

RULE 702

Nicholas Klingerman, Arizona Attorney General's Office

A. Rule 702

The “old” Ariz. R. Evid. 702 (prior to 2012):

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

Ariz. R. Evid. 702 as amended effective January 1, 2012:

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

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

B. Arizona Criminal Cases Interpreting New Rule 702

- *Rule 702 only applies Prospectively.*
 - *State v. Miller*, 234 Ariz. 31, ¶¶ 28-31, 316 P.3d 1219, 1228-29 (2013)
 - Miller went to trial in August 2011, before the new Rule 702 was adopted and went into effect. He argued on appeal that fundamental error occurred when firearm toolmark identification evidence was admitted under the *Frye* standard but would have been inadmissible under the *Daubert* standard. The Court held that amendments to Rule 702 could not be retroactively applied to cases that went to trial in 2011 or earlier.
- *General Considerations*
 - *State v. Bernstein*, 237 Ariz. 226, 349 P.3d 200 (2015)
 - “[T]he trial court’s gatekeeping function is not intended to replace the adversary system” and that cross-examination and presentation of contrary evidence is “the appropriate means for attacking shaky but admissible evidence.”
 - *Felipe v. Theme Tech Corp.*, 235 Ariz. 520, 524, ¶ 14, 334 P.3d 210, 214 (App. 2014)
 - Plaintiff argued that the investigating police officer was a fact witness because he observed the accident scene. The court rejected that argument because “[a]lthough Officer Garcia was an ‘actor or viewer’ in the sense that he was the Phoenix Police Department’s ‘scene agent,’ his testimony

extended beyond his observations at the scene and his physical investigation. Specifically, he described various accident reconstruction methods, his own reconstruction of this accident, and his opinions of the speeds of the vehicles based on his reconstruction.”

- *State v. Randles*, 235 Ariz. 547, 551, ¶ 17, 334 P.3d 730, 734 (App. 2014)
 - In a premeditated murder case, the court held that “[o]utside of the driving while intoxicated context, our supreme court has consistently explained that expert testimony regarding the effects of alcohol intoxication is generally inadmissible because the subject is one that is within the common knowledge and experience of most jurors.”
- *Glazer v. State*, 234 Ariz. 305, 321 P.3d 470 (App. 2014), *vacated in part on other grounds* 237 Ariz. 160, 347 P.3d 1141 (2015).
 - The trial court is not required to hold an evidentiary hearing before precluding or admitting expert testimony.
 - Recognizing the circuit split on the necessity of express findings on the admissibility of expert testimony and holding that “[a]lthough this court encourages superior courts to make findings when addressing pretrial challenges pursuant to Arizona Rule of Evidence 702, and such findings may be required when evidence is excluded, in this case, the superior court did not err in failing to make express findings regarding the admissibility of [the expert’s] trial testimony.”
- *Rule 702(a): Expert’s Experience*
 - *State v. Romero*, 236 Ariz. 451, 341 P.3d 493 (App. 2014), *petition for review granted September 1, 2015 (oral argument November 10, 2015)*:
 - Although disclaiming application under Rule 702(a), the court of appeals’ analysis logically fits that provision, stating that “an expert opinion must have the requisite qualifications on the particular matter . . . and experience in one area does not confer expertise in a related area. Stated differently: no expert is competent to express an opinion on every subject.” Romero’s proposed expert specialized in experimental design and would discuss the quality of firearm and toolmark identification procedures. The court found that he was not qualified to testify because he lacked experience in “any physical sciences on which toolmark analysis rests, such as ballistics, metallurgy, or physics,” and “could not describe the methods or protocols of a toolmark analyst.”
 - Judge Eckerstrom, specially concurring, disagreed with the majority’s analysis, concluding that “Rule 702 does not require an expert to have qualifications or expertise parallel to those of the opposing party’s expert.” Judge Eckerstrom would have found that Romero’s proposed expert had “knowledge, education, and experience far beyond that of the layperson for analyzing which scientific or statistical conclusions may be drawn from a particular experimental methodology and which may not.” Applying the “helpfulness” standard of *Salazar-Mercado*, Judge Eckerstrom finds that the defense expert “far exceeded this modest standard.”

- *State v. Ortiz*, 238 Ariz. 329, ___, ¶ 11, 360 P.3d 125, 131 (App. 2015)
 - Reaffirming that “the average juror is [not] familiar with the behavioral characteristics of victims of child molesting [Child Sexual Abuse Accommodation Syndrome],’ thus making [the expert’s] testimony proper under Rule 702(a).”
- *Glazer v. State*, 234 Ariz. 305, 316, ¶ 31, 321 P.3d 470, 481 (App. 2014), *vacated in part on other grounds* 237 Ariz. 160, 347 P.3d 1141 (2015) (quoting *State v. Delgado*, 232 Ariz. 182, 186, ¶ 12, 303 P.3d 76, 80 (App.2013)).
 - Rejecting argument that the plaintiff’s expert “was not qualified to testify on the standard of care regarding the need to install a median barrier because he has no highway design experience” because “[w]hether a witness is qualified as an expert is to be construed liberally, and it would be an abuse of discretion ‘to exclude testimony simply because . . . the proposed expert does not have the specialization that the court considers most appropriate.’”
 - The expert had a Ph.D. in transportation engineering; a master’s degree in traffic engineering; a bachelor’s degree in civil engineering and a “certificate of highway transportation.” He had been a transportation engineer for more than 45 years and was the Assistant Director of the Bureau of Highway Traffic program at Pennsylvania State University. He also taught at Yale and Penn State and belonged to professional organizations.
- *McMurtry v. Weatherford Hotel, Inc.*, 231 Ariz. 244, 293 P.3d 520 (App. 2013).
 - In a premises liability case involving a historic hotel, rejecting argument that plaintiff’s expert was not qualified because the expert did not have “experience regarding hotel safety, fire and building code compliance, or the architectural design of historic hotels,” where the expert had “training and experience limited to private investigation, hotel safety and security.”
 - The court held that the expert had “relevant experience in the realm of hotel safety and could assist the jury in determining whether the Hotel breached its applicable duty of care. [The expert’s] background and familiarity with certain building regulations goes to the weight of his testimony, not its admissibility.”
- *Rule 702(b)*
 - *Preston v. Amadei*, 238 Ariz. 124, 357 P.3d 159 (App. 2015)
 - The plaintiff’s mother died from a heart attack after being seen by her physician. The plaintiff’s expert would testify that a treating physician should involve family to persuade a patient to receive emergency treatment when the patient refuses to receive treatment. The expert would also testify that had the defendant’s staff fully and properly apprised the plaintiff of his mother’s condition, the plaintiff would have convinced his mother to go to the emergency room.
 - The defendant argued that the expert’s testimony was based on speculation, but the court of appeals held that the expert’s testimony should be admitted because “Rule 702 does not prevent an expert from

