The Honorable Richard McDermott

**SUPERIOR COURT OF THE STATE OF WASHINGTON**
**FOR KING COUNTY**

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| STATE OF WASHINGTON,<br>Plaintiff,<br>v.<br><br>KENNETH D. SIMS,<br>Defendant. | NO. 08-1-06912-1 KNT<br><br>DEFENSE MOTION TO EXCLUDE LATENT FINGERPRINT TESTIMONY |

## MOTION

The defense anticipates that the State will offer evidence at trial that a partial latent fingerprint recovered from the outside of alleged victim K.S.'s car matches an inked fingerprint impression identified to the defendant charged as Kenneth D. Sims. The defendant, by and through assigned counsel, Brent Hart and Juanita Holmes, respectfully moves this Court to exclude latent fingerprint testimony in this case because the relevant scientific community does not generally accept that latent fingerprint analysis can reliably and accurately demonstrate a connection between a latent print and a specific individual. This motion is based on *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923) (adopted by Washington in *State v. Woo,* 84 Wash.2d 472, 473, 527 P.2d 271 (1974); and maintained despite changes in federal law in *State v. Copeland,* 130 Wash.2d 244, 259, 922 P.2d 1304 (1998)); the Fifth Amendment to the United



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States Constitution; and Article I, Section 3 of the Washington State Constitution; and the following analysis.

## INTRODUCTION

On February 18, 2009, the prestigious National Research Council of the National Academy of Sciences published a watershed report, concluding that latent fingerprint analysis has not 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." Nat'l Research Council, Nat'l Acad. of Science, *Strengthening Forensic Science in the United States: A Path Forward*, [hereinafter 2009 NRC Report], 7 (emphasis added). The report is unequivocal: there is no existing research that demonstrates that latent fingerprint identification evidence is valid.

The 2009 NRC Report constitutes the latest and most definitive declaration from the scientific community that has increasingly recognized the absence of evidence validating fingerprint identifications. For although fingerprint evidence has enjoyed uncritical acceptance from courts for over 100 years, "[m]any of the most basic claims of fingerprint identification have never been tested empirically, and . . . in the strong form in which they usually are presented, those claims in fact are unprovable." 4 Mod. Sci. Evid. § 32:1.

"The core concern of *Frye* is whether the evidence being offered is based on an established scientific methodology. This involves both an accepted theory and general acceptance of the technique used to implement that theory." *State v. Russell,* 125 Wash.2d 24, 41, 882 P.2d 747 (1994). "If scientists significant either in number or expertise publically oppose [a technique or method] as unreliable, then that [technique or method] does not pass



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muster under *Frye*." *United States v. Jenkins*, 887 A.2d 1013, 1022 (D.C. 2005) (quoting *United States v. Porter*, 618 A.2d 629, 634 (D.C. 1992)). The 2009 NRC Report reflects the current view of scientists significant both in number and expertise. The National Research Council (NRC) Committee tasked by Congress with studying forensic science included members of the scientific community, forensic practitioners, and legal experts. The Committee reviewed studies related to forensic disciplines, conducted independent research, heard testimony from experts in the field, and concluded there is no scientific evidence that latent fingerprint analysis can consistently and accurately "demonstrate a connection between evidence and a specific individual or source." 2009 NRC Report at 7.

As the 2009 NRC Report explained, the method of evaluating latent fingerprints, commonly known as ACE-V, "is not specific enough to qualify as a validated method for this type of analysis. [The method] does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that two analysts following it will obtain the same results." *Id.* at 142. The NRC cited "a thorough analysis of the ACE-V method" and its "unambiguous" conclusion: "'We have reviewed available scientific evidence of the validity of the ACE-V method and **found none.**'" *Id.* at 143 (quotation and citation omitted, emphasis added).

"[T]rial courts must still undertake the *Frye* analysis if one party produces new evidence which seriously questions the continued general acceptance or lack of acceptance as to that theory within the relevant scientific community." *State v. Cauthron,* 120 Wash.2d 879, 888, note 3, 846 P.2d 502 (1993). "Whatever the merits of the prior decisions," new developments – such the 2009 NRC Report and recent scientific research – can "chang[e] the scientific landscape



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considerably and demonstrate[e] indisputably that there is no general acceptance of the current process." *Porter*, 618 A.2d at 639 n.17 (quotation and citation omitted). To be sure, many fingerprint examiners still forcefully vouch for the validity of the ACE-V method, but the conflict between fingerprint practitioners and scientists, including the NRC, "a body composed of . . . a distinguished cross-section of the scientific community,"[1] constitutes the very disagreement that makes expert testimony inadmissible under *Frye* and its progeny. "[A] court looks not only to the technique's acceptance in the forensic setting but also to its acceptance by the wider scientific community familiar with the theory and underlying technique." *Russell*, 125 Wash.2d at 41. "The very existence of a dispute precludes admission." *Jenkins*, 887 A.2d at 1022. Accordingly, the latent fingerprint testimony should be excluded.

## ARGUMENT

The question before the court is whether the claim by latent print examiners that they can accurately and reliably connect a latent print to a specific person is generally accepted in the relevant scientific community.[2] Part I of this Motion defines **who** constitutes the relevant scientific community, and Part II describes **what** that community generally accepts: namely, that there is no evidence that latent print analysis can accurately and reliably connect a latent print to a specific person. First, however, this Motion addresses any possible misapprehension that the

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[1] *Roberts v. United States*, 916 A.2d 922, 930 (D.C. 2007) (quotation and citation omitted).

[2] As explained in more detail in Part II(A), *infra*, a "latent" print is a fingerprint or part of a fingerprint that is associated with a crime (i.e. found at the crime scene), that is compared with the prints of a known individual. "Latent print identification" is the method of identifying people by comparing fingerprints, and is alternately described by practitioners as "friction ridge identification." *See* David R. Ashbaugh, QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY (CRC Press, 1999).



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longstanding acceptance of fingerprint evidence somehow insulates it from review, or makes a new assessment of its validity unnecessary.

At first blush it may be difficult to conceive of fingerprint identification as lacking scientific support. After all, fingerprints are enshrined not just in the law, but in our cultural imagination as irrefutable proof of identity. Yet fingerprinting was introduced in the early 1900s, when standards for admissible science were considerably lower: there "was no doctrinally mandated gatekeeping approach to expert evidence like those that apply today," whether under *Frye* or *Daubert*. Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 Brook. L. Rev. 13, 32 (Fall 2001). "Courts began admitting fingerprint evidence early last century with relatively little scrutiny, and later courts, relying on precedent, simply followed along." *United States v. Crisp*, 324 F.3d 261, 277 (4th Cir. 2003) (Michael, J., dissenting).[3] As the 2009 NRC Report observed, on the basis of these early cases, "[o]ver the years, courts have admitted fingerprint evidence, even though the evidence has made its way into the courtroom without empirical validation of the underlying theory and/or its particular application." 2009 NRC Report at 102 (quotation and citation omitted).

The scientific and legal communities were recently jolted out of their unquestioning acceptance of fingerprint evidence by three new developments. First, there were several well-publicized misidentifications using latent fingerprint evidence, none more damning of the

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[3] *See* Chistophe Champod, et al, FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS [hereinafter Champod], 196 (CRC Press, 2004) ("Court acceptance without much scrutiny in adversarial legal systems has led to an almost blind faith in fingerprint evidence."); 4 Mod. Sci. Evid. § 32:1 ("The seminal cases admitting fingerprint evidence in American courts paid so little attention to the foundation of the asserted science that they offer no help in evaluating the admissibility of fingerprint identification evidence . . . .").



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practice than the FBI's misidentification of Brandon Mayfield as a suspect in the Madrid train bombing.[4] Second, advances in DNA technology raised the standard for all forensic sciences. In particular, "[d]uring the effort to validate DNA evidence for courtroom use . . . it became apparent that assumptions about fingerprint evidence had been reached without the scientific scrutiny being accorded DNA." 2009 NRC Report at 104.[5] Finally, the forensic science community itself began to acknowledge the need for scientific evaluation. In fact, it was the Consortium of Forensic Science Organizations that was largely responsible for convincing Congress that the 2009 NRC Report was needed.[6]

The law is capable of responding to fundamental shifts in what the relevant scientific community generally accepts. Although the particular evidence at issue in *Frye* was a "novel"

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[4] *See infra* Part II(B)(2).

[5] *See also* Champod at 32 ("With the extensive use of probability-based DNA evidence and the evolving requirements for the admissibility of scientific evidence in the U.S., older identification fields such as fingerprints are being subjected to more rigorous scrutiny . . . . ").

[6] As the director of the professional association for latent print examiners, the International Association for Identification (IAI), stated: "The Consortium of Forensic Science Organizations (CFSO) of which IAI is a member was largely responsible for convincing Congress of the need for th[e] committee [that produced the 2009 NRC Report]." Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), www.theiai.org/current_affairs/nas_memo_20090219.pdf; *see also* The Honorable Harry T. Edwards, co-chair, 2009 NRC Report Committee, *Solving the Problems that Plague the Forensic Science Community*, Keynote Address at Conference: *Forensic Science for the 21st Century: The National Academy of Sciences Report and Beyond* [hereinafter Edwards Keynote], 1 (April 3, 2009) ("Congress passed the legislation [mandating the Report] in response to a *call for help* from forensic professionals who understood the problems.") (emphasis in original).



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scientific technique, 293 F. at 1014, there is no "novelty" requirement for challenging scientific evidence.[7] Courts may take judicial notice of the general acceptance of scientific techniques, and precedent admitting evidence "'may control subsequent trials,'" but only "'**until new evidence is presented reflecting a change in the attitude of the scientific community**.'" *Jones v. United States*, 548 A.2d 35, 46 n.9 (D.C. 1988) (quoting *People v. Kelly*, 549 P.2d 1240, 1245 (Cal. 1976)) (emphasis added). *See also, State v. Cauthron,* 120 Wash.2d 888, note 3. Moreover, "due process considerations require courts to intervene if scientific opinion shifts so dramatically that previously accepted methods are considered unreliable." *Armstead v. State*, 673 A.2d 221, 243 (Md. 1996). A defendant has the right to demand "that the trial be a fair one and that the sum of the evidence introduced against [him] must be sufficiently probative to prove guilt beyond a reasonable doubt." *United States v. Horn*, 185 F. Supp. 2d 530, 550 (D. Md. 2002). "Expedient as it may be for courts to take judicial notice of scientific or technical matters . . . this cannot be done in the face of legitimate challenges to the reliability and accuracy" of those methods. *Id.* Indeed, "[s]upposedly valid 'science' has not infrequently been unmasked."

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[7] *See, e.g.,* David H. Kaye et al, THE NEW WIGMORE: EXPERT EVIDENCE § 8.3, 299 (2004) (The "concept of novelty is not part of *Frye*" and *Frye* scrutiny applies "to theories that are boringly familiar but are yet to be adequately validated as much as to theories that are strikingly original."); John William Strong, *Language and Logic in Expert Testimony: Limiting Expert Testimony by Restrictions of Function, Reliability, and Form*, 71 Or. L. Rev. 349, 367 (Summer 1992) ("no apparent reason exists, as has repeatedly been suggested, for limiting the standard to 'novel' scientific evidence"); *id.* at 367 n.76 (stating that "[t]he origin of this qualification, if it is in fact a qualification, is obscure" and suggesting that it originated from an article that did not, in fact, supply any rationale for such a limitation).



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*State v. O'Key*, 899 P.2d 663, 673 n.9 (Or. 1995) (quotation, citation, and footnotes omitted). In one recent example, the "supposedly valid" forensic science of comparative bullet lead analysis (CBLA) was unmasked as unreliable, due in part to another report of the NRC. A description of the evolution of the judicial treatment of CBLA in response to a shift in scientific opinion – as reflected in a NRC report – and its ultimate exclusion from the courtroom is attached at Appendix A.

Courts in *Frye* jurisdictions have accordingly not shied away from "considering whether a theory, which had been accepted in the scientific and legal communities, continues to meet the standard." *Blackwell v. Wyeth*, 971 A.2d 235, 243 (Md. 2009); *see, e.g., Benn v. United States*, 978 A.2d 1257, 1276-77, 1278 (D.C. 2009) (in determining the admission of expert testimony, court "must consider . . . the **current** state of generally-accepted scientific research") (emphasis added); *People v. Venegas*, 954 P.2d 525, 528 (Cal. 1998) (admission of evidence becomes precedent "in the absence of evidence that the prevailing scientific opinion has materially changed").[8] "Science moves inexorably forward and . . . [t]he judicial system, with its search for

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[8] *See also State v. Bible*, 858 P.2d 1152, 1187 (Ariz. 1993) (noting that "[a]lthough courts have found DNA testing admissible . . . recent developments - scientific and judicial - drastically alter the relevant analysis"); *Porter*, 618 A.2d at 639 n.17 (citing with approval conclusion that "[w]hatever the merits of the prior decisions" a debate in the scientific literature "demonstrates indisputably that there is no general acceptance of the current process") (quotation and citation omitted); *People v. Barney*, 8 Cal. App. 4th 798, 810-11 (Cal. App. 1992) ("Even if the technique was previously determined correctly to have been generally accepted, the converse may subsequently be shown by evidence 'reflecting a change in the attitude of the scientific community.'") (quoting *Kelly*, 549 P.2d at 1245); *People v. Smith*, 215 Cal. App. 3d 19, 25 (Cal. App. 1989) (noting that defendant may not be "foreclosed from showing new information which may question the continuing reliability of the test in question or to show a change in the consensus within the scientific community concerning the scientific technique"); *Moore v. United States*, 374 A.2d 299, 302 (D.C. 1977) (considering appellant's claim that tests "no



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the closest approximation to the 'truth,' must accommodate this ever-changing scientific landscape." *State v. Behn*, 868 A.2d 329, 343 (N.J. Super. Ct. App. Div. 2005). This Court's assessment of the scientific community's current opinion of latent print identification is in no way limited by the uncritical acceptance of such evidence in the past.

## I. THE RELEVANT SCIENTIFIC COMMUNITY

### A. THE TEST OF GENERAL ACCEPTANCE

Washington has adopted the standard for determining the admissibility of evidence based on scientific procedures set forth in *Frye v. United States,* 293 F. 1013, 1014 (D.C. 1923). *State v. Cauthron,* 120 Wash.2d at 886. "The rule is settled: [E]vidence deriving from a scientific theory or principle is admissible only if that theory or principle has achieved general acceptance in the relevant scientific community." *Id.* (citing *State v. Martin,* 101 Wash.2d 713, 719, 684 P.2d 651 (1984)). The pivotal question for the admission of expert testimony is whether the party proffering the expert can show that "the techniques from which the evidence is derived have gained general acceptance" in the relevant scientific community. *Roberts v. United States*, 916 A.2d 922, 929 (D.C. 2007).

> Because judges do not have the expertise required to decide whether a challenged scientific theory is correct, we defer this judgment to scientists. This inquiry turns on the level of recognition accorded to the scientific principle involved-we look for *general acceptance* in the appropriate scientific community. *See Jones v. United States,* 548 A.2d 35, 42 (D.C.1988). If there is a significant dispute between qualified experts as to the validity of scientific evidence, it may not be admitted.

*State v. Cauthron,* 120 Wash.2d at 887.

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longer have general acceptance in their particular field"), *abrogated on other grounds by Thomas*



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When general acceptance is at issue, it "becomes the 'threshold question' of admissibility, to be resolved as a matter of law before the court exercises its discretion in applying all the criteria to a particular proffered expert." *Jones*, 548 A.2d at 40. The threshold requirement of general acceptance helps "guarantee that reliability [of the proffered testimony] will be assessed by those in the best position to do so: members of the relevant scientific field . . ." *State v. Bible*, 858 P.2d 1152, 1181 (Ariz. 1993) (quotations and citation omitted).[9] The standard does not require "unanimity among scientists," *Roberts*, 916 A.2d at 929, however, "[i]f scientists significant either in number or expertise publically oppose [a technique or method] as unreliable, then that [technique or method] does not pass muster under *Frye*." *Jenkins*, 887 A.2d at 1022 (quoting *Porter*, 618 A.2d at 634). As the court is not in a position to evaluate the reliability of a method, it is likewise not equipped to choose which side of a scientific debate deserves deference. Thus, "[t]he very existence of a dispute precludes admission." *Id.*[10]

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*v. United States*, 650 A.2d 183 (D.C. 1994).

[9] In the law, "reliability" encompasses (a) the scientific term "validity" (which refers to accuracy) and (b) the scientific term "reliability" (which refers to consistency). A technique is legally reliable if it is consistently accurate – if it repeatedly reaches the right result. *See, e.g., Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 590 n.9 (1993) ("[O]ur reference here is to evidentiary reliability-that is, trustworthiness. . . . In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity."). In sum, general acceptance = reliability (in the legal sense) = valid and reliable (in the scientific sense). This Motion uses the term "reliable" in the legal sense, and thus uses it interchangeably with "valid" and "accurate."

[10] *See also Clemons v. State*, 896 A.2d 1059, 1078 (Md. 2006) (evidence not admissible where "a genuine controversy exists within the relevant scientific community"); *Copeland*, 922 P.2d at 1312 ("If there is a significant dispute between qualified experts as to the validity of scientific evidence, it may not be admitted.") (quotation and citation omitted); *Lohmeier v. Hammer*, 248 P.3d 101, 113 (Ariz. Ct. App. 2006) ("significant disputes between qualified experts will preclude a finding of general acceptance") (quotation and citation omitted); *In re Detention of*



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B. DETERMINING THE RELEVANT SCIENTIFIC COMMUNITY

The relevant scientific community for latent print identification includes impartial scientists and scholars as well as latent print examiners. Furthermore, the 2009 NRC Report constitutes an authoritative work for purposes of determining general acceptance within that community.

**1. The relevant scientific community for latent print identifications includes impartial scientists as well as latent print examiners.**

"General acceptance" of a scientific technique is a useful proxy for reliability only if the community whose votes are being counted is capable of determining whether the technique is, in fact, reliable. Courts have consistently held that "[w]hile views of forensic scientists have weight and must be considered, members of the relevant scientific field will include those whose scientific background and training are sufficient to allow them to comprehend and understand the process and form a judgment about it." *Porter*, 618 A.2d at 634 (quotation and citation omitted). Although input from forensic practitioners is important, it is clear that the relevant community must include scientists "competent to make professional judgments concerning experiments

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*Traynoff*, 831 N.E.2d 709, 723 (Ill. App. Ct. 2005) ("In determining what constitutes 'general acceptance,' the question is whether there is consensus versus controversy over a particular technique."); *Comm. v. Lanigan*, 596 N.E.2d 311, 316 (Mass. 1992) (no general acceptance in light of "the lively, and still very current, dispute" in the field); *People v. Barney*, 10 Cal. Rptr. 2d 731, 737 (Cal. Ct. App. 1992) ("If the scientific literature discloses that the technique is deemed unreliable by 'scientists significant either in number or expertise . . . ,' the court may safely conclude there is no general acceptance.") (citation omitted).



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undertaken by others." *Reed v. State*, 391 A.2d 364, 377 (Md. 1978); *see also State v. Russell*, 125 Wash.2d, 40-41, 882 P.2d 747 (1994) ("a court looks not only to the technique's acceptance in the forensic setting but also to its acceptance by the wider scientific community familiar with the theory and underlying technique").[11] There is a critical "difference between practicing a technique and assessing the validity of a technique,"[12] thus a "'technician's testimony should never suffice to establish the validity of a . . . technique: The technician . . . knows how, but not why. Because it is critical to know the why, . . . the views of scientists are essential.'" *People v. Seda*, 529 N.Y.S.2d 931, 939 n.15 (N.Y.Sup. 1988) (quoting Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 Col. L. Rev. 1197, 1214-15 (1980)) (internal quotation and modification omitted).

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[11] *See also Blackwell*, 971 A.3d at 252 (describing relevant community as "scientists with sufficient training and expertise to permit them to comprehend novel scientific methods"); *Ramirez v. State*, 810 So.2d 836, 851 (Fla. 2001) ("[G]eneral scientific recognition requires the testimony of impartial experts or scientists. It is this independent and impartial proof of general scientific acceptability that provides the necessary *Frye* foundation."); *State ex rel. Collins v. Sup. Ct.*, 644 P.2d 1266, 1285-86 (Ariz. 1982) (describing relevant community as "disinterested and impartial experts, knowledgeable in the scientific specialty which deals with and uses such procedures or techniques"); *People v. Collins*, 405 N.Y.S.2d 365, 368 (N.Y.Sup. 1978) (observing that "expertise in disciplines tangential to the one under consideration could have significant bearing on the issue" of general acceptance); *Kelly*, 549 P.2d at 1250 (describing relevant community as those "engaged in the scientific fields").

[12] Simon A. Cole, *Out of the Daubert Fire and Into the Fryeing Pan? Self-Validation, Meta-Expertise and the Admissibility of Latent Print Evidence in Frye Jurisdictions*, 9 Minn. J. L. Sci. & Tech. 453, 487 (Spring 2008).



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Courts have consistently declined to limit the relevant community to forensic practitioners when evaluating the general acceptance of a range of forensic techniques, including field sobriety tests, tests of sexual dangerousness, handwriting analysis, medical causation, electrophoretic typing of human fluid stains, polygraph examinations, voiceprint experiments or spectrograms, and hair analysis. (See Appendix B for representative cases for each of these forensic techniques.) Courts have not only construed the relevant community broadly because forensic practitioners' "lack of formal training and background in the applicable scientific disciplines ma[k]e them unqualified to state the view of the relevant community of impartial scientists," *People v. Brown*, 726 P.2d 516, 532-33 (Cal. 1985), *rev'd on other grounds in California v. Brown*, 479 U.S. 538 (1987)) – but also because the livelihood of forensic technicians is tied to the continued acceptance of the discipline. "To allow general scientific acceptance to be established on the testimony alone of witnesses whose livelihood is intimately connected with a new technique would eliminate the safeguard of scientific community approval implicit in the general scientific acceptance test." *People v. Young*, 391 N.W.2d 270, 276 n.24 (Mich. 1986).[13] Thus the relevant community properly includes "disinterested and

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[13] *See also United States v. Oskowitz*, 294 F. Supp. 2d 379, 384 (E.D.N.Y. 2003) (declining to limit relevant community to one that "has not been a 'financially disinterested independent community, like an academic community'") (citation omitted); *In re Commitment of Burton*, 884 So.2d 1112, 1118 (Fla. App. 2004) (Altenbernd, J., concurring) ("relevant scientific community . . . should . . . not [include] merely the group of licensed professionals who are making a living by relying upon these tests"); *United States v. Starzecpyzel*, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995) (declining to limit relevant community to "community [that] is devoid of financially disinterested parties, such as academics"); *People v. Wesley*, 633 N.E.2d 451, 465 (N.Y. 1994) ("The opinions of two scientists, both with commercial interests in the work under consideration and both the primary developers and proponents of the technique, were insufficient to establish 'general acceptance' in the scientific field."); *State ex rel. Collins v. Sup. Ct.*, 644 P.2d 1266, 1285-86 (Ariz. 1982) ("[a]cceptance must be by those experts who are relatively disinterested



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impartial experts in the scientific community," *id.* at 274, who are "qualified to assess the general validity of a scientific method." *Jones*, 548 A.2d at 39 (quotations and citation omitted).

