the Gilchrist habeas proceedings, the court granted "full discovery."[117] In both cases, records of the labs in question showed discrepancies between lab notes and reports prepared for use in court, internal inconsistencies in lab documentation, and alterations of records designed

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112. Complaint, Exhibit A, *Lorincz*, 2017 WL 712949 (C.A. No. 2:16-cv-12290).

113. *Id.* at 20-21.

114. The success here is the recovery of pertinent information by the defense. The case against the defendant was ultimately dismissed because the Circuit Court held that the prosecution had not discharged its burden of showing the THC was synthetic. *Lorincz*, 2017 WL 712949, at *1-9. However, this result was not obtained until after sixteen months of litigation. *See* Dana Chicklas, *Judge dismissed felony charge against medical marijuana patient Max Lorincz*, FOX 17 (Jan. 22, 2016, 10:30AM), https://fox17online.com/2016/01/22/medical-marijuana-patient-max-lorincz-due-in-court-for-felony-charges-of-synthetic-thc/felony-charges-of-synthetic-thc/ [https://perma.cc/JRE9-V5E8]. The issue was ultimately rendered moot by passage of the bill in the Legislature reducing the penalty for synthetic THC to a misdemeanor. Joint Clarification on House Bill No. 5649, *Lorincz*, 2017 WL 712949 (No. 2:16-cv-12290).

115. MICH. COMP. LAWS ANN. §15.231 (West 2018).

116. It was Woodall's wrongful imprisonment suit after his release which prompted the Kanawha County Prosecutor to seek review of all of Zain's cases. *In re* Investigation of the W. Va. State Police Crime Lab., Serology Div. (*WV Crime Lab Investigation*), 438 S.E.2d 501, 509, 516-18 (W. Va. 1993) (see findings of fact in the Appendix). Pierce v. Gilchrist, No. CIV-05-1519-C, 2007 WL 128994 (W.D. Okla. Jan. 16, 2007) (In a memorandum Order denying Gilchrist's Motion for Summary Judgment, the Court relied on evidence gleaned during discovery.).

117. Mitchell v. Gibson, 262 F.3d 1036, 1064 (10th Cir. 2001):

> Mr. Mitchell requested and received permission to conduct discovery in this habeas proceeding. As a result, he obtained *hand-written notes taken by Ms. Gilchrist during telephone conversations with Agent Vick indicating that the agent had conducted two DNA probes on the samples.* These probes showed that the semen on the panties matched that of Mr. Taylor only, that no DNA was present on the rectal swab, and that the only DNA on the vaginal swab was consistent with the victim. The *results thus completely undermined Ms. Gilchrist's testimony*. *Id.* at 1063 [emphasis in original].

to support the fraudulent conclusion.[118]

Commentators have berated the criminal defense bar for the fact that so many of these scandals went unidentified at the trial court level.[119] In commenting on the Zain case, the authors of *Convicted by Juries, Exonerated by Science*, criticized trial counsel for not finding Zain's fraud sooner:

> It is also clear that in case after case, defense counsel failed to review the case notes of the prosecution's forensic serologists. Even a layperson would have seen that Fred Zain's written reports and sworn testimony were contradicted by his case notes.[120]

The critique is valid, but misdirected. It is true that the documents in question were damning, but as we will see below, they would in all likelihood not have been available to defense counsel.

The alteration of discovery under the criminal rules to permit access to bench notes, equipment readings and the like is not a panacea for all that ails the state of forensic science. Some commentators have reservations about whether the criminal litigation system can address any issue in forensic malpractice.[121] The co-chair of the National Academy of Sciences committee which prepared the NAS Report[122] testified before the Senate Judiciary Committee that a new national agency was necessary to properly address the issue:

> Unfortunately, the adversarial approach to the submission of evidence in court is not well suited to the task of finding "scientific truth." The judicial system is encumbered by, among other things, judges and lawyers who generally lack the scientific expertise necessary to comprehend and evaluate forensic evidence in an informed manner, defense attorneys who often do not have the resources to challenge prosecutors' forensic experts, trial judges (sitting alone) who must decide evidentiary issues without the benefit of judicial colleagues and often with little time for extensive research and reflection, and very limited appellate review of trial court rulings admitting disputed forensic evidence. Furthermore, the judicial system embodies a case-by-case adjudicatory approach that is not well suited to address the systematic problems in many of the various forensic science disciplines. Given these realities, there is a tremendous need for the forensic science community to improve. Judicial review, by itself, will not cure the infirmities of the

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118. *See WV Crime Lab Investigation*, 438 S.E.2d at 516-518; *see also Mitchell*, 262 F. 3d at 1064.

119. CONVICTED BY JURIES, *supra* note 73, at xvii-xviii.

120. *Id.* at xviii. On the other hand, counsel must know what to do with reports they do get. Giannelli, *supra* note 95, at 45 ("The obvious question for defense counsel is: Where are the results of the confirmatory test? Were they positive or negative? The right to counsel includes the right to effective assistance of counsel, which in turns [sic] imposes an obligation to investigate.")

121. *See generally* NAS REPORT, *supra* note 6.

122. *Id.*

forensic science community.[123]

Judge Edwards is not alone in his critique of the judicial system as a vehicle for addressing forensic problems. One of the co-founders of the Innocence Project shares the same view:

> This exploration of the types of invalid forensic science testimony that have contributed to convictions of the innocent provides one window into failures of our criminal justice system to adequately review the use of forensic science. That system still has not responded with a full investigation into most of these known miscarriages of justice, much less looked into other potentially affected cases or routinely conducted investigations to ensure accurate dispositions. These cases suggest that the adversary system cannot be depended upon as an adequate safeguard. The defense bar lacked the expertise and resources to detect and address invalid forensic science effectively in most of these cases, and judges did not remedy most errors brought to their attention.[124]

Even though the civil litigation system shows much more facility at assessing scientific evidence, I share these misgivings. It is here that the taxonomy of problems, outlined above, comes into its own. It is unquestionably the case that the current system of criminal justice is poorly configured to test the validity of the claims that various forensic methods have or lack scientific support. In addition to the reservations that many have about the ability of federal judges to assess scientific or technical merit in the context of *any* law suit,[125] there are other forces which make the courts a very limited forum when those issues arise in the *criminal law* context. Among these are the monopoly of forensic expertise in the hands of one side in the litigation,[126] and the incentives built into the adversarial

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123. Edwards, *supra* note 24.

124. Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1, 96-97 (2009).

125. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 600-01 (1993) (Rehnquist, C.J., dissenting):

> I defer to no one in my confidence in federal judges; but I am at a loss to know what is meant when it is said that the scientific status of a theory depends on its "falsifiability," and I suspect some of them will be, too . . . . But I do not think it imposes on them either the obligation or the authority to become amateur scientists in order to perform that role.

126. Most crime labs in the country are housed within police agencies. The Houston Forensic Science Center, which became independent after the scandals detailed above, is one of few which are not. However, even with the Houston Center, its customers are virtually entirely from the prosecution side of the process:

> HFSC currently receives the bulk of its funds from the City of Houston. The Center also has fee-for-service contracts with some agencies outside the city. HPD eventually will be one of many law enforcement agencies purchasing HFSC's forensic services. Although the City of Houston is funding startup costs, the goal is for HFSC to become financially self-sustaining.

FAQ, *How is HFSC funded and what are the future funding goals?*, HOUS. FORENSIC SCI. CTR.,

system not to challenge the claims of others practicing in the field.[127] This is coupled with the lack of resources on the part of most defendants,[128] which means that even when experts exist willing to dispute the claims of the prosecution, most defendants are not in a position to make effective use of them.[129] There also is a bias, betrayed by the case law, which supports the offering of weak prosecution evidence and is less receptive to the use of forensic evidence by the defense.[130] Finally, there is the lack of training of all the lawyers in the system in the scientific issues which they are called upon to address.[131]

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http://www.houstonforensicscience.org/faq.php [https://perma.cc/L3FH-AVFV] (last visited May 19, 2018). It is understandable that defense counsel would mistrust the confidentiality which would be available from such a facility.

127. Law enforcement is not alone in being reluctant to bite the hand that feeds it. Unlike the sciences which support multiple constituencies--medicine, physics, chemistry, biology and the like—an attack on a prevailing idea is likely to be looked on less as progress than as treachery. *See* PCAST REPORT *supra* note 8, at 14 ("To ensure the scientific judgments are unbiased and independent, such evaluations should be conducted by an agency which has no stake in the outcome."). The report suggested that the National Institute of Science and Technology (NIST) be the agency to oversee this evaluation. However, it further suggests that NIST modify its current approval process to require oversight by a committee composed of scientists "from outside the forensic-science community." *Id.* at 15. It further recommended that the Office of Science and Technology Policy at the White House oversee a national research and development strategy for the forensic sciences. *Id.* at 16.

> As the 2009 NRC Report and others have noted, fundamentally, the forensic sciences do not yet have a well-developed "research culture." Importantly, a research culture includes the principles that (1) methods must be presumed to be unreliable until their foundational validity has been established based on empirical evidence and (2) even then, scientific questioning and review of methods must continue on an ongoing basis. Notably, some forensic practitioners espouse the notion that extensive "experience" in casework can substitute for empirical studies of scientific validity. Casework is not scientifically valid research, and experience alone cannot establish scientific validity. In particular, one cannot reliably estimate error rates from casework because one typically does not have independent knowledge of the "ground truth" or "right answer." *Id.* at 32-33.

128. CAROLINE WOLF HARLOW, DEFENSE COUNSEL IN CRIMINAL CASES 1 (2000), *available at* https://www.bjs.gov/content/pub/pdf/dccc.pdf [https://perma.cc/PBY3-LCYH] ("Over 80% of felony defendants charged with a violent crime in the country's largest counties and 66% in U.S. district courts had publicly financed attorneys.").

129. See Tahirih V. Lee, *Court-Appointed Experts and Judicial Reluctance: A Proposal to Amend Rule 706 of the Federal Rules of Evidence*, 6 YALE L. & POL'Y REV. 480, 482 (1988).

130. *See generally* D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being left on the Dock?*, 64 ALB. L. REV. 99 (2000) ("criminal defendants virtually always lose their reliability challenges to government proffers").

131. *See generally* Giannelli, *supra* note 95. The author excoriates both prosecutors and defense counsel for failing to identify a blood test as preliminary and failing to ask for confirmatory results. He argues persuasively that this lack of scientific knowledge results in ineffective assistance

However, altering the rules would have a number of beneficial effects in reducing fraud, lack of credentials, and unsound work. The first of these effects would, of course, lie in providing defense attorneys with the ammunition needed to conduct an effective cross-examination. Much of the art of cross lies in exposing precisely the kinds of inconsistences that *Convicted by Juries* points to.[132] Without that ammunition, fraud is difficult, if not impossible to detect:

> The North Carolina debacle once again illustrates the importance of bench notes. Bench notes are often cited in the crime lab scandals. One of the most notorious cases involved Fred Zain, the chief serologist in the West Virginia State Police Crime Laboratory, who falsified test results from 1979 to 1989. (*In re* Investigation of the W. Va. State Police Crime Lab., Serology Div., 438 S.E.2d 501, 511 (W. Va. 1993).) A forensic scientist would later comment: "It is also clear that in case after case, defense counsel failed to review the case notes of the prosecution's forensic serologists. Even a layperson would have seen that Fred Zain's written reports and sworn testimony were contradicted by his case notes."[133]

But that is not the only benefit of disclosure. Forensic examiners tempted to commit fraud will be less confident of getting away with it when they know that their records are subject to disclosure. It is virtually impossible to put together a fraudulent paper trail which will withstand searching scrutiny for long.[134] Another virtue of disclosure lies in the greater scrutiny, which will be given by laboratories and prosecutors to records which are too good to be true. In retrospect, there were warning signs in all the fraud cases. Colleagues in the lab could not replicate results. West Virginia prosecutors pursued Fred Zain to Texas[135] to test their evidence because no one else could get the results that he seemed able to produce. Joyce Gilchrist was called "Black Magic"[136] because of her ability to find favorable prosecution evidence when no other analyst could.

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of counsel. *Id.* at 63-64. On the other hand, the Innocence Projects that exist across the country, which have as their goal the use of science to exonerate people wrongfully convicted of crime, provide evidence that it is possible to train lawyers in the rudiments of science. *Misapplication of Forensic Science*, *supra* note 3. West Virginia University has taken this task head-on with its Forensic Science LLM which matches information about law and policy with education in forensic science. *See LL.M. Forensic Justice*, W. VA. UNIV., https://forensics.wvu.edu/students/graduate-students/ll-m-forensic-justice [https://perma.cc/FM48-2NAG] (last visited June 2, 2018).