- relying on his or her own years of first-hand experience in a medical practice to formulate opinions as to the probable treatment a patient would receive and the likely outcome.”
- *Sandretto v. Payson Healthcare Mgmt., Inc.*, 234 Ariz. 351, 322 P.3d 168 (App. 2014)
 - The plaintiff’s expert planned to testify that the plaintiff developed Complex Regional Pain Syndrome (CRPS) after multiple surgeries to clean out a MRSA infection. The defense argued that the expert’s “causation opinion was ‘medical mumbo-jumbo’ and ‘rank speculation’ that ‘Rule 702 was designed to prevent.’”
 - The court of appeals held that the expert’s testimony was permissible because “[w]hen a properly qualified physician with expertise in a recognized medical condition opines on the cause of the condition in a particular patient based on his examination and testing, such testimony is admissible unless the opponent proffers scientific evidence challenging the reliability of the underlying principles and application. . . . Reliance on internet-based general medical information with disclaimers against using the information for medical diagnosis and treatment does not satisfy this requirement.”
 - The court also held that the defendant’s “challenge of [the expert’s] testimony based on isolated portions of his testimony and the testimony of [the defense’s expert] does not present a Rule 702 argument; rather, it is a jury argument going to the weight and credibility of the testimony.”
 - *State v. Sosnowicz*, 229 Ariz. 90, 270 P.3d 917 (App. 2012).
 - Although not entirely a Rule 702(b) case, holding that when “the medical examiner’s opinion regarding the manner of death is based largely on the testimony of lay witnesses whose credibility the jury can determine without the aid of expert testimony, an expert’s opinion regarding the manner of death would normally be inadmissible. On the other hand, a medical examiner’s testimony regarding the manner of death that is based primarily on the expert’s external and internal examination of the body will frequently assist the jury in understanding the evidence and would ordinarily be admissible.”
 - *Rule 702(c) and (d) (Daubert Factors and Other Considerations)*
 - *State ex rel. Montgomery v. Miller (Madrid)*, 234 Ariz. 289, 321 P.3d 454 (App. 2014)
 - Defense attacked admissibility of retrograde extrapolation calculation for determining blood alcohol content. After evidentiary hearing at which experts for State and defense testified, trial court precluded the use of the technique. The State special actioned and the court reversed.
 - The Court applied and analyzed *Daubert*’s five non-exclusive factors:
 - (1) Whether the expert’s theory or technique can be tested;
 - (2) Whether the theory or technique has been subjected to peer review and publication;

- (3) Whether the technique or theory is generally accepted within the relevant scientific community;
 - (4) The known or potential rate of error of the technique or theory when applied; and
 - (5) The existence and maintenance of standards controlling application of the technique.
 - The Court also analyzed the following other factors:
 - (A) Whether the expert’s testimony is prepared solely in anticipation of litigation, or is based on independent research;
 - (B) Whether the expert’s field of expertise/discipline is known to produce reliable results;
 - (C) Whether other courts have determined that the expert’s methodology is reliable;
 - (D) Whether there are non-judicial uses for the expert’s methodology/science;
 - (E) Whether the expert employs the same care as a litigation expert as he would in his regular professional work outside the courtroom;
 - (F) Whether the expert has accounted for obvious alternative explanations; and
 - (G) Whether the expert’s opinion adequately accounts for available data and unknown variables.
- *Ariz. State Hosp./Ariz. Cmty. Prot. & Treatment Ctr. v. Klein*, 231 Ariz. 467, 473, ¶ 28, 296 P.3d 1003, 1009 (App. 2013).
 - Reiterating that *Daubert* applies to “soft science” experts, but that all “the factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert’s particular expertise, and the subject of his testimony.”
- *Rule 702(a) and (c) – Child Molestation Testimony; Experts Testifying based on Experience; and Error Rates.*
 - *State v. Buccheri-Bianca*, 233 Ariz. 324, 312 P.3d 123 (App. 2013)
 - The court found that the State expert Wendy Dutton’s testimony on child molestation victim characteristics and behavior admissible under Rule 702(a) because courts “cannot assume that the average juror is familiar with the behavioral characteristics of victims of child molesting.” Additionally, testimony based on experience is admissible under Rule 702(c) because “Rule 702 is not intended to prevent expert testimony based on experience.” Courts need not assess all testimony for known or potential error rates.
 - *But see State v. Salazar-Mercado*, 234 Ariz. 590, 325 P.3d 996 (2014) (whether Dutton’s general testimony satisfies new Rule 702(a)-(c) is unresolved and may be addressed in future cases; the defendants in *Buccheri-Bianca* and *Salazar-Mercado* did not request evidentiary hearings or put on evidence before the trial judges and instead offered those judges to rely on their previous experience with the witness).

- *Rule 702(d) – Cold Experts.*
 - *State v. Salazar-Mercado*, 234 Ariz. 590, 325 P.3d 996 (2014)
 - Rule 702(d) does not specifically require the testifying expert to be the one who applies the principles and methods to the facts of the case, so long as other evidence makes that connection. “Cold experts” or “blind experts” who testify on general principles but do not know the facts of the case are permitted in the federal system, and likewise they shall be permitted in Arizona courts.

- *Rule 702(d) – Claims that an Expert has not Properly Applied Generally Reliable Principles.*
 - *State v. Bernstein*, 237 Ariz. 226, 349 P.3d 200 (2015)
 - After finding the Scottsdale Crime Laboratory’s gas chromatograph was a non-conforming instrument and violated the Lab’s accreditation standards, the trial court precluded BAC results under Rule 702(d). The Supreme Court reversed, holding that although Rule 702(d) “forecloses the approach of leaving challenges to an expert’s application of a methodology exclusive to the jury, . . . alleged flaws in the application of a reliable methodology should not result in exclusion of evidence unless they so infect[] the procedure as to make the results unreliable.”

C. *Daubert* and Forensic Sciences.

- Firearm / Toolmark Analysis.
 - *State v. Romero*, 236 Ariz. 451, 341 P.3d 493 (App. 2014), *review granted*
 - Majority opinion holds that firearms and toolmark identification evidence is generally admissible in federal courts under *Daubert*, and therefore it is admissible under new Ariz. R. Evid. 702 as well. Majority also permits State’s expert to testify to a “match” because the expert said his identification was “to a reasonable degree of scientific certainty.”
 - *United States v. Green*, 405 F. Supp. 2d 104, 124 (D. Mass. 2005)
 - Court noted that every previous court to address the issue admitted the expert evidence but “without any searching review, much less a hearing.” After holding a hearing, judge decides to admit some evidence reluctantly out of concern that preclusion would not survive appellate review. “The more courts admit this type of toolmark evidence without requiring documentation, proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more.”
 - *United States v. Taylor*, 663 F. Supp. 2d 1170, 1179–80 (D.N.M. 2009)
 - The evidence before the Court indicates that when a bullet is fired from a gun, the gun will impart to the bullet a set of markings that is, at least to some degree, unique to that gun. . . . However, because of the limitations on the reliability of firearms identification evidence discussed above, Mr. Nichols will not be permitted to testify that his methodology allows him to reach this conclusion as a matter of scientific certainty.”

- *United States v. Hicks*, 389 F.3d 514, 526 (5th Cir. 2004)
 - Finding that firearm / toolmark testimony was admissible because “the matching of spent shell casings to the weapon that fired them has been a recognized method of ballistics testing in this circuit for decades.”
- *United States v. Casey*, 928 F. Supp. 2d 397, 400 (D.P.R. 2013)
 - “The Court declines to follow sister courts who have limited expert testimony based upon the 2008 and 2009 NAS reports and, instead, remains faithful to the long-standing tradition of allowing the unfettered testimony of qualified ballistics experts.”
- U.S. Dep’t of Justice notified Mississippi that one of its death penalty convictions involved scientific testimony by an FBI firearms examiner, and USDOJ and FBI provided the following statement:
 - “The science regarding firearms examinations does not permit examiner testimony that a specific gun fired a specific bullet to the exclusion of all other guns in the world. The examiner could testify to that information, to a reasonable degree of scientific certainty, but not absolutely. Any individual association or identification conclusion effected through this examination process is based not on absolute certainty but rather a reasonable degree of scientific certainty. As with any process involving human judgment, claims of infallibility or impossibility of error are not supported by scientific standards.”
- National Research Council, National Academy of Sciences, *Strengthening Forensic Science in the United States: A Path Forward*, 150-155 (2009), <https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf>.
 - “...the decision of the toolmark examiner remains a subjective decision based on unarticulated standards and no statistical foundation for estimation of error rates.”
 - “Because not enough is known about the variabilities among individual tools and guns, we are not able to specify how many points of similarity are necessary for a given level of confidence in the result. Sufficient studies have not been done to understand the reliability and repeatability of the methods. The committee agrees that class characteristics are helpful in narrowing the pool of tools that may have left a distinctive mark. Individual patterns from manufacture or from wear might, in some cases, be distinctive enough to suggest one particular source, but additional studies should be performed to make the process of individualization more precise and repeatable.”
 - “A fundamental problem with toolmark and firearms analysis is the lack of a precisely defined process. AFTE has adopted a theory of identification, but it does not provide a specific protocol. . . . This AFTE document, which is the best guidance available for the field of toolmark identification, does not even consider, let alone address, questions regarding variability, reliability, repeatability, or the number of correlations needed to achieve a given degree of confidence.”