**2. The report of the National Research Council reflects the conclusions of the relevant scientific community for latent print identification.**

The task of defining the relevant scientific community is simplified here because the National Research Council has convened the relevant scholars, scientists, and experts who are qualified to evaluate latent print identification. Courts have uniformly recognized that the conclusions of the National Research Council regarding the reliability of a particular methodology "can easily be equated with general acceptance of those methodologies in the relevant scientific community." *Porter*, 618 A.2d at 643 n.26.

The National Research Council, the operating arm of the National Academies, has been committed since 1916 "to providing elected leaders, policy makers, and the public with expert advice based on sound scientific evidence."[14] "When NAS [National Academy of Sciences] is requested to do a study, it convenes a Committee, composed of prominent scientists and engineers in the relevant field of study . . . . The Committee reviews the relevant data, and undertakes an extended series of deliberations involving candid exchanges of views by the Committee members in closed session. . . . The reports are then submitted to a review panel

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and impartial and whose livelihood, therefore, is not intimately connected with approval of the technique."); *People v. Barbara*, 255 N.W.2d 171, 180 (Mich. 1977) ("one would want, where the task was to demonstrate general scientific acceptability, an acknowledgment of the value of the device and the techniques by disinterested scientists whose livelihood was not intimately connected with it"); *State v. Thompkins*, 891 So.2d 1151, 1153 (Fla. Dist. Ct. App. 2005) ("*Frye* requires more than the testimony of an expert who has a personal stake in the theory or is prone to an institutional bias.").



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composed of members other than those on the authoring Committee." *Plough Inc. v. Nat'l Acad. of Sciences*, 530 A.2d 1152, 1156 (D.C. 1987). "This independent, rigorous review is a hallmark that distinguishes the National Academies from many other organizations offering scientific and technical advice."[15]

In selecting committee members, the NRC's focus is on "ensur[ing] that the relevant points of view are . . . reasonably balanced so that the committee can carry out its charge objectively and credibly."[16] Indeed, courts have routinely recognized that NRC committees represent "a distinguished cross section of the scientific community." *Porter*, 618 A.2d at 643 n.26. (See Appendix C for case law describing the NRC committees as representative of a cross section of the scientific community.) In light of the impartiality and expertise that are the hallmarks of NRC committees, courts consistently "**have treated the reports of the NRC as authoritative works for purposes of determining generally accepted standards within the scientific community** . . . ." *Com. v. Gaynor*, 820 N.E.2d 233, 250 (Mass. 2005) (emphasis added). (See Appendix C for case law citing the NRC as authoritative for purposes of determining general acceptance.) Courts also consistently acknowledge the expertise of the National Academy of Sciences, describe NRC reports as "authoritative," *Roberts*, 916 A.2d at 930, and both courts and federal agencies follow the recommendations of NRC reports when making a range of decisions. *See, e.g., State v. Tester*, 968 A.2d 895, 906 (Vt. 2009) ("The courts have almost uniformly followed the recommendation of the National Research Council.");

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[14] *See* sites.nationalacademies.org/nrc/index.htm.

[15] *See* sites.nationalacademies.org/nrc/PoliciesandProcedures/index.htm.

[16] *See* www8.nationalacademies.org/cp/information.aspx?key=Committee_Appointment.



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*Blasioli*, 713 A.2d at 1120 ("courts have traditionally deferred to pronouncements from the National Academy of Sciences"). (See Appendix C for illustrative case law.)

The 2009 NRC Report on the forensic sciences is no exception. The authoring Committee was made up of an illustrious group of "members of the forensic science community," "members of the legal community," including the leading authorities on scientific evidence issues, "and a diverse group of scientists," including renowned statisticians. 2009 NRC Report at 2. Although some print examiners have asserted – in the aftermath of the report – that forensic practitioners were not sufficiently represented on the Committee, this claim does not withstand scrutiny. Committee members included Dr. Randall S. Murch, the former deputy director of the FBI Laboratory; Peter M. Marone, who has worked in crime laboratories for over 30 years and is the Executive Director of the Virginia Department of Forensic Sciences; Dr. Robert Shaler, who was formerly on the staff of the Pittsburgh Crime Laboratory and New York City's Medical Examiner's Office, and is the Director of the Forensic Science program at Pennsylvania State University; and Dr. Jay A. Siegel, the Director of Forensic and Investigative Sciences Program at Indiana University-Purdue University, and author of numerous forensic science textbooks, who is also the editor in chief of the Encyclopedia of Forensic Sciences. (See Appendix D for a description of each of the individual Committee members.)

To prepare the Report, the Committee "reviewed numerous published materials, studies, and reports related to the forensic science disciplines, engaged in independent research on the subject," and heard extensive expert testimony. 2009 NRC Report at 2. Testifying experts



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included leading latent fingerprint examiners,[17] representatives of the professional association for latent print examiners, the International Association for Identification (IAI),[18] and representatives of major forensic science organizations and crime labs.[19] The Report was also reviewed by "individuals chosen for their diverse perspectives and technical expertise," including many forensic scientists. *Id.* at xii-xiii (listing reviewers).[20] The Report thus shares the characteristics of objectivity, expertise, and rigorous research that have justified the consistent judicial deference to NRC reports.

Indeed, the Supreme Court has already relied on the 2009 NRC Report as authority for the point that "[s]erious deficiencies have been found in the forensic evidence used in criminal trials" and "to refute the suggestion that this category of evidence [the testimony of forensic

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[17] Presenters included Stephen Meagher, the leading Fingerprint Specialist at the FBI and Vice-Chair of the Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST), and Ed German, Latent Print Examiner, U.S. Army, Retired. *Id.* at 309, 307.

[18] The Committee heard from Joe Polski, Chief Operations Advisor, International Association for Identification. *Id.* at 303; *see also* Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6, ("During the course of the NAS hearings the IAI was invited to present its positions concerning these issues.").

[19] For example, presenters included Bruce A. Goldberger, President-Elect, American Academy of Forensic Scientists; Bill Marbaker, President, American Society of Crime Laboratory Directors; and Joseph A. DiZinno, Assistant Director, Laboratory Division, Federal Bureau of Investigation. *Id.* at 304, 305.

[20] For example, reviewers included Christope Champod, Professor of Forensic Science, author of FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS (CRC Press, 2004), and IAI and SWGFAST member, Barry Fisher, the Crime Laboratory Director for the Los Angeles County Sheriff's Department; Carl Selavka, former Director of the Massachusetts State Police Crime Laboratory; and David Stoney, forensic scientist and former latent print examiner. *Id.* at xiii.



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analysts] is uniquely reliable." *Melendez-Diaz v. Mass.*, 129 S.Ct. 2527, 2537, 2537 n.6, 557 U.S. __ (2009). The Supreme Court also cited the 2009 NRC Report's discussion of "problems with subjectivity, bias, and **unreliability of common forensic tests such as latent fingerprint analysis** . . . ." *Id.* at 2538 (emphasis added). In other words, when the NRC speaks, even the Supreme Court listens.

## II THE RELEVANT SCIENTIFIC COMMUNITY DOES NOT GENERALLY ACCEPT THAT LATENT FINGERPRINT EXAMINERS CAN ACCURATELY AND RELIABLY CONNECT A LATENT PRINT TO A SPECIFIC INDIVIDUAL TO THE EXCLUSION OF ALL OTHERS

Despite the historical acceptance of fingerprint evidence, it is now plain that there is no general acceptance in the relevant scientific community for the claim that latent print analysis can match a latent print to a particular person to the exclusion of all others. At the very least there exists a significant dispute that is sufficient to preclude admission of the testimony.

To be clear, the query is not whether there is general acceptance of fingerprints' uniqueness and permanence. It is undisputed that "[u]niqueness and permanence are necessary conditions for friction ridge identification to be feasible," 2009 NRC Report at 144, and it is also true that neither uniqueness nor permanence have ever been proven.[21] But even assuming that all fingerprints are both unique and permanent, "those conditions do not imply that anyone can reliably discern whether or not two friction ridge impressions were made by the same person. *Id.*

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[21] Neither uniqueness nor permanence has been proven, although there is some "[s]ome scientific evidence support[ing] the presumption that friction ridge patterns are unique to each person and persist unchanged throughout a lifetime." 2009 NRC Report at 143-44. As the NRC recognized, "[t]he determination of uniqueness requires [inter alia] . . . calculations of the probability that different objects share a common set of observable attributes. *Id.* at 44. And "[n]one of these variabilities – of features across a population of fingers or of repeated impressions left by the



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As the 2009 NRC Report explained: "The question is less a matter of whether each person's fingerprints are permanent and unique – uniqueness is commonly assumed – and more a matter of whether one can determine with adequate reliability that the finger that left an imperfect impression at a crime scene is the same finger that left an impression (with different imperfections) in a file of fingerprints." *Id.* at 43.[22] Thus the essential question is: does the relevant scientific community accept that latent print identification can do just that – correctly connect a latent print to a particular person? The answer is no.

A. THE LATENT PRINT IDENTIFICATION PROCESS

An understanding of the method of latent fingerprint identification is useful before turning to the critiques of the technique by the scientific community. The sources for the following description are proponents of fingerprint identification and print examiners themselves, including (1) The Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST), the FBI sponsored working group whose focus is to "establish

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same finger – has been characterized, quantified, or compared." *Id.* at 144. In short, the determination of uniqueness requires data on fingerprints that do not currently exist.

[22] *See* 2009 NRC Report at 144 ("Uniqueness does not guarantee that prints from two different people are always sufficiently different that they cannot be confused, or that two impressions made by the same finger will also be sufficiently similar to be discerned as coming from the same source."); 4 Mod. Sci. Evid. § 32:47 ("The issue is not the finding of two fingerprints that are alike, but rather the finding of prints from two different fingers that can be mistakenly judged to be alike by a fingerprint examination."); Tamara Lawson, *Can Fingerprints Lie?: Re-weighing Fingerprint Evidence in Criminal Jury Trials*, 31 Am. J. Crim. L. 1, 9 (Fall 2003) ("The center of the current legal debate, however, is not the physiology of fingerprints, i.e., the uniqueness or



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guidelines and standards for the latent print community;"[23] (2) Bruce Budowle and other scientists at the FBI's forensic laboratory; (3) David R. Ashbaugh, a leading print examiner and author of QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY [hereinafter Ashbuagh] (CRC Press, 1999), one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test; and (4) Christophe Champod, author of FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS [hereinafter Champod] (CRC Press, 2004). This section also relies in large part on the comprehensive study conducted by the Office of the Inspector General into the FBI's erroneous fingerprint identification of Brandon Mayfield in the Madrid train bombing incident. *See A Review of the FBI's Handling of the Brandon Mayfield Case, Unclassified and Redacted*, Office of the Inspector General, Oversight and Review Division [hereinafter OIG Report] (March 2006)

The latent fingerprint identification process involves the comparison of a "known print," a fingerprint taken from a known suspect or defendant, to a "latent print," a print from an unknown source that has been left at a crime scene or on an object related to the crime.[24] The

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permanence of the mark . . . . Instead, the issue is whether fingerprint examiners can accurately and conclusively determine the identity of an incriminating latent print found at a crime scene.").

[23] *See* www.swgfast.org/become_a_member.html. SWGFAST was established in 1997 and continues to operate through sponsorship from the Federal Bureau of Investigation. Members are from "local, state, and federal law enforcement agencies as well as the forensic community." SWGFAST Bylaws, www.swgfast.org/Bylaws_3.1.pdf.

[24] This Motion uses the terms "friction ridge identification," "latent print identification" and "fingerprint identification" interchangeably. This Motion also uses the terms "identification" and "individualization" interchangeably, in accordance with SWGFAST's definitions of those



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identification process is a visual comparison of the known and latent prints to see whether, in the subjective opinion of the examiner, the prints are sufficiently similar to declare a "match."[25] The visual process for comparing latent and known prints fingerprints is generally referred to as "ACE-V,"[26] an acronym which describes the four stages of the examination: Analysis, Comparison, Evaluation, and Verification.[27]

At the analysis stage, the examiner first looks at the latent print and determines whether the print is of sufficient value; in other words, whether the latent print is of adequate size, clarity, and quality to be used in a comparison. There are no national or generally accepted standards for determining whether a print is of sufficient value. Instead, examiners either make their own subjective decision about whether there is "enough" to proceed with the analysis or rely on the standards of their individual lab. In the absence of generally accepted standards, "examiners [or individual labs] subjectively trade off size of fragment and clarity of image, and subjectively

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terms. *See* SWGFAST Glossary at 11 ("IDENTIFICATION: See *Individualization*"), www.swgfast.org/Glossary_Consolidated_ver_1.pdf.

[25] *See* Ashbaugh at 103 ("The identification process is synonymous with sight.").

[26] The ACE-V method is distinct from AFIS (Automated Fingerprint Identification System), the computerized system which uses scans of prints to identify a list of possible matches. All fingerprint identifications, whether the print was originally identified through AFIS or not, rely on visual inspection by individual examiners. *See* 4 Mod. Sci. Evid. § 32:29 ("In no sense is the computer doing the ultimate comparison of suspects' and crime scene prints. . . . Rather, the computer helps in the selection of candidates. . . . The actual comparison is conducted by the fingerprint examiner using the actual fingerprint evidence."); OIG Report at 120 (same).

[27] Ashbaugh at 108. The acronym was popularized by leading print examiner David Ashbaugh in the 1990s, Champod at 15, and is "a protocol that examiners are invited to follow during the friction ridge examination process." Christophe Champod, *Fingerprint Examination: Towards More Transparency*, 7 Law, Probability & Risk 111, 111 (June 2008).



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conclude that there is or is not enough information in the fragment print to declare that the fragment would or would not match any other fingerprint fragment in the world." 4 Mod. Sci. Evid. § 32:15.[28]

Determining whether a print contains enough information to be analyzed is a significant step in the ACE-V process because latent prints are often incomplete and distorted. After all, "[c]rime scene prints are unintentional, chance prints for which there is no thought (or desire) to produce a clear reproduction." John P. Nielson [latent print examiner], *Rebutting the "No Fingerprint" Defense*, 39-DEC Prosecutor 32, 36 (2005).[29] Prints left at crime scenes are often distorted by the pressure used to deposit the print, by movement of the finger, by overlapping prints, and by substances on the fingers and surfaces where prints are deposited. (See Appendix E for a description of six common sources of distortion in latent prints.) "Because of these factors, latent fingerprints are not perfect reproductions of the friction skin, even over a small area." OIG Report at 104. Moreover, latent prints are typically fractions of a full print from a single finger or thumb – the average size of a latent fingerprint fragment is only one-fifth the size of a full fingerprint. *Id.* at 99 n.58.

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[28] Bruce Budowle, Pd. D. et al, FBI Laboratory, *A Perspective on Errors, Bias, and Interpretation in the Forensic Sciences and Direction for Continuing Advancement*, 54 J. Forensic Science 798, 805 (July 2009) ("there is no guarantee that all scientists (or the vast majority) agree or recognize what is a sufficient amount of information to determine that the examinations are complete and appropriate . . . . ").

[29] "John Nielson served as a certified latent print examiner from 1981-1998 and is currently a forensic scientist supervisor with the Wisconsin State Crime Lab." *Id.* at 32 n.a1. *The Prosecutor* is published bimonthly by the National District Attorneys Association.



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If the examiner decides there is "enough" to make a comparison, he then continues with the analysis by visually inspecting the appearance of the print. Examiners describe the characteristics of fingerprints by referring to three "levels" of detail. "Level 1 detail" refers to the overall design or pattern of the ridges, known as arches, loops, or whorls.[30] Level 2 details refer to the paths and shapes of the friction ridges,[31] and are described with terms such as "islands," or "ridge endings" or "branchings,"[32] although "the nomenclature in the literature is not standardized."[33] Level 3 details are tiny features of the friction ridges, such as the shapes of

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[30] Champod at 17, T.2.1; OIG Report at 98. A suspect can be excluded on the basis of Level 1 details, but Level 1 details are never used as the basis of an identification. Ashbaugh at 95; SWGFAST Guidelines for Friction Ridge Examination Methodology for Latent Print Examiners [hereinafter SWGFAST Guidelines], at 2.1.6., www.swgfast.org/Friction_Ridge_Examination_Methodology_for_Latent_Print_Examiners_1.01.pdf.

[31] OIG Report at 98. Level 2 details are also known as "minutiae," "points of identification," and "Galton characteristics." Champod at 17, T.2.1.

[32] Ashbaugh at 139-41 (describing dots, islands, short ridges, ridge endings, bifurcation, enclosures, spur, crossover, trifurcation, and overlaps); *id.* at 140 ("While some authors list several ridge characteristics, they all break down to islands and branches."); Champod at 17, T.2.1 (stating that "[b]asic forms are ridge endings, bifurcations, and dots").

[33] Champod at 17, T.2.1. As one latent print examiner explained: "if you read more than one [fingerprint text], you risk complete confusion because the terminology is not all the same and the methods used to make an identification are not all the same." Sandra Wiese, *From Galton Points to ACE-V: One Examiner's Journey, An Editorial Perspective Disguised as a Research Paper*, www.clpex.com/Articles/FromGaltonPointstoACEV.doc (citing J. Cowger, FRICTION RIDGE SKIN: COMPARISON AND IDENTIFICATION OF FINGERPRINTS, 143 (Elsevier Science 1983) ("The terms used to describe these characteristics vary markedly among writers in the field and differ even among examiners.")).



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ridge edges, and the shape and relative location of the pores.[34] There are no standards for what or how many aspects of the fingerprint should be considered, either at Level 1, 2, or 3, and the examiner is not required to record what aspects of the print he thinks are relevant. The examiner makes a subjective decision about what aspects of the print to use when comparing it to the known print.

At the comparison stage the examiner compares the latent print to the known print. Ashbaugh at 173. There are no standards for what characteristics or features the prints should have in common, 2009 NRC Report at 139, and the examiner is not required to record what he considers to be the similarities or differences between the prints. There are also no standards that dictate a comparison be conducted at a particular scale. OIG Report at 108.

At the evaluation stage the examiner makes a subjective decision about whether the prints are similar enough to be declared a "match." Ashbaugh at 173-74. If the examiner determines in his subjective opinion that the prints do not match, it is classified as an "exclusion."[35] If he determines in his subjective opinion that the prints do match, it is classified as an "identification"

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[34] OIG Report at 99; Ashbaugh at 96; Champod at 17, T.2.1. Level 3 details are so small that some examiners do not consider them to be a reliable basis for a fingerprint identification. As the Office of the Inspector General explained: "Because Level 3 details are so small, the appearance of such details in fingerprints is highly variable, even between different fingerprints made by the same finger. As a result, the reliability of Level 3 details is the subject of some controversy within the latent fingerprint community." OIG Report at 8.

[35] SWGFAST defines "exclusion" as "The determination that two areas of friction ridge impressions did not originate from the same source (non-identification)." SWGFAST Glossary at 9.



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or "individualization."[36] Fingerprint examiners explicitly acknowledge that "[t]he opinion of individualization or identification is subjective," Ashbaugh at 103,[37] and that there are no generally accepted standards in the United States for how similar the prints have to be before a match can be declared.

Other countries have requirements for how many "points" prints should have in common before an examiner can make an identification. The governing bodies of U.S. fingerprint examiners (the IAI and SWGFAST) have rejected a point standard, however, because of the absence of any "valid basis for requiring a predetermined minimum number of friction ridge characteristics that must be present in two impressions in order to establish positive identification." Resolution of the IAI (Aug. 1, 1973).[38] In other words, because there is no valid scientific basis to set the bar for identification at, for example, 20, 10, or 8 points, the IAI and SWGFAST have discarded the point system altogether in favor of a practice where identification is determined by "*the opinion* of the friction ridge identification specialist that there is sufficient uniqueness within those details to eliminate all other possible donors in the world." Ashbaugh at

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[36] SWGFAST defines "individualization" as "The determination that corresponding areas of friction ridge impressions originated from the same source to the exclusion of all others." SWGFAST Glossary at 12. "Identification" is defined as "Individualization." *Id.* at 11. "If neither an identification nor an exclusion can be reached, the result of the comparison is inconclusive." 2009 NRC Report at 138.

[37] *See also* 2009 NRC Report at 101 ("How much friction ridge detail is considered sufficient depends on the capability of the expert of assessing the value of what is present and forming an opinion.").



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103 (emphasis in original). The rejection of the point standard stems– not from evidence that the subjective opinion approach is reliable – but rather from the absence of evidence suggesting the adequacy of any particular point standard.

Although there are no uniform standards governing latent print evaluation, forensic examiners ostensibly maintain a "one discrepancy rule," pursuant to which, "[i]n theory, one significant dissimilarity is enough for the examiner to declare an exclusion." Champod at 22.[39] However, "[s]mall discrepancies appear in all prints." Ashbaugh at 146. Thus "[i]n practice, the difficulty lies at defining what a significant difference is." Champod at 22-23. The decision about whether a discrepancy between two prints is an acceptable distortion that does not implicate the "one discrepancy rule," or whether it is a difference that requires exclusion is a subjective one, and there are "no criteria . . . for adopting an explanation." OIG Report at 112. Fingerprint examiners assert that "[e]xperienced identification specialists have learned through training and practice the limits of how much distortion or difference is still considered within the parameters of agreement." Ashbaugh at 146. As discussed *infra*, however, "[a] criticism of the latent print community is that the examiners can too easily explain a 'difference' as an 'acceptable distortion' in order to make an identification." 2009 NRC Report at 145.

In the final stage of the ACE-V process, verification, if the examiner has identified a match, he gives the latent and known prints to another examiner in the lab and asks the second

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[38] *See also* SWGFAST Standards for Conclusions at 1.2.1 ("There is no scientific basis for requiring that a predetermined number of corresponding friction ridge details be present in two impressions in order to effect individualization."); Champod at 29.