132. *See generally* CONVICTED BY JURIES, *supra* note 73.

133. Giannelli, *supra* note 95, at 44 (quoting Walter F. Rowe, *Commentary*, *in* EDWARD CONNORS ET AL., CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL xviii (1996)).

134. "O, what a tangled web we weave/When first we practise [sic] to deceive!" SIR WALTER SCOTT, MARMION (1808).

135. *In re* Investigation of the W. Va. State Police Crime Lab., Serology Div. (*WV Crime Lab Investigation*), 438 S.E.2d 501, 512 (W. Va. 1993).

136. Belinda Luscombe et al., *When The Evidence Lies, TIME MAG.,* May 21, 2001, at 39.

No other technician could keep pace with the volume of Annie Dookhan's work.[137] She represented that she completed 6,466 lab tests in 2010 when all her colleagues were snowed under with the burden of court appearances mandated by *Melendez-Diaz* and produced far fewer.[138] All of these warning signs were disregarded by both prosecutors and laboratory administrators.[139] When the documents underlying the reports of expert results were not subject to discovery, prosecutors and administrators lacked incentive to look too closely at their prized "experts." But, when the documentation is going to be turned over to the defense, there is an incentive for scrutiny.

So disclosure of bench notes, instrument calibrations and maintenance records, and the like would have a beneficial effect throughout the criminal justice system. Defense investigation and cross-examination would be more meaningful, experts tempted to bend the truth would not feel that they have a screen behind which to do so, and prosecutors charged with the obligation to disclose evidence[140] would have a stake in policing their own. The National Commission on Forensic Science cited a telling case in its defense of the proposed change in the rules:

> The leading neutron activation case, *United States v. Stifel*, illustrates the dangers of restrictive discovery. Stifel was charged with sending a bomb through the mail. The bomb exploded and killed a victim after delivery. The prosecution's evidence included the results of neutron activation analysis, which was used to compare bomb debris (vinyl tape, metal cap, cardboard mailing tube, and paper gummed label) and similar items obtained from Stifel's place of employment. The prosecution expert testified that the metal cap and tape were "of the same manufacture" and from the "same batch" one day's manufacturing production. This testimony "depends on the existence of sufficient background information." Stifel was convicted, and his conviction upheld on appeal. During his imprisonment, Stifel filed a request under the Freedom of Information Act (FOIA), which revealed several things, including discrepancies about the background tests on the vinyl tape. As a result, Stifel filed a post-conviction petition, alleging a due process violation — the failure to disclose exculpatory evidence. The district court disagreed that the expert had misrepresented the facts on this issue, but noted the misleading character of this information in overturning the conviction. In short, Stifel was entitled, through FOIA, to more information about the prosecution's case *after* he was convicted than he was entitled to when preparing for his trial. This material would have been discoverable in a civil trial.[141]

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137. HINTON REPORT *supra* note 89, at 63-73.

138. The next highest volume of testing was 3,329. *Id.* at 63.

139. *Id.* at 71-72.

140. MODEL CODE OF PROF'L RESPONSIBILITY r. 3.8 (a) & (d) (AM. BAR ASS'N 2002).

141. DEP'T OF JUSTICE, PRETRIAL DISCOVERY IN FORENSIC EVIDENCE CASES: POLICY RECOMMENDATION 4 (Nat'l Comm'n on Forensic Sci. Oct. 28-29, 2014), *available at*

IV. WHAT DISCLOSURES SHOULD BE REQUIRED?

In *United States v. Tornquist*,[142] Magistrate Judge Duffy expressed dissatisfaction with both parties on a motion to disclose laboratory data and protocols in a case involving DNA because no one would explain the significance of the material sought.[143] In *United States v. Iglesias*,[144] the majority of the court expressed concern that material sought in the disclosure motion would be "distorted and misused."[145] To forestall each of these concerns, I will lay out generic descriptions of the kinds of information, the disclosure of which, I advocate. I will also set forth the relevance of that information to the orderly conduct of an expert witness examination.

In most instances, the U.S. Department of Justice has already conceded as a matter of internal policy that disclosure should be made.[146]

A. Chain of Custody

Material that is subject to expert analysis must somehow get from the location where it was collected to the person or persons testing it and thence to the courtroom. With respect to most material subject to forensic testing—blood samples, fingerprints, hair and fiber, for example—this chain of custody must be documented because the samples are not sufficiently distinct to be identifiable

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https://www.justice.gov/sites/default/files/pages/attachments/2014/10/20/draft_on_discovery.pdf [https://perma.cc/LS6V-G7DM] [hereinafter DEP'T OF JUSTICE POLICY RECOMMENDATION].

142. 2012 WL 2862864, at *1-5 (D.S.D. July 11, 2012).

143. *Id.* at *3:

> Mr. Tornquist never even explains to the court what the nature of the discovery is he is requesting. The court has no independent knowledge of what an "electropherogram" is or what it does or shows. Neither does the court know what a "slot blot membrane"or a "PCR product analysis" is. Not only does Mr. Tornquist fail to explain what the items are that he is requesting, he also fails to explain how the requested discovery is material to his defense.
>
> The government states in its response to Mr. Tornquist's motion to compel that—with three exceptions—it does not object to the disclosure of records requested by Mr. Tornquist to the extent the DCI lab has any of the described documents in its possession. *Id.*

144. 881 F.2d 1519 (9th Cir. 1989).

145. *Id.* at 1524.

146. *See generally* Memorandum from David W. Ogden, Deputy Att'y Gen., for Department Prosecutors (Jan. 4, 2010), *available at* https://www.justice.gov/archives/dag/memorandum-department-prosecutors [https://perma.cc/8A39-3BA8] [hereinafter Ogden Memo]; Memorandum from David W. Ogden, Deputy Att'y Gen., for Department Prosecutors, 165. Guidance for Prosecutors Regarding Criminal Discovery (Jan. 4, 2010); Yates Memo, *supra* note 13; *see* discussion *supra*, note 9.

merely by sight.[147] To qualify for introduction in court, the authenticity requirements of Federal Rules of Evidence 901 must be met through a chain of custody.[148] Disclosing the logs which chart the progress of the tested material will not provide the opposing party with any information which they will not ultimately obtain through the in-court foundation.[149] However, providing that material in advance of trial will serve a number of useful and necessary functions.

If the witness or witnesses whom the proponent plans to call did not, in fact, perform the critical tests, the U.S. Supreme Court has ruled that the criminal defendant is denied his or her right to Confrontation.[150] Advance disclosure of the evidence logs would permit pre-trial resolution of this issue.

Regarding the goal of this Article of ferreting out fraud and misconduct, the logs would disclose evidence which was tested by more than one examiner. The thread which runs through both the Zain and Gilchrist cases is the fact that other examiners had looked at the material from which those two drew fraudulent results and had drawn different, accurate, conclusions.[151] An examination of the logs would have disclosed the fact of repeated testing.

As with the rest of the disclosures advocated here, the traditional arguments against disclosure are absent.[152] There is little risk that the evidence will be misrepresented if it is made known to the other side.[153] If misrepresentation

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147. FED. R. EVID. 901(b)(1) (providing that one must call more than one "[w]itness with [k]nowledge" to lay an authenticity foundation where material is susceptible to material alteration).

148. *Id.*

149. Unless there is a stipulation to authenticity at least some of the persons handling transfer of the material must be called to testify. 2 KENNETH S. BROUN, MCCORMICK ON EVIDENCE § 213 (7th ed., 2013); 1 MARK S. BRODIN, WEINSTEIN'S FEDERAL EVIDENCE § 901 (2d ed., 2011).

150. Bullcoming v. New Mexico, 564 U.S. 647, 664-65 (2011).

151. *See supra* text accompanying notes 130-32.

152. DEP'T OF JUSTICE, RECOMMENDATIONS TO THE ATTORNEY GENERAL ON PRETRIAL DISCOVERY 3 (Nat'l Comm'n on Forensic Sci. June 21, 2016), *available at* https://www.justice.gov/ncfs/file/880241/download [https://perma.cc/8B4B-2BHD] [hereinafter RECOMMENDATIONS TO THE ATTORNEY GENERAL]:

> With forensic evidence, however, these traditional arguments against criminal discovery lose whatever force they might otherwise have. The first argument fails because "it is virtually impossible for evidence or information of this kind to be distorted or misused because of its advance disclosure." Also, there is no evidence that the intimidation of experts is a major problem, both because in federal practice, the expert is often a government employee, and because the evidence can often be reexamined, if necessary, by another expert.

See also DEP'T OF JUSTICE POLICY RECOMMENDATION, *supra* note 141, AT 7 (LISTED ON THE NCFS WEBSITE AS INITIAL DRAFT POLICY RECOMMENDATION IN PRETRIAL DISCOVERY IN FORENSIC EVIDENCE CASES (INTRODUCED AT NCFS MEETING #4)); COMMENTARY ABA STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY AND PROCEDURE BEFORE TRIAL 67 (APPROVED DRAFT 1970). FINALLY, SEE FED. R. CRIM. P. 16 Notes of Advisory Committee on Rules- 1974 Amendment ("[I]t is not likely that such evidence will be distorted or misused if disclosed prior to trial[.]")

153. As the dissent points out in *Inglasias*, *United States v. Iglesias*, 881 F 2d 1519, 1526 (9th

occurs at trial, counsel for the government will be able to challenge it. As noted above, the other party is going to learn about this evidence in any event at trial. The records are written and in the custody of the opposing party, so they are not subject to tampering. The records already exist, so intimidation is not a realistic fear.

Current U.S. Department of Justice policy calls for the disclosure of this chain of custody material.[154] USAM 9-5.001 (C)(2): "[information which] might have a significant bearing of the admissibility of prosecution evidence."[155] The Yates memo specifically recognizes that chain of custody logs are contained in the "case file" which the prosecutor "should provide."[156]

B. Bench Notes and Instrument Results

There are two primary tasks of forensic testing. The first is to determine whether there is a link between material somehow associated with the crime and material somehow associated with various suspects: DNA or blood typing, fingerprint comparisons, hair and fiber comparisons, ballistics, etc.[157] The second is to determine the nature of a substance thought to figure in criminal activity: drug identification, the presence of accelerants in cases of suspected arson, etc.[158]

Modern forensic testing involves some augmentation of human senses using equipment which is designed to make appropriate comparisons or

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Cir. 1989), "Counsel is entitled to explore any inconsistencies or ambiguities contained in the notes."

154. *9-5.001- Policy Regarding Disclosure of Exculpatory and Impeachment Information,* OFFICE OF THE U.S. ATT'YS, https://www.justice.gov/usam/usam-9-5000-issues-related-trials-and-other-court-proceedings [https://perma.cc/C7JA-5PFV] (last visited May 21, 2018).

155. *Id.*

156. Yates Memo, *supra* note 13, at 3:

> Third, if requested by the defense, the prosecutor should provide the defense with a copy of, or access to, the laboratory or forensic expert's "case file," either in electronic or hard-copy form. This information, which may be kept in an actual file or may be compiled by the forensic expert, normally will describe the facts or data considered by the forensic expert, include the underlying documentation of the examination or analysis performed, and contain the material necessary for another examiner to understand the expert's report. The exact material contained in a case file varies depending on the type of forensic analysis performed. It may include such items as a chain-of-custody log; photographs of physical evidence; analysts' worksheets or bench notes; a scope of work; an examination plan; and data, charts and graphs that illustrate the results of the tests conducted.

157. *Forensic Sciences: Types of Evidence*, NAT'L INST. OF JUSTICE, https://www.nij.gov/topics/forensics/evidence/Pages/welcome.aspx [https://perma.cc/X8KR-VSJA] (last visited June 11, 2018).