- Assoc. of Firearm and Tool Mark Examiners (AFTE), *The Response of the Association of Firearm and Tool Mark Examiners to the February 2009 National Academy of Science Report “Strengthening Forensic Science in the United States: A Path Forward,”* AFTE Journal, Volume 41, No. 3 (June 22, 2009).
 - “There is an extensive body of research, extending back over one hundred years, which establishes the accuracy, reliability, and validity of conclusions rendered in the field of firearm and toolmark identification.”

- Fingerprints
 - *State v. Favela*, 234 Ariz. 433, 323 P.3d 716 (App. 2014)
 - Holding that ACE-V fingerprint analysis is generally admissible under *Daubert* because the “overwhelming consensus from federal jurisdictions is that, even when considered ‘[i]n terms of specific *Daubert* factors, the reliability of the technique has been tested in the adversarial system for over a century and has been routinely subject to peer review,’ and that ‘absent novel challenges, [expert testimony regarding] fingerprint evidence is sufficiently reliable to satisfy Rule 702 and *Daubert*.”
 - *United States v. Herrera*, 704 F.3d 480 (7th Cir. 2013)
 - Finds ACE-V fingerprint analysis generally admissible under *Daubert*. Holding, “defendant intimates that any evidence that requires the sponsorship of an expert witness, as fingerprint evidence does, must be found to be good science before it can be admitted under the doctrine of the *Daubert* case and Rules 702 or 703 of the Federal Rules of Evidence. But expert evidence is not limited to ‘scientific’ evidence, however such evidence might be defined. It includes any evidence created or validated by expert methods and presented by an expert witness that is shown to be reliable.”
 - *United States v. Llera Plaza*, 188 F. Supp. 2d 549 (E.D. Pa. 2002)
 - Includes a detailed discussion of ACE-V fingerprint analysis and the ability to testify that a particular latent print is a “match.”

- Handwriting Analysis
 - *United States v. Prime*, 431 F.3d 1147 (9th Cir. 2004)
 - “Handwriting analysis is performed by comparing a known sample of handwriting to the document in question to determine if they were written by the same person. The government and Storer provided the court with ample support for the proposition that an individual’s handwriting is so rarely identical that expert handwriting analysis can reliably gauge the likelihood that the same individual wrote two samples.”
 - *United States v. Mooney*, 315 F.3d 54 (1st Cir. 2002)
 - Allowing handwriting expert to testify to a match and stating, “Accordingly, once a trial judge determines the reliability of the proffered expert’s methodology and the validity of his reasoning, the expert should be permitted to testify as to the inferences and conclusions he draws from it, and any flaws in his opinion may be exposed through cross-examination or competing expert testimony.”

- *United States v. Yagman*, No. CR 06-227(A)-SVW, 2007 WL 4409618 (C.D. Cal. May, 22, 2007)
 - Although unpublished, collects cases from multiple circuit courts and district courts applying *Daubert* to handwriting analysis.
- *United States v. Saelee*, 162 F. Supp. 2d 1097 (D. Alaska 2001)
 - “First of all, the court would point out that it is not holding that handwriting analysis can never be a field of expertise under the Federal Rules of Evidence. The court is merely holding that the Government has failed to meet its burden of establishing that the proffered expert testimony in this case is admissible under Rule 702.” Court extremely critical of the “guild” system of training apprentices rather than application of scientific methods and principles.
- *United States v. Hines*, 55 F. Supp. 2d 62 (D. Mass. 1999)
 - “I find Harrison’s testimony meets Fed. R. Evid. 702’s requirements to the extent that she restricts her testimony to similarities or dissimilarities between the known exemplars and the robbery note. However, she may not render an ultimate conclusion on who penned the unknown writing.”
- *United States v. Hidalgo*, 229 F. Supp. 2d 961 (D. Ariz. 2002)
 - “For the foregoing reasons, we GRANT the defendants’ motion to exclude expert opinion testimony that the handwriting on the questioned documents is in fact the handwriting of a defendant. We DENY the defendants’ motion to exclude testimony on the mechanics and characteristics of handwriting or handprinting, methodology, comparisons of similarities and dissimilarities, and any other factors that would be helpful to the jury in making a finding of identity or non-identity, short of an ultimate opinion.”
- Hair Microscopy
 - *State v. Reid*, 757 A.2d 482 (Conn. 2000)
 - Where the forensic examiner did not testify to a match, stating, “Because the expert testimony pertaining to the hair analysis was relevant to an issue in the case, namely, the identity of the victim’s attacker, and because the defendant’s challenge to the methodology affected the weight of the testimony and not its reliability, we conclude that the trial court properly admitted the testimony.”
 - *Meskimen v. Commonwealth*, 435 S.W.3d 526 (Ky. 2013)
 - “In this case, the Commonwealth offered evidence that has been admissible in the state of Kentucky for many years. Microscopic hair analysis is a scientifically reliable method, and we, therefore, do not require that a *Daubert* hearing be held with regard to the admittance of such evidence. . . . With that being said, the state of scientifically accepted evidence is ever changing, and what is scientifically acceptable today may be found to be incorrect or obsolete in the future.”

- Spencer S. Hsu, *FBI Admits Flaws in Hair Analysis over Decades*, Wash. Post, April 18, 2015, http://www.washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfabc310_story.html
 - Discussing the flaws with hair match analysis that led the FBI to report that examiners incorrectly testified that hair results were matches.
- USDOJ letter to Mississippi officials that Willie Manning’s conviction based on hair microscopy testimony at trial that is unsupported by evidence prompts Mississippi Supreme Court to grant stay of execution with only four hours to spare. Spencer S. Hsu, *Willie Jerome Manning is Granted Stay of Execution by Mississippi High Court*, Wash. Post, May 7, 2013, http://www.washingtonpost.com/local/crime/willie-jerome-manning-is-granted-stay-of-execution-by-mississippi-high-court/2013/05/07/1e5855b2-b6b4-11e2-aa9e-a02b765ff0ea_story.html
- Comparative Bullet Lead Analysis
 - After the National Research Council published a report in 2004 finding no scientific reliability, comparing the amounts of lead and other trace elements in bullets is no longer a valid practice.
 - The FBI—the only agency to perform CBLA—no longer does so.
 - *Clemons v. State*, 896 A.2d 1059 (Md. 2006)
 - Suggesting that CBLA fails both *Frye* and *Daubert* because “is clear that a genuine controversy exists within the relevant scientific community about the reliability and validity of CBLA.”
 - *Maryland v. Kulbicki*, __ S. Ct. __, 2015 WL 5774453 (per curiam, Oct. 5, 2015)
 - Attorney in 1995 not ineffective for failing to challenge State’s CBLA expert because CBLA was widely-accepted at the time and did not fall into disrepute until later, as shown in *Clemons*.
 - *Ragland v. Commonwealth*, 191 S.W.3d 569 (Ky. 2006)
 - “The scientific study commissioned by the FBI Laboratory, itself, raised questions about the reliability and relevancy of CBLA that were sufficiently serious to convince the Laboratory to discontinue forthwith CBLA testing.”
- DNA
 - *District Attorney’s Office for Third Judicial Dist. v. Osborne*, 557 U.S. 52 (2009)
 - Although not addressing Rule 702, stating, “DNA testing has an unparalleled ability both to exonerate the wrongly convicted and to identify the guilty. It has the potential to significantly improve both the criminal justice system and police investigative practices.”
 - *United States v. McCluskey*, 954 F. Supp. 2d 1224 (D.N.M. 2013)
 - “In determining that a separate, pretrial hearing is not required under *Daubert*, the Court observes that a number of courts have held that judicial notice of the reliability of PCR/STR DNA analysis can be taken. *See, e.g., United States v. Beasley*, 102 F.3d 1440, 1448 (8th Cir.1996); *State v. Butterfield*, 27 P.3d 1133, 1143 (Utah 2001).”