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examiner to agree or disagree with the conclusion the first examiner reached. There are no uniform standards governing the second examiner's analysis, the second examiner simply makes a subjective decision about whether she agrees with the first, and is not required to record why she has verified the original decision. The second examiner is also aware of the conclusion the first examiner has reached; there is often no attempt to "blind" the verifying examiner to the original decision. 4 Mod. Sci. Evid. § 32:32 ("Usually a second examiner will know the result of the first examination . . . ."); OIG Report at 115. In fact, the verifying examiner sometimes consults with the original examiner when conducting the verification. OIG Report at 115.

Once the decision that the prints match has been "verified," the examiner will testify in court that he has identified an absolute match. Fingerprint examiners are professionally prohibited from expressing a fingerprint match in terms of a probability. They are thus never "85% sure" or "99% certain" that the defendant is the source of the latent print. A fingerprint examiner always represents that the match is absolute and that the individual has been identified as a source of the print to the exclusion of all others. "Testimony as to possible or probable identifications are grounds for disciplinary measures against members by sanctioning organizations. Unless clearly elicited by the examining attorney and well qualified during testimony, such statements transgress the bounds of ethical conduct." Nielson at 37 n.12 (citing "Resolution VII Amended," 30 Identification News 8 (August 1980)); *see also* SGWFAST Press Kit at 12.2 ("Statements of possible, probable, or likely fingerprint conclusions are speculative,

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[39] SWGFAST Standards for Conclusions at 2.2.1 ("The presence of one discrepancy is sufficient to exclude.").



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unscientific, inappropriate, and misleading.").[40] As explained above, "[t]he conclusion of certainty derives from the examiner's **personal conviction** that the chance of a match between the crime mark [latent print] and any other person other than X is so small that it can be ignored." Champod at 33 (emphasis added).[41]

B. THE SCIENTIFIC COMMUNITY DOES NOT GENERALLY ACCEPT THAT LATENT PRINT ANALYSIS CAN CONSISTENTLY, AND WITH A HIGH DEGREE OF CERTAINTY, DEMONSTRATE A CONNECTION BETWEEN A LATENT PRINT AND A PARTICULAR PERSON

The relevant scientific community does not generally accept that latent fingerprint analysis can consistently and accurately identify a specific person as the exclusive source of a latent print because the community recognizes that (1) a valid scientific basis for latent

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[40] *See* www.swgfast.org/swgfast_press_kit_may04.html; *see also* IAI position concerning Latent Fingerprint Identification, at 2-3 (Nov. 29, 2007) ("Fingerprint examiners . . . are ethically and professionally required to offer their opinions only when they are absolutely confident of their conclusions . . . ."), www.onin.com/fp/IAI_Position_Statement_11-29-07.pdf; Champod at 33 ("The present state of affairs, then, is that fingerprint experts have taken the position not to report opinions in terms of probabilities."); OIG Report at 111 (consistent with SWGFAST guideline, FBI examiners "only express a conclusion of individualization in terms of absolute certainty, with a zero likelihood that the latent fingerprint was made by a different person").

[41] After the 2009 NRC report was released the IAI published a statement on its website that "Although the IAI does not, at this time, endorse the use of probabilistic models when stating conclusions of identification, members are advised to avoid stating their conclusions in absolute terms when dealing with population issues." Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6. The rules prohibiting testimony in the form of anything less than absolute certainly remain in effect, however, and the IAI's statement makes clear that it still does not endorse probability statements.



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fingerprint identification has never been demonstrated; (2) the discipline's claim of infallibility is demonstrably false; (3) the significance or weight that should attributed to an "identification" is unknown because it is not known how often portions of fingerprints are sufficiently similar to one another to be misattributed; and (4) latent fingerprint examination is a subjective analysis conducted without standards or controls for bias.

**1. The relevant scientific community recognizes that a valid scientific basis for latent fingerprint identification has never been demonstrated.**

Even before the 2009 NRC Report was released, the relevant scientific community had raised the alarm regarding the lack of scientific evidence validating latent fingerprint identification. As the 2005-2006 Edition of Modern Scientific Evidence observed: "Many of the most basic claims of fingerprint identification have never been tested empirically, and the field's most thoughtful research and scholarship have concluded that, in the strong form in which they usually are presented, those claims in fact are unprovable." 4 Mod. Sci. Evid. § 32:1. Indeed, a host of legal and scientific scholars, as well as some forensic examiners, have criticized the absence of any evidence validating latent fingerprint identification and the ACE-V method.

Criticism of the fact that "surprisingly little conventional science exists to support the claims of the fingerprint examination community," 4 Mod. Sci. Evid. § 32:1, has come from every corner of the relevant scientific community, including experts in scientific evidence, scientists, statisticians, legal and other scholars, and even forensic scientists and fingerprint examiners. In all, **at least 31 different representatives** of the relevant scientific community had acknowledged or criticized the dearth of evidence validating latent fingerprint identification – even before the 2009 NRC Report was released. The list of the members of the relevant



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scientific community and their criticism of the absence of scientific evidence supporting latent print identification is attached at Appendix F.

The 2009 NRC Report is the most recent and definitive declaration from the scientific community regarding fingerprint analysis and it echoed the conclusions of the scholars and scientists referenced above. (The relevant sections of the Report are attached as Appendix G). The NRC concluded that latent fingerprint analysis, like many other types of forensic evidence, "has not 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**." NRC Report at 7 (emphasis added). The Honorable Harry T. Edwards, co-chair of the 2009 NRC Report Committee, highlighted "the paucity of scientific studies addressing the accuracy of fingerprint analyses" in his keynote address at a recent conference:

> One of the most telling moments for me during the committee's hearings occurred when I heard the testimony of an expert fingerprint analyst who is a member of the Scientific Working Group on Friction Ridge Analysis, Study and Technology [SWGFAST]. At one point in his testimony, he was asked about the scientific basis for determining a match in prints in a situation when the examiner has only a smudged or partial print. The expert did not hesitate in conceding that the research had yet to be done.[42]

As the NRC recognized, "ACE-V provides a broadly stated framework for conducting friction ridge analysis. However, this framework is not specific enough to qualify as a validated method for this type of analysis." *Id.* at 142. The NRC explained:

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[42] Edwards Keynote at 3, *supra* note 6.



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> ACE-V does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that two analysts following it will obtain the same results. For these reasons, merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results. A recent paper by Haber and Haber presents a thorough analysis of the ACE-V method and its scientific validity. Their conclusion is unambiguous: "We have reviewed available scientific evidence of the validity of the ACE-V method and found none."

*Id.* at 142-43. The relevant scientific community has made clear, both in scholarly articles and as reflected in the 2009 NRC Report, that it does not generally accept that latent fingerprint identification is a valid method that can reliably connect a latent print to a specific person to the exclusion of all others.

Latent print identification can only be validated through an appropriate scientific study. A century of adversarial litigation is not a substitute for validation; as Judge Harry T. Edwards observed, "the adversarial approach to the submission of evidence in court is not well suited to the task of finding 'scientific truth.'"[43] As the 2009 NRC Report explains: "To confirm the validity of a method or process for a particular purpose (e.g., for a forensic investigation), **validation studies must be performed**." 2009 NRC Report at 113 (emphasis added).

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[43] Edwards Keynote at 6, *supra* note 6; *see also* Budowle, FBI Laboratory, 54 J. Forensic Science at 799 ("we do not advocate successful admissibility as demonstrating good science"); *Crisp*, 324 F.3d at 272-73 (Michael, J., dissenting) ("Nor is fingerprint . . . analysis necessarily reliable because it has been subjected to the adversarial process of litigation."); Michael J. Saks et al., *Merlin and Solomon: Lessons from the Law's Formative Encounters with Forensic Identification Science*, 49 Hastings L. J. 1069, 1102 n. 169 (1998) ("The allusion to 'thousands of cases without error' begs the question of validity. In actual disputed cases it rarely, if ever, is possible to tell whether the identification was correct or not; that is why the issue was before the fact finder.").



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Validation studies "begin with a clear hypothesis (e.g. '[fingerprinting] can reliably associate [a fingerprint] with its source'). *Id.* An unbiased experiment is then conducted "to provide useful data about the hypothesis" which is collected "under well-specified and controlled conditions." *Id.*[44] A validation study, in other words, would measure the rate at which latent print examiners achieve accurate results. Ironically, it is in part because fingerprint evidence has been admitted for so long that there has been no incentive for studies testing whether the method is actually valid.[45] As one former prosecutor pointed out, however, "[r]egardless of the reason for not conducting the supporting research for fingerprint identification, the lack of empirical study and testing of the processes is a glaring lacuna in the overall methodology of forensic 'science.'" Tamara Lawson, *Can Fingerprints Lie?: Re-weighing Fingerprint Evidence in Criminal Jury Trials*, 31 Am. J. Crim. L. 1, 33, 66 (Fall 2003).

In its responses to the NRC's critique, the IAI, the professional association for print examiners, did not dispute the absence of validation studies. Instead it asserted that:

> The IAI has, for many years, sought support for research that would scientifically validate many of the comparative analyses conducted by its member practitioners. While there is a great deal of empirical evidence to support these exams, **independent validation has been lacking**. Daubert and Frye hearings of recent years have focused on the lack of scientific validation in a number of these forensic disciplines. Unfortunately, although some funds have been made available, definitive research has been elusive.

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[44] Moreover, "[a] critical step in such validation studies is their publication in peer reviewed journals, so that experts in the field can review, question, and check the repeatability of the results." *Id.* at 114.

[45] Ashbaugh at 4 ("Legal counsel shied away from dwelling on a science that was considered exact and infallible, a belief that was difficult to dispel without adequate and structured literature being available.").



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Letter from IAI President Robert J. Garrett to The Honorable Patrick J. Leahy, at 2 (March 18, 2009) (emphasis added).[46] SWGFAST's response to the NRC was less explicit, but similarly failed to refute the absence of validation studies: "It is the position of SWGFAST that more than a century of research exists in the discipline of friction ridge analysis including studies in biology, physiology, histology, embryology, physics, genetics, statistics, mathematics and computer science."[47] Even assuming these sources (for which no citations were provided) can demonstrate something useful about fingerprint evidence, it is undisputed that they cannot demonstrate the **validity** of latent fingerprint identification. And it is the absence of such validation evidence that has been decried by the relevant scientific community.

The IAI also issued the notable statement that:

> we would like to point out the following statement in regards to fingerprint analysis contained on page [142] [of the 2009 NRC Report]: "it seems plausible that a careful comparison of two impressions can accurately discern whether or not they had a common source." Therefore we submit that the fingerprint examinations conducted and continuing to be conducted across this country are reliable when conducted by individuals, trained to competency, using scientific and professionally accepted practices and procedures following accepted standards.

Garrett Letter at 2. But plausibility is where science starts, not where it ends. If latent fingerprint identification "seems plausible" that means only that it is a promising candidate for scientific study. It does not mean that in the absence of such study it should be admitted into the courtroom and relied upon by a fact finder in a criminal case. Indeed, the fact that the NRC could say only that latent print identification "seems plausible" is the best evidence that the

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[46] *See* www.theiai.org/current_affairs/nas_response_leahy_20090318.pdf.



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scientific community does not at this time generally accept the discipline's ability to "accurately discern" whether a known print and a latent print come from the same person.[48]

**2. The relevant scientific community recognizes that the claim that latent fingerprint identification is infallible is scientifically implausible and demonstrably false.**

Because there are no validation studies testing whether latent fingerprint comparisons produce valid and reliable results, there is accordingly no evidence of how often latent fingerprint comparisons are erroneous. Practitioners have consistently claimed that the answer is "never" – that the discipline is infallible and has an error rate of zero. For example, the FBI publication, THE SCIENCE OF FINGERPRINTS: CLASSIFICATION AND USES, describes fingerprinting as "infallible." *Id.* at iv.[49] Courts have found the "zero error rate" very persuasive, and have relied on it when admitting a print examiner's testimony despite other concerns about the reliability of latent print identification.[50] The relevant scientific community, however, has

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[47] SWGFAST Position Statement Regarding NAS Report (Aug. 3, 2009), www.swgfast.org/SWGFAST_Position_Statement_NAS_2009_08_03.pdf.

[48] Under the *Frye* standard, the scientific community arguably cannot generally accept a technique that has not been tested. *See, e.g., Downing*, 753 F.2d at 1237 n.14 ("Implicit in the *Frye* approach . . . is the assumption that extensive testing of the technique will occur within the relevant scientific community."); *Brim v. State*, 695 So. 2d 268, 272 (Fla. 1997) ("Th[e *Frye*] standard requires a determination, by the judge, that the basic underlying principles of scientific evidence have been sufficiently tested and accepted by the relevant scientific community.").

[49] *See* www.gutenberg.org/files/19022/19022-8.txt. This publication is one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test. *See also* OIG Report at 124 ("Some examiners have testified in court that the error rate for the ACE-V methodology, properly applied, is zero or nearly zero, and several examiners interviewed by the OIG made the same assertion.") (citation omitted).

[50] *See, e.g., United States v. Llera Plaza*, 188 F. Supp. 2d 549, 566 (E.D. Pa. 2002) ("[The FBI examiner] knew of no erroneous identifications attributable to FBI examiners . . . . [and i]t has



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recognized that the discipline's claim of infallibility is demonstrably false. The 2009 NRC Report made clear: "Although there is limited information about the accuracy and reliability of friction ridge analysis, claims that these analyses have zero error rates are **not scientifically plausible**." 2009 NRC Report at 142 (emphasis added).[51] As Judge Edwards observed, "[t]here is no such concept as a zero error rate in good scientific analysis."[52] Moreover, well documented erroneous fingerprint identifications have eviscerated "the misconception that the forensic discipline of fingerprinting is infallible." 2009 NRC Report at 103-04.

It clear that the error rate for late print identifications cannot plausibly be zero, but there is no evidence demonstrating the actual error rate. As scientists cited in the 2009 NRC Report concluded:

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been open to defense counsel to present examples of erroneous identifications attributable to FBI examiners, and no such examples have been forthcoming. I conclude, therefore, on the basis of the limited information in the record as expanded, that there is no evidence that the error rate of FBI examiners is unacceptably high.").

[51] After the 2009 NRC report was released, the IAI published a statement on its website that "[i]t is suggested that members not assert 100% infallibility (zero error rate) when addressing the reliability of fingerprint comparisons." Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6. It is not clear whether the IAI has actually rejected the zero error rate premise, or whether it is suggesting that, as a matter of strategy, members should not make that claim. The IAI update did not acknowledge that the error rate for latent print identification is unknown. Publication of the 2009 NRC Report also caused SWGFAST to "acknowledge[] . . . that claims of zero error rate in the discipline are not scientifically plausible."

[52] Edwards Keynote at 3, *supra* note 6.



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> Our careful search of all of the professional research literature turned up not a single experiment on examiner accuracy, either when comparing latent prints to AFIS outputs [prints from the AFIS computer system] or when comparing latent prints to ten prints [inked prints of all ten fingers taken from known individuals]. Such data simply do not exist, even though examiners have testified in court about their infallible accuracy in making fingerprint comparisons for almost 100 years.

Lyn Haber & Ralph Norman Haber, *Error Rates for Human Latent Fingerprint Examiners*, in AUTOMATIC FINGERPRINT RECOGNITION SYSTEMS 339, 358 (Nalini K. Ratha & Ruud Bolle eds., 2004).[53] Yet "[w]ithout information about error rates, the initial factfinder, this Court, and the ultimate one, the jury, have no accurate way of evaluating the testimony." *United States v. Green*, 405 F. Supp. 2d 104, 121 (D.Mass. 2005); *see also* Jonathan J. Koehler, *Fingerprint Error Rates and Proficiency Tests: What They Are and Why They Matter*, 59 Hastings L. J. 1077, 1098 (May 2008) ("[t]he reliability and probative value of a reported fingerprint match is inextricably linked to the rate at which fingerprint examiners make errors."). When the jury hears that a print examiner has made a "match" absent error rate data, the jury has no way to determine how much weight to give that testimony. "In effect, the jury would have to trust in

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[53] *See* 2009 NRC Report at 138-39, 142-43 (citing research conducted by Lyn Haber & Ralph Haber); *see also* Begley, S., Despite Its Reputation, Fingerprint Evidence Isn't Really Infallible, *The Wall Street Journal*, Jun. 4, 2004, at B1 ("[S]cientific evidence must . . . have a known error rate and standards. Fingerprints don't. It's time to admit this emperor is naked."); Mnookin, 67 Brook. L. Rev. at 59 ("In the case of fingerprinting, the general rate of error is simply not known. . . ."); Sandy L. Zabell, Ph.D., *Fingerprint Evidence*, 13 J.L. & Pol'y 143, 178 (2005) ("we have no true idea of the underlying error rate"); Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 Ga. St. U. L. Rev. 705, 728-29 (2003) ("There is no known error rate for latent fingerprint examiners.").



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[the examiner's] observational capacities, without knowing how often he was actually correct." *Green*, 405 F. Supp. 2d at 122.[54]

Although it is unknown how often latent print analysis is wrong, it is undisputed that erroneous latent print identifications have been made. And while the Brandon Mayfield case is not the sole example of latent fingerprint identification's capacity to produce an erroneous identification, it is one of the most powerful and thoroughly documented. Following the March 11, 2004 terrorist bombing of a number of trains in Madrid, Spain, the Spanish National Police sought the FBI's assistance in identifying a latent fingerprint from a plastic bag found on the scene that contained remnants of explosives. OIG Report at 1, 29. Using the computerized fingerprint system (AFIS),[55] the FBI generated 20 possible candidates for the prints, one of whom was Brandon Mayfield. *Id.* at 31. "Following a detailed comparison of [the latent print] and Mayfield's known fingerprint, the [FBI] examiner concluded that Mayfield was the source of the [the latent print]." *Id.* at 1. The 100% identification was verified by "a Fingerprint Examiner . . . who is a retired FBI fingerprint examiner with over 30 years of experience" and by "[a] Supervisory Fingerprint Specialist" who is one of the three chiefs of the FBI's Latent Fingerprint Unit. *Id.* at 64. On the basis of the fingerprint identification, Mayfield was arrested on May 6, 2004. *Id.* at 67. The identification was subsequently verified again by a court-appointed expert

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[54] *See also* Lyn Haber & Ralph Haber, *Scientific Validation of Fingerprint Evidence under Daubert*, 7 Law, Probability & Risk 87, 92 (2008) ("the published error rate information informs the court of the amount of confidence that can be placed in a conclusion"); Koehler, 59 Hastings L.J. at 1079 ("Without information about error rates, fact finders have an insufficient basis for assessing the examiner's reliability and assigning weight to his opinion.").

[55] *See* description of AFIS, *supra* note 26.



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selected by the defense who was "certified as a latent print examiner by the IAI," had over 30 years experience, and had "received numerous honors and awards." *Id.* at 80. Then on May 19, the Spanish Police "informed the FBI that it had positively identified [the latent print] as the fingerprint of a different person, an Algerian national named Ouhnane Daoud." *Id.* at 3. On May 24, after reviewing Daoud's prints, the government announced that the FBI had erred in its identification. *Id.* at 3, 88. On July 16, the FBI issued a formal report identifying Daoud as the source of the latent print. *Id.* at 4.

As a result of these events, the Office of the Inspector General (OIG) initiated a comprehensive investigation[56] "to determine the causes of the fingerprint misidentification" in the Mayfield case. *Id.*[57] In addition to demonstrating that latent print identification can be simply – and completely – wrong, the OIG Report on the Mayfield case substantiated several

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[56] The OIG interviewed over 70 individuals, OIG Report at 22, reviewed thousands of pages of documents, *id.* at 23, and received input and guidance from "recognized experts in latent fingerprint identification." *Id.* at 24.

[57] The OIG report constitutes an admission of a party opponent. "The courts have . . . stated on more than one occasion that reports or writings published by a governmental agency constitute admissions of the government under [the federal rules of evidence]." *Penguin Books U.S.A., Inc. v. New Christian Church of Full Endeavor, Ltd.*, 262 F. Supp. 2d 251, 261 (S.D.N.Y. 2003). *See United States v. Van Griffin*, 874 F.2d 634, 638 (9th Cir. 1989) (holding that a manual on field sobriety testing issued by the government should be admissible as an admission of a party opponent in a drunk driving case); *Garland v. State*, 834 So.2d 265, 267 (Fla. Dist. Ct. App. 2002) (holding that a forensics report was admissible against the government as party admission); *Gess v. United States*, 952 F. Supp. 1529, 1534 n.8 (M.D. Ala. 1996) (finding report prepared by Air Force Office of Special Investigations admissible against government under Rule 801(d)(2) in FTCA action by Air Force hospital patients); *see also Harris v. United States*, 834 A.2d 106, 120 (D.C. 2003) ("The language of the party admission rule provides no basis for creating . . . an exception where the government is the party opponent.").



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critiques of the scientific community and revealed problems with the reliability of **any** latent print identification.

Fingerprints from different people can be very similar to one another: The Mayfield case demonstrates that even if every full fingerprint is unique, fragments of prints can still be strikingly similar. According to the OIG, "a major factor in the misidentification" was "[t]he unusual similarity between [the latent print] and Mayfield's known fingerprint. *Id.* at 6. Specifically, there were ten features, or "points" in the latent print that "were at least generally consistent with features in the known prints for both Mayfield and Daoud." *Id.* at 130. Mayfield and Daoud did not have identical fingerprints, *id.* at 131, but "the unusual similarity in position and ridge counts was a critical factor that misled four examiners and contributed to their overlooking other important differences between [the latent print] and Mayfield's fingerprint." *Id.* at 7; *see also* 2009 NRC Report at 46. Specifically, it was not distortions in the print that misled the examiners, but the true "close similarities" between the two prints. OIG Report at 131. The similarities between the two prints in the Mayfield case illustrates the exact problem the scientific community has highlighted when challenging the reliability of latent print identification – even if **full** fingerprints are unique, **partial** latent prints from two different people might have patterns similar enough that an impression from one could be mistakenly attributed to the other. Because "multiple people may have a certain number of ridge characteristics in common, . . . the axiom that 'no two fingerprints are alike' is defied in practice." [58]

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[58] Jessica D. Gabel & Margaret D. Wilkinson, *"Good" Science Gone Bad: How the Criminal Justice System Can Redress the Impact of Flawed Forensics*, 59 Hastings L.J. 1001, 1012 (May,



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The OIG described the degree of similarity between Mayfield and Daoud's prints as "unusual" based on "anecdotal reports suggest[ing] that this degree of similarity between prints from two different people is an extremely unusual circumstance." *Id.* at 7; *see also id.* at 136. Yet the OIG acknowledged that it "found no systemic study of the rarity of such an event." *Id.* at 7. (As explained in Part II(B)(3), *infra*, no such studies exist.). The OIG thus found that the similarity between the prints of two different people was one of the primary causes of the misidentification and it admitted that it found no evidence – other than anecdotes – describing just how prevalent such similarities are in the population.