158. *Id.*

identifications.[159] That equipment may itself perform the test.[160] For example, a gas chromatograph/mass spectrometer is used to identify unknown substances such as drugs or accelerants. In that case, the instrument has a display or printout which reflects the result obtained,[161] and bench notes record, among other things, how the instrument was used.[162] Or the instrument may augment the senses. For example, a comparison microscope is used to examine bullets for ballistics, hair or fiber evidence, finger prints, etc.[163] In that case, the instrument may capture an image of the comparison or the user of the instrument may take contemporaneous notes of the tests performed.[164]

Disclosure of these results or notes is critical to uncovering erroneous or fraudulent claims.[165] As the National Commission on Forensic Science pointed out in its draft memorandum on the issue of discovery, "The lack of bench notes is often cited in laboratory scandals. The West Virginia, Chicago, Houston, and FBI explosive unit investigations all found inadequate documentation in forensic case files."[166]

Had there been a requirement to turn over the spectrometer printouts in the various drug fraud cases, both the prosecutor and defense counsel would have had a much better chance of determining that the tests were not, in fact, run.[167] It is much more difficult to fabricate a full paper trail of bench notes than it is to provide a trial testimony stating a spurious result.[168] Had Joyce Gilchrist been

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159. *Forensic Laboratory Equipment*, LABCOMPARE, https://www.labcompare.com/Forensic-Laboratory-Equipment/ [https://perma.cc/AHB8-2A48] (last visited June 11, 2018).

160. *Id.*

161. For a discussion of the print out from mass spectrometry instruments and an account of the errors which can occur with such printouts see generally VICKI BARWICK ET AL., BEST PRACTICE GUIDE FOR GENERATING MASS SPECTRA 1-28 (2006), *available at* http://www.rsc.org/images/MS2new_tcm18-102519.pdf [https://perma.cc/Y27F-628Z].

162. For a discussion of proper bench note maintenance, see generally NAT'L INSTS. OF HEALTH OFFICE OF THE DIR., GUIDELINES FOR SCIENTIFIC RECORD KEEPING IN THE INTRAMURAL RESEARCH PROGRAM AT THE NIH 1-16 (2008), *available at* https://oir.nih.gov/sites/default/files/uploads/sourcebook/documents/ethical_conduct/guidelines-scientific_recordkeeping.pdf [https://perma.cc/DPH2-9NYC].

163. *The Comparison Microscope*, MICROSCOPE MASTER, https://www.microscopemaster.com/comparison-microscope.html [https://perma.cc/FV8L-VVFM] (last visited June 2, 2018).

164. DEP'T. OF JUSTICE POLICY RECOMMENDATION, *SUPRA* 141, AT 15-16. (EMPHASIZING THE NEED OF CONTEMPORANEOUS NOTES).

165. *See generally id*.

166. *Id*. at 14-15.

167. *See supra* text accompanying notes 86-91.

168. CONVICTED BY JURIES, *supra* note 73, at xviii ("Even a layperson would have seen that Fred Zain's written reports and sworn testimony were contradicted by his case notes."); *see also* Mitchell v. Gibson, 262 F.3d 1036, 1064 (2001):

> Mr. Mitchell requested and received permission to conduct discovery in this habeas proceeding. As a result, he obtained *hand-written notes taken by Ms. Gilchrist during telephone conversations with Agent Vick indicating that the agent had conducted two*

required to turn over the notes on the FBI DNA testing in the *Mitchell* case at the time of the original trial rather than ten years later on *habeas*, the fact that the DNA evidence contradicted her sworn testimony would have come to light in time to save him from years on death row.[169]

In order to prepare opposing experts, the original test results—not conclusory statements—are critical: "All data and laboratory records generated by analysis of DNA samples should be made freely available to all parties. Such access is essential for evaluating the analysis."[170]

The Department of Justice has recognized that full disclosure of the underlying records is necessary.[171]

Under *Daubert v. Merrell Dow Pharmaceuticals*[172] and Federal Rules of Evidence Rule 702(d),[173] the district court has an obligation to determine whether the testifying expert has properly applied the relevant methodology. Without the original test results and bench notes, those methods used cannot be subject to cross examination,[174] impeachment by prior inconsistent statement, or impeachment by contradiction.

Bench notes already fall within the class of materials that will, in any event, be subject to disclosure under the Jencks Act because they are prior statements of a governmental witness.[175] The Department of Justice recognizes that

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> *DNA probes on the samples*. These probes showed that the semen on the panties matched that of Mr. Taylor only, that no DNA was present on the rectal swab, and that the only DNA on the vaginal swab was consistent with the victim. The *results thus completely undermined Ms. Gilcrhist's testimony*. (emphasis in original)

169. *See supra* text accompanying notes 80-85, 117.

170. NAT'L RESEARCH COUNCIL, DNA TECHNOLOGY IN FORENSIC SCIENCE 23 (1992).

171. *See supra* text accompanying note 156.

172. 509 U.S. 579 (1993).

173. FED. R. EVID. 702(d) ("[T]he expert has reliably applied the principles and methods to the facts of the case.").

174. FED. R. EVID. 705 Advisory Committee Notes. Referring to the decision not to require disclosure of the bases for an expert's conclusion during direct examination of the expert at trial, the Advisory Committee says:

> The answer assumes that the cross-examiner has the advance knowledge which is essential for effective cross-examination. This advance knowledge has been afforded, though imperfectly, by the traditional foundation requirement. Rule 26(b)(4) of the Rules of Civil Procedure, as revised, provides for substantial discovery in this area, obviating in large measure the obstacles which have been raised in some instances to discovery of findings, underlying data, and even the identity of experts.

Unfortunately, there is no current analogue to Rule 26 in the rules of Criminal Procedure.

175. 18 U.S.C. § 3500 (b) (2012):

> After a witness called by the United States has testified on direct examination, the court shall, on motion of the defendant, order the United States to produce any statement (as hereinafter defined) of the witness in the possession of the United States which relates to the subject matter as to which the witness has testified. If the entire contents of any such statement relate to the subject matter of the testimony of the witness, the court

disclosure must be made in advance of trial.[176]

Again, we are speaking about records which already do, or at least should, exist. There is no danger of misrepresentation in the hands of the opposing party. Again there is no danger of fabrication or of alteration through threats or intimidation.[177]

C. Instrument Calibration

As noted above, forensic testing of important types of evidence—drugs, accelerants, DNA—is dependent on the proper functioning of instruments.[178] Accreditation standards for forensic laboratories[179] and manufacturers' specifications[180] call for periodic calibration of the instrument or the comparison of known samples to ensure accurate functioning. A laboratory, which is

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shall order it to be delivered directly to the defendant for his examination and use.

This is not to suggest that the Jencks Act remedy of disclosure during trial is adequate. Review of expert testimony requires advance preparation. RECOMMENDATIONS TO THE ATTORNEY GENERAL, *supra* note 152, at 1 ("[T]he Commission expects that 'reasonably in advance of trial' will usually mean at least a few weeks before trial and with sufficient time for the defense to consult with and/or secure expert assistance.").

176. Yates Memo, *supra* note 13, at 3 ("Disclosure should be made according to local rules but at least as soon as is reasonably practical and, of course, reasonably in advance of trial."); *see also* Ogden Memo, *supra* note 146.

177. DEP'T OF JUSTICE POLICY RECOMMENDATION, *supra* note 141.

178. *See supra* text accompanying notes 161-63.

179. ANAB, ISO/IEC 17025:2005- FORENSIC SCIENCE TESTING LABORATORIES: ACCREDITATION REQUIREMENTS 17 (2017), *available at* https://anab.qualtraxcloud.com/ShowDocument.aspx?ID=7104 [https://perma.cc/55VS-4W65] [hereinafter ACCREDITATION REQUIREMENTS]; LEONARD STEINBORN, GMP/ISO QUALITY AUDIT MANUAL FOR HEALTHCARE MANUFACTURERS AND THEIR SUPPLIERS 402 (2005).

> **5.5.2** Equipment and its software used for testing, calibration and sampling shall be capable of achieving the accuracy required and shall comply with specifications relevant to the tests and/or calibrations concerned. Calibration programmes shall be established for key quantities or values of the instruments where these properties have a significant effect on the results. Before being placed into service, equipment (including that used for sampling) shall be calibrated or checked to establish that it meets the laboratory's specification requirements and complies with the relevant standard specifications. It shall be checked and/or calibrated before use.
>
> American Society of Crime Laboratory Directors accreditation requirements:
>
> A program and procedure for the calibration of laboratory equipment shall include a list of the equipment requiring calibration, specifications for the calibration laboratory, specified requirements for the calibration, and the interval of calibration. ACCREDITATION REQUIREMENTS, *supra*, at 14.

180. *See*, *e.g.*, *Mass Spectrometry Calibration Standards*, SIGMA-ALDRICH, http://www.sigmaaldrich.com/life-science/proteomics/mass-spectrometry/calibration-standards.html [https://perma.cc/D8K3-CNQS] (last visited May 21, 2018).

functioning correctly, will have a record of the calibrations performed.[181] If calibrations are not properly and timely performed, the instruments may produce erroneous results.[182]

Rule 702(d) of the Federal Rules of Evidence requires proper application of the relevant methods.[183] Without the calibration logs, counsel and the court cannot know whether this key piece of the methodology is being properly performed.[184] The National Commission on Forensic Science called for disclosure of calibration data in its draft policy on forensic disclosure.[185]

These records, like those above, already do, or should, exist. A ready standard of comparison exists which is widely agreed upon within the relevant community.[186] There is no danger of misrepresentation, fabrication, or alteration through threats or intimidation.[187]

D. Laboratory Protocols

Forensic laboratories should have protocols for their staff describing the appropriate conduct of tests that they perform. The Department of Justice suggests that these protocols are generally publicly available.[188] Whether they are or are not, these protocols should be disclosed. To the extent that the protocols are at variance with practice in the field, the disclosure would permit inquiry into

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181. ANAB, *supra* note 179, at 17 ("**5.9.1.1** Quality control procedures to ensure the validity of tests undertaken shall be specified in the test method and the result of each quality control **activity shall be recorded**.") (emphasis added).

182. *See id.*

183. FED. R. EVID. 702(d) ("[T]he expert has reliably applied the principles and methods to the facts of the case.").

184. DEP'T OF JUSTICE POLICY RECOMMENDATION, *supra* note 141.

185. *Id.* ("The results of all forensic examinations, expert opinions, and related case documents (e.g., bench notes, graphs, electropherograms, calibration reports, etc.) should be subject to disclosure.").

186. See policy discussion *supra* note 179.

187. *See supra* text accompanying note 149.

188. Yates Memo, *supra* note 13, at 3:

> In some circumstances, the defense may seek laboratory policies and protocols. To the extent that a laboratory provides this information online, the prosecutor may simply share the web address with the defense. Otherwise, determinations regarding disclosure of this information should be made on a case-by-case basis in consultation with the forensic analysts involved, taking into account the particularity of the defense's request and how relevant the request appears to be to the anticipated defenses.

For example, the West Virginia State Police post their Forensic Laboratory Field Manual publicly on the web. CRIMINAL IDENTIFICATION BUREAU, THE W. VA. STATE POLICE FORENSIC LABORATORY FIELD MANUAL (9th ed. 2010), *available at* http://www.wvsp.gov/about/documents/crimelab/9thmanual.pdf [https://perma.cc/3H3Z-WG4R]. *See also Virginia Department of Forensic Science*, VA.GOV, http://www.dfs.virginia.gov/documentation-publications/manuals [https://perma.cc/AF86-WG2Y](last visited May 21, 2018).

whether the methods of the laboratory are reliable as required by Rule 702.[189] If the protocols do conform to reliable methodology, then they will provide a standard against which the performance of the individual technician can be assessed.[190] In either event, disclosure supports appropriate examination under the rules of evidence. If the protocols are already publicly disclosed, no discovery problem exists. If they are not, there can be no objection to turning over information which is probably accessible under the Freedom of Information Act in any case.[191] The Department of Justice has conceded that a violation of protocols would be *Giglio* material.[192]

The status of laboratory accreditation should be disclosed.[193] Accreditation means that a laboratory has been reviewed for compliance with certain accepted procedures.[194] The Justice Department has committed itself to using accredited labs wherever possible.[195]

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189. FED. R. EVID. 702(d).

190. The United States Attorneys Manual, 9-5.1000 recognizes that departure from established protocols would be *Giglio* impeachment material. *9-5.100- Policy Regarding the Disclosure to Prosecutors of Potential Impeachment Information Concerning Law Enforcement Agency Witnesses ("Giglio Policy)*, OFFICE OF THE U.S. ATT'YS, https://www.justice.gov/usam/usam-9-5000-issues-related-trials-and-other-court-proceedings [https://perma.cc/C7JA-5PFV] (last visited May 21, 2018).

191. 5 U.S.C. § 552 (a)(2) (B)-(C) (2012) (statements of policy and administrative staff manuals and instructions).

192. *9-5.001- Policy Regarding Disclosure of Exculpatory and Impeachment Information, supra* note 154 (discussing procedures for disclosing potential impeachment information.