- Gas Chromatograph/Mass Spectrometer
 - *State v. Bernstein*, 237 Ariz. 226, 349 P.3d 200 (2015)
 - Holding that gas chromatograph testing satisfied Rule 702(a)-(c).
 - But Scottsdale DUI crime lab electropherogram printouts were routinely erroneous, and criminalists working in the lab routinely criticized the failure of the lab to correct these errors. The criticism of the lab was so strong that trial court, in consolidated hearing for 11 cases, precludes blood results under Rule 702(d) because the lab did not reliably apply accepted methodology.
 - Court of Appeals reversed, based primarily on trial court's finding that there was no evidence that any of the tests on the 11 defendants' samples were inaccurate.
 - Supreme Court vacated Court of Appeals' opinion but agreed with the conclusion that the State's evidence should not be precluded except in the most extraordinary of cases.

- Strangulation
 - *State v. Delgado*, 232 Ariz. 182, ¶¶ 9-17, 303 P.3d 76, 80-81 (App. 2013)
 - In case charging aggravated assault by strangulation, emergency room physician Ronald Salik testified as "strangulation expert" based on his experience in treating patients, opining that red marks on neck of victim (as shown in police photographs) were consistent with neck compression.
 - Defense argued that Dr. Salik's testimony was not based on his specialized training but on self-reports given by patients. If a patient told him that s/he had been strangled, then he accepted that report. There was no way to test it. For this reason, his evidence should have been precluded because he was merely vouching for the alleged victim. *See Lindsey; State v. Sosnowicz*, 229 Ariz. 90, ¶¶ 19-20, 270 P.3d 917, 922-23 (App. 2012).
 - Court of Appeals found Salik testimony was properly admitted. He had specialized training as ER physician; whether his patients accurately reported the cause of their injuries was a question of weight and not admissibility and thus should be considered by the jury.

- Polygraphs
 - *State v. Perez*, 233 Ariz. 38, 308 P.3d 1189 (App. 2013)
 - Polygraphs are still inadmissible under new Rule 702 / *Daubert* standard. Recognizes that federal courts have abandoned the per se rule against polygraphs but declines to do so until parties show that polygraphs have changed since *State v. Hoskins*, 199 Ariz. 127, 14 P.3d 997 (2000).

- Abusive Head Trauma (previously Shaken Baby Syndrome)
 - *Cavazos v. Smith*, 132 S. Ct. 2 (2011)
 - The Ninth Circuit granted habeas corpus relief to a grandmother convicted of shaking a grandchild to death under *Jackson v. Virginia*, because no rational jury could have found sufficient evidence to convict. The Supreme Court vacated the opinion for reconsideration. The Ninth Circuit granted the writ again, the Supreme Court vacated again for reconsideration, and the Ninth

Circuit then granted the writ a third time. By *per curiam* order, the Supreme Court reversed. Justice Ginsburg (joined by Justices Sotomayor and Breyer) dissented, finding that the Ninth Circuit correctly applied the law. Ginsburg also focused on the science backing the theory of AHT.

- *Wolfe v. State*, ___ S.W.3d ___, 2015 WL 831720 (Tex. App. Feb. 26, 2015)
 - State’s doctors allowed to testify that child was victim of abusive head trauma because it is accepted in pediatrics. State’s doctors admitted they were not familiar with literature criticizing the diagnosis, but were aware of the debate between pediatrics and biomechanics on this issue, claiming that those in biomechanics “don’t deal with real people.” Court of Appeals found no abuse of discretion in admitting general testimony about abusive head trauma, noting that appellate counsel did not challenge any of the testimony as to the victim in particular. Dissenting opinion alleges that appellate counsel made such a challenge and the issue should have been reached because there were serious questions about the reliability of the doctors’ conclusions (but the dissent does not offer a full analysis on the merits).
- *Day v. State*, 303 P.3d 291 (Okla. Crim. App. 2013)
 - *Daubert* hearing not required before admitting testimony of expert on abusive head trauma. Note: Oklahoma only applies *Daubert* to novel sciences.
- *Hamilton v. Commonwealth*, 293 S.W.3d 413 (Ky. App. 2009)
 - Trial court abused its discretion by failing to hold a *Daubert* hearing on abusive head trauma.
- Most cases that criticize abusive head trauma are in context of post-conviction relief proceedings, raised as newly-discovered evidence or as ineffective assistance of counsel claims. *See, e.g., State v. Denz*, 232 Ariz. 441, 306 P.3d 98 (App. 2013) (failure to investigate causation of child’s head injury was ineffective; post-conviction counsel obtained affidavit from expert who could have testified as to lack of evidence of causation); *Ex parte Henderson*, 384 S.W.3d 833 (Tex. Crim. App. 2012) (medical examiner who testified to homicide at trial reviewed defense expert opinions and agreed that he was wrong at trial); *State v. Edmunds*, 746 N.W.2d 590 (Wis. App. 2008) (babysitter’s conviction vacated due to new scientific evidence undercutting state’s experts at trial who testified that the manner of death was homicide).
- Even in cases where State’s experts are permitted to testify, or even go unchallenged by the defense, the nature of the diagnosis as providing the actus reus and the mens rea for the crime can result in a failure to prove guilt beyond a reasonable doubt. *See State v. Consaul*, 332 P.3d 850 (N.M. 2014) (doctors’ speculation that oxygen deprivation resulted from suffocation not supported by evidence); *State v. West*, 2-CA CR 2008-0342, 2012 WL 723752 (Ariz. App., March 5, 2012) (trial court granted post-verdict motions for judgment of acquittal after husband and wife each convicted of child abuse under AHT theory; husband’s reversal upheld but wife’s conviction reinstated).
- Some legal scholarship challenges abusive head trauma. *See* Deborah Tuerkheimer, *The Next Innocence Project: Shaken Baby Syndrome and the Criminal Courts*, 87 Wash. U. L. Rev. 1 (2009); Keith A. Findley, et al., *Shaken Baby Syndrome, Abusive*

Head Trauma, and Actual Innocence: Getting it Right, 12 Hous. J. Health L. & Pol’y 230 (2012). Nevertheless, “Defense motions to exclude expert testimony regarding [shaken baby syndrome] have, almost without exception, proven unsuccessful.” Tuerkheimer, *supra*, at 32.

- Eyewitness Experts
 - *State v. Forde*, 233 Ariz. 543, ¶¶ 67-68, 315 P.3d 1200, 1219 (2014)
 - Expert testimony on behavioral characteristics affecting eyewitness testimony is admissible, but expert may not opine on the accuracy of a particular identification because that invades the province of the jury. See *State v. Lindsey*, 149 Ariz. 472, 475, 720 P.2d 73, 76 (1986).