"Verification" does not prevent erroneous identifications: The Mayfield case also illustrates that the Verification stage of the ACE-V method is not a sufficient safeguard against erroneous identifications. The incorrect latent print identification of Mayfield was confirmed three times: first in an official verification by an experienced FBI examiner, then pursuant to a review by one of the three chiefs of the FBI Latent Prints Unit, and then again by a court-appointed expert examiner. *Id.* at 175-76. The OIG reported that the information it reviewed

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2008); *see also* Bruce Budowle, JoAnn Buscaglia, Rebecca Perlman, *Review of the Scientific Basis for Friction Ridge Comparisons as a Means of Identification: Committee Findings and Recommendations*, FBI Laboratory, at 3 (Jan. 2006) ("The uniqueness issue of interest is not that a fingerprint **in its entirety** is unique . . . . The critical issue is the minimum number of objective features in a latent print necessary to render an identification with confidence.") (emphasis added); Champod at 35 ("The crux of the matter is . . . the ability of the examiner to recognize sufficient information for the disclosure of identity from a small, distorted latent fingerprint fragment that may reveal only limited information in terms of quantity or quality."); 2009 NRC Report at 8 ("the true value of the evidence is determined by the quality of the latent fingerprint evidence.").



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"raises the possibility that the existing verification procedures may provide insufficient assurance that complete, independent, and unbiased second examinations are conducted in connection with every identification." *Id.* at 176; *see also id.* at 177 (noting that the absence of disagreement between examiners over time may "reflect that the verification phase of ACE-V is not serving as a significant screen"). The inability of the verification stage to prevent erroneous identifications has likewise been emphasized in critiques by the scientific community.[59]

The OIG Report suggested that the verification process is ineffective at spotting incorrect identifications because "verifiers are made aware that an identification has already been made by a prior FBI examiner . . . contributing to the expectation that the second examiner will concur with his colleague." *Id.* at 175. The OIG could not "definitively state" that the verification procedure was a source of the Mayfield error, but concluded that the verification procedure creates the "potential for other erroneous identifications." *Id.* at 10.

The "one discrepancy rule" does not prevent erroneous identifications: The OIG recognized that "the FBI and other forensic laboratories utilize a 'one discrepancy rule' in which a single difference in appearance that cannot be explained must preclude the examiner from declaring an identification." *Id.* at 154. However, the rule did not preclude the erroneous identification in the Mayfield case, because the examiners explained away every difference in appearance between Mayfield's print and the latent print. *Id.* at 164-65. Upon review, the OIG concluded that "[a]lthough the explanations the examiners gave for each difference were

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[59] *See, e.g.*, Haber & Haber, 7 Law, Probability & Risk at 97 ("most verification testing in crime laboratories is non-blind, which permits contamination and bias to reduce the chances of detecting errors").



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individually plausible, they cumulatively required too many rationalizations to support an identification with the requisite certainty." *Id.* at 9.[60] Ultimately, the OIG concluded that the FBI's application of the "one discrepancy rule" was not stringent enough to prevent the erroneous identification of Mayfield. *Id.* The case thus illustrates "[a] criticism of the latent print community . . . that the examiners can too easily explain a 'difference' as an 'acceptable distortion' in order to make an identification." 2009 NRC Report at 145.

Even the most qualified latent print examiners make erroneous identifications: It is undisputed that the latent print examiners who erroneously identified Mayfield as the source of the latent print were experts in the field. The first examiner, who made the original identification, was a supervisor in the FBI's latent print unit, and the identification was verified by a retired FBI fingerprint examiner with over 30 years of experience who had been selected "to act as the verifier because of [his] extensive experience and skill." *Id.* at 30, 32-33. The verification was then confirmed by a Supervisory Fingerprint Specialist who was one of the three chiefs of the FBI's Latent Print Unit. In short, the examiners in the Mayfield case were some of the best and most experienced latent print examiners in the country. And all of them were wrong. Similarly, the scientific community has pointed out that many of the documented erroneous identifications were committed by IAI certified examiners. *See, e.g.*, Simon A. Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. Crim. L. &

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[60] There were also differences in Level 3 details that were not "treated as important enough to require explanation" and "were apparently attributed to the variability in appearance that occurs in any transfer" of a latent print. OIG Report at 153. The OIG criticized this approach as



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Criminology 985, 1024 (Spring 2005) ("nearly one-third (7/22) of the total number of American examiners implicated in disputed identifications after IAI certification was instituted in 1977 were IAI-certified") (footnotes omitted).[61] The Mayfield case thus disproves the common claim by latent print examiners that, notwithstanding the evidence of errors by others, their own experience makes their identifications reliable.

Access to a defense expert does not prevent erroneous identifications: The identification in the Mayfield case was confirmed by a court-appointed expert selected by the defense, Kenneth Moses. Moses has over 30 years of latent print examination experience; is IAI certified; is a member of SWGFAST; has testified before courts and arbitrators over 800 times; and has "received numerous honors and awards." *Id.* at 80.[62] Moses' confirmation of the identification of Mayfield demonstrates that analysis by even an exceptionally qualified defense expert is an insufficient safeguard against erroneous identifications.

Complying with the discipline's best practices guidelines does not prevent erroneous identifications: The OIG also concluded that "the examiners were able to make all of the decisions that contributed to the erroneous identification **without violating any specific provision of the applicable [FBI Latent Print Unit] or SWGFAST standards**." OIG Report

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"selective 'cherry-picking' of only those Level 3 details that seemed to support the identification, while dismissing all Level 3 differences elsewhere in the print." *Id.*

[61] *See also* Simon A. Cole, *The Prevalence and Potential Causes of Wrongful Conviction by Fingerprint Evidence*, 37 Golden Gate U. L. Rev. 39, 86 (Fall 2006) (citing case where erroneous latent print identification was attested to by two IAI-certified examiners, one of whom was the author of a textbook on fingerprint identification).

[62] *See also* www.jurispro.com/KennethMoses.



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at 198 (emphasis added). Although the examiners certainly made errors, "the steps taken by the examiners in [the Mayfield] case did not specifically contravene any criterion, recommendation, method, or prohibition set forth" in the FBI or SWGFAST standards. *Id.* The examiners followed all the rules, and complied with the discipline's recommended best practices as set out in the SWGFAST guidelines, and they **still** made an erroneous identification. Again, the absence of meaningful standards to govern the stages of the latent print identification process has been the subject of extensive criticism from the scientific community. *See, e.g.,* Henry C. Lee and R.E. Gaensslen, Eds., ADVANCES IN FINGERPRINT TECHNOLOGY, at 329 (CRC Press, 2d Ed. 2001) ("Any unbiased, intelligent assessment of fingerprint identification practices today reveals that there are, in reality, no standards.").[63]

Reliance on Level 3 details can contribute to an erroneous identification: The ACE-V method explicitly involves analysis of Level 3 details (pores, incipient dots, and ridge edge shapes), but as the OIG Report noted, there is a "debate within the fingerprint discipline regarding the reliability of Level 3 detail." *Id.* at 153. The Mayfield case will become "an important case study for consideration in that debate" because it illustrates how unreliable Level 3 details can be. *Id.*[64]

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[63] This publication is one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test.

[64] *See also* John "Dusty" Clark, [IAI certified latent print examiner with over 30 years of experience] *What is the Point,* Latent Prints, www.latent-prints.com/id_criteria_jdc.htm (Dec. 15, 1999) ("There is such a degree of variation of appearance in the 3rd level detail due to pressure, distortion, over or under processing, foreign or excessive residue on the fingers, surface debris and surface irregularity, to name a few. The repeatability of the finite detail that is utilized



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"[T]he purported agreement of Level 3 details" between the latent and Mayfield's print served as "an important basis" for the examiners' identification of Mayfield, *id.* at 150, even though "[t]here were several indications . . . that the purported Level 3 similarities did not provide reliable support for the identification." *Id.* at 8. In fact, the OIG found that "none of the purported Level 3 features in [the latent print] . . . corresponded to features in the known prints of the true donor (Daoud)." *Id.* This was a separate problem from the striking similarities between the prints of Mayfield and Daoud – in regard to the Level 3 details the FBI examiners "misinterpreted distortions in [the latent print] as real features corresponding" to Mayfield's prints. *Id.* In other words, the examiners relied on details that were not even features of the fingerprint at all. The Mayfield case demonstrates that the ACE-V method's inclusion of Level 3 details can contribute to significant identification errors.

The absence of objective standards for identifying a "match" can contribute to an erroneous identification but would not have prevented the Mayfield misidentification: The OIG considered whether the Mayfield misidentification could have been prevented if the FBI examiners used a fingerprint analysis standard that required a predetermined number of characteristics in common, rather than the qualitative approach used by the FBI. *Id.* at 10. The OIG concluded – in light of the other problems listed above – that the erroneous identification would have occurred under either method, but determined that "more objectively defined criteria for declaring an identification could help prevent future misidentifications." *Id.* at 174. Specifically, the OIG believed that "the absence of any further objective definition or guidelines

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in the comparison process has never been subjected to a definitive study to demonstrate that what is visible is actually a true 3rd level detail or an anomaly.").



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for determining sufficiency, in terms of both quantity and quality, heightens the danger that an examiner will be unduly swayed by an initial or 'gut' reaction, or will fail to factor in an adequate margin of safety in a close case." *Id.* at 174-75. As there is currently no scientific basis for any objective, numerical standard, the danger of erroneous identifications remains real. The absence of validated standards to cabin the subjective "identification" decision of examiners has been recognized by the scientific community as a major flaw in latent print identification. *See, e.g.,* Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 Ga. St. U. L. Rev. 705, 736 (2003) ("The absence of standards is most glaring with respect to the ultimate question that should be asked of all fingerprint comparisons: what constitutes a sufficient basis to make a positive identification?") (footnote omitted).

"The Mayfield case and the resulting report from the Inspector General surely signal caution against simple, and unverified, assumptions about the reliability of fingerprint evidence." 2009 NRC Report at 3-16. Moreover, while the error in the Mayfield case has received the most governmental scrutiny, it was certainly not the first time latent print analysis has produced an erroneous identification.[65] **There are at least 36 additional documented examples of**

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[65] *See also* Champod, 7 Law, Probability & Risk at 112 ("Cases of false identification are now well-publicized and well-documented."); OIG Report at 137 (citing representation by fingerprint examiner who served on the IAI Certification Board responsible for investigating complaints of erroneous identifications by IAI-certified examiners, that in his 14-year tenure on the Board "he encountered 25 to 30 erroneous identifications"); *id.* at 124-25 ("other instances of erroneous identifications by non-FBI fingerprint examiners have been reported"); Paul Giannelli and Edward Imwinkelried, 1 SCIENTIFIC EVIDENCE (3d. Ed 1999) § 16-1, p. 740-741, ("both here and abroad there have been alarming disclosures of errors by fingerprint examiners"); *see generally* Jonathan J. Koehler, Ph.D., *A Welcome Exchange on the Status of Fingerprinting*, 7 Law, Probability & Risk 85, 85 (June 2008) ("As for the certainty of fingerprint identifications, the



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**erroneous conclusions by latent print examiners**, as well as at least 13 other documented examples of crucial errors in the latent print analysis process that demonstrate the unreliability of latent print identifications. Each of the 49 cases is described in Appendix H.

The cases listed in Appendix H likely represent only the tip of the iceberg – because latent print identifications are a form of evidence for which wrongful convictions are least likely to be exposed. One analysis of 20 cases of fingerprint misidentifications showed that most cases were not exposed through the routine working of the criminal justice process: "In 63% of the cases, extraordinary circumstances were required to expose the fact that misattributions had occurred." Cole, 95 J. Crim. L. & Criminology at 1020. For example, erroneous print identifications have been revealed where the true perpetrator left DNA at the scene by drinking from a cup and discarding clothing containing DNA, *id.* at 1021, when a supposedly identified corpse turned up alive, *id.* at 1013, or, as in the Mayfield case, when there was a competing interpretation of the fingerprint from an international law enforcement agency. *Id.* at 1022. "Most often, there is no independent proof of the accuracy of an examiner's call. Consequently, the absence of large numbers of known errors in fingerprint cases says little about the accuracy of fingerprint match declarations." Koehler, 59 Hastings L. J. at 1087. The fingerprint errors that have been discovered, however, illustrate the unreliability of latent print identifications.

In sum, the relevant scientific community does not generally accept latent print identification in part because of the implausibility of the claim that latent print identification is

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data (not surprisingly) show that fingerprint examiners are fallible. Many commit false-positive and false-negative errors in proficiency tests and in casework."); James E. Starrs, *Judicial Control Over Scientific Supermen: Fingerprint Experts and Others Who Exceed the Bounds*, 35 Crim. L. Bull. 234 (1999) ("the process of fingerprint identification is not infallible").



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infallible, the absence of actual error rate data, and the indisputable evidence that erroneous identifications do occur.

**3. The relevant scientific community recognizes that the claim of a fingerprint "match" is meaningless in the absence of probability rate data.**

One of the central lessons of the Mayfield case is that even if no full fingerprints are ever alike, fragments of fingerprints can be similar enough to be indistinguishable to expert print examiners. Indeed, the prints of Mayfield and Daoud had at least ten shared points. There is also evidence that that partial prints from different people have shared up to 16 points in common.[66] Such similarities raise the question: just how often do partial prints from different

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[66] *See* OIG Report at 136 (citing JohnThorton, "Setting Standards In The Comparison and Identification," (transcript of speech), www.latent-prints.com/Thornton.htm, May 9, 2000 (describing spurious comparison of cropped palm prints with nine points of agreement)); John D. "Dusty" Clark, *ACE-V – Is it Scientifically Reliable and Accurate?*, 52 J. of Forensic Identification 4, 401-408 (2002) (illustrating cropped impressions with eight matching deviations, with some variance in relative location); Y. Mark and D. Attias, *What is the Minimum Standard of Characteristics for Fingerprint Identification?*, 22 Fingerprint Whorld 86 (Oct. 1996) (reporting discovery of non-identical prints with seven matching characteristics)); *see also* James Osterburg, *The Crime Laboratory: Case Studies of Scientific Criminal Investigation* (1967) (documenting a case where two individual shared ten points of similarity.); Ene-Malle Lauritis, *Some Fingerprints Lie*, National Legal Aid Defender Association, The Legal Aid Briefcase, at 129 (Oct. 1968) (describing a case where the latent and known prints shared 14 points of similarity and three dissimilarities); *United States v. Parks*, No. CR-91-358-JSL (Dec. 10, C.D. Cal. 1991) (board certified member of the IAI testified that cases have occurred in which there were ten points of similarity and one point of dissimilarity); Cole, 95 J. Crim. L. & Criminology at 1024 ("Of the twelve cases in the data set for which the number of supposed matching ridge characteristics is known, in fully half of those cases the misattribution was made



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people "match"? The relevant scientific community has acknowledged that the answer is unknown.

As one scholar, cited in the 2009 NRC Report, made clear: "Is the chance of two partial prints from different people matching one in a hundred . . . or one in a billion? No fingerprint examiner can honestly answer that question, even though the answer is of course critical to evaluating the probative value of the evidence of a 'match.'" Mnookin, 67 Brook. L. Rev. at 60-61.[67] There is no database to which fingerprint examiners can turn to tell them how frequently two people might have, for example, 10 print characteristics in common, as "population statistics for fingerprints have not been developed." 2009 NRC Report at 139. Thus, "[f]ingerprint examiners have no statistical basis for determining the probability that a match really indicates that both prints come from the same human being." Mnookin, 67 Brook. L. Rev. at 60, *see* OIG Report at 117-18 ("Although the standard purports to permit the examiner to take into account the 'uniqueness' of different kinds of friction ridge details, research into the relative frequencies

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with at least sixteen points. . . . Three-quarters of the cases had at least fourteen points, and none of the cases involved fewer than eleven points."); Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Ruling from Jennings to Llera Plaza and Back Again*, 41 Am. Crim. L. Rev. 1189, 1207 (2004) ("During the 1990s, at least three documented misidentifications occurred in Britain where a sixteen-point minimum standard was in effect."); Mears & Day, 19 Ga. St. U. L. Rev. at 714-15 ("During testimony in a pre-trial hearing challenging the admission of fingerprint comparison evidence, one government expert admitted that he knew of instances where prints from two different people had as many as ten matching characteristics.").

[67] 2009 NRC Report at 142 n.28 (citing Jennifer Mnookin, *The Validity of Latent Fingerprint Identification*, 7 Law, Probability & Risk 127 (June 2008)).



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with which different characteristics or combinations of features appear is lacking . . . .").[68] Even the FBI has acknowledged that although "[s]ome probabilistic models have attempted to address the rarity of features in Level II and Level III detail[, m]any of these have not been rigorously tested, or the . . . data are not available for review because this information is proprietary or not well collated." Bruce Budowle, JoAnn Buscaglia, Rebecca Perlman, *Review of the Scientific Basis for Friction Ridge Comparisons as a Means of Identification: Committee Findings and Recommendations*, FBI Laboratory, at 5 (Jan. 2006).[69]

Because it is unknown how often partial prints can "match," we cannot know how meaningful – or not – it is that the examiner in this case has concluded that a latent print matches the defendant. As the NRC stated plainly in a previous report, "[t]o say that two patterns match, without providing any scientifically valid estimate (or, at least, an upper bound) of the frequency with which such matches might occur by chance, is **meaningless**." Nat'l Research Council, Nat'l Acad. of Science, *DNA Technology in Forensic Science*, 74 (1992) (emphasis added). Courts have recognized in other forensic contexts that "[o]nce the observation has been made that there is a match between the known (i.e., suspect's) and questioned (i.e., crime scene) samples, **the significance of that determination must be ascertained and expressed to the**

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[68] *See also* 4 Mod. Sci. Evid. § 32:45 ("The criteria for absolute identification . . . are the product of probabilistic intuitions widely shared among fingerprint examiners, not of scientific research."); David A. Stoney, *Fingerprint Identification: Scientific Status*, in 3 Mod. Sci. Evid.: The Law and Science of Expert Testimony § 32:45 (David L. Faigman et al. eds., 2002) ("probability models . . . simply do not exist for fingerprint pattern comparisons"); Saks, 49 Hastings L. J. at 1105-06 (fingerprint "practitioners use no probability models and have no probability data to use"); 2009 NRC Report at 139-40 ("Little research has been directed toward developing population statistics [for fingerprints], although more would be feasible.").

[69] *See* www.fbi.gov/hq/lab/fsc/backissu/jan2006/research/2006_01_research02.htm.



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**jury**." *United States v. Yee*, 134 F.R.D. 161, 180 (N.D. 1991) (emphasis added); *see also Porter*, 618 A.2d at 640 ("We would not permit the admission of test results showing a DNA match (a positive result) without telling the jury anything about the likelihood of that match occurring.") (citation, quotation, and modification omitted). Likewise in the context of fingerprint identification, courts and juries cannot assess the import of an examiner's declaration of a "match" without knowing "'[h]ow likely is it that a random person could have made this print?' . . . [but] there are no reasonable data and no scientific model that would allow an answer." 4 Mod. Sci. Evid. § 32:48.

Instead of probability statistics, the latent fingerprint field relies on the experience and memory of individual print examiners. As the NRC reported, "[t]he fingerprint community continues to assert" that "a lengthy apprenticeship . . . with an experienced latent print examiner enables a new examiner to develop . . . a sense of how much friction ridge detail could be common to two prints from different sources." 2009 NRC Report at 140-41 (emphasis added). As one court explained in the context of evaluating ballistics testimony: "In effect, . . . [the examiner] just compares the image in front of him to what he **remembers** from all those previous exams." *Green*, 405 F. Supp. 2d at 112 (emphasis in original). Similarly in the context of latent prints, the examiner is ostensibly consulting a mental file that includes images of every print he has ever examined, and is using this memory "database" to determine that the amount of



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similarity he observes in the two prints before him is sufficiently rare that he can conclude with absolute certainty that the two prints come from the same person.[70]

The fact that latent print examiners make identifications without any evidence of probability statistics means that jurors are presented with evidence they cannot evaluate in a logical manner. "Without the probability assessment, the jury does not know what to make of the fact that the patterns match: the jury does not know whether the patterns are as common as pictures with two eyes, or as unique as the Mona Lisa." *Yee*, 134 F.R.D. at 181. Simply put: "no numbers, no knowledge." *Id.* (quotation and citation omitted, emphasis added). The absence of such evidence is particularly problematic because jurors walk into court with a preconception that fingerprints constitute infallible evidence of identity.[71] Testimony regarding

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[70] Christophe Champod, *Fingerprint Examination: Towards More Transparency*, 7 Law, Probability & Risk 111, 114 (June 2008) ("It is fair to say that the ACE-V protocol remains obscure when it comes to the decision and inferential processes.").

[71] *See, e.g., Crisp*, 324 F.3d at 276 (Michael, J., dissenting) ("the general public, which sees movies and television programs that regularly portray fingerprinting and other forensic techniques as key to crime solving, regards fingerprint identification as perfectly reliable"); *People v. Safford*, 910 N.E.2d 143, 154 (Ill. App. Ct. 2009) ("Fingerprint evidence is extremely persuasive. A jury may be so swayed by such evidence that strong alibi witnesses have little chance of being found credible when fingerprint evidence points to the defendant being present at the scene of the crime. The persuasiveness of fingerprint evidence reinforces the need to require a proper foundation to establish its admissibility."); *United States v. Mitchell*, 365 F.3d 215, 228-29 (3d Cir. 2004) ("the defense introduced a survey of jurors that found that 93% agreed with the statement 'fingerprint identification is a science' and 85% agreed with the statement 'fingerprints are the most reliable means of identifying a person.'"); Newman, A., Fingerprinting's Reliability Draws Growing Court Challenges, *The New York Times*, Apr. 7, 2001, at A8 ("In the long history of forensic science, prosecutors have found few weapons more



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a fingerprint identification submits an identification to the jury – not just without any information about how the identification should be weighed – but without any evidence to counteract the jury's preexisting sense that the identification is "an unassailable symbol of truth." Specter, M., Annals of Crime: Do Fingerprints Lie?, *The New Yorker*, pp. 90-105, at 96 (May 27, 2002). The possibility that jurors will overvalue unreliable information assuming the mantle of science is the very risk the *Frye* standard was designed to prevent.[72]

**4. The relevant scientific community recognizes that latent fingerprint examination is a subjective analysis conducted without standards or controls for bias.**

A final reason the relevant scientific community does not generally accept the claims of latent print examiners is the field's lack of standards to cabin the subjective decisions of individual examiners, provide for transparency, or control for bias. The relevant scientific community has recognized that ACE-V leaves so much room for individual subjective decisions that it cannot "ensure repeatability . . . [it] does not guarantee that two analysts following it will obtain the same results." 2009 NRC Report at 142. "[T]he ACE-V method does not specify particular measurements or a standard test protocol, and examiners must make subjective assessments throughout." *Id.* at 139. As a result, "examiners differ at each stage of the method in the conclusions they reach. To the extent that they differ, some conclusions are invalid." *Id.* at 143 (quoting Haber & Haber, 7 Law, Probability & Risk 87). "In fact, recent research . . . has

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powerful than the fingerprint. The whorls, arches, ridges and loops left on a surface by the skin's oil have long been considered virtually unassailable evidence tying a person to a crime.").