193. The National Commission on Forensic Science recommended to the Attorney General that forensic science service providers be universally accredited. (Adopted at NCFS Meeting #6 - April 30 - May 1, 2015) RECONCILED at NCFS Meeting #9 - March 21-22, 2016). DEP'T. OF JUSTICE, UNIVERSAL ACCREDITATION (Nat'l Comm'n on Forensic Sci. 2015), *available at* https://www.justice.gov/archives/ncfs/file/477851/download [https://perma.cc/5FPX-4ENH]. On November 23, 2015, the Attorney General issued directions to the Department of Justice that by December 2020 all department labs except those conducting digital analysis must obtain or maintain accreditation and that department attorneys "must use, whenever practicable, accredited forensic testing entities." U.S. Dep't. of Justice, Memorandum for Heads of Department Components, Recommendations of the National Commission on Forensic Science 1 (Nov 23, 2015), *available at* https://www.justice.gov/ncfs/file/799001/download [https://perma.cc/7HQP-3YM9] [hereinafter the Lynch Memo]. The National Commission also recommended that all labs undergo proficiency testing. DEP'T. OF JUSTICE, RECOMMENDATIONS TO THE ATTORNEY GENERAL ON PROFICIENCY TESTING (Nat'l Comm'n on Forensic Sci. Dec. 8, 2016), *available at* https://www.justice.gov/archives/ncfs/page/file/905566/download [https://perma.cc/TK4P-KJ9M]. The Justice Department has not yet acted on this recommendation.

194. *See generally Forensic Accreditation*, ANAB, https://www.anab.org/forensic-accreditation [https://perma.cc/3B26-BA4F] (last visited June 11, 2018).

195. *See* Lynch Memo, *supra* note 193.

E. Expert Qualifications

There should be no doubt that experts seeking to testify to conclusions under *Daubert* and Rule 702 are required to disclose their credentials in advance or at least at the *Daubert* hearing.[196] This is typically done in the form of a written *curriculum vitae*.[197] The Justice Department has agreed that this disclosure is required.[198] The National Commission on Forensic Science notes that a large number of forensic witnesses have lied about their credentials.[199] It is interesting that both Zain[200] and Gilchrist[201] misrepresented, in minor ways, relevant credentials. If the individual practitioner is or is not certified, that should be revealed.[202]

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196. Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993).

197. Jim Mangraviti, *How to Write a Curriculum Vitae (CV) for Expert Witness Work*, SEAK (Sept. 5, 2015), https://www.testifyingtraining.com/write-curriculum-vitae-cv-expert-witness-work/ [https://perma.cc/H934-GYKE].

198. Yates Memo, *supra* note 13, at 3:

> Fourth, the prosecutor should provide to the defense information on the expert's qualifications. Typically, this material will include such items as the expert's curriculum vitae, highlighting relevant education, training and publications, and a brief summary that describes the analyst's synopsis of experience in testifying as an expert at trial or by deposition.

199. DEP'T. OF JUSTICE POLICY RECOMMENDATION, *supra* note 141, at 17 n.82:

> E.g., Maddox v. Lord, 818 F.2d 1058, 1062 (2d Cir. 1987) (serologist testified falsely about academic credentials); Kline v. State, 444 So. 2d 1102 (Fla. Dist. Ct. App. 1984) (psychologist convicted of perjury for claiming he had a doctorate during Ted Bundy trial); People v. Alfano, 420 N.E.2d 1114, 1116 (Ill. App. 1983) (arson expert testified falsely about his academic credentials); State v. Elder, 433 P.2d 462 (Kan. 1967) (lab technician convicted of perjury for misrepresenting his educational background); State v. DeFronzo, 394 N.E.2d 1027, 1030 (Ohio C.P. 1978) (lab analyst pleaded guilty to 8 counts of falsification for misstating his academic credentials). *See also* Michael Saks, *Prevalence and Impact of Ethical Problems in Forensic Science*, 34 J. FORENSIC SCI. 772 (1989) (listing other cases); James Starrs, *Mountebanks Among Forensic Scientists*, in 2 FORENSIC SCIENCE HANDBOOK 1, 7, 20-29 ®. Saferstein ed. 1988); Annotation, *Perjury or Wilfully False Testimony of Expert Witness as Basis for New Trial on Ground of Newly Discovered Evidence*, 38 A.L.R.3d 812.

200. Mr. Zain claimed to have minored in chemistry whereas he had only taken a few courses with little success. Chan, *supra* note 68.

201. Ms. Gilchrist testified that she was a member of the American Academy of Forensic Scientists when her membership had been revoked for non-payment of dues. *See* Scott Cooper, *Chemist's colleagues saw warning signs*, NEWSOK (May 13, 2001, 12:00AM) http://newsok.com/article/1057162 [https://perma.cc/XV7T-7PRC].

202. The National Commission on Forensic Science adopted a "views" document on practitioner certification calling for progress toward consistent certification of all practitioners. DEP'T. OF JUSTICE, VIEWS OF THE COMMISSION CERTIFICATION OF FORENSIC SCIENCE PRACTITIONERS (Nat'l Comm'n on Forensic Sci. Sept. 12, 2016), *available at* https://www.justice.gov/archives/ncfs/page/file/905897/download [https://perma.cc/9PX9-259D]. This idea did not

There is also a need to gather any *Giglio*[203] material relevant to the witness.[204]

F. Communications Concerning the Case

The case file on an examination should include communications between the expert and others about the case.[205] The National Academies of Science Report[206] calls for study of human bias in forensic work.

> [The proposed agency to oversee forensic science] should encourage research programs on human observer bias and sources of human error in forensic examinations. Such programs might include studies to determine the effects of contextual bias in forensic practice (e.g., studies to determine whether and to what extent the results of forensic analyses are influenced by knowledge regarding the background of the suspect and the investigator's theory of the case).[207]

They based that recommendation on existing studies.[208] They cite a study showing that non-task related contextual information influences forensic conclusions.[209] Thus, there have been critiques of the "verification" phase of fingerprint examinations because the second examiner knows that a previous identification has been made.[210] They also note the erroneous fingerprint identification of Brandon Mayfield as an example of confirmation bias under emergency circumstances.[211] In the hands of an unscrupulous examiner, the felt need to support the investigative "team," will result in deliberate fabrication.[212] In the hands of those trying to be accurate, it will provide the impetus to call a marginal or questionable result in favor of the conclusion sought. Thus,

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become a recommendation to the Department of Justice and was never acted on by the Attorney General.

203. Giglio v. United States, 405 U.S. 150 (1972).

204. *See* Yates Memo, *supra* note 13; *see also* Ogden memo, *supra* note 146.

205. *See* Yates Memo, *supra* note 13; *see also* Ogden memo, *supra* note 146.

206. *See generally* NAS REPORT, *supra* note 6.

207. *Id*. at 24.

208. *See generally id*. at 122-24.

209. Itiel E. Dror & David Charlton, *Why Experts Make Errors*, 56 J. FORENSIC IDENTIFICATION 600, 600-16 (2006).

210. *See generally* Glenn Langenburg et al., *Testing for Potential Contextual Bias Effects during the Verification Stage of the ACE-V Methodology When Conducting Fingerprint Comparisons* 54 J. FORENSIC SCI. 571 (2009); Elizabeth J. Reese, *Techniques for Mitigating Cognitive Biases in Fingerprint Identification*, 59 UCLA L. REV. 1252 (2012).

211. Robert B. Stacey, *Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, FBI (Jan. 2005), https://archives.fbi.gov/archives/about-us/lab/forensic-science-communications/fsc/jan2005/special_report/2005_special_report.htm [https://perma.cc/M7LV-7VXX]; *see generally* Saul M. Kassin et al., *The Forensic Confirmation Bias: Problems, Perspective, and Proposed Solutions* 2 J. OF APPLIED RES. IN MEMORY & COGNITION 42 (2013).

212. *See* discussion *supra* Part II.D (concerning instances of forensic fraud).

disclosure of those communications will be relevant to assessment of the application of methods used. The Justice Department has agreed to disclose at least some of this material.[213]

G. Summary

These types of disclosures are all clearly tied to needs of the district court to discharge its responsibilities under the Rules of Evidence and the relevant Constitutional standards. Adhering to these standards will take a giant step in preventing forensic fraud.

V. NATIONAL COMMISSION ON FORENSIC SCIENCE REMEDY INADEQUATE

The National Commission on Forensic Science recommended that, "[t]he Attorney General should direct federal prosecutors" to make appropriate disclosures in litigation where they intend to offer expert testimony.[214] To work lasting and enforceable change in discovery of materials required to check fraud and deficient performance, change in the internal policy of the Justice Department is insufficient. What is needed is a change in Rule 16 of the Federal Rules of Criminal Procedure.[215] This is true for two reasons: internal policies of the Department of Justice are not enforceable by defendants or by the courts, and internal policies are subject to the vagaries of shift in attitudes by the leadership of the Department.

On the issue of enforceability, we need to look to the status of internal policy directives. The directives of the Attorney General to the U.S. Attorneys located in every federal judicial district are embodied in the U.S. Attorneys Manual (USAM).[216] The USAM provides direction on the handling of all of the various types of litigation normally dealt with by U.S. Attorneys. Title 9 of the Manual deals with criminal cases and 9-5.000 deals with "Issues Related To Trials And Other Court Proceedings."[217] No section of the USAM deals expressly with the disclosure of forensic material. The closest is 9-5.001 which is the policy regarding disclosure of exculpatory and impeachment information.[218]

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213. *See* Yates Memo, *supra* note 13; *see also* FED. R. EVID. 702(d).

214. RECOMMENDATIONS TO THE ATTORNEY GENERAL, *supra* note 152, at 1. The NCFS has ceased to function, because Attorney General Sessions failed to renew it in April of 2017. In an earlier draft, it also recommended that the Department seek a change in Rule 16. DEP'T. OF JUSTICE POLICY RECOMMENDATION, supra note 141, at 2.

215. *See* proposed change starting *infra* note 326.

216. The USAM is available on-line. *U.S. Attorneys' Manual*, U.S. DEP'T OF JUSTICE https://www.justice.gov/usam/united-states-attorneys-manual [https://perma.cc/BH69-NS5C] (last visited May 22, 2018) [hereinafter USAM].

217. *9-5.000-Issues Related to Discovery, Trials, And Other Proceedings,* OFFICE OF THE U.S. ATT'YS, https://www.justice.gov/usam/usam-9-5000-issues-related-trials-and-other-court-proceedings [https://perma.cc/C7JA-5PFV] (last visited May 21, 2018).

218. *9-5.001- Policy Regarding Disclosure of Exculpatory and Impeachment Information*, *supra* note 154. The Manual on this topic was last updated in December of 2017. The Ogden memo,

As Elizabeth Magill points out in her article on "agency self-regulation,"[219] the USAM "commits the government to a variety of substantive policies that are not required by law."[220] The Department is eager to point out that the USAM guidance is "not intended to have the force of law or to create or confer any rights, privileges, or benefits."[221]

Deputy Attorney General David W. Ogden, author of the section of the current manual dealing with *Guidance for Prosecutors Regarding Criminal Discovery*, cites U.S. Supreme Court case of *United States v. Caceres* as authority that the USAM confers no benefits on third parties.[222] In *Caceres*, the Internal Revenue Service violated its own internal procedure in surreptitiously recording conversations between one of its agents and a man offering that agent a bribe.[223] Over the strong dissent of Justice Thurgood Marshall, the Court held that since the regulation in question protected no constitutional or statutory right and since the defendant had not relied to his detriment on the policy, the defendant was not entitled to the relief of suppression of the evidence in question.[224] In doing so, it distinguished, without discussing, a long line of cases holding that the government must follow its own regulations and that parties who suffer because of a failure to follow those regulations are entitled to relief.[225] As Justice Marshall summarized:

> In a long line of cases beginning with *Bridges v. Wixon*, 326 U.S. 135, 152-153 . . . (1945), this Court has held that "one under investigation . . . is legally entitled to insist upon the observance of rules" promulgated by an executive or legislative body for his protection. See *United States v. Nixon,* 418 U.S. 683, 695-696 . . . (1974); *Morton v. Ruiz,* 415 U.S. 199, 235 . . . (1974); *Yellin v. United States*, 374 U.S. 109 . . . (1963); *Vitarelli v. Seaton*, 359 U.S. 535 . . . (1959); *Service v. Dulles*, 354 U.S. 363 . . . (1957); *United States ex rel. Accardi v. Shaughnessy*, 347 U.S. 260 . . . (1954). Underlying these decisions is a judgment, central to our concept of due process, that government officials no less than private citizens are bound by rules of law. Where individual interests are implicated, the Due Process Clause requires that an executive agency adhere to the standards by which it professes its action to be judged. See *Vitarelli v. Seaton, supra*, 359 U.S. at 547 . . . (Frankfurter, J.,

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which addressed broadened discovery in response to the Senator Ted Stevens case, is annexed to the Manual as Resource 165. *See infra* text accompanying note 310. That memo was issued on January 4, 2010. Both the Ogden memo and the Yates memo were incorporated into the text of the Manual in the December 2017 revision. *See* text *infra* at notes 250-52.