- Retrograde BAC
 - *State ex rel. Montgomery v. Miller (Madrid)*, 234 Ariz. 289, 321 P.3d 454 (App. 2014)
 - Satisfies Rule 702

- Police Officers’ “Training and Experience”
 - Gang Behavior Testimony
 - *United States v. Hankey*, 203 F.3d 1160 (9th Cir. 2000)
 - “[T]he witness had devoted years working with gangs, knew their ‘colors,’ signs, and activities. . . . He had communicated and worked undercover with thousands of other gang members. This type of street intelligence might be misunderstood as either remote (some dating back to the late 1980’s) or hearsay (based upon current communications about ‘retaliation’ and ‘code of silence.’), but FRE 702 works well for this type of data gathered from years of experience and special knowledge.”
 - *State v. Guarino*
 - Although not a Rule 702 case, *Guarino* provides a template for the admission of such testimony.
 - The supreme court noted that the detectives’ testimony was based on: (1) trainings, (2) observations, and (3) experiences that collectively formed the bases for their expertise. Their knowledge and experience was based on a wide range of sources, including supervised training in the field, working as undercover officers in frequent contact with gang members, attending and instructing at seminars on gang-related activity, collaborating with prison intelligence officials, debriefing gang members when they end their gang memberships, talking to gang members acting as informants, conducting wire taps, and intercepting and reading gang members’ mail.

- Narcotics Trade – *United States v. Plunk*, 153 F.3d 1011, 1017 (9th Cir. 1998), *overruled on other grounds*, *United States v. Hankey*, 203 F.3d 1160 (9th Cir. 2000)
 - The court based its ruling, inter alia, on evidence that Speziale (1) possessed extensive experience working undercover in large-scale drug trafficking

organizations, (2) had served as an instructor to the FBI and the DEA on wiretap techniques, and (3) had listened to more than 350 wiretaps in which narcotics traffickers were communicating using codes and other jargon. Although Plunk's attorney sought to make much on voir dire of the fact that Speziale had no formal training in the use of drug-culture code, we are not persuaded. '[H]ard-core drug trafficking scarcely lends itself to ivied halls. In a rough-and-ready field such as this, experience is likely the best teacher.'"

- Drug Ledger Testimony – *Dixon v. Commonwealth*, 149 S.W.3d 426 (Ky. 2004)
 - Collecting cases and stating, “The type of expert opinion offered by Detective Duvall has been almost routinely admitted in drug cases.”

- Horizontal Gaze Nystagmus – *State v. Hullinger*, 649 N.W.2d 253 (S.D. 2002)
 - Collecting cases and stating, “The overwhelming majority of jurisdictions having addressed the issue permit the admission of evidence of HGN testing in criminal trials involving charges of driving while intoxicated.”

- Failed Fourth Amendment challenges that potentially involve some aspect of expert testimony.
 - *State v. Moreno*, 236 Ariz. 347, 340 P.3d 426 (App. 2014) – police officer’s stop of vehicle for “excessive tint” upheld even though his tint meter showed that the tint was within legal limits.
 - *State v. Moran*, 232 Ariz. 528, 307 P.3d 95 (App. 2013) – officer stopped vehicle for speeding; stop upheld because officer testified that he was trained to detect a vehicle’s speed within five miles per hour.

- Drug-sniffing dogs Issues that may involve expert testimony
 - *Florida v. Harris*, 133 S.Ct 1050 (2013) – unanimous court held that there is no checklist for what documents / evidence needs to be provided as a precondition to admitting evidence obtained pursuant to a dog sniff. Such will be determined on a case-by-case basis. False-positives and other issues related to a dog’s performance may be relevant in any particular case. Because in this case, the defendant presented insufficient evidence to challenge the dog’s reliability, probable cause should have been found.
 - *United States v. Burgos-Montes*, 786 F.3d 92, 116 (1st Cir. 2015) (on a challenge to a cadaver-dog handler’s testimony, noting that “the prosecution witnesses offered virtually no evidence that the scientific reliability of such a use had been established, or that their investigation protocols were generally accepted for such a use,” but finding any possible error harmless in part because “the prosecution witnesses cited no studies or reports to buttress their experience-based observations, nor claimed any special scientific expertise, and in which the defense gave the jury ample evidence from which to judge for themselves whether a cadaver dog alert that revealed no cadaver was anything more than a false alert”).

STRENGTHENING
**FORENSIC
SCIENCE**
IN THE UNITED STATES
A PATH FORWARD

Committee on Identifying the Needs of the Forensic Science Community

Committee on Science, Technology, and Law
Policy and Global Affairs

Committee on Applied and Theoretical Statistics
Division on Engineering and Physical Sciences

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Copyright © National Academy of Sciences. All rights reserved.

work in laboratories that conduct hundreds or thousands of evaluations of impression evidence develop useful experience and judgment, it is difficult to assert that the field has enough collective judgment about the variabilities in lip prints and ear prints based on tens of examinations. The community simply does not have enough data about the natural variability of those less frequent impressions, absent the presence of a clear deformity or scar, to infer whether the observed degree of similarity is significant.

Most of the research in the field is conducted in forensic laboratories, with the results published in trade journals, such as the *Journal of Forensic Identification*. With regard to reporting, SWGTREAD is moving toward the use of standard language to convey the conclusions reached.⁵⁸ But neither IAI nor SWGTREAD addresses the issue of what critical research should be done or by whom, critical questions that should be addressed include the persistence of individual characteristics, the rarity of certain characteristic types, and the appropriate statistical standards to apply to the significance of individual characteristics. Also, little if any research has been done to address rare impression evidence. Much more research on these matters is needed.

TOOLMARK AND FIREARMS IDENTIFICATION

Toolmarks are generated when a hard object (tool) comes into contact with a relatively softer object. Such toolmarks may occur in the commission of a crime when an instrument such as a screwdriver, crowbar, or wire cutter is used or when the internal parts of a firearm make contact with the brass and lead that comprise ammunition. The marks left by an implement such as a screwdriver or a firearm's firing pin depend largely on the manufacturing processes—and manufacturing tools—used to create or shape it, although other surface features (e.g., chips, gouges) might be introduced through post-manufacturing wear. Manufacturing tools experience wear and abrasion as they cut, scrape, and otherwise shape metal, giving rise to the theory that any two manufactured products—even those produced consecutively with the same manufacturing tools—will bear microscopically different marks. Firearms and toolmark examiners believe that toolmarks may be traced to the physical heterogeneities of an individual tool—that is, that “individual characteristics” of toolmarks may be uniquely associated with a specific tool or firearm and are reproduced by the use of that tool and only that tool.

The manufacture and use of firearms produces an extensive set of

⁵⁸ SWGTREAD. 2006. *Standard Terminology for Expressing Conclusions of Forensic Footwear and Tire Impression Examinations*. Available at www.theiai.org/guidelines/swgtread/terminology_final.pdf.

specialized toolmarks. Gun barrels typically are rifled to improve accuracy, meaning that spiral grooves are cut into the barrel's interior. The process of cutting these grooves into the barrel leaves marks and scrapes on the relatively softer metal of the barrel.⁵⁹ In turn, these markings are transferred to the softer metal of a bullet as it exits the barrel. Over time, with repeated use (and metal-to-metal scraping), the marks on a barrel (and the corresponding "stria" imparted to bullets) may change as individual imperfections are formed or as cleanliness of the barrel changes. The brass exterior of cartridge cases receive analogous toolmarks during the process of gun firing: the firing pin dents the soft primer surface at the base of the cartridge to commence firing, the primer area is forced backward by the buildup of gas pressure (so that the texture of the gun's breech face is impressed on the cartridge), and extractors and ejectors leave marks as they expel used cartridges and cycle in new ammunition.