[72] *See also* 2009 NRC Report at 4 (citing "the potential danger of giving undue weight to evidence and testimony derived from imperfect testing and analysis").



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shown that experienced examiners do not necessarily agree with even their own past conclusions when the examination is presented in a different context some time later." *Id.* at 139. In short, a standardless decision-making process produces unreliable results.

The problematic absence of standards was addressed in the description of the latent print examination process, *supra*, and includes:

- No generally accepted or uniform standards for reaching the ultimate conclusion that a suspect's print can be identified as the exclusive source of a latent print: "[T]he amount of correspondence in friction ridge detail that is necessary for a conclusion of identity has not been established." Lee and Gaensslen, ADVANCES IN FINGERPRINT TECHNOLOGY, at 329-30.
- No generally accepted or uniform standards for determining whether a latent print is of value for comparison: There is "no methodology in place that is capable of measuring the amount of detail that is available in a fingerprint for comparison to another." 4 Mod. Sci. Evid. § 32:46.[73]
- No standards for determining what aspects of a print should be examined or how they should be measured: In other words, "before examining two fingerprints, one cannot say a priori which features should be compared. Features are selected . . . when a fingerprint examiner identifies which features are common to the two impressions and are clear enough to be evaluated." 2009 NRC Report at 139.

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[73] The OIG noted this absence and recommended that the FBI "[e]stablish[] criteria to determine a latent fingerprint to be a print 'of value,' including minimum latent print quality considerations." OIG Report at 197. No such standards currently exist.



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- No standards for distinguishing between differences that can be explained and those that prohibit an identification: Despite the "one discrepancy rule," "there are no objective standards in the Comparison phase that determine the allowances that can be made for the minor 'explainable' discrepancies that are inherent in fingerprints." 4 Mod. Sci. Evid. § 32:46.[74]
- No standards for conducting a verification: As the OIG Report observed, under the "FBI documentation requirements, which were similar to those in place in other forensic laboratories," "[t]he documentation requirement for a verification was satisfied when the second examiner wrote the word 'verified' on the case notes followed by his signature and date." OIG Report at 122.
- No standards for documentation: "Currently, there is no requirement for examiners to document which features within a latent print support their reasoning and calculations." 2009 NRC Report at 143.
- No standards for training or certification of latent print examiners: Both the IAI and SWGFAST offer training publications but "they are not required, and there is no auditing of the content of the training programs developed by nonaccredited agencies." 2009 NRC

[74] The OIG Report likewise concluded that "[n]othing in the standards [employed by the FBI] required the examiners to justify their explanations for differences in appearance between the latent and known prints . . . or even to document the differences or explanations at all." OIG Report at 198.



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Report at 137. There are also no certification requirements for print examiners. *See* 4 Mod. Sci. Evid. § 32:47 (noting the "voluntary certification process").[75]

An additional and serious problem is the absence of standards to limit recognized problems of bias. As a rule, "[s]cience takes great pains to avoid biases by using strict protocols to minimize their effects." 2009 NRC Report at 122. "Unfortunately, at least to date, there is no good evidence to indicate that the forensic science community has made a sufficient effort to address the bias issue . . . ." *Id.* at 8 n.8. Specifically, the 2009 NRC Report concluded that the ACE-V method "**does not guard against bias**." *Id.* at 142 (emphasis added). Indeed, the 2009 NRC Report identified forms of both contextual and cognitive bias that make latent fingerprint identifications unreliable.[76] For example, the NRC cited an experiment by Dr. Itiel Dror where

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[75] In the absence of training requirements, most examiners learn on the job. As one commentator explained:

> The harsh reality is that latent print training as a structured, organized course of study is scarce. Traditionally, fingerprint training has centered around a type of apprenticeship, tutelage, or on-the-job training, in its best form, and essentially a type of self study, in its worst. . . . Such apprenticeship is most often expressed in terms of duration, not in specific goals and objectives, and often end with a subjective assessment that the trainer is ready.

David L. Grieve, *The Identification Process: The Quest For Quality*, 40 J. of Forensic Identification 109, 110-111 (1990). *See also* Budowle, FBI Laboratory, 54 J. Forensic Science at 805 ("with the exception of DNA, there are no established mandatory acceptable minimum [education and training] standards across the U.S."); Haber & Haber, 7 Law, Probability & Risk at 94 ("Most examiners receive the majority of their training on the job, without either a formal structure of topics covered or formal assessment of success in meeting training goals.").

[76] As the NRC explained: "A common cognitive bias is the tendency for conclusions to be affected by how a question is framed or how data are presented. . . . Forensic scientists also can be affected by this cognitive bias if, for example, they are asked to compare two particular . . . fingerprints – one from the crime scene and one from a suspect – rather than comparing the crime scene exemplar with a pool of counterparts." *Id.* at 122-23. Yet latent print evaluations



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"experienced fingerprint examiners were asked to analyze fingerprints that, unknown to them, they had analyzed previously in their careers." *Id.* at 123. The study demonstrated the effects of contextual bias, which occurs when print examiners are influenced by what they hear about the case or the print identification (the context) at the time they evaluate the print. As the NRC explained, in Dror's study:

> For half the examinations, contextual biasing was introduced. For example, the instructions accompanying the latent prints include information such as the "suspect confessed to the crime" or the "suspect was in police custody at the time of the crime." In 6 of the 24 examinations that included contextual manipulation, the examiners reached conclusions that were consistent with the biasing information and **different from the results they had reached when examining the same prints in their daily work**.

*Id.* (citing I.E. Dror and D. Charlton, *Why Experts Make Errors*, 56 J. of Forensic Identification 600 (2006)) (emphasis added); *see also* Dror and D. Charlton, *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 J. of Forensic Identification 74, 77 (Dec. 2005) ("Our study shows that it is possible to alter identification decisions on the same fingerprint, solely by presenting it in a different context."). Despite the demonstrated risk of

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are always conducted as a comparison between the crime scene exemplar and the suspect's prints, and there are no standards designed to limit the biasing effect of this process. Another "common cognitive bias is the tendency to see patterns that do not actually exist." *Id.* at 124. This form of bias is particularly problematic in latent print analysis, where "examiners *intuit* when the amount and rarity of the consistent ridge detail is 'sufficient' to warrant the conclusion that the potential donor pool has been reduced to one." Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 (emphasis in original). As the NRC made clear, "human intuition is not a good substitute for careful reasoning where probabilities are concerned." 2009 NRC Report at 124.



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contextual bias, there are no standards that govern the amount or nature of information made available to examiners when they conduct latent print evaluations.[77]

The 2009 NRC Report highlighted the point that although in science, "[t]he goal is to make scientific investigation as **objective** as possible so the results do not depend on the investigator," *id.* at 124 (emphasis added), "the ACE-V method does not specify particular measurements or a standard test protocol, and examiners make **subjective** assessments throughout." *Id.* at 139 (emphasis added). Because "the assessment of latent prints from crime scenes is based largely on human interpretation" without any standards to govern the exercise of subjective decision-making, the fact-finder cannot be confident that results of a latent print analysis are reliable. *Id.*

## III. THE LATENT FINGERPRINT TESTIMONY SHOULD BE EXCLUDED AS MORE PREJUDICIAL THAN PROBATIVE

Even if this Court does not recognize that, at the very least, there is a dispute regarding the reliability of latent print identification in the relevant community sufficient to preclude admission under *Frye*, the fingerprint testimony should still be excluded as more prejudicial than probative. *Jones*, 548 A.2d at 40 ("if the [*Dyas*] criteria are met, the court evaluates probative value against prejudicial impact before deciding whether to admit the testimony"). The examiner's testimony will be extremely prejudicial, as it is well established that "expert or scientific testimony possesses an aura of special reliability and trustworthiness." *Burgess*, 953 A.2d at 1062 (citation and quotation omitted). "Because 'science' is often accepted in our

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[77] *See* 2009 NRC Report at 6 ("even when protocols are in place (e.g., SWG standards), they often are vague and not enforced in any meaningful way").



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society as synonymous with truth, there is a substantial risk of overweighting by the jury." *Bible*, 858 P.2d at 1181 (quotation and citation omitted).[78] Jurors are particularly inclined to view fingerprint evidence as infallible: "most if not all of the claims made by or on behalf of fingerprint examiners enjoy widespread and unquestioning belief among the lay public." 4 Mod. Sci. Evid. § 32:1.[79] As one latent print examiner observed in an article for the National District Attorneys Association: "Fingerprints are accorded a degree of respect almost unequaled among all other forms of physical evidence. . . . 'The testimony of the fingerprint expert can be devastating.'" Nielson at 32 (quoting Bailey and Rothblatt, CROSS-EXAMINATION IN CRIMINAL TRIALS, 256 (1978)). The risk of prejudice is exacerbated by the absolute language examiners

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[78] *See United States v. Addison*, 498 F.2d 741, 744 (D.C. Cir. 1974) ("scientific proof may in some instances assume a posture of mystic infallibility in the eyes of a jury of laymen"); *United States v. Hines*, 55 F. Supp. 2d 62, 64 (D. Mass. 1999) ("a certain patina attaches to an expert's testimony unlike any other witness; this is 'science,' a professional's judgment, the jury may think, and give more credence to the testimony than it may deserve."); *Williamson v. Reynolds*, 904 F. Supp. 1529 (E.D. Okla. 1995) ("forms of expert examination and testimony have been criticized because jurors may be awed by an 'aura of special reliability and trustworthiness' which may cause undue prejudice, confuse the issues or mislead the jury") (quoting United States v. *Amaral*, 488 F.2d 1148, 1152 (9th Cir. 1973)); *Ramirez,* 810 So.2d at 844 ("The trustworthiness of expert scientific testimony is especially important because oftentimes '[t]he jury will naturally assume that the scientific principles underlying the expert's conclusion are valid.'"); *O'Key*, 899 P.2d at 672 ("Evidence perceived by lay jurors to be scientific in nature possesses an unusually high degree of persuasive power."); *People v. Leahy*, 882 P.2d 321, 325 (Cal. 1994) ("'Lay jurors tend to give considerable weight to 'scientific' evidence when presented by 'experts' with impressive credentials'") (quoting *Kelly*, 549 P.2d at 1245).

[79] *See supra* note 71.



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are professionally required to use when testifying about a latent print identification. "A false aura of scientific infallibility, coupled with low probative value . . . multiplies the hazards of misleading a jury." *In re Agent Orange Prod. Liab. Lit.*, 611 F. Supp. 1223, 1256 (E.D.N.Y. 1985). While the risk of prejudice is well established, the probative value of the testimony, as described herein, has not yet been demonstrated. Precisely "because fingerprint identification has been both oversold and under-researched," the testimony should be excluded as more prejudicial than probative. 4 Mod. Sci. Evid. § 32:1.

## IV CONCLUSION

The relevant scientific community recognizes that there is no scientific evidence validating fingerprint identifications, the claim of infallibility has been disproven, the meaning of a match is meaningless in the absence of probability data, and the analysis is a subjective and standardless process. In sum, "[t]he relevant question is . . . whether there is a general consensus [in the relevant scientific community] that fingerprint examiners can make reliable identifications on the basis of . . . basic ridge characteristics. The answer to that question is plainly no." Mears & Day, 19 Ga. St. U. L. Rev. at 744. And even the strongest advocates of latent print analysis must acknowledge the existence of "active debate in the scientific, fingerprint practitioner and legal communities." 4 Mod. Sci. Evid. § 32:53. The fingerprint testimony should accordingly be excluded. In the alternative, the fingerprint testimony should be excluded as more prejudicial than probative.

WHEREFORE, based on the foregoing reasons, the defendant charged as Kenneth Sims respectfully requests that this Court grant a hearing on this Motion to exclude the latent fingerprint testimony. The defense reserves the right to supplement this Motion.



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**APPENDIX A:**

A description of the evolution of the judicial treatment of CBLA in response to a shift in scientific opinion, as reflected in a NRC report, and its ultimate exclusion from the courtroom.

Courts had been admitting expert testimony on Comparative Bullet Lead Analysis (CBLA) in thousands of cases since the 1960s, allowing FBI examiners to testify that they could "match" a bullet connected to a crime to a bullet connected with a defendant. *See, e.g., United States v. Davis*, 103 F.3d 660, 673 (8th Cir. 1996). CBLA involved a process called Inductively Coupled Plasma-Optical Emission Spectoscopy, which FBI examiners used to determine if the composition of the crime bullet matched the composition of the bullet tied to the defendant. *See Clemons v. Maryland*, 896 A.2d 1059, 1067 (Md. 2006). In response to some criticism in the scientific community, including in law review articles, the National Research Council (NRC) established a committee to evaluate the CBLA method. The resulting report concluded that "there is evidence that bullets from [different sources of lead] can sometimes coincidentally be analytically indistinguishable." National Research Council of the National Academies, *Forensic Evidence: Weighing Bullet Lead Evidence*, 112 (2004). Thus "[t]he available data do not support any statement that a crime bullet came from, or is likely to have come from, a particular box of ammunition." *Id.* at 113.

Courts subsequently determined that, notwithstanding precedent for the admission of such evidence, CBLA was no longer "generally accepted within the scientific community as valid and reliable." *Clemons*, 896 A.2d at 1070; *see also Blackwell v. Wyeth*, 971 A.2d at 235, 243-44 (Md. 2009) (noting that CBLA previously "had gained currency as admissible scientific evidence" but was rejected in *Clemons* as "no longer generally accepted"). What is more, "[f]ollowing a fourteen-month review of the findings and recommendations of the NRC, the FBI

Laboratory announced on September 1, 2005, that it would no longer conduct CBLA tests." *Ragland v. Com.*, 191 S.W.3d 569, 579 (Ky. 2006) (holding that "a finding by the trial court that the [CBLA] evidence is both scientifically reliable and relevant would be clearly erroneous" where the NRC report "raised questions about the reliability and relevancy of CBLA that were sufficiently serious to convince the [FBI] Laboratory to discontinue forthwith CBLA testing"). Other forms of traditionally admissible forensic evidence, such as voiceprint identification, have likewise been deemed unreliable after scientific scrutiny revealed their inadequacies. *See, e.g., State v. Gortarez*, 686 P.2d 1224, 1235 (Ariz. 1984) (excluding testimony regarding voiceprint identification as no longer generally accepted, and finding the critique in a NRC report "to be particularly persuasive"). The evolution of the judicial treatment of CBLA is simply the most recent illustration that evidence previously recognized as generally accepted can be reevaluated in light of a shift in scientific opinion – as reflected in a NRC report – and ultimately excluded from the courtroom.

**APPENDIX B:**

Representative cases illustrating that courts have consistently declined to limit the relevant scientific community to forensic practitioners when evaluating the general acceptance of a range of forensic techniques.

**Field sobriety tests:**
*See, e.g., United States v. Horn*, 185 F. Supp. 2d 530, 557 (D. Md. 2002) ("However skilled law enforcement officials, highway safety specialists, prosecutors and criminologists may be in their fields, the record before me provides scant comfort that these communities have the expertise needed to evaluate the methods and procedures underlying human performance tests such as the [standard field sobriety tests]"); *People v. Leahy*, 882 P.2d 321, 334 (Cal. 1994) ("testimony by police officers regarding the mere *administration* of the test is insufficient to meet the general acceptance standard"); *State v. O'Key*, 899 P.2d 663, 686 (Or. 1995) ("the scientific disciplines of pharmacology, ophthalmology, and to a lesser extent optometry should be included with behavioral psychology, highway safety, neurology, and criminalistics in the relevant scientific community").

**Tests of sexual dangerousness:**
*See, e.g., In re Commitment of Burton*, 884 So.2d 1112, 1118 (Fla. Dist. Ct. App. 2004) (Altenbernd, J., concurring) ("[T]he relevant scientific community that must generally accept these tests and the interpretation of their results should include a broader group of clinical and experimental psychologists and psychiatrists, and not merely the group of licensed professionals who are making a living by relying upon these tests.").

**Handwriting analysis:**
*See, e.g., United States v. Saelee*, 162 F. Supp. 2d 1097, 1104 (D. Alaska 2001) ("[T]he evidence does indicate that there is general acceptance of the theories and techniques involved in the field of handwriting analysis among the closed universe of forensic document examiners. This proves nothing."); *United States v. Oskowitz*, 294 F. Supp. 2d 379, 384 (E.D.N.Y. 2003) ("To the extent that handwriting analysis techniques have been 'generally accepted' by a relevant technical community, that community has not been a 'financially disinterested independent community, like an academic community.'") (citation omitted); *United States v. Starzecpyzel*, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995) ("FDEs [forensic document examiners] certainly find 'general acceptance' within their own community, but this community is devoid of financially disinterested parties, such as academics.").

**Medical causation:**
*See, e.g., Blackwell v. Wyeth*, 971 A.2d 235, 252 (Md. 2009) (Citing with approval opinion of trial court that "the 'relevant scientific community' includes the full community of scientists with sufficient training and expertise to permit them to comprehend novel scientific methods, and may not properly be restricted to those who practice or otherwise adhere to the methods at issue.").

**Electrophoretic typing of human fluid stains:**
*See, e.g., People v. Brown*, 726 P.2d 516, 533 (Cal. 1985), *rev'd on other grounds in California v. Brown*, 479 U.S. 538 (1987)) (The witnesses "were competent and well-credentialed forensic technicians, but their identification with law enforcement, their career interest in acceptance of the tests, and their lack of formal training and background in the applicable scientific disciplines made them unqualified to state the view of the relevant community of *impartial* scientists.") (emphasis in original); *People v. Young*, 391 N.W.2d 270, 276-77 (Mich. 1986) ("The community of scientists having direct empirical experience with electrophoresis of evidentiary bloodstains does not seem sufficiently large so that the *Frye* objective of receiving a consensus judgment of the scientific community can be met. The community of nonforensic scientists using electrophoresis is, however, large enough to obtain an adequate sampling of scientific opinion. These scientists have sufficient theoretical understanding and practical experience to be able to evaluate the evidence.") (footnote, quotation, and citation omitted); *People v. Reilly*, 196 Cal. App. 3d 1127, 1138 (Cal. Ct. App. 1987) ("[T]o the extent that those scientists in broader disciplines are knowledgeable about bloodstain typing, their opinions should be considered as part of the relevant scientific community.").

**Polygraph examinations:**
*See, e.g., State v. Thompkins*, 891 So.2d 1151, 1153 (Fla. Dist. Ct. App. 2005) ("The testimony in this record, which came only from persons who administer polygraph tests, is insufficient to establish the general scientific recognition required by *Frye* . . . ."); *United States v. Alexander*, 526 F.2d 161, 164 n.6 (8th Cir. 1975) ("Some commentators have posited the argument that the polygraph need only attain general acceptance among the polygraph operators themselves to satisfy the test for admissibility. . . . This position must be rejected. . . . Experts in neurology, psychiatry and physiology may offer needed enlightenment upon the basic premises of polygraphy."); *People v. Barbara*, 255 N.W.2d 171, 181 (Mich. 1977) ("While the special record before us establishes that the polygraph is accepted as reliable by polygraphers, it does not establish that polygraph analysis is accepted as reliable by the scientific community. Credentials of the witnesses, although outstanding for polygraph technicians, are not those of scientists. Therefore, unless we depart from the standard *Davis/Frye* test for admissibility, defendant has failed to convince us that the polygraph should be admitted into evidence at trial in our state."); *Akonom v. State*, 394 A.2d 1213, 1217 (Md. Ct. Spec. App. 1978) ("[T]he relevant 'field' in which the polygraph belongs is not limited to those who practice the science (or art) of polygraphy, but extends into the larger scientific community as well.").

**Voiceprint experiments or spectrograms:**
*See, e.g., Cornett v. State*, 450 N.E.2d 498, 503 (Ind. 1983) ("We agree that the relevant scientific community should be made up of linguists, psychologists, and engineers, in addition to the people who use voice spectrography for identification purposes. Limiting the community to only the latter group would be too narrow and misleading.").

**Hair analysis:**
*See, e.g., Williamson v. Reynolds*, 904 F. Supp. 1529, 1558 (E.D. Okl. 1995), *abrogated on other grounds by Nguyen v. Reynolds*, 131 F.3d 1340 (10th Cir. 1997) ("general acceptance" standard not met, "since any general acceptance seems to be among hair experts who are generally technicians testifying for the prosecution, not scientists who can objectively evaluate such

evidence"); *State v. Coon*, 974 P.2d 386, 400-01 (Alaska 1999) ("trial court did not abuse its discretion in determining the relevant scientific community [included] . . . 'forensic scientists and scientists in acoustics and speech-related fields with experience using the technique'"); *State v. Gortarez*, 686 P.2d 1224, 1233 (Ariz. 1984) ("In the area of spectrographic analysis, we feel that disinterested and impartial experts in many fields, possibly including acoustical engineering, acoustics, communications electronics, linguistics, phonetics, physics, and speech communications, must generally accept the technique before we will allow its admission into evidence in this state."); *Reed v. State*, 391 A.2d 364, 377 (Md. 1978) (finding "no basis for 'restricting the relevant field of experts' to those who have performed voiceprint experiments, and eliminating from consideration the opinions of those scientists in the fields of speech and hearing, as well as related fields, who, by training and education, are competent to make professional judgments concerning experiments undertaken by others"); *People v. Collins*, 405 N.Y.S.2d 365, 368 (N.Y. Sup. Ct. 1978) ("Certainly, speech scientists familiar with the use of the spectrograph are qualified to form an opinion as to its adequacy in voice identification, and are also qualified to judge whether any sound spectrographic technique is scientifically accepted.").