219. Elizabeth Magill, *Agency Self-Regulation*, 77 GEO. WASH. L. REV. 859, 863 (2009).

220. *Id.* at 867.

221. Ogden Memo, *supra* note 146.

222. 440 U.S. 741 (1979).

223. *See id.* at 749.

224. *Id.* at 744.

225. *Id.* at 757-58.

concurring in part and dissenting in part).[226]

Marshall points out that the prior precedent does not rely on the existence of a Constitutional or statutory requirement for the regulation: "This Court has consistently demanded governmental compliance with regulations designed to safeguard individual interests even when the rules were not mandated by the Constitution or federal statute."[227]

One way to distinguish *Caceres* from a case which might arise under the USAM disclosure provisions is that those disclosure provisions stem from the constitutional mandate for a fair trial.[228] The *Caceres* Court cited for support of its holding *Bridges v. Wixon*,[229] which it characterized as standing for the proposition that the regulations upheld in that case were "designed 'to afford [the alien] due process of law.'"[230] One could clearly argue that the USAM provisions on disclosure were designed to prevent due process violations.[231] Certainly in cases where it could be shown that the failure to disclose concealed exculpatory or impeachment evidence, a violation of the USAM would give rise to constitutional problems.[232]

However, in those clear constitutional violation cases, it is not obvious what a regulatory violation claim would add to the remedies sought by the defendant to whom disclosure was denied. The real utility of an independent USAM claim would arise where the defendant sought disclosure for use in cross-examination to discredit the expert, not through outright impeachment with a showing of bias or inconsistent statement, but through some failure of science or method, lack of proficiency, or of proper documentation. It is unlikely under current materiality rules[233] that a U.S. Attorney would regard material for such a cross as a mandatory disclosure under *Brady* or *Giglio*.

Caceres has not been overruled by the Court nor has any clarification of the apparent conflict with the *Accardi*[234] line of cases been forthcoming. Eight circuits have addressed the issue of the enforceability of the USAM, and all have held that it does not give rise to a right to enforcement on the part of

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226. *Id.*

227. *Id.* at 759. He also maintains that individual reliance on the regulation, such as might occur with the granting of a governmental benefit, had not been previously required as a prerequisite to the right to invoke the regulation. *Id.* at 761.

228. *See 9-5.001- Policy Regarding Disclosure of Exculpatory and Impeachment Information*, *supra* note 154.

229. 326 U.S. 135, 152-58 (1945).

230. *Caceres*, 440 U.S. at 749. The Supreme Court does not appear to have further clarified the line between *Accardi, et al*. and *Caceres*.

231. In fact, those provisions were annexed to the USAM in response to the due process violations which occurred in the Stevens case. *See infra* text accompanying note 304.

232. *See generally* Giglio v. United States, 405 U.S. 150 (1972); Brady v. Maryland, 373 U.S. 83 (1963).

233. *See* discussion of materiality *infra* text notes 299-301, 307-20.

234. United States *ex rel.* Accardi v. Shaughnessy, 347 U.S. 260 (1954) is generally cited as the leading case on the requirement that the government follow its own regulations.

defendants.[235]

The preface to the USAM explicitly states: "As is the situation with regard to other Departmental policies, compliance is expected in all cases but a failure to comply is not intended to confer any rights on a defendant or another party in litigation with the United States."[236] No circuit has held to the contrary.[237]

Thus, it would appear that there is no chance of using the USAM as a source of law to require discovery.[238] It is certainly possible, although probably unlikely absent a constitutional violation, that violations of the USAM might give rise to employment or ethical violations,[239] but such enforcement will not aid the defense in preventing the kinds of dubious, sloppy, or fraudulent claims that the National Commission on Forensic Science was targeting.

However, even if the Courts were prepared to compel disclosure based on the USAM, the contents of that manual are subject to unilateral change at any time.[240] Unlike the Rules of Criminal Procedure which require concurrence of the Court and Congress to amend, the USAM is drafted and reviewed by the Executive Office for U.S. Attorneys pursuant to an Order from the Attorney General.[241] In

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235. *See, e.g.*, United States v. Michaud, 860 F.2d 495, 497 (1st Cir. 1988) (citing cases); United States v. Busher, 817 F.2d 1409, 1411 (9th Cir. 1987) (defendant not entitled to rely on USAM where the manual stated it did not create any rights enforceable at law by any party); *see also* United States v. Lee, 274 F.3d 485, 493 (8th Cir. 2001); United States v. Myers, 123 F.3d 350, 355-56 (6th Cir. 1997); Nicholas v. Reno, 124 F.3d 1376, 1376 (10th Cir. 1997); United States v. Under Seal, 42 F.3d 876, 880 (4th Cir. 1994); United States v. Gillespie, 974 F.2d 796, 800-02 (7th Cir. 1992); United States v. Craveiro, 907 F.2d 260, 264 (1st Cir. 1990); *Busher*, 817 F.2d at 1411-12; United States v. Catino, 735 F.2d 718, 725 (2d Cir.1984).

236. *See Craveiro*, 907 F.2d at 264.

237. A review of the remaining circuits has turned up no case in which the USAM was enforced to the benefit of a defendant.

238. It is this very lack of judicial enforcement of the USAM which led the Advisory Committee on the Criminal Rules in 2006 to recommend an amendment to Rule 16 to incorporate a "Brady" provision. *See* AM. BAR ASSOC., CRIMINAL JUSTICE SECTION, REPORT TO THE HOUSE OF DELEGATES 4 (Aug. 2011).

239. Even in the *Stevens* case, *see* footnote 310 *infra*, the report of the Special Counsel appointed by the D.C. Circuit Court did not recommend contempt sanctions despite a finding of intentional withholding of exculpatory evidence. Notice of Filing of Report to Hon. Emmet G. Sullivan at 514, No. 1:09-mc-00198-EGS, Document 84 (2012) [hereinafter Stevens Report].

240. *9-27.140 -Modifications or Departures,* OFFICE OF THE U.S. ATT'YS, https://www.justice.gov/usam/usam-9-27000-principles-federal-prosecution#9-27.130 [https://perma.cc/J7RF-57XQ] (last visited May 21, 2018).

241. 28 C.F.R § 0.16 (b) (Order 665-76, 41 FR 46598, Oct. 22, 1976); 28 C.F.R.§0.22 (b) (Order No. 1413-90, 55 FR 19064 May 8, 1990):

> The Executive Office for U.S. Attorneys, shall be under the direction of a Director. Under the supervision of the Deputy Attorney General, the Director shall:
>
> (b) Publish and maintain, subject to the general supervision of the Attorney General and under the directions of the Deputy Attorney General, a U.S. Attorneys' Manual for the

addition to disclaiming any intent to create any rights in third parties, it is not intended to constrain the "litigation prerogatives" of the Department of Justice.[242] Thus, the USAM may be revised at any time.

To bring this point home, we need only look at the fate of the National Commission on Forensic Science itself. As noted above, the action which created the Commission called for it to be subject to renewal in April of 2017.[243] The members of the Commission believed that important work still needed to be done.[244] Nevertheless, the incoming Attorney General, without explanation, decided to terminate the Commission.[245] The Department of Justice sought public comment on a replacement vehicle for the Commission.[246] Two hundred and fifty-three comments were received.[247] No replacement vehicle has yet been announced. All of the work product generated by the Commission has been archived.[248]

Before its demise, the Commission made the recommendations discussed above.[249] The then Attorney General accepted the recommendations at least in part[250] and provided a memo from then Deputy Attorney General Sally Yates providing guidance to the U.S. Attorneys on "Supplemental Guidance for Prosecutors Regarding Criminal Discovery Involving Forensic Evidence and Experts."[251] The memo was incorporated into the USAM in December of 2017

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internal guidance of the U.S. Attorneys' Offices and those other organizational units of the Department concerned with litigation.

242. U.S. Attorneys' Manual 1-1.200 (2018):

> The Justice Manual provides internal DOJ guidance. It is not intended to, does not, and may not be relied upon to create any rights, substantive or procedural, enforceable at law by any party in any matter civil or criminal. Nor are any limitations hereby placed on otherwise lawful litigation prerogatives of the DOJ.

243. *See* Memo of Understanding, *supra* note 11, § VIII.

244. *See generally* NAT'L COMM'N ON FORENSIC SCI., REFLECTING BACK–LOOKING TOWARD THE FUTURE (2017), *available at* https://www.justice.gov/archives/ncfs/page/file/959356/download [https://perma.cc/S4ZB-47GH].

245. *Attorney General Jeff Sessions Announces New Initiative to Advance Forensic Science and Help Counter the Rise in Violent Crime*, *supra* note 9.

246. Justice Dep't, *Notice of Public Comment Period on Advancing Forensic Science*, FED. REGISTER (Apr. 13, 2017), https://www.federalregister.gov/documents/2017/04/13/2017-07512/notice-of-public-comment-period-on-advancing-forensic-science [https://perma.cc/Q2TY-96LX].

247. *Notice of Public Comment Period on Advancing Forensic Science*, REGULATIONS.GOV, https://www.regulations.gov/docketBrowser?rpp=50&so=DESC&sb=postedDate&po=0&dct=PS&D=DOJ-LA-2017-0006 [https://perma.cc/NG4H-7RDZ] (last visited May 22, 2018).

248. *Archives*, DEP'T OF JUSTICE ARCHIVES, https://www.justice.gov/archives/ncfs, [https://perma.cc/E6ZX-JJ9J] (last visited May 22, 2018).

249. *See* Justice Dep't, *supra* note 246.

250. *See* Lynch Memo, *supra* note 193.

251. *See* Yates Memo, *supra* note 13.

when the U.S. Attorneys Manual was amended to add section 9-5.003.[252] However, it may be as easily removed in the future.

Because action to alter the internal practices of the Department of Justice is subject to political change, not subject to review, and provides no enforceable right to the criminal defendant, the remedy proposed by the National Commission on Forensic Science is inadequate to address the need for forensic discovery. What is needed is to embody these recommendations into Criminal Procedure Rule 16.

VI. THE CURRENT RULES OF CRIMINAL DISCOVERY

The current Rules of Criminal Procedure, Rule 16, as written and interpreted, is not adequate to the task. This section will explore why that is the case. Let's start with the clear fact that everything which the NFSC recommendation would make discoverable in criminal cases is already discoverable in civil matters. We have seen that several forensic fraud cases came to light only after civil law suits or habeas corpus petitions were filed.[253] The reason for that is in no small part attributable to the availability of discovery in those proceedings. The standard for discovery in civil cases is that the material sought is not privileged and is likely to lead to the production of relevant evidence.[254] This standard of relevance does not characterize criminal discovery. Civil discovery has six main tools: depositions, interrogatories, requests for admission, requests for production (or entry on to land), medical examinations, and, more recently, an expanded role for subpoenas.[255] Criminal discovery has a very limited role for depositions.[256] Most of the devices used are akin to pre-defined requests for production.[257]

The key discovery rule for our purposes is Rule 16 of the Federal Rules of Criminal Procedure. With respect to bench notes, logs, calibration data and the like, four sections of that rule could come into play. To a much lesser extent, the

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252. *9-5.003-Criminal Discovery Involving Forensic Evidence and Experts*, OFFICE OF THE U.S. ATT'YS, https://www.justice.gov/usam/usam-9-5000-issues-related-trials-and-other-court-proceedings [https://perma.cc/C7JA-5PFV] (last visited May 21, 2018). That same amendment elevated the Ogden Discovery memo from supporting material to 9-5.002. This amendment was made after the representative of the Department of Justice had represented to the Advisory Committee on the Criminal Rules in October of 2017 that the Yates' memo was being implemented. *See* COMMITTEE ON RULES OF PRACTICE AND PROCEDURE OF THE JUDICIAL CONFERENCE OF THE UNITED STATES 227 (Dec. 8, 2017), *available at* http://www.uscourts.gov/sites/default/files/2017-12-08-criminal_rules_committee_report_0.pdf [https://perma.cc/SP4K-7RPX] (containing the draft minutes of the October meeting of the Advisory Committee). My thanks to Professor Sara Sun Beale for alerting me to this amendment.