Firearms examination is one of the more common functions of crime laboratories. Even small laboratories with limited services often perform firearms analysis. In addition to the analysis of marks on bullets and cartridges, firearms examination also includes the determination of the firing distance, the operability of a weapon, and sometimes the analysis of primer residue to determine whether someone recently handled a weapon. These broader aspects are not covered here.

Sample and Data Collection

When a tool is used in a crime, the object that contains the tool marks is recovered when possible. If a toolmark cannot be recovered, it can be photographed and cast. Test marks made by recovered tools can be made in a laboratory and compared with crime scene toolmarks.

In the early 1990s, the FBI and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) developed separate databases of images of bullet and cartridge case markings, which could be queried to suggest possible matches. In 1996, the National Institute of Standards and Technology (NIST) developed data exchange standards that permitted the integration of the FBI's DRUGFIRE database (cartridge case images) and the ATF's CEASEFIRE database (then limited to bullet images). The current National Integrated Ballistic Information Network (NIBIN) includes images from both cartridge cases and bullets that are associated with crime scenes and is maintained by the ATF.

Periodically—and particularly in the wake of the Washington, DC,

⁵⁹ Although the metal and initial rifling are very similar, the cutting of the individual barrels, the finishing machining, and the cleaning and polishing begin the process of differentiation of the two sequentially manufactured barrels.

sniper attacks in 2002—the question has been raised of expanding the scope of databases like NIBIN to include images from test firings of newly manufactured firearms. In concept, this would permit downstream investigators who recover a cartridge case or bullet at a crime scene to identify the likely source firearm. Though two states (Maryland and New York) instituted such reference ballistic image databases for newly manufactured firearms, proposals to create such a database at the national level did not make substantial progress in Congress. A recent report of the National Academies, *Ballistic Imaging*, examined this option in great detail and concluded that “[a] national reference ballistic image database of all new and imported guns is not advisable at this time.”⁶⁰

Analyses

In both firearm and toolmark identification, it is useful to distinguish several types of characteristics that are considered by examiners. “Class characteristics” are distinctive features that are shared by many items of the same type. For example, the width of the head of a screwdriver or the pattern of serrations in the blade of a knife may be class characteristics that are common to all screwdrivers or knives of a particular manufacturer and/or model. Similarly, the number of grooves cut into the barrel of a firearm and the direction of “twist” in those grooves are class characteristics that can filter and restrict the range of firearms that match evidence found at a crime scene. “Individual characteristics” are the fine microscopic markings and textures that are said to be unique to an individual tool or firearm. Between these two extremes are “subclass characteristics” that may be common to a small group of firearms and that are produced by the manufacturing process, such as when a worn or dull tool is used to cut barrel rifling.

Bullets and cartridge cases are first examined to determine which class characteristics are present. If these differ from a comparison bullet or cartridge, further examination may be unnecessary. The microscopic markings on bullets and cartridge cases and on toolmarks are then examined under a comparison microscope (made from two compound microscopes joined by a comparison bridge that allows viewing of two objects at the same time). The unknown and known bullet or cartridge case or toolmark surfaces are compared visually by a firearms examiner, who can evaluate whether a match exists.

⁶⁰ National Research Council. 2008. *Ballistic Imaging*. Washington, DC: The National Academies Press, p. 5.

Scientific Interpretation

The task of the firearms and toolmark examiner is to identify the individual characteristics of microscopic toolmarks apart from class and subclass characteristics and then to assess the extent of agreement in individual characteristics in the two sets of toolmarks to permit the identification of an individual tool or firearm.

Guidance from the Association of Firearm and Tool Mark Examiners (AFTE)⁶¹ indicates that an examiner may offer an opinion that a specific tool or firearm was the source of a specific set of toolmarks or a particular bullet striation pattern when “sufficient agreement” exists in the pattern of two sets of marks. The standards then define agreement as significant “when it exceeds the best agreement demonstrated between tool marks known to have been produced by different tools and is consistent with the agreement demonstrated by tool marks known to have been produced by the same tool.”⁶²

Knowing the extent of agreement in marks made by different tools, and the extent of variation in marks made by the same tool, is a challenging task. AFTE standards acknowledge that these decisions involve subjective qualitative judgments by examiners and that the accuracy of examiners’ assessments is highly dependent on their skill and training. In earlier years, toolmark examiners relied on their past casework to provide a foundation for distinguishing between individual, class, and subclass characteristics. More recently, extensive training programs using known samples have expanded the knowledge base of examiners.

The emergence of ballistic imaging technology and databases such as NIBIN assist examiners in finding possible candidate matches between pieces of evidence, including crime scene exhibits held in other geographic locations. However, it is important to note that the final determination of a match is always done through direct physical comparison of the evidence by a firearms examiner, not the computer analysis of images. The growth of these databases also permits examiners to become more familiar with similarities in striation patterns made by different firearms. Newer imaging techniques assess toolmarks using three-dimensional surface measurement data, taking into account the depth of the marks. But even with more training and experience using newer techniques, the decision of the toolmark examiner remains a subjective decision based on unarticulated

⁶¹ Theory of identification, range of striae comparison reports and modified glossary definitions—An AFTE Criteria for Identification Committee report. 1992. *Journal of the Association of Firearm and Tool Mark Examiners* 24:336-340.

⁶² *Ibid.*, p. 336.

standards and no statistical foundation for estimation of error rates.⁶³ The National Academies report, *Ballistic Imaging*, while not claiming to be a definitive study on firearms identification, observed that, “The validity of the fundamental assumptions of uniqueness and reproducibility of firearms-related toolmarks has not yet been fully demonstrated.” That study recognized the logic involved in trying to compare firearms-related toolmarks by noting that, “Although they are subject to numerous sources of variability, firearms-related toolmarks are not completely random and volatile; one can find similar marks on bullets and cartridge cases from the same gun,” but it cautioned that, “A significant amount of research would be needed to scientifically determine the degree to which firearms-related toolmarks are unique or even to quantitatively characterize the probability of uniqueness.”⁶⁴

Summary Assessment

Toolmark and firearms analysis suffers from the same limitations discussed above for impression evidence. Because not enough is known about the variabilities among individual tools and guns, we are not able to specify how many points of similarity are necessary for a given level of confidence in the result. Sufficient studies have not been done to understand the reliability and repeatability of the methods. The committee agrees that class characteristics are helpful in narrowing the pool of tools that may have left a distinctive mark. Individual patterns from manufacture or from wear might, in some cases, be distinctive enough to suggest one particular source, but additional studies should be performed to make the process of individualization more precise and repeatable.

⁶³ Recent research has attempted to develop a statistical foundation for assessing the likelihood that more than one tool could have made specific marks by assessing consecutive matching striae, but this approach is used in a minority of cases. See A.A. Biasotti. 1959. A statistical study of the individual characteristics of fired bullets. *Journal of Forensic Sciences* 4:34; A.A. Biasotti and J. Murdock. 1984. “Criteria for identification” or “state of the art” of firearms and tool marks identification. *Journal of the Association of Firearms and Tool Mark Examiners* 16(4):16; J. Miller and M.M. McLean. 1998. Criteria for identification of tool marks. *Journal of the Association of Firearms and Tool Mark Examiners* 30(1):15; J.J. Masson. 1997. Confidence level variations in firearms identification through computerized technology. *Journal of the Association of Firearms and Tool Mark Examiners* 29(1):42. For a critique of this area and a comparison of scientific issues involving toolmark evidence and DNA evidence, see A. Schwartz. 2004-2005. A systemic challenge to the reliability and admissibility of firearms and tool marks identification. *Columbia Science and Technology Law Review* 6:2. For a rebuttal to this critique, see R.G. Nichols. 2007. Defending the scientific foundations of the firearms and tool mark identification discipline: Responding to recent challenges. *Journal of Forensic Sciences* 52(3):586-594.