**APPENDIX C:**

Case law recognizing that NRC committees represent a cross section of the scientific community; citing the NRC as authoritative for purposes of determining general acceptance; acknowledging the expertise of the National Academy of Sciences; describing NRC reports as "authoritative;" and demonstrating that courts and federal agencies follow the recommendations of NRC reports when making a range of decisions.

**Case law recognizing that NRC committees represent a cross section of the scientific community:**

*See, e.g., State v. Garcia*, 3 P.3d 999, 1003 (Ariz. Ct. App. 1999) ("The NRC is comprised of 'a distinguished cross section of the scientific community.'") (quoting *State v. Johnson*, 922 P.2d 294, 299 (Ariz. 1996); *People v. Venegas*, 954 P.2d 525, 552 (Cal. 1998) ("'[C]ourts have recognized that the [NRC] is a distinguished cross section of the scientific community.'") (quoting *United States v. Porter*, 618 A.2d 629, 643 n.26 (D.C. 1992)); *see also State v. Hammons*, 2002 WL 484645, at *7 (Del. Super. Ct. 2002) (describing NRC committee as "consisting of eminent scientists and jurists"); *State v. Pappas*, 776 A.2d 1091, 1107 (Conn. 2001) (describing NRC committee members as "eminent scientists and jurists"); *Plough Inc. v. Nat'l Acad. Of Sciences,* 530 A.2d 1152, 1156 (D.C. 1987) (describing NAS committees as "composed of prominent scientists and engineers in the relevant field of study"); *People v. Soto*, 981 P.2d 958, 974 n.30 (Cal. 1999) (describing the NRC as "society of distinguished scholars"); *Com. v. Blasioli*, 713 A.2d 1117, 1120 n.3 (Pa. 1998) (same); *State v. Marcus*, 683 A.2d 221, 227 n.6 (N.J. Super. Ct. App. Div. 1996) (same); *Love v. Wolf*, 38 Cal. Rptr. 183, 185 (Cal. Dist. Ct. App. 1964) (describing the NRC as "a public body of distinguished scientists").

**Case law citing the NRC as authoritative for purposes of determining general acceptance**:

*See, e.g., United States v. Morrow*, 374 F. Supp. 2d 51, 61 (D.D.C. 2005) (quoting with approval conclusion that "strongest evidence on this point [general acceptance] is the conclusion reached by the National Research Council's Committee") (quoting *United States v. Shea*, 957 F. Supp. 331, 338-39 (D.N.H. 1997)); *Shea*, 957 F. Supp. at 338-39, *aff'd,* 159 F.3d 37 (1st Cir. 1998) (describing conclusion of NRC report as "strongest evidence" that technology was a "generally accepted technique"); *People v. Venegas*, 954 P.2d 525, 552 (Cal. 1998) (NRC's conclusion "'can easily be equated with general acceptance . . . in the relevant scientific community'") (quoting *United States v. Porter*, 618 A.2d 629, 643 n.26 (D.C. 1992)); *State v. Johnson*, 922 P.2d 294, 299 (Ariz. 1996) ("We, too, believe that endorsement by the NRC of [a particular] method is strong evidence of general acceptance within the relevant scientific community."); *State v. Jones*, 922 P.2d 806, 809 (Wash. 1996) (en banc) (noting with approval conclusion in prior case "that because the approach was recommended in the NRC Report, it had gained general acceptance within the scientific community"); *Hayes v. State*, 660 So.2d 257, 264 (Fla. 1995) (describing "the National Research Council" as "a major voice in the scientific community"); *Roberts v. United States*, 916 A.2d 922, 930 (D.C. 2007) (referencing "scientific consensus reflected in [NRC] report"); *Coy v. Renico*, 414 F. Supp. 2d 744, 762 (E.D. Mich. 2006) ("The courts have routinely found that statistical analyses performed pursuant to the

standards set forth in [a NRC report] are reliable and generally accepted . . . ."); *People v. Reeves*, 109 Cal. Rptr. 2d 728, 749 (Cal. Ct. App. 2001) ("[C]ourts have recognized that 'the [NRC] is a distinguished cross section of the scientific community. . . . Thus, that committee's conclusion . . . can easily be equated with general acceptance of those methodologies in the relevant scientific community.'") (quoting *Venegas*, 954 P.2d at 552); *State v. Garcia*, 3 P.3d 999, 1003 (Ariz. Ct. App. 1999) ("endorsement by the NRC is 'strong evidence' that a methodology or formula satisfies *Frye*") (quoting *Johnson*, 922 P.2d at 299); *State v. Cauthron*, 846 P.2d 502, 517 (Wash. 1993), *overruled in part on other grounds by State v. Buckner*, 941 P.2d 667 (Wash. 1997) ("Although we lack the scientific expertise to either assess or explain the methodology, its adoption by the [NRC] Committee indicates that sufficient acceptance within the scientific community has been achieved to satisfy *Frye* in appropriate circumstances."); *State v. Alt*, 504 N.W.2d 38, 50 (Minn. Ct. App. 1993) (quoting with approval observation of the Washington Supreme Court that methodology's "'adoption by the [NRC] Committee indicates that sufficient acceptance within the scientific community has been achieved to satisfy *Frye* in appropriate circumstances'") (quoting *Cauthron*, 846 P.2d at 517).

**Case law acknowledging the expertise of the National Academy of Sciences:**

*See, e.g., Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1267 (D.C. Cir. 2004) (NAS "serves as the federal government's scientific adviser, convening distinguished scholars to address scientific and technical issues confronting society."); *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 735 (M.D. Pa. 2005) (noting that NAS "was recognized by experts for both parties as the 'most prestigious' scientific association in this country"); *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 34 n.7 (D.D.C. 2003) (NAS is a "society of prestigious American scientists founded . . . to give expert advice on technical matters."); *Lee v. Martinez*, 96 P.3d 291, 295 (N.M. 2004) (noting that NAS is society "of distinguished scientists and engineers that advises the federal government on scientific and technical matters, recently conducted a review of the validity of polygraph testing" and that NAS report "objectively reviews the scientific literature on the reliability of polygraph examinations").

**Caselaw describing NRC reports as "authoritative":**

*See, e.g., United States v. Lowe*, 954 F.Supp. 401, 403 (D. Mass. 1996) ("both the government and the defendant agree [the NRC report] is an authoritative work in the field"); *State v. Butterfield*, 27 P.3d 1133, 1142 (Utah 2001) (describing NRC report as "authoritative"); *Comm. v. Rosier*, 685 N.E.2d 739 (Mass. 1997) (describing NRC report as "an authoritative scientific study"); *People v. Allen*, 72 Cal. App. 4th 1093, 1100 (Cal. Ct. App. 1999) (describing NRC report as "an authoritative scientific study"); *State v. Kinder*, 942 S.W.2d 313, 327 (Mo. 1996) (describing NRC report as "authoritative"); *Comm. v. Bly*, 862 N.E.2d 341, 355 (Mass. 2007) (describing NRC report as "authoritative"); *People v. Wilson*, 136 P.3d 864, 868 n.1 (Cal. 2006) (describing NRC report as "authoritative"); *see also United States v. Davis*, 602 F. Supp. 2d 658, 663 n.4 (D. Md. 2009) (noting that NRC report on DNA is "widely regarded as one of the definitive publications on the use of DNA evidence in the field of forensics"); *United States v. Trala*, 162 F. Supp. 2d 336, 351 (D. Del. 2001) ("Both the government and the defendant agree that the NRC [report] is widely regarded as one of the definitive publications on the use of DNA evidence in the field of forensics."); *Whiting v. Boston Edison Co.*, 891 F. Supp. 12, 15 (D. Mass.

1995) ("The most authoritative assessments of the health effects on humans of ionizing radiation are the periodic reports issued by the National Research Council of the National Academy of Sciences . . . .").

**Case law demonstrating that courts and federal agencies follow the recommendations of NRC reports when making a range of decisions:**

*See, e.g., Mass. v. EPA*, 549 U.S. 497, 521 (2007) (noting that the "EPA regards [the NRC Report] as an 'objective and independent assessment of the relevant science'"); *Am. Council of the Blind v. Paulson*, 525 F.3d 1256, 1262 n.5 (D.C. Cir. 2008) (noting that "[a]fter the 1995 NRC Report [*Currency Features for Visually Impaired People*], U.S. paper currency was modified to incorporate subtle differences in background color in different denominations."); *United States v. Morrow*, 374 F. Supp. 2d 51, 59 (D.D.C. 2005) (noting that "the FBI Laboratory has adopted the recommendation of the National Academy of Sciences" regarding DNA frequencies); *Com. v. Lykus*, 885 N.E.2d 769, 779 (Mass. 2008) ("Based on the NRC report, the FBI discontinued offering voice identification testimony in judicial proceedings."); *Nutritional Health Alliance v. Shalala*, 144 F.3d 220, 224 n.9 (2d Cir. 1998) (noting that FDA rules provide that the prohibition on placing claims on food labels does not apply if "the National Academy of Sciences publishes an authoritative statement about the relationship between a nutrient and a disease or health-related condition"); *Love v. Wolf*, 38 Cal. Rptr. 183, 185 (Cal. Dist. Ct. App. 1964) ("[T]he recommendations of this [NRC] committee . . . were also approved by the Food and Drug Administration.").

*See also, e.g., United States v. Trala*, 162 F. Supp. 2d at 351 ("In making its determination, the court finds the conclusions announced in the [NRC report] to be persuasive."); *United States v. Moultrie*, 552 F. Supp. 2d 598, 602 (N.D. Miss. 2008) (finding "persuasive the study performed by the National Academy of Sciences"); *People v. Reeves*, 109 Cal. Rptr. 2d 728, 749 (Cal. Ct. App. 2001) (citing "the respect courts afford conclusions of this esteemed scientific body"); *Lemour v. State*, 802 So. 2d 402, 405 (Fla. Dist. Ct. App. 2001) ("courts rely on relevant scientific and forensic literature including The National Research Council's report"); *State v. Sivri*, 646 A.2d 169, 191 (Conn. 1994) (noting that when the NRC report on DNA was published "it significantly changed the scientific landscape").

**APPENDIX D:**

A description of the individual members of the 2009 NRC Report Committee (The Committee on Identifying the Needs of the Forensic Science Community).

**Forensic practitioners:**

- Dr. Robert Shaler is the Director of the Forensic Science program at Pennsylvania State University. 2009 NRC Report at 296. He was formerly on the staff of the Pittsburgh Crime Laboratory and New York City's Medical Examiner's Office, where he created the Department of Forensic Biology. *Id.*

- Dr. Jay A. Siegel is the Director of the Forensic and Investigative Sciences Program, Indiana University-Purdue University, has authored textbooks in forensic science, and is the editor in chief of the ENCYCLOPEDIA OF FORENSIC SCIENCES. *Id.* at 296-97.

- Dr. Marcella F. Fierro was formerly the Chief Medical Examiner for the Commonwealth of Virginia, and Chair of the Department of Legal Medicine at Virginia Commonwealth University. She is Past President of the National Association of Medical Examiners and has served as a consultant to the FBI for the National Crime Information Center Unidentified and Missing Persons Files. *Id.* at 290-91.

- Dr. Ross E. Zumwalt is Chief Medical Investigator of the State of New Mexico and is also a Past President of the National Association of Medical Examiners. *Id.* at 299.

**Crime laboratory directors:**

- Dr. Randall S. Murch is the former deputy director of the FBI Laboratory, and is now the Associate Director of Research Program Development at Virginia Tech. Dr. Murch has also served on the Board of Directors for the American Society of Crime Lab Directors. *Id.* at 293-94.

- Peter M. Marone is the Executive Director of the Virginia Department of Forensic Sciences, and has worked in crime laboratories for over 30 years. He is the past chair of the Board of Directors of the Consortium of Forensic Science Organizations. *Id.* at 292.

**Members of the legal community, including the leading authorities on scientific evidence issues:**

- The Committee was co-chaired by The Honorable Harry T. Edwards, Judge of the U.S. Court of Appeals for the D.C. Circuit and Visting Professor of Law at the New York University of Law. *Id.* at 287-88.

- Margaret A. Berger has been on the faculty of Brooklyn Law School since 1973 and is "widely recognized as one of the nation's leading authorities on scientific evidentiary issues." *Id.* at 289. Professor Berger has been called on as a consultant to the Carnegie

Commission on Science, Technology, and Government and has contributed chapters to both editions of the Federal Judicial Center's Reference Manual on Scientific Evidence. *Id.*

- Joe S. Cecil serves as the principal editor of the Federal Judicial Center's REFERENCE MANUAL ON SCIENTIFIC EVIDENCE and is a Senior Research Associate and Project Director in the Division of Research at the Federal Judicial Center. *Id.* at 289-90.

- Geoffrey S. Mearns is a former prosecutor with the U.S. Department of Justice who is now the Dean of the Cleveland-Marshall College of Law at Cleveland State University. *Id.* at 292-293.

- Marvin E. Schechter is a criminal defense attorney and is a member of the Board of Directors of the National Association of Criminal Defense Attorneys. *Id.* at 295.

**A diverse group of scientists:**

- Dr. M. Bonner Denton is a Professor of Chemistry and a Professor of Geosciences at the University of Arizona and has authored more than 190 peer-reviewed manuscripts. *Id.* at 290.

- Dr. Channing Robertson is a Professor of Chemical Engineering at Stanford University and has published more than 140 articles. *Id.* at 295.

- Dr. Sargur Srihari is a SUNY Distinguished Professor in the Department of Computer Science and Engineering at the University of Buffalo and is the Chair of the International Association for Pattern Recognition's Publicity and Publications Committee. *Id.* at 297.

- Dr. Sheldon M. Wiederhorn is a Senior Fellow at the National Institute for Standards and Technology. *Id.* at 298.

**Renowned statisticians:**

- The Committee was co-chaired by Dr. Constantine Gatsonis, founding Director of the Center for Statistical Sciences, Brown University, and "a leading authority on statistical methods for the evaluation of diagnostic texts and biomarkers." *Id.* at 288-89.

- Dr. Karen Kafadar is Rudy Professor of Statistics and Physics at Indiana University, and has authored more than 80 journal articles and book chapters and has served on the governing boards for the American Statistical Association, the Institute of Mathematical Statistics, and the International Statistical Institute. *Id.* at 291-92.

**APPENDIX E:**

Six common sources of distortion in latent prints.

**1. SURFACE**

The surface upon which the print is deposited can affect the quality of the print either because it is less receptive to the deposit of a print in the first place, or because it makes the transfer of a print by law enforcement more complicated:

- David R. Ashbaugh, QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY, at 114 (1999) [hereinafter Ashbuagh] ("Various substrates [surfaces] can cause distortion or interfere with the deposition of a print, affecting its appearance and quality.").

- John P. Nielson, *Rebutting the "No Fingerprint" Defense*, 39-DEC Prosecutor 32, 34 (2005) [hereinafter Nielson] ("Objects that are extremely porous or are made using course fibers prove to be poor receiving surfaces. . . . If the surface is uneven, only partial transfer will result leaving a print that is of no real value for identification. If the surface is rough, fingerprint powder may become trapped in the recesses causing such a loss of contrast as to obscure latent impressions.")

- *A Review of the FBI's Handling of the Brandon Mayfield Case, Unclassified and Redacted,* Office of the Inspector General, Oversight and Review Division, at 103 (March 2006) [hereinafter OIG Report] ("One factor affecting the clarity of a latent fingerprint is the surface or 'substrate' upon which a latent fingerprint is deposited.").

**2. PRESSURE**

The shape of the ridges can be distorted or blurred by the amount of pressure used to deposit the print:

- Nielson at 36 ("Besides blurring due to rotational, lateral or longitudinal movement, deformation of the finger as it presses firmly against a surface typically causes some distortion and edge blurring.").

- Ashbaugh at 123 ("Deposition pressure generally changes the shape of the friction ridge by flattening or broadening each ridge.").

- OIG Report at 103 ("[D]ownward pressure during the deposition of a print . . . will affect the apparent width of the ridges and furrows, and can significantly affect the appearance of ridge edge shapes.").

**3. MOVEMENT**
Movement of the finger while the print was deposited can distort the print:

- Nielson at 34 (citing problem of "fingerprints deposited while the surface or hand was moving causing slippage and resulting in only partial clarity"); *id.* at 36 ("movement of the finger by a distance equal to the width of one furrow between ridges (1 to 2/100ths of an inch) is sufficient to blur a print beyond use").

- Ashbaugh at 125 ("[P]ressure distortion takes place on the lateral or horizontal place [and] usually is accompanied by sideways sliding of the friction ridges resulting in a smearing of ridge matrix.").

- 2009 NRC Report at 139 ("[A] small stretching of distance between two fingerprint features, or a twisting of angles, can result from either a difference between the fingers that left the prints or from distortions from the impression process.").

- OIG Report at 103 (noting that "sideways or lateral force . . . may result . . . in smearing").

**4. OVERLAPS**
Overlapping or "double tap" prints can obscure details in each print:

- Nielson at 36 (citing problem of "overlapping prints that obscure details in each print").

- Ashbaugh at 114 ("Double taps are a very common distortion with flexible substrates [surfaces]. A double tap happens when a single print is deposited with two distinct and separate applications of pressure. . . . At times . . . the print will appear normal but will actually be distorted in size and/or shape. . . . . Double taps come in a variety of shapes sizes, and causes. Some are obvious and some are extremely difficult to discern.").

- OIG Report at 103 ("'Double taps,' where a single print is deposited in two distinct applications of pressure, are a common type of distortion with flexible substrates.").

**5. MATERIALS**
Prints can be compromised by materials that are either on the surface where the print has been deposited, or on the finger or thumb or thumb itself:

- Ashbaugh at 116 ("Dirty substrates [surfaces] may not accept all of the matrix [substance deposited by the fingertip] available during deposition. The resulting print can appear blotchy, have areas missing, or generally lack detail.").

- Nielson at 36 ("Depositing surface interferences include any contaminant on the friction ridges that hinders or prevents the deposit of fingerprint residue. For instance, dirt, grease and other foreign matter can obliterate the fine detail that must be present to effect an identification. . . . To some greater or lesser extent, the same type of situation takes place whenever foreign matter is present on friction ridge skin.").

- OIG Report at 103 ("Distortion can also be introduced by the substance that is actually deposited by the finger to form the impression . . . .").

**6. TRANSFER**

Fingerprints are developed and transferred by a variety of methods, all of which have the potential to cause distortions:

- Ashbaugh at 117 ("Improper procedures, and especially efforts to correct those improper procedures, can cause various alterations to the lifted print."), *id.* at 117-18 (describing incident where lifting tape caused alteration of several of the major ridge path deviations and error was only discovered because print had been photographed prior to lifting).

- OIG Report at 104 ("Each development medium can affect the appearance of a latent print and the accuracy with which details are reproduced.").

**APPENDIX F:**

Criticism of the fact that "surprisingly little conventional science exists to support the claims of the fingerprint examination community," 4 Mod. Sci. Evidence § 32:1, has come from every corner of the relevant scientific community, including the following 31 sources.[1]

**Experts in scientific evidence:**

- Michael J. Saks, *Merlin and Solomon: Lessons from the Law's Formative Encounters with Forensic Identification Science*, 49 Hastings L. J. 1069, 1106 (1998) ("By conventional scientific standards, any serious search for evidence of the validity of fingerprint identification is going to be disappointing. . . . A vote to admit fingerprints is a rejection of conventional science as the criterion for admission. A vote for science is a vote to exclude fingerprint expert opinions.") (footnote omitted).

- Margaret A. Berger, *Expert Testimony in Criminal Proceedings: Questions Daubert Does Not Answer*, 33 SETON HALL L. REV. 1125, 1139 (2003) ("Hopefully, research into the validity of fingerprint matches will be adequately funded and will commence in the near future. But what should be done now?").

- David L. Faigman, *Is Science Different for Lawyers?* 297 Science 339 (2002) (fingerprinting has "not been seriously tested").

- Paul C. Giannelli, *Daubert Challenges to Fingerprints*, 42 No. 5 Crim. Law Bulletin 5 (Sept.-Oct. 2006) ("The basic problem with fingerprint identification is the lack of empirical testing.").

- David H. Kaye, The *Nonscience of Fingerprinting: United States v. Llera-Plaza*, 21 QUINNIPIAC L. REV. 1073, 1082 (2003) (citing "the failure to conduct scientific research validating ridgeology").

- Jennifer Mnookin, *The Validity of Latent Fingerprint Identification: Confessions of a Fingerprinting Moderate*, 7 Law, Probability & Risk 127, 129, 134 (2008) ("the scientific validity of fingerprint evidence is surprisingly untested . . . there has not been any formal scientific test that establishes the validity of ACE-V").

- D. Michael Risinger, Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

[1] In counting sources, this Appendix counts each author as a single source even if more than one book or article from that author has been cited.

- Jane Campbell Moriarty, PSYCHOLOGICAL AND SCIENTIFIC EVIDENCE IN CRIMINAL TRIALS § 12:15 (2004) ("The assumption of the validity of fingerprinting rests upon law, rather than science.").

**Scientists:**

- Lyn Haber & Ralph Norman Haber [Psychologists], *Error Rates for Human Latent Fingerprint Examiners*, in AUTOMATIC FINGERPRINT RECOGNITION SYSTEMS 339, 358 (Nalini K. Ratha & Ruud Bolle eds., 2004) ("Our careful search of all of the professional research literature turned up not a single experiment on examiner accuracy, either when comparing latent prints to AFIS outputs or when comparing latent prints to ten prints. Such data simply do not exist, even though examiners have testified in court about their infallible accuracy in making fingerprint comparisons for almost 100 years.").

- Donald Kennedy [Biologist, former president of Stanford University and former editor-in-chief of *Science*], *Forensic Science: Oxymoron?*, 302 Science 1625, 1625 (2003) (fingerprint analysis' "reliability is unverified either by statistical models of fingerprint variation or by consistent data on error rates.").

- Jonathan J. Koehler, Ph.D. [Psychologist and law professor], *A Welcome Exchange on the Scientific Status of Fingerprinting*, 7 Law, Probability & Risk 85, 85 (June 2008) ("Shocking though it may be, no one has ever bothered to conduct a rigorous scientific experiment on ACE-V.").