253. *See supra* text accompanying notes 116-18.

254. FED. R. CIV. P. 26(b)(1).

255. FED. R. CIV. P. 27-36, 45.

256. FED. R. CRIM. P. 15. The rules also require notice of certain defenses. FED. R. CRIM. P. 12.1-12.3.

257. FED. R. CRIM. P. 16.

Jencks Act[258] has some potential role as well. The terms of these current rules do not spell out a right to the information we are seeking and the courts have largely adopted constructions of those rules, which have narrowed their utility even further.

A. Rule 16(a)(1)(F)

The part of the rule which seems at first sight to be the best fit is 16(a)(1)(F). That rule provides:

> **Reports of Examinations and Tests.** Upon a defendant's request, the government must permit a defendant to inspect and to copy or photograph the results or reports of any physical or mental examination and of any scientific test or experiment if:
>
> (i) the item is within the government's possession, custody, or control;
>
> (ii) the attorney for the government knows—or through due diligence could know—that the item exists; and
>
> (iii) the item is material to preparing the defense or the government intends to use the item in its case-in-chief at trial.[259]

Surely bench notes and instrument printouts of test results at least fall under the rule. It might require a broader reading to include property logs and calibration test data, but even those are critical to showing that the correct evidence was tested and that the equipment used in the test was working correctly.[260]

Unfortunately, the two Circuit court[261] opinions to address this issue directly have held that material like bench notes and instrument results are not "results or reports" within the meaning of the rule. In *United States v. Berry*, the circuit court devoted one sentence to the issue: "Under Rule 16(a)(1) of the Federal Rules of Criminal Procedure appellant had a right to the results or reports of any examinations, and therefore the personal work notes were not required to be

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258. 18 U.S.C. § 3500 (2012), now largely displaced by FED. R. CRIM. P. 26.2.

259. FED. R. CRIM. P. 16 (a)(1)(F).

260. *See supra* text accompanying notes 146-57, 178-89.

261. *See* United States v. Iglesias, 881 F.2d 1519 (9th Cir. 1989) and United States v. Berry, 636 F.2d 1075, 1082 (5th Cir. 1981). There are also two 10th Circuit cases referencing the rule, but not addressing this issue. In *United States v. Price*, 75 F.3d 1440 (10th Cir. 1996) the court cites *Iglesias*, but ultimately appears to decide the case on the basis that the motion of the defense was too general. In *United States v. Dennison*, 937 F2d 559 (10th Cir. 1991) the court held that delivery of raw interview notes of the defense psychologist to the government was error because those notes were not test results. However, it held that error to be harmless. *Id.* at 566. There are also two 10th Circuit cases under an earlier version of the rule which made disclosure discretionary with the court. United States v. Smaldone, 484 F.2d 311, 320-21 (10th Cir. 1973), *cert. denied*, 415 U.S. 915 (1974); Wolford v. United States, 401 F.2d 331, 333 (10th Cir. 1968). The current rule makes disclosure mandatory.

disclosed."[262] *United States v. Iglesias* provides a fuller discussion. *Iglesias* was a drug case in which the defense asked for access to the following:

> [A]ll documents associated with any scientific analysis of any controlled substance . . . associated with the prosecution of this case. This request includes, but is not limited to those records memorializing the storage and transportation of any such substance . . . ."[263]

The government responded by providing the defense with a copy of the final lab report and agreed to let defense counsel talk to the chemist who presumably performed the test.[264] However, according to the opinion "[t]he government . . . refused to turn over the 'log notes,' protocols, and other internal documents of the chemists who worked on the analysis."[265]

It might be possible to distinguish *Iglesias* because it would appear from the defense request and the government response that the actual test results (bench notes and printouts) were not in issue.[266] Rather, it appears that the defense was seeking essentially chain of custody documentation and the government was objecting to that, the log records, and lab protocols.[267] Although both kinds of documentation might be important to the defense case, they are not the actual results of testing which appear to be contemplated by the rule. However, the court did not confine itself to these issues but swept in bench notes and printouts in its decision.[268]

As the court's opinion goes on to hold, the government did not claim that the material requested was irrelevant nor that it was not within the government's control.[269] Rather the government argued and the court ultimately accepted that the documents sought were not sufficiently formal or final to be considered a "report" or "result."[270] The court acknowledged that the issue was not clear cut and that the documents sought might permit the defendant to make a "more effective defense."[271] But it concluded that the rule was designed to guard against possible "abuses."[272] The court went on to express the fear that, "unlike the final reports, the preliminary log notes are much more likely to be distorted and misused."[273] The opinion does not suggest what the misuse or distortion might be.

The court does acknowledge that the 1974 Advisory Committee notes on this section of the rule suggest a different conclusion when they make the points that

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262. 636 F.2d at 1082.
263. *Iglesias*, 881 F. 2d at 1521.
264. *Id.*
265. *Id.* at 1521.
266. *See generally id.*
267. *Id.* at 1521-22.
268. *Id.* at 1523-24.
269. *Id.* at 1523.
270. *Id.*
271. *Id.*
272. *Id.*
273. *Id.* at 1524.

it is difficult to test expert testimony without advance preparation and that scientific test results are "not likely . . . [to] be distorted or misused if disclosed prior to trial[.]"[274] In its holding the court simply states:

> While we certainly respect defendants' rights to inspect and copy the actual results or reports of scientific tests, we are not willing to force the government to disclose every single piece of paper that is generated internally in conjunction with such tests.[275]

The dissent in *Iglesias* is vigorous and gets to the nub of the matter:

> The final report in this case is of no use in determining whether the testing was appropriate. Only by means of the notes may counsel ascertain anything about the method and accuracy of the testing. Counsel is entitled to explore any inconsistencies or ambiguities contained in the notes.[276]

It goes on to say, "in fact it is difficult to understand the government's reluctance to furnish the information sought in this case."[277]

If *Iglesias* and *Berry*[278] stood alone, they would be troubling precedents, but they have been followed by district courts in at least three other circuits.[279] It is true that increasingly, trial courts have found ways to work around the precedents, but they stand unreversed.

No case under 16(a)(1)(F) has turned on the materiality requirement in that rule, but it is important to trace its origins here because that requirement has played such a large role in the cases under 16(a)(1)(E).[280] I will discuss the problems with this provision in that rule below, but it is worthwhile noting here that the materiality requirement in this part of the Rule, 16(a)(1)(F), was not authored by the Committee on Rules of Practice and Procedure and Rules

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274. *Id.*

275. *Id.*

276. *Id.* at 1526.

277. *Id.*

278. *See generally* United States v. Berry, 636 F.2d 1075 (5th Cir. 1981); *see supra* text accompanying note 273.

279. In the First Circuit, see *United States v. Swartz*, 2012 U.S. Dist. LEXIS 107255 (D. Mass. 2012). In the Third Circuit see *United States v. Wilson*, 2016 U.S. Dist. LEXIS 87908 (D. N.J. 2016). In the Fifth Circuit, there is an appendix opinion: *United States v. Ashlock*, 105 Fed. App'x 581 (5th Cir. 2004). See *supra* text accompanying note 272 for a discussion of two Tenth Circuit cases. A number of state courts have followed this precedent as well. The Second Circuit, on the other hand, in an appendix opinion has ruled that printouts from testing equipment are clearly results within the meaning of the rule. United States v. Evans, 82 Fed. App'x 726 (2nd Cir. 2003), *but see* United States v. Nelson, 103 F. Supp. 2d 512, 515 (N.D.N.Y. 1999) (finding that "notes, rough notes, investigations, tests and draft reports" were not discoverable but did require the government to turn over "final analyses and reports").

280. *See infra* text accompanying notes 307-20.

Advisory Committee.[281] As the provision that went from the Supreme Court to Congress the rule read:

> Upon motion of a defendant the court may order the attorney for the government to permit the defendant to inspect and copy or photograph any relevant . . . (2) results or reports of physical or mental examinations, and of scientific tests or experiments, made in connection with the particular case, or copies thereof, within the possession, custody or control of the government, the existence of which is known, or by the exercise of due diligence may become known, to the attorney for the government . . .[282]

However, the materiality language does appear, without explanation, in the House Report on the bill that ultimately enacted the Rules in 1975.[283] It is my contention, as I will argue below that the Advisory Committee got it right and the materiality requirement does not belong in this rule.

However, even without that requirement, the current version of 16(a)(1)(F) has proven unsatisfactory at producing the disclosures which the NFSC and many commentators view as critical to combat flawed forensic analysis. Hence the need for the proposed reform. But before we leave the existing rules, it is worth exploring three other possible avenues of access to these materials.

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281. *See* FED. R. CRIM. P. 16(a)(1)(F).

282. 383 U.S. 1097-98 (1966).

283. The rule as proposed by the Advisory Committee and originally adopted in 1965 did not contain a materiality test. Rather, it limited the results and reports to those "made in connection with the particular case." As the advisory notes report:

> (2) Relevant results or reports of physical or mental examinations, and of scientific tests or experiments (including fingerprint and handwriting comparisons) made in connection with the particular case, or copies thereof. Again the defendant is not required to designate but the government's obligation is limited to production of items within the possession, custody or control of the government, the existence of which is known, or by the exercise of due diligence may become known, to the attorney for the government. With respect to results or reports of scientific tests or experiments the range of materials which must be produced by the government is further limited to those made in connection with the particular case [citations omitted]. *Id*. (Notes of Advisory Committee on Rules—1974 Amendment).

There was no proposed amendment to this rule in 1974, 416 U.S. 1011, Order transmitting the 1974 proposed amendments, nor did any discussion of this change occur in the 1974 report of the House Judiciary Committee proceedings. *See generally Amendments to Federal Rules of Criminal Procedure*, *Hearings Before the Subcomm. on Criminal Justice of the Comm. on the Judiciary*, 94th Cong. (1975). However, it does appear, without explanation in the House Report on the bill which ultimately enacted the Rules in 1975. H.R. Rep. 94-247 (1975). It was enacted in 89 Stat. 370. The committee reports do not discuss this change, but H.R. Rep. 94-247 contains a public comment from the D.C. Defender Service recommending the change because there might be relevant evidence in a test done in another case. (I want to thank Nicholas Stump of the WVU College of Law Library for helping me to unravel this history.).

B. Rule 16(a)(1)(E)

Rule 16(a)(1)(E) provides a more generic access to governmental records:

> **Documents and Objects.** Upon a defendant's request, the government must permit the defendant to inspect and to copy or photograph books, papers, documents, data, photographs, tangible objects, buildings or places, or copies of portions of any of these items, if the item is within the government's possession, custody, or control and:
>
> (i) The item is material to preparing the defense;
> (ii) The government intends to use the items in its case-in-chief at trial; or
> (ii) The item was obtained from or belongs to the defendant.[284]

The dissent in *Iglesias* suggested that the discovery sought by the defendant in that case could be required under this portion of the rule:

> Requiring production of testing manuals and instructions appears to further the purpose of the rule and to come within its scope. The government has not questioned the materiality of the items requested. Unless the government shows that the materials are not within its possession, custody, or control, or shows that they are internal government documents falling within the exception set forth in Rule 16(a)(2), it would be error for the district court to deny that portion of the request.[285]

A number of the lower courts that have departed from *Iglesias* and required production have done so on the basis of this suggestion of the dissent and in reliance on rule 16(a)(1)(E).[286] However, as the dissent in *Iglesias* points out, there are two potential impediments to successful use of this rule to get at bench notes, instrument results, and the like.[287] The first of these is materiality and the second is work product.[288] We will look at each in turn.

Rule 16(a)(1)(E)(i) requires that the item be "material" to the defense.[289] While it is not clear what materiality means in the discovery context,[290] it is clear that mere relevance is not sufficient, much less the civil litigation standard of likely to lead to relevant evidence. The most commonly cited formulation of a definition is found in *United States v. Graham*:

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284. FED. R. CRIM. P. 16 (a)(1)(E).

285. United States v. Iglesias, 881 F.2d 1519, 1527 (9th Cir. 1989).

286. *See generally* United States v. DeLeon, 2017 U.S. Dist. LEXIS 17811 (D. N.M. 2017); United States v. Liquid Sugars, Inc., 158 F.R.D. 466 (E.D. Cal. 1994); United States v. Zanfordino, 833 F. Supp. 429 (S.D.N.Y. 1993).

287. *Iglesias*, 881 F. 2d at 1524-27.

288. *Id.* at 1527.