⁶⁴ All quotes from National Research Council. 2008. *Ballistic Imaging*. Washington, DC: The National Academies Press, p. 3.

A fundamental problem with toolmark and firearms analysis is the lack of a precisely defined process. As noted above, AFTE has adopted a theory of identification, but it does not provide a specific protocol. It says that an examiner may offer an opinion that a specific tool or firearm was the source of a specific set of toolmarks or a bullet striation pattern when “sufficient agreement” exists in the pattern of two sets of marks. It defines agreement as significant “when it exceeds the best agreement demonstrated between tool marks known to have been produced by different tools and is consistent with the agreement demonstrated by tool marks known to have been produced by the same tool.” The meaning of “exceeds the best agreement” and “consistent with” are not specified, and the examiner is expected to draw on his or her own experience. This AFTE document, which is the best guidance available for the field of toolmark identification, does not even consider, let alone address, questions regarding variability, reliability, repeatability, or the number of correlations needed to achieve a given degree of confidence.

Although some studies have been performed on the degree of similarity that can be found between marks made by different tools and the variability in marks made by an individual tool, the scientific knowledge base for toolmark and firearms analysis is fairly limited. For example, a report from Hamby, Brundage, and Thorpe⁶⁵ includes capsule summaries of 68 toolmark and firearms studies. But the capsule summaries suggest a heavy reliance on the subjective findings of examiners rather than on the rigorous quantification and analysis of sources of variability. Overall, the process for toolmark and firearms comparisons lacks the specificity of the protocols for, say, 13 STR DNA analysis. This is not to say that toolmark analysis needs to be as objective as DNA analysis in order to provide value. And, as was the case for friction ridge analysis and in contrast to the case for DNA analysis, the specific features to be examined and compared between toolmarks cannot be stipulated a priori. But the protocols for DNA analysis do represent a precisely specified, and scientifically justified, series of steps that lead to results with well-characterized confidence limits, and that is the goal for all the methods of forensic science.

ANALYSIS OF HAIR EVIDENCE

The basis for hair analyses as forensic evidence stems from the fact that human and animal hairs routinely are shed and thus are capable of being

⁶⁵ J.E. Hamby, D.J. Brundage, and J.W. Thorpe. 2009. The identification of bullets fired from 10 consecutively rifled 9mm Ruger pistol barrels—A research project involving 468 participants from 19 countries. Available online at <http://www.fti-ibis.com/DOWNLOADS/Publications/10%20Barrel%20Article-%20a.pdf>.

The Response of the Association of Firearm and Tool Mark Examiners[1] to the February 2009 National Academy of Science Report "Strengthening Forensic Science in the United States: A Path Forward." [2]

June 22, 2009

By: The AFTE Committee for the Advancement of the Science of Firearm and Tool Mark Identification

Keywords: AFTE Response to the 2009 NAS Report, NAS Report, National Academy of Science, Daubert, NAS Recommendations, Strengthening Forensic Science in the United States: A Path Forward

ABSTRACT

The National Academy of Science Report, "Strengthening Forensic Science in the United States: A Path Forward" made 13 general recommendations regarding Forensic Science. Six of these recommendations directly relate to AFTE. Activities conducted by AFTE and SWGGUN already meet certain conditions of these six recommendations and are fully described in this response. The NAS report briefly critiqued firearm and toolmark identification directly; however, as stated on page S-5 of the report, a detailed evaluation by the NAS was not feasible. The critiques are addressed in this response even though it is evident that the NAS did not look critically at the scientific underpinning of firearm and toolmark identification despite having been provided with hundreds of relevant references.

In February 2009, the National Academy of Science (NAS) issued a report authored by its Committee on Identifying the Needs of the Forensic Science Community (herein referred to as the NAS Committee) entitled, "Strengthening Forensic Science in the United States: A Path Forward." The aim of the NAS Committee, as stated on page P-1 of the report, was "to chart an agenda for progress in the forensic science community and its scientific disciplines," including firearm and toolmark identification. Pursuant to this goal, the report offers 13 recommendations that represent the Committee's studied opinion on how best to achieve its agenda.

The Association of Firearm and Tool Mark Examiners (AFTE) acknowledges what a tremendous undertaking it must have been to report on the needs of the forensic science community outside of the discipline of DNA analysis. Our review of the thirteen recommendations made by the NAS Committee found that six of them, numbers 2, 3, 6, 7, 8 and 9, directly relate to AFTE. We are pleased to report that activities conducted by AFTE and the Scientific Working Group for Firearms and Toolmarks (SWGGUN) already meet certain requirements or expectations of these six recommendations. These recommendations and our responses are as follows:

Recommendation 2 (page S-16):

The National Institute of Forensic Science (NIFS), after reviewing established standards such as ISO 17025, and in consultation with its advisory board, should establish standard terminology to be used in reporting on and testifying about the results of forensic science investigations. Similarly, it should establish model laboratory reports for different forensic science disciplines and specify the minimum information that should be included. As part of the accreditation and certification processes, laboratories and forensic scientists should be required to utilize model laboratory reports when summarizing the results of their analyses.

AFTE response to Recommendation 2:

In 1980, AFTE established an extensive glossary of terms and definitions covering all phases of firearm and toolmark examinations. This document, which is periodically revised as necessary, has served to establish standardized terminology and statements that can be rendered as conclusions in reports.

Recommendation 3 (pages S-16 and S-17):

Research is needed to address issues of accuracy, reliability, and validity in the forensic science disciplines. The National Institute of Forensic Science (NIFS) should competitively fund peer-reviewed research in the following areas:

(a) Studies establishing the scientific bases demonstrating the

Date Received: July 27, 2009
Peer Review Completed: July 28, 2009

validity of forensic methods.

(b) *The development and establishment of quantifiable measures of the reliability and accuracy of forensic analyses. Studies of the reliability and accuracy of forensic techniques should reflect actual practice on realistic case scenarios, averaged across a representative sample of forensic scientists and laboratories. Studies also should establish the limits of reliability and accuracy that analytic methods can be expected to achieve as the conditions of forensic evidence vary. The research by which measures of reliability and accuracy are determined should be peer reviewed and published in respected scientific journals.*

(c) *The development of quantifiable measures of uncertainty in the conclusions of forensic analyses.*

(d) *Automated techniques capable of enhancing forensic technologies.*

AFTE response to Recommendation 3:

There is an extensive body of research, extending back over one hundred years, which establishes the accuracy, reliability, and validity of conclusions rendered in the field of firearm and toolmark identification. A list of some of this pertinent research has been compiled by SWGGUN and is easily accessible on their website [3]. Since its inception in 1969, AFTE has emerged as a leading forensic organization and represents the relevant scientific community for the publication and dissemination of research in firearm and toolmark identification. In this role, AFTE actively encourages collaboration with educational institutions and governmental agencies.

Recommendation 6 (page S-18):

To facilitate the work of the National Institute of Forensic Science (NIFS), Congress should authorize and appropriate funds to NIFS to work with the National Institute of Standards and Technology (NIST), in conjunction with government laboratories, universities, and private laboratories, and in consultation with Scientific Working Groups, to develop tools for advancing measurement, validation, reliability, information sharing, and proficiency testing in forensic science and to establish protocols for forensic examinations, methods, and practices. Standards should reflect best practices and serve as accreditation tools for laboratories and as guides for the education, training, and certification of professionals. Upon completion of its work, NIST and its partners should report findings and recommendations to NIFS for further dissemination and implementation.