- John Vokey [Professor of Psychology and Neuroscience], Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

**Statisticians:**

- Sharath Pankanti et al., *On the Individuality of Fingerprints*, 24 IEEE Transactions on Pattern Analysis & Machine Intelligence 1010, 1010-11 (2002) ("[T]he underlying scientific basis of fingerprint individuality has not been rigorously studied or tested.").

- Stephen E. Fienberg [Professor of Statistics and Social Science], Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

- Max Welling [Associate Professor of Computer Science and Statistics], with Simon A. Cole [expert in scientific evidence], Rachel Dioso-Villa [graduate student, not included in count], Robert Carpenter [legal scholar], *Beyond the Individuality of Fingerprints: A Measure of Simulated Computer Latent Print Source Attribution Accuracy*, 7 Law, Probability & Risk 165, 166 (Sept. 2008) ("There have been essentially no empirical

- Sandy L. Zabell [Professor of Mathematics and Statistics], *Fingerprint Evidence*, 13 J.L. & Pol'y 143, 164 (2005) ("Although there is a substantial literature on the uniqueness of fingerprints, it is surprising how little true scientific support for the proposition exists. From a statistical viewpoint, the scientific foundation for fingerprint individuality is incredibly weak.") (quotation, citation, and footnote omitted).

**Legal scholars:**

- Tamara Lawson, *Can Fingerprints Lie?: Re-weighing Fingerprint Evidence in Criminal Jury Trials*, 31 Am. J. Crim. L. 1, 33, 66 (Fall 2003) ("it is somewhat shocking that in 2004 the hard data does not already exist to support the general belief that fingerprints do not lie.").

- Robert Epstein, *Fingerprints Meet Daubert: The Myth of Fingerprint "Science" is Revealed*, 75 S. CAL. L. REV. 605, 622 (2002) ("[T]he reality is that the fingerprint community has never conducted any scientific testing to validate the premises upon which the field is based.").

- Tara Marie La Morte, *Sleeping Gatekeepers: United States v. Llera Plaza and the Unreliability of Forensic Fingerprinting Evidence Under Daubert*, 14 Alb. L.J. Sci. & Tech. 171, 172, 180 (2003) ("[T]he underlying premises of the field rest on shaky ground, as its scientific bases remain untested and unexamined.").

- Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 Ga. St. U. L. Rev. 705, 728-29 (2003) ("the premises underlying fingerprint identification have not been empirically validated").

- Joelle Anne Moreno, Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

**Other scholars:**

- Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Rulings from Jennings to Llera Plaza and Back Again*, 41 Am. Crim. L. Rev. 1189, 1215 (2004) ("It is clear that no studies exist that measure the accuracy of fingerprint examiners when they make conclusions of identification.").

- Robert Bradley, [Professor of Political Science], Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After

nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

**Forensic scientists and fingerprint examiners:**

- David A. Stoney, [forensic scientist and former latent print examiner] *Fingerprint Identification: Scientific Status*, in 3 MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY §§ 27-2.3.1, at 386-387, 390 (David L. Faigman et al. eds., 2002) ("What about more specific, objective validation studies of the (subjective) fingerprint practices? Although such tests are feasible, they have not been conducted.").

- Mark Acree [former FBI latent print examiner], Signatory to Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at *16 ("After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists.").

- David R. Ashbaugh, [leading latent print examiner and vocal supporter of latent fingerprint identification] QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY, 4 (CRC Press, 1999) ("It is difficult to comprehend that a complete scientific review of friction ridge identification has not taken place at some time during the last 100 years.").

- Christophe Champod [Professor of Forensic Science and vocal supporter of latent fingerprint identification], *Fingerprint Examination: Towards More Transparency*, 7 Law, Probability & Risk 111, 116 (June 2008) (acknowledging "the absence of validation studies regarding ACE-V").

**APPENDIX H:**

36 documented examples of erroneous conclusions by latent print identifications and 13 other latent print analysis errors that demonstrate the unreliability of latent print identifications.

This Appendix includes the following:

**36 erroneous conclusions by latent print examiners:**

- 25 cases of erroneous identifications by latent print examiners. These are cases where latent print examiners erroneously concluded that a particular individual was the source of a latent print to the exclusion of all other persons.

- 5 additional cases where there is compelling evidence of a possible erroneous identification by latent print examiners.

- 5 cases of erroneous exclusions by latent print examiners. These are cases where latent print examiners erroneously concluded that a particular individual was not the source of a latent print.

- 1 case of an erroneous failure to exclude by latent print examiners. This is a case where the latent print examiner erroneously concluded that a latent print was inconclusive, when it in fact excluded the defendant.

**13 other latent print analysis errors that demonstrate the unreliability of latent print identifications:**

- 10 cases of fraudulent testimony and fabricated fingerprint evidence by latent print examiners. These cases demonstrate how the subjectivity and imprecision of latent print analysis allow unethical examiners to manipulate the evidence and their own testimony.

- 3 cases of fingerprint computer system errors. These cases demonstrate the fallibility of fingerprint computer systems used to generate candidates for fingerprint matches.

The case descriptions have been compiled from multiple sources, including academic articles, newspaper reports, case records, and websites. All of the sources for the case examples are cited in the endnotes to this Appendix.

## 1. ERRONEOUS IDENTIFICATIONS BY LATENT PRINT EXAMINER

| | |
|---|---|
| **Name** | **Maria Maldonado**[1] |
| **Year** | **2008** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | A Los Angeles Police Department (LAPD) fingerprint unit specialist determined that several fingerprints lifted from the scene of a burglary belonged to Maria Maldonado, a 25-year-old hospital technician. Two other examiners in the unit verified the identification. |
| **How error was uncovered** | At Maldonado's trial, fingerprint expert Kurt Kuhn testified that the police had made a mistake and that the prints did not match. The judge ordered the District Attorney's Office to have the fingerprints analyzed by the FBI. However, the LAPD had lost or misplaced the evidence. |
| **Outcome** | In light of the lost evidence, the prosecution was unable to proceed, and the charges against Ms. Maldonado were dismissed. A subsequent internal audit of the Latent Print Unit characterized the fingerprint identification as "erroneous."<br>The Los Angeles Times reviewed the LAPD's internal report and stated: "LAPD officials do not know how many other people might have been wrongly accused over the years as a result of poor fingerprint analysis and do not have the funds to pay for a comprehensive audit to find out, according to police records and interviews." |
| ***See also*** | *Latonya McIntyre* |

| | |
|---|---|
| **Name** | **Latonya McIntyre**[2] |
| **Year** | **2008** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Latonya McIntyre was extradited from Alabama on burglary charges after Los Angeles Police Department fingerprint specialists matched McIntyre's prints to those found at the crime scene. |
| **How error was uncovered** | The error was uncovered while evidence was being prepared for trial and reviewed pursuant to an internal audit of the Latent Print Unit. |
| **Outcome** | An internal audit of the Latent Print Unit characterized the fingerprint identification as "based upon faulty analysis." McIntyre filed a lawsuit in October 2008 against the City of Los Angeles. The case is still pending. |
| ***See also*** | *Maria Maldonado* |

| | |
|---|---|
| **Name** | **Dexter Presnell**[3] |
| **Year** | **2008** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Presnell was charged with the murder of Regan Wheeler when he was identified by the Georgia Bureau of Investigation Crime Lab as the source of a latent print found at the scene of the homicide. |
| **How error was uncovered** | The examiner later found that the print actually matched the victim's daughter. |
| **Outcome** | Murder charges against Presnell were dropped. |

| Name | **Clemente Javier "Shorty" Aguirre**[4] |
|---|---|
| **Year** | **2007** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Aguirre was convicted of killing a 68 year-old woman and her daughter. At Aguirre's trial, a fingerprint expert from the Seminole County, Florida Sheriff's Office, Donna Birks, testified that Aguirre's print matched a latent fingerprint found on the blade of a bloody chef's knife discovered at the crime scene. |
| **How error was uncovered** | The Florida Department of Law Enforcement re-evaluated approximately 300 cases coming out of the Seminole County Sheriff's Office after a print examiner from that office complained that a colleague, Donna Birks, was biased and breaking print-reading rules. |
| **Outcome** | The Florida Department of Law Enforcement determined that the bloody print found on the knife did not match Aguirre. The trial court declined to grant a new trial, however, finding that the error had not affected the jury's verdict. |

| Name | **Arturo Avina**[5] |
|---|---|
| **Year** | **2007** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Avina was tried on charges of felony commercial burglary in 2007. San Fernando police lifted fingerprints from the crime scene and used the automated fingerprint database to identify Avina as a possible suspect. Frank Terrio, a fingerprint expert working with the San Fernando police department, determined that the print belonged to Avina. |
| **How error was uncovered** | Avina was in prison at the time of the incident. In addition, there was no evidence that Avina had ever been to the location of the crime, so his print could not have been deposited at an earlier time. |
| **Outcome** | The trial court determined that Avina was innocent of the charges and Avina was released. |

| Name | **Argenis Burgos**[6] |
|---|---|
| **Year** | **2006** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Burgos was charged with a home invasion robbery in 2007. A key piece of evidence linking Burgos to the crime was a latent fingerprint lifted from the base of a cordless telephone at the scene of the crime. The fingerprint was matched to a known fingerprint of Burgos, initially through the automated fingerprint database, and later by fingerprint examiner Kevin Parisi at the state Forensic Science Laboratory. |
| **How error was uncovered** | After initially identifying the fingerprint as Burgos,' the prosecution later determined that the identification was incorrect and so notified the court. |
| **Outcome** | All charges against Burgos were dismissed. |

| Name | Leonard Mitchell[7] |
|---|---|
| Year | 2004 |
| Type of error | Erroneous identification by latent print examiner |
| Facts | LAPD Comparison Specialist matched Mitchell's right index finger to a print found on a handgun in a gun possession case. The match was verified by two other examiners. |
| How error was uncovered | An expert for the defense reviewed eight photos of the prints from the handgun and found no matches to Mitchell. The expert concluded that, while he saw perhaps four or five points of similarity, it was insufficient to declare a match. |
| Outcome | Mitchell pleaded nolo contendere and was convicted and given a suspended sentence and three years' probation. |

| Name | David Valken-Leduc[8] |
|---|---|
| Year | 2004 |
| Type of error | Erroneous or fraudulent identification by latent print examiner |
| Facts | Valken-Leduc was charged in 2001 with murdering a motel clerk in Woods Cross, Utah. Scott Spjut, Certified Latent Print Examiner and Chair of the International Association for Identification's Latent Print Certification Board, testified that Valken-Leduc was the source of two bloody prints found at the crime scene. Valken-Leduc was convicted of the murder in 2004. |
| How error was uncovered | After the examiner, Spjut, died, the crime laboratory reviewed his findings and found that the victim was the actual source of the prints. It is unclear whether the misattribution was fraud or an "honest mistake." |
| Outcome | In 2009 Valken-Leduc entered an Alford plea to second-degree felony manslaughter. The judge vacated the 2004 jury conviction and sentenced Valken-Leduc to three years probation. |

| Name | Dwight Gomas[9] |
|---|---|
| Year | 2003 |
| Type of error | Erroneous identification by latent print examiners |
| Facts | Gomas was charged with robbery after NYPD Detective Eileen Barrett matched a partial fingerprint from the crime scene to him. A second NYPD detective, Charles Schenkel, verified the identification. |
| How error was uncovered | Detective Daniel Perruzza reviewed the fingerprint identification just prior to Gomas' trial and determined that the fingerprint taken from the crime scene, though similar, did not match Gomas' fingerprint. |
| Outcome | Gomas was released from prison and all charges against him were dropped. He later sued the city and the Queens district attorney's office, accepting a settlement of $145,000 on September 3, 2009. |

| Name | Mark Sinclair[10] |
|---|---|
| Year | 2003 |
| Type of error | Erroneous identification by latent print examiners |
| Facts | In 2003, Mark Sinclair was convicted of armed robbery, due in part to a fingerprint identification. Scottish Criminal Records Office examiners |

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| | testified that they had "no doubt" that Sinclair was the source of the print. |
| **How error was uncovered** | The case was reevaluated after the reforms undertaken in response to the Shirley McKie case. |
| **Outcome** | Allan Bayle, an independent examiner formerly with Scotland Yard, concluded that the identification was "unsafe." Two examiners from the Police Service of Northern Ireland agreed with Bayle's conclusion that the latent print was insufficient for identification. |
| ***See also*** | *Shirley McKie* |

| **Name** | **Kathleen Hatfield**[11] |
|---|---|
| **Year** | **2002** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Hatfield was mistakenly identified as the victim of a homicide based primarily on fingerprint evidence. The misidentification occurred when, in June 2002, an unidentified corpse was found in the desert near Las Vegas, Nevada. Hatfield had been listed as a missing person, and her physical description matched that of the corpse. The Sonoma County Sheriff's Office in California faxed a copy of Hatfield's fingerprint card to the Las Vegas Metropolitan Police Department. A consultant for the coroner's office with 25 years of ten-print experience determined that Hatfield's prints matched a fingerprint taken from the body. |
| **How error was uncovered** | Between the time the body was discovered and the time the fingerprint identification was made, a police officer stopped Hatfield in Santa Rosa, California for an unidentified reason and noticed that she was listed as a missing person. Hatfield's name was then removed from the missing persons database. When Las Vegas authorities later tried to remove Hatfield's name from the missing persons database after identifying her as the homicide victim, they discovered that her name was no longer there, raising a red flag. The Sonoma County Sheriff's Office mailed a second copy of Hatfield's fingerprint card to Las Vegas authorities. Upon re-examination, the analyst determined that the ten-prints and the autopsy print did not match. The conclusion was confirmed by the Las Vegas Metropolitan Police Department Latent Print Unit. |
| **Outcome** | Hatfield's name was removed from the missing persons database and a search for the identity of the corpse presumably resumed. |

| **Name** | **Stephen Wallace**[12] |
|---|---|
| **Year** | **2000** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Wallace was arrested by the Greater Manchester Police in November 2000 for burglary. Wallace was linked to the crime by a fingerprint, which police claimed had been checked three times. |
| **How error was uncovered** | Journalists discovered this and one other mistake while investigating the case of Alan McNamara. Mike Armer, an independent fingerprint expert formerly with the police, confirmed that some characteristics didn't match Wallace's fingerprints. |

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| **Outcome** | Wallace was acquitted. |
| ***See also*** | *Alan McNamara* |

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|---|---|
| **Name** | **[Unidentified suspect], Manchester, England[13]** |
| **Year** | **2000** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Journalists' investigation of two other disputed identifications uncovered an erroneous identification that occurred in 2000. A fingerprint was attributed to a suspect who had an alibi and who did not fit the witness's description. |
| **How error was uncovered** | The error came to light when the investigating officer noted that the suspect had an alibi and did not match the witness description. |
| **Outcome** | Though the work had been "triple-checked," the fingerprint was eventually discarded as an erroneous identification. |
| ***See also*** | *Alan McNamara, Stephen Wallace* |

| | |
|---|---|
| **Name** | **Stephan Cowans[14]** |
| **Year** | **1998** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Stephan Cowans was convicted of shooting a Boston police officer. Cowans initially became a suspect when police found a fingerprint on a glass of water that the shooter drank after forcing his way into a nearby house. Boston Police Department fingerprint examiner Dennis LeBlanc identified the print as belonging to Cowans based on 16 corresponding ridge characteristics. |
| **How error was uncovered** | In the fall of 2003, testing showed that DNA from the glass and the assailant's cap and sweatshirt all belonged to the same person, who was determined not to be Cowans. As a result, the fingerprint lifted from the glass was re-evaluated by the FBI in January of 2004. |
| **Outcome** | The FBI determined that the print did not match Cowans and that the previous identification had been a mistake. Cowans was exonerated and released from prison. He later won a $3.2 million settlement from the state for the wrongful conviction. |

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|---|---|
| **Name** | **Richard Jackson[15]** |
| **Year** | **1998** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | On September 24, 1998, Jackson was convicted for the murder of Alvin Davis, his friend and occasional lover, in Upper Darby, Pennsylvania. Three examiners attributed latent print evidence found on a fan in Davis's home to Jackson. The match was made by Anthony Paparo of the Upper Darby police, and verified by Jon Creighton, a certified examiner from Vermont. Jackson hired his own experts, Vernon McCloud and George Wynn, both former examiners for federal agencies, who concluded that he was not the source of the evidence. Although McCloud and Wynn testified at trial, the jury convicted Jackson, and he was sentenced to life in prison. |
| **How error was uncovered** | A few days after the conviction, McCloud and Wynn wrote to the International Association for Identification, informing the IAI president that |

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| | Paparo and two other members had testified to erroneous identifications. |
| **Outcome** | The IAI concluded that the analysts had erroneously identified Jackson. In early 2000, the FBI issued a report that the latent print evidence did not belong to Jackson. Jackson was released from prison and the charges against him were dismissed. |

| **Name** | **Shirley McKie**[16] |
|---|---|
| **Year** | **1997** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Shirley McKie, a detective with the Strathclyde Police Department in Scotland, was charged with perjury after her fingerprint was identified on a door frame at the murder scene of Marion Ross. McKie, assigned with securing the crime scene, denied that she had ever left her post and entered the house. The identification was made and verified by four Latent Print Examiners of the Scottish Criminal Records Office, who claimed the fingerprints had at least sixteen corresponding ridge characteristics in common. |
| **How error was uncovered** | In 1999, American fingerprint examiners Pat Wertheim and David Grieve went to Scotland to re-examine the evidence, and testified at McKie's trial that McKie could not be the source of the latent print. |
| **Outcome** | McKie was acquitted and released. The International Association for Identification later convened a panel of fingerprint experts, who came to the unanimous conclusion that the latent print and the known exemplar from Shirley McKie did not share a common source. |
| ***See also*** | *David Asbury* |

| **Name** | **Andrew Chiory**[17] |
|---|---|
| **Year** | **1996** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Chiory was charged with the 1996 burglary of the London home of Miriam Stoppard. Scotland Yard fingerprint expert Simon Harris reported that two prints found at the scene matched Chiory. In doing so, Harris employed the national standard for fingerprint identification, which required at least 16 corresponding points for an identification to be made. In addition, the identification was confirmed by two other fingerprint examiners. |
| **How error was uncovered** | Independent checks revealed the police match to be wrong and Scotland Yard admitted its mistake, initiating an internal investigation to determine the source of the error. |
| **Outcome** | Chiory was released from prison and all charges against him were dropped. |

| **Name** | **Troy Deville**[18] |
|---|---|
| **Year** | **1996** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Deville was arrested in 1996 on suspicion of burglarizing the Archbishop Shaw High School in Marrero, Louisiana. The basis for his arrest was a latent fingerprint found at the crime scene. The Jefferson Parish Sheriff's Office |

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| | determined that the fingerprint belonged to Deville after running it through the Automated Fingerprint Identification System, which identified Deville as the maker of the print. Sergeant Patricia Lusk verified that the print belonged to Deville. |
| **How error was uncovered** | After his arrest, Deville was taken to the Jefferson Parish Correctional Center where he was booked and fingerprinted. His fingerprints were compared with the print lifted from the crime scene, and it was discovered that his prints did not match the one taken from the crime scene. |
| **Outcome** | Deville was released from prison and was not charged with any crime related to this incident. |

| **Name** | **Terry McGee**[19] |
|---|---|
| **Year** | **1994** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Terry McGee was arrested and interrogated for three days in 1994 for the murder of seven people during a robbery in Palatine, Illinois. A Chicago Police Department latent print examiner matched a print from the crime scene to McGee. The match was attested to by four examiners, two of which were certified by the International Association for Identification (Thomas Krupowicz, the author of a textbook on fingerprint identification, and Booker Washington). |
| **How error was uncovered** | The alleged match was reviewed by the Illinois State Police and the FBI, who determined that the identification was erroneous. |
| **Outcome** | McGee was released. |

| **Name** | **Neville Lee**[20] |
|---|---|
| **Year** | **1991** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | Neville Lee was arrested in 1991 in Nottinghamshire, England for the rape of an eleven-year-old girl, based on a fingerprint match at a time when a minimum of sixteen matching ridge characteristics was required in the United Kingdom. |
| **How error was uncovered** | Someone else confessed to the crime. |
| **Outcome** | The authorities admitted that the fingerprint match was erroneous. Lee was ultimately released. |

| **Name** | **Maurice Gaining**[21] |
|---|---|
| **Year** | **1987** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Fingerprint experts at the Fayetteville-Cumberland Identification Bureau identified a fingerprint found at a crime scene as belonging to Gaining. Gaining pled guilty to 22 counts of breaking and entering and 23 counts of larceny. |
| **How error was uncovered** | The FBI reviewed 51 fingerprint identifications made by the Fayetteville-Cumberland Identification Bureau after a fingerprint misidentification in |

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| | another case resulted in two murder charges being dropped by the local district attorneys office. In reviewing the fingerprint identification made in Gaining's case, the FBI determined that the print did not belong to Gaining, but instead, belonged to co-defendant Joseph Hammock. |
| **Outcome** | The trial court threw out Gaining's 10-year sentence and ordered a new trial. |

| **Name** | **Danny McNamee**[22] |
|---|---|
| **Year** | **1987** |
| **Type of error** | Erroneous identification by latent print examiners |
| **Facts** | In 1987, McNamee was convicted and sentenced to 25 years for conspiracy to cause explosions in the "Hyde Park Bomber" case. He was implicated by three latent prints, the most incriminating of which came from a battery recovered from debris after a controlled explosion in London. At trial, Metropolitan Police latent print examiners indicated that McNamee was the source of the print on the battery under the UK standard that requires at least 16 matching fingerprint characteristics be reached before an identification can be made. |
| **How error was uncovered** | For the appeal, 14 experts analyzed the battery print and McNamee's inked prints. Two examiners each found eleven corresponding ridge characteristics, but they were not the same eleven. At least two examiners attributed the print to McNamee, but did not agree with some of the corresponding characteristics identified by the original examiners. Other experts found the latent print insufficient for identification. None of the experts found more than eleven matching characteristics. |
| **Outcome** | The appeals court quashed the fingerprint evidence and reversed the conviction, holding that the new evidence undermined confidence in the jury verdict. McNamee was released in 1998. |

| **Name** | **Bruce Basden**[23] |
|---|---|
| **Year** | **1986** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Basden was charged with the murders of Remus and Blanche Adams in Fayetteville, NC on the basis of a fingerprint found in the decedents' home. |
| **How error was uncovered** | John Trogden, the fingerprint examiner, enlarged and reexamined the fingerprint evidence in response to a discovery request by the defense. In doing so, he found unexplained dissimilarities between the print found at the decedents' home and Basden's print, causing him to change his mind that the prints belonged to Basden. |
| **Outcome** | All charges against Basden were dismissed. |

| **Name** | **Michael Cooper**[24] |
|---|---|
| **Year** | **1986** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Cooper was arrested on suspicion of being a serial rapist after Timothy O'Sullivan, an identification technician for the Tucson Arizona Police Department, matched Cooper's fingerprints to latent prints found at two of the |