289. FED. R. CRIM. P. 16 (a)(1)(E)(i).

290. *See infra* text accompanying notes 291-93.

> Under Rule 16, evidence is material if 'there is a strong indication that it will play an important role in uncovering admissible evidence, aiding witness preparation, . . . or assisting impeachment or rebuttal.'[291]

However, the court goes on:

> Although the materiality standard is 'not a heavy burden,' the Government need disclose Rule 16 material only if it 'enable[s] the defendant significantly to alter the quantum of proof in his favor.'[292]

It would not be difficult to make a showing that bench notes, etc. *might* play an important role in uncovering evidence, assisting witness preparation, or conducting impeachment or rebuttal. Certainly, if the testing was flawed or non-existent, that would be admissible defense evidence. If the testing was based on unsupported scientific claims, the disclosure would aid in supporting defense witnesses and arguments in the context of the *Daubert* hearing.[293] Or if the bench notes were inconsistent with the final report (as they were in Zain),[294] that would provide devastating material for impeachment. But how is the defense to know, before examining the documents sought, that any of these defects will be revealed?

In civil discovery, there is no requirement, outside the work product context, to show that the requestor will benefit from the information sought.[295] You do not know; that is why you ask. But for at least one trial court, the materiality standard has been taken to impose on the defense the obligation to show that the evidence would be favorable. If the outcome of the discovery is unknown, the requestor loses, without even being able to see the item he seeks.[296]

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291. United States v. Graham, 83 F.3d 1466, 1474 (D.C. Cir., 1996) (quoting United States v. Lloyd, 992 F.2d 348, 351 (D.C. Cir. 1993)).

292. *Id.*

293. Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993).

294. *See supra* text accompanying note 116.

295. *See generally Discovery: Work Product and Good Cause Development Since* Hickman v. Taylor, 36 IND. L.J. 186 (1961) ("This work product exemption protects the material prepared by the attorney from discovery except upon a showing of special circumstances justifying such an invasion.").

296. *See generally* United States v. Caro, 597 F. 3d 608 (4th Cir. 2010). On the other hand, some courts adopt a standard which simply requires a relationship between the evidence sought and some proper defense function. *See* United States v. Zanfordino, 833 F. Supp. 429, 432 (S.D.N.Y. 1993). Ironically, having created the difficulties described above with its restrictive reading of (a)(1)(F), the Ninth Circuit has a liberal construction of the materiality requirement. United States v. Soto-Zuniga, 837 F.3d 992, 1003 (9th Cir. 2016):

> Materiality is a 'low threshold; it is satisfied so long as the information . . . would have helped' to prepare a defense. *United States v. Hernandez-Meza*, 720 F.3d 760, 768 (9th Cir. 2013) (citation and internal quotation marks omitted). The test is not whether the discovery is admissible at trial, but whether the discovery may assist Soto-Zuniga in formulating a defense, including leading to admissible evidence. *See id.* ("Information

As the keeper of the vast preponderance of evidence in criminal cases, the U.S. government has fought fiercely to maintain the materiality standard.[297] It enables the government to effectively say, "I do not believe that the items you seek will help you, and since you cannot prove me wrong without seeing them, you lose."[298]

Why do we have such a strange hurdle in criminal cases? There appear to be three reasons. The first is the fear of misuse by the defendant. Witnesses may be suborned or worse if they are disclosed. Evidence not within the control of the government may be destroyed. The defendant may commit perjury. But as the Advisory Committee pointed out in their commentary on 16(a)(1)(F), these fears are simply not salient when we are dealing with the kind of lab notes and other data covered here.[299] The government has the evidence. The tests have been done.

> is material even if it simply causes a defendant to completely abandon a planned defense and take an entirely different path." (citation and internal quotation marks omitted)); *United States v. Lloyd,* 992 F.2d 348, 351 (D.C. Cir. 1993) ("This materiality standard normally is not a heavy burden; rather, evidence is material as long as there is a strong indication that it will play an important role in uncovering admissible evidence, aiding witness preparation, corroborating testimony, or assisting impeachment or rebuttal." *Id.*

297. See statement of Deputy Attorney General James Cole taking the position that no change in the status quo was required by the blatant withholding of *Brady* material in the Ted Stevens case. *Deputy Attorney General James M. Cole Testifies Before the Senate Judiciary Committee*, DEP'T OF JUSTICE (June 6, 2012), https://www.justice.gov/opa/speech/deputy-attorney-general-james-m-cole-testifies-senate-judiciary-committee [https://perma.cc/HP7K-RHHE]. The chief reason advanced for keeping the initial materiality decision in the hands of the prosecution is fear for the safety of witnesses. *See* Kelly A. Zusman & Daniel Gillogly, *Getting a Clue: How Materiality Continues to Play a Critical Role in Guiding Prosecutors' Discovery*, 60 U. S. ATT'YS' BULL 13, 14 (2012). However, as the Advisory Committee notes on Rule 16(a)(1)(F) point out, discovery of results and reports do not pose the threats conjured up by the Department. *See supra* text accompanying notes 152-56.

The conviction of former Senator Ted Stevens was overturned because of the failure of the Department of Justice to turn over exculpatory evidence. An independent investigation instigated by the trial judge found serious misconduct against the government. *See* Stevens Report, *supra* note 239. The trial judge also called for amendment to the exculpatory evidence rules to get rid of the materiality standard. *See* Emmet G. Sullivan, *Enforcing Compliance with Constitutionally-Required Disclosures: A Proposed Rule*, CARDOZO L. REV. *DE NOVO* 138 (2016). It was to head off this proposed change that Mr. Cole testified.

298. In 1994, the House of Delegates approved criminal justice standards for discovery which call for disclosure of "[a]ny material which tends to negate the guilt of the defendant . . ." without reference to materiality. *See* Criminal Justice Section, Discovery Standard 11-2.1(a)(viii). In 2008, the Criminal Justice Section of the ABA labelled control of discovery by the government "The Discovery Paradox" and called for a change in Rule 16. *See* HOUSE OF DELEGATES, RESOLUTION 105D 3-4 (Am. Bar Ass'n 2011), *available at* Https://www.nacdl.org/WorkArea/DownloadAsset.aspx?id=22279.

299. *See* FED. R. CRIM. P. 16, Advisory Committee Notes on 1974 Amendment. One of the

The results have been written down. The witnesses have already been identified in the final report. The only real risk is that able defense counsel will be able to use the disclosures to throw doubt on the technician's conclusion. To the extent that counsel's questioning or arguments are improper, the trial court has full power to control them. To the extent that counsel's arguments are sophistic, opposing counsel should be able to meet them. To the extent that the questions are telling, they should be asked.[300]

The second reason for a materiality standard might be to prevent discovery for discoveries' sake; the use of discovery as a tool of tactical advantage to raise the costs to the other side in litigation. In civil cases, where much less is at stake than the liberty or life of the defendant, we have faced this issue and concluded that more access to information, even with the possibility of misuse, is preferable to trial by ambush[301] or reaching the wrong result because one side has an information advantage. Here, the risk of discovery leverage is much reduced. The government can only be asked to produce what it already has. If there are no bench notes, they cannot be produced. Even the wildest fishing expedition is going to take place in a very small pond.[302]

The final reason is that the courts are confusing two different points in the progress of a case. Materiality in the post-conviction context where *Brady* and other cases are located, requires an exploration of whether any error committed below is harmless.[303] We are trying to look behind the judgment of the trial court to see whether some alteration of the evidence is likely to have made a difference in the outcome. But that is not the context in which discovery takes place.[304] Here, no prior judgment has been rendered. We are not being asked to rewind the clock. The issue here is, what will produce a fairer trial from the inception. Is it a situation in which both sides have access to available information or where one side has a monopoly? Interestingly, the Department of Justice takes the official,

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difficult issues in Rule 16 rules and case law is the frequent renumbering of the rules as changes are made. The rule discussed as (a)(1)(D) is now (a)(1)(F).

> The obligation of disclosure applies only to scientific tests or experiments "made in connection with the particular case." So limited, mandatory disclosure seems justified because: (1) it is difficult to test expert testimony at trial without advance notice and preparation; (2) it is not likely that such evidence will be distorted or misused if disclosed prior to trial; and (3) to the extent that a test may be favorable to the defense, its disclosure is mandated under the rule of *Brady v. Maryland*[.] *Id*.

300. United States v. Iglesias, 881 F 2d 1519, 1526 (9th Cir. 1989).

301. This was Justice William Brennan's characterization of the state of criminal discovery. William J. Brennan, Jr., *The Criminal Prosecution: Sporting Event or Quest for Truth? A Progress Report*, 68 WASH. U. L. REV. 1, 3 (1990).

302. For a description of the material sought, see *supra* Part IV.

303. *See generally* Robert Pondolfi, *Principles for Application of the Harmless Error Standard*, 41 U. CHI. L. REV. 616 (1974) (history of harmless error doctrine).

304. Two courts dealing with materiality in the discovery context make this point. *See* United States v. Liquid Sugars, 158 F.R.D. 466, 470 (E.D. Cal., 1994); United States v. Siegfried, 2000 U.S. Dist. LEXIS 10411 (N.D. Ill. 2000).

but internal position that exculpatory material beyond that required by *Brady* should be made available in discovery,[305] but fights any proposal to externalize and make that standard enforceable.

Assuming that we can dispose of the materiality issue, through a liberal reading of the rule which effectively equates materiality with relevance, we are left with one more problem in using Rule 16(a)(1)(E) to obtain these reports.[306] Unlike the other provisions of Rule 16, 16(a)(1)(E) is limited by a "work product" like provision. That provision makes undiscoverable "reports, memoranda, or other internal government documents made by . . . other government agent in connection with investigating or prosecuting the case."[307] At least one trial court has held that the kind of documents sought here are proscribed under this provision of the rule.[308] On the other hand, two other trial courts have held that (a)(2) does not apply in these circumstances.[309]

So, although a number of courts have granted defense access to the NFSC disclosures using Rule16(a)(1)(E), that route is plagued with potential pitfalls.

C. Rule 16(a)(1)(G)

Another possible route used by lower courts to grant access to these materials

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305. *9-5.001- Policy Regarding Disclosure of Exculpatory and Impeachment Information*, *supra* note 154.

306. One creative court avoided the materiality requirement by finding that if documents were relied on in preparing government witnesses, they were being used by "the government [as evidence] in its case-in-chief at trial[,]" thus making the documents discoverable under FED. R. CRIM. P. 16(a)(1)(E)(ii). *See* United States v. Yee, 129 F.R.D. 629, 635 (N.D. Ohio 1990).

307. FED. R. CRIM. P. 16(a)(2).

308. *See generally* United States v. Wilkerson, 189 F.R.D. 14 (D. Mass. 1999). The defense in *Wilkerson* asked for written records related to drug testing in the case as well as various lab protocols. *Id*. at 15. The court held that other than the results themselves, the other documents were protected by (a)(2):

> Defendant argues that these documents are "material to the preparation of the defendant's defense." Rule 16(a)(1)(C) [now 16(a)(1)(E)]. However, Rule 16(a)(2) acts as a prohibition against compelled discovery of "reports, memoranda, or other internal government documents" even if they could initially be categorized as "material to the preparation of the defendant's defense" as that term is used in Rule 16(a)(1)(C). *Id*. at 16.

Cf. United States v. Cole, 707 F. Supp. 999, 1002 (N.D. Ill. 1989). *Cole* does not lay out the government theory nor that of the defense, but it excludes from discovery "work papers underlying scientific tests or accounting analyses" in a context where only (a)(2) would appear to be on point. *Id*. at 1002.

309. United States v. Zanfordino, 833 F. Supp. 429, 432 (S.D.N.Y. 1993); United States v. Bel-Mar Labs., 284 F. Supp. 875, 887 (E.D.N.Y. 1968). Documents of the kind sought by the NFSC do not contain the kind of "thought process" typically covered by the "work product" doctrine. *See* FED. R. CRIM. P. 16, Advisory Committee Notes on 1974 Amendment (revisions on rules).

is found in Rule16(a)(1)(G).[310] That relatively new provision in the rule provides:

> **Expert Witnesses.** – At the defendant's request, the government must give to the defendant a written summary of any testimony that the government intends to use under Rules 702, 703, or 705 of the Federal Rules of Evidence during its case-in-chief at trial . . . . The summary provided under this subparagraph must describe the witness's opinions, the bases and reasons for those opinions, and the witness's qualifications.[311]

Two appellate courts have held that such a summary must identify bench notes and the like as supporting documents.[312] It is not clear from either of those opinions whether the documents need to be turned over or merely identified, but the requirement would be meaningless if production were not required.[313]

D. Jencks Act and Rule 26.2

The final approach under the current Rules and statutes to force disclosure of the NCFS disclosures is found in the *Jencks* Act.[314] That statute requires the government to turn over to the defense prior statements made by the witness which relate to the "subject matter as to which the witness has testified," at the end of a witness's direct testimony.[315] *Jencks* has been superseded by Rules of Criminal Procedure Rule 26.2,[316] but this rule remains unaltered. Bench notes at least would be a prior statement by the technician and thus producible under

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310. FED. R. CRIM. P. 16(a)(1)(G).