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|---|---|
| | crime scenes. O'Sullivan's conclusions were verified by the supervisor of the lab, Gene Scott. |
| **How error was uncovered** | On the basis of the fingerprint identification, Cooper was subjected to interrogation. Identification technician Mary Kay McCall participated in the interrogation, and when doubts began to arise about Cooper's guilt, she reexamined the prints. Upon reexamination, McCall determined that that the prints were not a match. O'Sullivan and Scott also agreed upon further review that there were sufficient discrepancies to cancel out the points of similarity, thus excluding Cooper as a match. |
| **Outcome** | Cooper was released from custody nearly twenty-four hours after his arrest and was not charged with any crime related to this incident. |

| **Name** | **John Stoppelli**[25] |
|---|---|
| **Year** | **1948** |
| **Type of error** | Erroneous identification by latent print examiner |
| **Facts** | Internal Revenue Agent W. Harold "Bucky" Greene determined that Stoppelli's fingerprint was on a package of heroin seized in an Oakland raid. Greene found fourteen matching ridge characteristics. No other evidence was found linking Stoppelli to the crime. On the day of the raid, Stoppelli had registered with his probation officer 3,000 miles away, but he was nevertheless convicted of drug trafficking in an Oakland federal court. |
| **How error was uncovered** | Stoppelli's attorney had the print reviewed by the FBI Laboratory. The FBI determined the print did not match Stoppelli. |
| **Outcome** | Stoppelli's request for a new trial was denied. President Truman commuted Stoppelli's sentence after he had served two years. |

## 2. COMPELLING EVIDENCE OF A POSSIBLE ERRONEOUS IDENTIFICATION BY LATENT PRINT EXAMINERS

| **Name** | **David Asbury**[26] |
|---|---|
| **Year** | **1996** |
| **Type of error** | Evidence of possible erroneous identification by latent print examiner |
| **Facts** | Asbury was convicted of killing Marion Ross in 1997. At trial, the prosecution linked Asbury to the murder by offering fingerprint evidence from the Scottish Criminal Records Office identifying prints on a gift tag in Ms. Ross' home as Asbury's. In addition, a latent print on a candy tin in Asbury's home was identified as that of Ms. Ross. |
| **How error was uncovered** | During the trial, a latent print from a door frame was identified as belonging to Detective Shirley McKie. McKie insisted that the identification was erroneous, casting doubt on the reliability of the other fingerprint evidence provided by the Scottish Criminal Records Office. As a result, the government had independent experts analyze the evidence. |
| **Outcome** | The Court of Criminal Appeal overturned Asbury's conviction, finding that the fingerprint evidence could not be relied upon to sustain the conviction. |
| ***See also*** | *Shirley McKie* |

| Name | Kevin Siehl[27] |
|---|---|
| Year | 1991 |
| Type of error | Evidence of possible erroneous identification |
| Facts | Siehl was charged with the July 1991 stabbing death of Christine Siehl, his estranged wife, whose body was found in the bathtub. At trial, Trooper Merril Brant testified that a latent fingerprint on the shower head matched Siehl, and that the position of the print indicated that it was left by the murderer who was standing outside the tub. Brant also testified that the print must have been left within 24-36 hours of when the victim was discovered, since it had not yet started to deteriorate. These statements contradicted Brant's previous testimony at the preliminary hearing that he was unable to determine how the print had been made or how long it had been there. Siehl's lawyer stipulated that the fingerprint on the shower head belonged to Siehl. |
| How possible error was uncovered | In Siehl's post-conviction proceedings, Professor Herbert Leon MacDonell, a highly credentialed forensic expert, submitted a report that Brant misidentified the print and had no scientific foundation to conclude the print was fresh. |
| Outcome | The Third Circuit has remanded to the district court for an evidentiary hearing on the issue of whether Siehl's trial counsel was ineffective in stipulating that the print on the shower head belonged to Siehl. |

| Name | Name unknown[28] |
|---|---|
| Year | 1984 |
| Type of error | Evidence of possible erroneous identification by latent print examiner |
| Facts | Special Agent German reported a case of erroneous identification by an examiner from "a small American police department in the Midwest" in 1984. The defendant, a parolee, was implicated based on latent print evidence given at a preliminary hearing and parole revocation hearing. |
| How error was uncovered | Unknown |
| Outcome | The defendant was released upon exposure of the misidentification. The examiner was decertified upon exposure of the error, but continued to work as a latent print examiner. |

| Name | Roger Caldwell[29] |
|---|---|
| Year | 1981 |
| Type of error | Evidence of possible erroneous identification by latent print examiners |
| Facts | Caldwell was convicted of murder in 1978 partly based on fingerprint evidence lifted from an envelope which linked Caldwell to the crime. Three latent print examiners, including the defendant's own expert, identified the print as belonging to Caldwell. |
| How error was uncovered | At the trial of the co-defendant (Caldwell's wife), forensic scientist Herbert MacDonell and latent print examiners George Bonebrake and Walter Rhodes testified that Caldwell could not have been the source of the latent print. |
| Outcome | The Minnesota Supreme Court held that Caldwell was entitled to a new trial because the government's testimony at trial regarding the fingerprint was |

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| | incorrect. Caldwell pled guilty in exchange for time served, but continued to proclaim his innocence. |

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| **Name** | **Robert Loomis**[30] |
| **Year** | **1918** |
| **Type of error** | Evidence of possible erroneous identification by latent print examiner |
| **Facts** | Loomis was convicted in 1920 of murdering Bertha Myers during a burglary in 1918. Two fingerprint experts testified that a latent fingerprint found on a jewelry box belonged to Loomis. |
| **How error was uncovered** | Loomis won a new trial, during which the prosecution admitted that Loomis was not the source of the latent print and declined to offer it into evidence. The record does not show what led the government to this conclusion. |
| **Outcome** | Loomis was acquitted and released in 1921. |

## 3. ERRONEOUS EXCLUSIONS BY LATENT PRINT EXAMINERS

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| **Name** | **Mark Miller**[31] |
| **Year** | **2001** |
| **Type of error** | Erroneous exclusion by latent print examiners |
| **Facts** | On Halloween 2001, Helen Biank was fatally shot in her Barrett Township home. In 2005, police arrested Miller, Biank's ex-boyfriend, based in part on a fingerprint found on the murder weapon. Retired FBI analyst Ivan Futrell analyzed the fingerprint for the defense and concluded the print did not belong to Miller. His conclusion was verified by retired FBI analyst George Wynn. |
| **How error was uncovered** | Miller later pleaded guilty to third-degree murder, saying he was playing with the gun when it accidentally went off and shot Biank, who had rejected his marriage proposal. |
| **Outcome** | Assistant District Attorney Michael Mancuso contacted the International Association for Identification (IAI), which had certified Futrell and Wynn. After a lengthy investigation, Futrell and Wynn were found to have made a technical error in their misidentification and were given one-year suspensions on their certifications. The decision is being appealed. |

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| **Name** | **[Names of defendants unknown]**[32] |
| **Year** | **1994** |
| **Type of error** | Erroneous exclusions by latent print examiner |
| **Facts** | In February 1994, it was determined that Elmer Lee Smith, a Sergeant in the Latent Print Section of the Los Angeles Police Department and past president of the Southern California Association of Fingerprint Officers, had testified to erroneous exclusions in four separate cases. |
| **How error was uncovered** | The Southern California Association of Fingerprint Officers review of the prints in question found all four identifications to be valid and correct. |
| **Outcome** | Smith's membership to the Southern California Association of Fingerprint Officers was revoked. |

| Name | **Andre Foreman**[33] |
|---|---|
| **Year** | **1994** |
| **Type of error** | Erroneous exclusion by latent print examiner |
| **Facts** | Foreman was arrested by New York City police for petty larceny on May 10, 1994. The New York State Division of Criminal Justice Services ran Foreman's fingerprints through a computer database, which found a match with John Breeze, who had a prior arrest for stealing the false teeth of a homeless man, and John Freeman, who had a prior arrest for possession of narcotics and was suspected of committing a murder in Pennsylvania. Both names were aliases used by Foreman. However, a fingerprint expert conducted a visual check and determined that the prints did not match. As a result, Foreman was released because he had no prior arrests. |
| **How error was uncovered** | On July 12, 1994, Foreman was arrested on burglary charges. Authorities again ran a fingerprint check, this time identifying Foreman as a suspect in the Pennsylvania murder and as a suspect in the murder of his pregnant girlfriend, which had occurred three days earlier on July 9. |
| **Outcome** | Foreman was subsequently indicted on murder charges. The ultimate resolution of the case is unknown. |

| Name | **John Orr**[34] |
|---|---|
| **Year** | **1989** |
| **Type of error** | Erroneous exclusion by latent print examiner |
| **Facts** | A fingerprint was found on a piece of paper that was part of a delay incendiary device, recovered after an arson fire in 1987. In 1989, another series of arsons were committed. Both were in close conjunction with conferences of arson investigators, and by comparing the lists of attendees, a short list of suspects was created. Everyone on the list, including Orr, was cleared of suspicion when their fingerprints were compared with the evidence. |
| **How error was uncovered** | In 1991, the print was identified to renowned Fire Captain John Orr. Prosecutors later wrote that the state Department of Justice expert did not know why he was unable to match the print to Orr in 1989. But the same analyst was able to make a positive match later on, and a total of five print specialists determined that the print matched Orr's left ring finger. |
| **Outcome** | Orr pled guilty to twenty arsons and was convicted of the murder of the four people who died in the fires. |

| Name | **Paul Perveler and Kristina Cromwell**[35] |
|---|---|
| **Year** | **1968** |
| **Type of error** | Erroneous exclusion by latent print examiners |
| **Facts** | Paul Perveler and Kristina Cromwell were accused of killing their spouses to collect $60,000 in life insurance. Vincent Yoder, a police fingerprint technician, testified that two fingerprints found on beer bottles in the house where Mrs. Cromwell's husband was shot to death belonged to neither the victim nor Perveler. The prosecution contended that Mr. Cromwell had been drinking beer with his killer, but the unidentified prints indicated that |

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| | someone else had been present. The prosecutor asked the head of the police fingerprint detail to look at the prints again. This was done, and Yoder took the stand once more and admitted that he had made an error. He said one of the prints was Cromwell's and that the other, badly smeared, could belong to Cromwell or someone else. |
| **Outcome** | Unknown. |

## 4. ERRONEOUS FAILURE TO EXCLUDE BY LATENT PRINT EXAMINER

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| **Name** | **Christopher Malray**[36] |
| **Year** | **2007** |
| **Type of error** | Erroneous failure to exclude by latent print examiner |
| **Facts** | A Los Angeles County Sheriff's Department latent print technician compared a crime scene print with Malray's fingerprints. At trial, she testified that the latent print was of insufficient quality for comparison purposes. |
| **How error was uncovered** | Defense expert Kenneth Moses determined that Malray was not the source of the print, and Ms. Vasquez changed her opinion in line with his conclusion. |
| **Outcome** | A jury found Malray guilty of a lesser offense. He was sentenced to 14 years. |

## 5. FRAUDULENT TESTIMONY BY LATENT PRINT EXAMINERS AND FABRICATED FINGERPRINT EVIDENCE

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| **Name** | **Fred van der Vyver (South Africa)**[37] |
| **Year** | **2007** |
| **Type of error** | Fraudulent testimony by a latent fingerprint examiner |
| **Facts** | In March 2005, van der Vyver was the main suspect in the murder of his girlfriend, Inge Lotz. Crucial evidence against him was a fingerprint allegedly lifted from a DVD cover that was rented at a time relevant to van der Vyver's alibi. Fred van der Vyver maintained his innocence and provided an alibi while the State denied any possibility of a mistake. |
| **How error was uncovered** | Several defense experts reviewed the case and concluded that the fingerprint came from a different surface, not the DVD cover. |
| **Outcome** | The judge concluded that the latent print evidence did not come from a DVD cover and found Van der Vyer not guilty. |

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| **Name** | **Alan McNamara**[38] |
| **Year** | **2003** |
| **Type of error** | Evidence of possibly fabricated fingerprint evidence |
| **Facts** | McNamara, a store owner, was arrested in October 1999 for the burglary of a house in Rochdale, UK. The only evidence was McNamara's thumb print, allegedly found on a wooden jewelry box in the house owner's bedroom. McNamara was found guilty and sentenced to two and a half years in prison. |
| **How error was uncovered** | At trial, defense examiners Allan Bayle and Pat Wertheim had testified that although the print belonged to McNamara, it showed no evidence of wood grain, and had been lifted off a smooth curved surface, such as a vase, which could have been touched by McNamara innocently during his day to day |

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| | business. In November 2003, McNamara won the right to appeal his conviction. In December 2004, the appeal was heard and McNamara's conviction was affirmed. McNamara anticipates taking the case to the Criminal Case Review Commission, an independent body set up by the government to look at alleged cases of miscarriage of justice. |
| **Outcome** | McNamara was jailed for 30 months. Allan Bayle resigned his position with Scotland Yard so that he could testify in McNamara's defense. Journalists investigating McNamara's case uncovered two errors by the same agency. |
| ***See also*** | *Stephen Wallace* |

| **Name** | **Numerous defendants (WI State Police Crime Lab)**[39] |
|---|---|
| **Year** | **2001** |
| **Type of error** | Fraudulent testimony by latent print examiner |
| **Facts** | Jack R. Patterson was charged with three counts of misconduct for performing cursory examinations of evidence for fingerprints and then lying on reports claiming he performed sophisticated tests. Patterson had spent 25 years with the Milwaukee Police Department examining fingerprints, followed by five years at the State Crime Laboratory. |
| **How the error was uncovered** | During a random quality-control exam of evidence processed by Patterson, his superiors at the lab determined that his notes misrepresented the procedures he was actually following when he analyzed evidence, according to the complaint. After the discrepancies were found, the laboratory notified area law enforcement agencies of the situation and began reworking cases that he had handled, if the agencies so requested. |
| **Outcome** | Patterson received five years probation and 500 hours community service. Evidence was re-examined in 210 cases, revealing that Patterson failed to examine 345 fingerprints, 31 palm prints, and 34 impressions. |

| **Name** | **Numerous defendants (Texas Dept. of Public Safety)**[40] |
|---|---|
| **Year** | **2000** |
| **Type of error** | Fraudulent reports by latent print examiner |
| **Facts** | In December 2000, Diana Boyd Monaghan was indicted on 13 counts of falsifying fingerprint reports on evidence she never tested. |
| **How error was uncovered** | Unclear. |
| **Outcome** | Monaghan pled guilty and received 5 years probation. Referring to the Department of Public Safety crime laboratory, the grand jury called for an investigation into "what appears to be a total lack of supervision and managerial oversight in one of the most important crime-fighting offices within the state of Texas." |

| **Name** | **Numerous Defendants, New York State Police**[41] |
|---|---|
| **Year** | **1997** |
| **Type of error** | Fabricated fingerprint evidence |
| **Facts** | Six investigators who worked in the identification unit of the New York State Police were charged with fabricating evidence in more than two dozen cases, |

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| | including burglaries and homicides. Troopers would take a fingerprint from a police station booking card or an object the suspect touched, and claim the fingerprint was discovered at a crime scene. |
| **How error was uncovered** | The scandal came to light in the summer of 1992 when state police learned that one of the investigators had admitted to fabricating fingerprints while interviewing for a job with the Central Intelligence Agency in 1991. |
| **Outcome** | Five of the six officers were convicted of fabricating evidence. |

| **Name** | **Gene Bibbins**[42] |
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| **Year** | **1987** |
| **Type of error** | Fraudulent testimony by latent print examiner |
| **Facts** | Bibbins was convicted of aggravated rape and aggravated robbery in 1987 and sentenced to life in prison. At trial, a fingerprint examiner from the Baton Rouge Police Department testified that the fingerprints from the crime scene were unidentifiable and that she had checked those findings with the state crime lab, which had reached the same conclusion. In fact, however, a report by the state crime lab excluded Bibbins as the source of the fingerprints. |
| **How error was uncovered** | In March 2003, post-conviction testing of DNA evidence confirmed that Bibbins could not have been the perpetrator. |
| **Outcome** | Bibbins was exonerated and released from prison. |

| **Name** | **Kerry Max Cook**[43] |
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| **Year** | **1977** |
| **Type of error** | Fraudulent testimony by latent print examiner |
| **Facts** | Cook was convicted and sentenced to death for the murder of Linda Jo Edwards, a 21-year-old secretary. A fingerprint found on the outside of a sliding glass door at Edwards' apartment was identified as Cook's. The fingerprint expert testified at trial that the print was twelve hours old, placing Cook in the apartment at the time of the murder. |
| **How error was uncovered** | The fingerprint expert later admitted that it was impossible to date a fingerprint, and said that prosecutors pressured him to give false testimony. |
| **Outcome** | The Texas Court of Criminal Appeals overturned Cook's conviction. Cook was released from prison after pleading no contest to a time-served sentence. |

| **Name** | **Ricky Dale Smith**[44] |
|---|---|
| **Year** | **1976** |
| **Type of error** | Fabricated fingerprint evidence |
| **Facts** | Police sent copies of latent fingerprints from an armed robbery in Traverse City to Detective Dale Rose for comparison with the known fingerprints of Smith and another suspect, Jack Lown. Rose reported that the fingerprints matched those of both suspects. Smith pled guilty and was convicted. |
| **How error was uncovered** | Sometime after June 16, 1976, the Traverse City police became aware that Detective Rose had been intentionally falsifying evidence in cases. The fingerprint evidence concerning Smith was rechecked with the Michigan State Police, who found that Rose had lied about the matching of Smith's prints to those found at the robbery. |

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| **Outcome** | Smith appealed his conviction. The appeals court affirmed the conviction on the basis of Smith's confession. |

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| **Name** | **William DePalma**[45] |
| **Year** | **1974** |
| **Type of error** | Fabricated fingerprint evidence |
| **Facts** | DePalma was convicted in federal court on charges of robbing the Mercury Savings and Loan in Buena Park, CA. Sergeant Bakken, an Identification Officer for the Buena Park Police Department, testified that he identified a latent fingerprint from the bank counter as the fingerprint of DePalma. An FBI latent print examiner also testified that the lifted fingerprint matched DePalma's fingerprint. DePalma was sentenced to 15 years in prison. |
| **How error was uncovered** | Authorities agreed to re-examine the evidence in DePalma's case after Sergeant Bakken was indicted in a separate matter for perjury and proffering false evidence. |
| **Outcome** | The FBI concluded that the latent fingerprint had been fabricated by Bakken, using a photocopy of DePalma's fingerprint. As a result, DePalma's conviction was vacated in February 1974 and he was released from prison. |

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| **Name** | **Dennis Stafford and Michael Luvaglio**[46] |
| **Year** | **1967** |
| **Type of error** | Fraudulent testimony |
| **Facts** | Stafford and Luvaglio were convicted for the murder of Angus Sibbet in 1967. Fingerprints were found in the Jaguar in which Sibbet's body was discovered. They did not match Sibbet, Stafford, or Luvaglio, and were consistent with two other men dragging Sibbet's body on to the back seat of the car where it was found. At the trial, it was claimed that these fingerprints were so smudged as to be unidentifiable. |
| **How error was uncovered** | Among the unused evidence, Luvaglio discovered a statement from a fingerprint expert, Chief Inspector Sams, saying that some of the fingerprints were indeed clear enough for identification purposes. |
| **Outcome** | Luvaglio believed that DNA could be obtained from the fingerprints. But the evidence had been destroyed after a failed appeal in 1973 on the instructions of Chief Inspector Ronald Kell, the officer in charge of the case. |

### 6. FINGERPRINT COMPUTER SYSTEM ERRORS

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| **Name** | **Jeremy Bryan Jones**[47] |
| **Year** | **2004** |
| **Type of error** | Fingerprint computer system error |
| **Facts** | Jones, using the name John Paul Chapman, was arrested multiple times for minor offenses in Georgia. The FBI's computerized fingerprint checks failed to match his prints to his real name and the associated 2000 warrant for him for rape, sodomy and jumping bail in Oklahoma. Jones was released, and a new file in the FBI database was created for "Chapman." Jones was arrested again for methamphetamine possession, but the FBI computers again failed to |

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| | match his prints to his real name and he was again released. |
| **How error was uncovered** | Jones, still going by the name Chapman, was arrested as a suspect in a homicide in Mobile County, Alabama. When officials alerted other jurisdictions to the crime, they discovered that the real John Paul Chapman was in a Missouri prison. Mobile County officials determined Jones's true identity and asked the FBI to review its database. |
| **Outcome** | The FBI discovered its error, and recognized that the computerized system had failed to identify the fingerprint match. |

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| **Name** | **Manny G. Rojas**[48] |
| **Year** | 2001, 2005 |
| **Type of error** | Fingerprint computer system error |
| **Facts** | Rojas was arrested in 2005 by the Bayonne Police Department for not having proper ID for his reduced fare ticket. During a warrant check, police concluded that Rojas was Emannuel "Manny" Rojas, who used the same Social Security number and date of birth and was wanted in South Florida for jumping bail on a narcotics case. Rojas (the one arrested) said he left his Social Security card and ID documents at an ex-girlfriend's almost ten years prior and never retrieved them, and suspected they were used to steal his identity. When Rojas was taken to police headquarters, the Police Chief said that his fingerprints were sent through their database, and came back as a match to the fugitive. |
| **How error was uncovered** | U.S. Marshals conducted a print comparison that showed the prints did not actually match, and Rojas was released. |
| **Outcome** | Rojas was jailed for two days in 2001 and four days in 2005. |

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| **Name** | **Hector Roman**[49] |
| **Year** | **1995** |
| **Type of error** | Fingerprint computer system error and erroneous exclusion |
| **Facts** | When Roman was arrested on November 8 for stealing the car of Marguerite Curtin, the New York fingerprint identification system listed it as his first arrest, and he was released. The system failed to match Roman's prints to his prior arrests that were listed under another name. |
| **How error was uncovered** | Roman was arrested subsequently on November 21 for the murder of Marguerite Curtin. Officials then realized he had been erroneously released after the November 8th arrest. |
| **Outcome** | Marguerite Curtin was killed in her home on November 20 or 21. |

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