311. *Id.*

312. United States v. Grace, 526 F. 3d 499, 513 (9th Cir. 2008) (tying identification of "documents or information . . . reviewed in preparing his or her report" to the requirement in Rule 16(a)(1)(G) that the expert report include "bases and reasons" for opinions); United States v. Davis, 514 F.3d 596, 612-13 (6th Cir. 2008), holding:

> We conclude that none of these documents adequately indicate the bases for the chemists' laboratory reports; if Davis had hired a chemist, he or she would not have been able to analyze the steps that led the government's chemists to their conclusions. The prosecutors clearly violated Rule 16(a)(1)(G). It was proper for the district court to request that the chemists provide their notes to Davis's counsel.

The court cites the language of the Advisory Committee notes:

> Without regard to whether a party would be entitled to the underlying bases for expert testimony under other provisions of [Fed. R. Crim. P.] 16, the amendment requires a summary of the bases relied upon by the expert. That should cover not only written and oral reports, tests, reports, and investigations, but any information that might be recognized as a legitimate basis for an opinion under Federal Rule of Evidence 703, including opinions of other experts. *Id.* at 612.

313. *See* FED. R. CIV. P. 26(a)(2)(B) (setting forth the requirements of a report for an expert in a civil case.).

314. 18 U.S.C. § 3500 (2012).

315. *Id.*

316. FED. R. CRIM. P. 26.2.

Jencks. The problem with using this vehicle to obtain this information is that it is limited to the witness's statements and thus does not include much of what the NCFS calls for. Further, the timing of *Jencks* disclosures seriously compromises their usefulness because a continuance must be sought to assess the meaning of the notes and to enlist expert assistance in formulating an appropriate attack should one emerge.[317]

Brady and *Giglio* would seem to provide some avenue for relief where the NCFS disclosure is evidently exculpatory or contains evident impeachment material.[318] However, the problems discussed above relevant to the materiality test infect the jurisprudence surrounding those two cases.[319] There is also the danger that the prosecuting attorney, not steeped in forensic science and lacking the impetus to learn that competent defense counsel would have, will, in good faith, miss covered documents. These notes and other documents are not likely to be in the initial case file so that a prosecutor would have to seek it out, again without the defense incentive. It is only relatively recently that an obligation to actually explore the forensic file was articulated by the Department of Justice.[320]

The upshot of this exploration of current rules, statutes, and cases is to reinforce the conclusion, which the NCFS obviously drew: that a change in the *status quo* must occur to ensure access to this material.

VII. AMENDMENT TO THE RULE

What is needed is an amendment to Rule 16 of the Federal Rules of Criminal Procedure to ensure access to the material identified by the NCFS. As currently written, the pertinent parts of that Rule read as follows:

> (a) Government's Disclosure
>
> (1) Information Subject to Disclosure.
>
> . . .
>
> **(F) Reports of Examinations and Tests.** Upon a defendant's request, the government must permit a defendant to inspect and to copy or photograph the results or reports of any physical or mental examination and of any scientific test or experiment if:
>
> (i) the item is within the government's possession, custody, or control;
>
> (ii) the attorney for the government knows—or through due diligence could know—that the item exists; and
>
> (iii) the item is material to preparing the defense or the government intends to use the item in its case-in-chief at trial.

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317. *Jencks* calls for disclosure only after the witness has testified, which makes receipt of this material largely useless in preparing testimony of a defense expert. *See* 18 U.S.C. § 3500.

318. *See generally* Giglio v. United States, 405 U.S. 150 (1972); Brady v. Maryland, 373 U.S. 83 (1963).

319. *See supra* text accompanying notes 290-96, 303-15.

320. *See* Ogden Memo, *supra* note 146.

> **(G) Expert Witnesses.** At the defendant's request, the government must give to the defendant a written summary of any testimony that the government intends to use under Rules 702, 703, or 705 of the Federal Rules of Evidence during its case-in-chief at trial. If the government requests discovery under subdivision (b)(1)(C)(ii) and the defendant complies, the government must, at the defendant's request, give to the defendant a written summary of testimony that the government intends to use under Rules 702, 703, or 705 of the Federal Rules of Evidence as evidence at trial on the issue of the defendant's mental condition. The summary provided under this subparagraph must describe the witness's opinions, the bases and reasons for those opinions, and the witness's qualifications.[321]

Rule 16(a)(1)(F) (iii) should be amended as follows:

(iii) the item is **relevant** to the case at issue.

Items falling under this rule shall include, but not be limited to:

(1) records revealing the chain of custody for any material examined or tested,
(2) bench notes and instrument output reflecting the methods used and results obtained for all examinations or tests performed,
(3) records reflecting the most recent prior calibration of any instruments or other equipment used in the examination or testing,[322]
(4) protocols used in the performance of any tests run or examinations performed,
(5) a statement of the qualifications of any personnel involved in the examination and testing, and
(6) other materials considered by the examiner in formulating conclusions regarding the examination, test, or experiment.

As noted above, the concept of materiality appears to have been introduced into Rule 16(a)(1)(F) by the House Judiciary committee in an attempt to broaden the scope of this rule.[323] But the concept of materiality has been used by prosecutors and courts to limit the utility of the Rule 16(a)(1)(E).[324] To remove this threat that a similar fate will befall amended Rule 16(a)(1)(F), the language of the rule is changed to require the production of any material in the government's possession "relevant" to examination and testing in the case at

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321. FED. R. CRIM. P. 16 (a)(1)(F)-(G).

322. Ironically, a provision requiring disclosure of such calibration is contained in the traffic laws of New York State. N.Y. CRIM. PROC. LAW § 240.20(1)(k) (McKinney 2018).

323. *See supra* text accompanying note 261.

324. *See* discussion of materiality *supra* text accompanying notes 290-94, 299-312.

issue. To expressly reject the precedents in *Berry* and *Iglesias*[325] and to head off similar mischief going forward, I propose explicit categories of disclosures.

As noted above, the current policy of the Justice Department, at least as articulated in its public sources, calls for the disclosure of most of the enumerated records.[326] Given this agreement, there should not be resistance from the Department to the amendment of Rule 16.[327] However, when Judge Jed Rakoff, recently of the NCFS, proposed amending Rule 16 to parallel the Yates memo,[328] the Department of Justice spoke against the proposal of the ground that the Department had already implemented these changes internally.[329] However, as discussed above, the DOJ policy is not enforceable by defendants.[330] Thus, a change in the Rule is necessary.

VIII. CONCLUSION

This amendment to the Rule will not address all of the problems raised by the NAS Report. As I have discussed above, there is a discernable taxonomy of those problems and case by case litigation in the criminal courts is not the best vehicle to address them all.[331] But problems of the persistence of outright fraud and less culpable error in forensic testing are amenable to correction through this means. Most obviously, disclosure of critical documentation will help defense counsel formulate an attack through cross examination and *in limine* motions to exclude, on fraudulent misconduct. When counsel have had the ability to discover these records,[332] frauds have been disclosed.

Less obviously, the knowledge that records will be discoverable will provide

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325. *See supra* text accompanying note 263. Even though courts have acknowledged that the 1974 revision of Rule 16 was designed to increase the scope of discovery, they have been reluctant to do so. *See* United States v. Iglesias, 881 F.2d 1519, 1524 (1989). Therefore, explicit enumeration of material to be disclosed is necessary.

326. *See supra* text accompanying notes 146, 154-156, 171, 195-198, 213. *But see* the fact that aspects of this policy are not referenced in the U.S. Attorneys Manual. *See* discussion *supra* text accompanying notes 250-57. The only item not specifically covered by the current policy is instrument calibration which is surely the least problematic of the disclosures required. The existing policy also calls for a case by case review of correspondence to ensure that no work product is disclosed.

327. However, resistance can be expected to incorporation of this policy in Rule 16. *See supra* text accompanying note 302.

328. See the Advisory Committee on Criminal Rules agenda book for its meeting on October 24, 2017 at tab 6B. ADVISORY COMMITTEE ON CRIMINAL RULES (Chi., Ill. Oct. 24, 2017), *available at* http://www.uscourts.gov/sites/default/files/2017-10-criminal-agenda-book.pdf [https://perma.cc/UKE3-TRW3].

329. See Draft Minutes of the Advisory Committee on Criminal Rules for its October 24, 2017 Meeting. *See generally id.*

330. *See supra* text accompanying notes 214-38.

331. *See* discussion *supra* Part II.

332. In too many instances, these materials were only disclosed through the use of civil discovery mechanisms in post-conviction proceedings. *See supra* text accompanying notes 116-18.

a deterrent to that fraud and sloppy practice. Now an examiner looking to cut corners or to lie outright about their results can do so with a fair degree of assurance that no one will scrutinize their conduct or, at least, will not do so until many years after the fact.[333] They might be less willing to stray if they knew they would face an informed cross-examination based on their own documents.

An additional deterrent will be provided by prosecutor review of those same records. This proposed change should cause prosecutors to collect and review materials which now they have little incentive to examine.[334] The knowledge that these records will go to the defense will provide an incentive to police providers of testing services to ensure quality.

American courts and lawyers are fond of the assertion by Wigmore that cross examination is "beyond any doubt the greatest legal engine ever invested for the discovery of truth."[335] Even if one is more skeptical, one would have to agree with Justice Stevens in his dissent in *United States v. Salerno et al.* that "one must admit that in the Anglo-American legal system cross-examination is the principal means of undermining the credibility of a witness whose testimony is false or inaccurate."[336]

It is beyond doubt that forensic investigation could profit from a major injection of "truthiness."[337] But any engine needs fuel to run. And the Rules Advisory Committee has noted in a number of contexts that prior access to information is that fuel for cross-examination.[338]

In civil litigation we would reject, out of hand, the effort of any party to deflect relevant and discrete discovery requests with the assertion that "there is nothing here to help you, trust us!"

Prosecutorial *Brady* review of forensic data did not unearth any of the scandals discussed above.[339] Quite the contrary, prosecutors and police were all

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333. It has only been when scandal has arisen that supervisors or special investigations have looked at many of these instances of fraud. *See supra* text accompanying note 98. When that scrutiny has occurred, it has been relatively easy to find the fraudulent conduct. *See supra* text accompanying notes 116-17. Had the scrutiny come earlier, many erroneous findings would not have made their way into the criminal justice system.

334. The only reference to forensic material in the current U.S. Attorneys Manual provision on discovery, U.S.A.M. 9-5.100, notes that failure to follow forensic protocols would be discoverable under *Giglio*. *See 9-5.100- Policy Regarding the Disclosure to Prosecutors of Potential Impeachment Information Concerning Law Enforcement Agency Witnesses ("Giglio Policy)*, *supra* note 190. That provision appears to have been added to the Manual in 2014 (see introductory notes to the section) A full developed policy with respect to forensic disclosure was only set forth in 2017 and is not incorporated in the Manual. *See supra* text accompanying notes 250-57.

335. 5 WIGMORE ON EVIDENCE § 1367, at 32 (J. Chadbourn rev. 1974).

336. United States v. Salerno, 505 U.S. 317, 328 (1992) (Stevens, J., dissenting).

337. *See* discussion *supra* Part II.C-D. Due apologies to Stephen Colbert.

338. *See supra* note 174 and accompanying text discussing FED. R. EVID. 705; *supra* note 284 and accompanying text discussing FED. R. CRIM. P. 16.

339. *See* discussion *supra* Part II.

too eager to rely on experts who could produce results which were too good to be true.[340]

We have a choice. We can reconcile ourselves to periodic scandals, lost years of innocents behind bars, and the risk to the community when true criminal perpetrators remain at large. Or we can take a step which the civil practice of law took seventy-nine years ago. It is time to do what the Rules Advisory Committee tried to do thirty-three years ago and require meaningful discovery of forensic testing. It is time to provide some fuel to the engine that is cross examination.

340. *See supra* text accompanying notes 134-38.