AFTE response to Recommendation 6:

AFTE facilitates the exchange of information between its members by holding annual training seminars and by the quarterly publication of a peer-reviewed, scientific journal. AFTE has also adopted documentation standards [4] and collaborates with SWGGUN in not only the development of examination protocols but also the periodic review of established ones. Finally, AFTE has had a comprehensive training program since 1982. This program has been frequently updated.

Recommendation 7 (page S-19):

Laboratory accreditation and individual certification of forensic science professionals should be mandatory, and all forensic science professionals should have access to a certification process. In determining appropriate standards for accreditation and certification, the National Institute of Forensic Science (NIFS) should take into account established and recognized international standards, such as those published by the International Organization for Standardization (ISO). No person (public or private) should be allowed to practice in a forensic science discipline or testify as a forensic science professional without certification. Certification requirements should include, at a minimum, written examinations, supervised practice, proficiency testing, continuing education, recertification procedures, adherence to a code of ethics, and effective disciplinary procedures. All laboratories and facilities (public or private) should be accredited, and all forensic science professionals should be certified, when eligible, within a time period established by NIFS.

AFTE response to Recommendation 7:

AFTE, through the assistance of a National Institute of Justice (NIJ) grant, developed and implemented a certification program in firearms, toolmarks, and gunshot residue examination and identification in 1999 [5]. This program includes all of the minimum requirements for a certification program recommended above.

Recommendation 8 (page S-19):

Forensic laboratories should establish routine, quality assurance and quality control procedures to ensure the accuracy of forensic analyses and the work of forensic practitioners. Quality control procedures should be designed to identify mistakes, fraud, and bias; confirm the continued validity and reliability of standard operating procedures and protocols; ensure that best practices are being followed;

and correct procedures and protocols that are found to need improvement.

AFTE response to Recommendation 8:

AFTE endorses the quality assurance and quality control (QA/QC) requirements of accreditation inspections conducted by the American Society of Crime Lab Directors-Laboratory Accreditation Board (ASCLD-LAB), as well as the QA guidelines recommended by SWGGUN. Furthermore, SWGGUN has recently developed training and quality assurance recommendations that, if followed, help ensure accurate examination results.

Recommendation 9 (page S-19):

The National Institute of Forensic Science (NIFS), in consultation with its advisory board, should establish a national code of ethics for all forensic science disciplines and encourage individual societies to incorporate this national code as part of their professional code of ethics. Additionally, NIFS should explore mechanisms of enforcement for those forensic scientists who commit serious ethical violations. Such a code could be enforced through a certification process for forensic scientists.

AFTE response to Recommendation 9:

For many years, AFTE has had a comprehensive ethics code (adopted in 1980) and an equally comprehensive enforcement process.

However, AFTE is disappointed about what appears to be a deliberate oversight, expressed by the NAS Committee on page S-5:

The committee decided early in its work that it would not be feasible to develop a detailed evaluation of each discipline in terms of its scientific underpinning, level of development, and ability to provide evidence to address the major types of questions raised in criminal prosecutions and civil litigation.

By approaching their stated task with this self-imposed limitation in mind, the NAS Committee in effect chose to ignore extensive research supporting the scientific underpinnings of the identification of firearm and toolmark evidence, despite having been provided with documentation referencing many of these studies as early as June 2008.

The NAS report specifically addresses the subject of firearm and toolmark examination on pages 5-18 through 5-21. However, the Committee's discussion of the discipline is

inconsistent at times. For example, after stating on page 5-21, "because not enough is known about the variabilities among individual tools and guns, we are not able to specify how many points of similarity are necessary for a given level of confidence in the result," the Committee goes on to comment, "individual patterns from manufacture or from wear might, in some cases, be distinctive enough to suggest one particular source, but additional studies should be performed to make the process of individualization more precise and repeatable."

The NAS report also cites several statements critical of firearm and toolmark identification that appear in the National Research Council (NRC) 2008 report on ballistic imaging, while not referencing the AFTE response [6] to these statements, dated August 20, 2008. This AFTE response was sent to NRC Chairman, Dr. John Rolph, NAS Director, Committee of Law and Justice, Carol Petrie, and NAS Media Relations Officer, Sara Frueh. Additionally, in May 2008, Dr. Rolph wrote an affidavit to correct some misconceptions surrounding the critical comments contained in the NRC report for a court proceeding regarding the admissibility of firearms-related evidence. Both the AFTE response and Dr. Rolph's affidavit should have been readily available to the NAS Committee for review prior to publication of their February 2009 report.

In their report, the NAS Committee painted an incomplete and inaccurate portrait of the field of firearm and toolmark identification using a very broad brush, and in doing so did not consider the appropriate scientific principles on which our discipline was founded. AFTE is confident that the majority of its members can dispel the limitations and inaccuracies portrayed in the NAS report through well-prepared court testimony, which gives us the opportunity to explain and defend the identification of firearms and toolmarks using what we feel will be perceived as a compelling justification for our conclusions. A partial listing of relevant literature articles summarizing some of the foundational scientific research that has been conducted in the discipline of firearm and toolmark identification is provided below. [7-15]

Unfortunately, some firearm and toolmark examiners performing casework today are clearly outside the mainstream of forensic consciousness and do not conform or adhere to the current protocols and standards recommended by AFTE when conducting such examinations. These examiners take few case notes or other forms of documentation and are not familiar with the extensive amount of empirical and theoretical research that serves as the scientific basis of firearm and toolmark identification. Some of these examiners have been responsible for judicial rulings wherein their testimony has been limited in some way by the court due to their

nonconformity to accepted forensic protocols. Those of us in the mainstream of our profession are working very hard to overcome the cloud of suspicion that has formed over all of us by the shallow court presentations of a few. Justice cannot be served if the results of well-documented firearm and toolmark comparisons are precluded from American courts. Forensic casework performed by trained and competent examiners not only has the potential to identify the responsible firearm used in a crime, but may also quickly exclude a suspected firearm as having any association with a shooting incident. Either of these determinations can be of critical importance to the administration of justice.

The NAS report states that firearm and toolmark examinations have "a heavy reliance on the subjective findings of examiners rather than on the rigorous quantification and analysis of sources of variability" (page 5-21). However, the NAS report again does not address the relevant scientific literature that demonstrates a concerted effort by researchers to achieve a statistical foundation for the conclusions rendered in firearm and toolmark casework. [16-20] There was no apparent attempt by the Committee to acknowledge either existing research or that which is ongoing at various academic institutions across the country in order to formulate statistical foundations for toolmark identifications. [21, 22] This research has the potential to further support the validity and reliability of firearm and toolmark identifications and provide quantitative data to supplement the many years of empirical research that has been conducted in the field.

In closing, regardless of whether or not the NAS Committee's vision of the formation of a National Institute of Forensic Science (NIFS) ultimately comes to fruition, AFTE remains committed to the advancement of the field of firearm and toolmark identification and looks forward to diligently working with whatever entity may eventually become responsible for the forensic enterprise in the United States. The stakes are too high to do anything less.

References

- [1] The AFTE Committee for the Advancement of the Science of Firearm and Tool Mark Identification. Committee members include: John Murdock (Chair), Brandon Giroux, Lucien Haag, James Hamby, Ph.D., Andy Smith, and Peter Striupaitis.
- [2] A copy of the NAS report is currently available on the internet at: <http://www.nap.edu>.
- [3] Internet source: <http://www.swggun.org/resource/resourcekit.htm>
- [4] "Standardization of Comparison Documentation" – an AFTE policy statement adopted at the business meeting of the 2005 AFTE Training Seminar, Indianapolis, IN – *AFTE Journal*, Vol. 38, No. 1, Winter 2006, pp. 72-73.
- [5] Kowalski, Ken, "Summary Report on the Development of Certification Examinations for Practicing Firearms and Toolmark Examiners," *AFTE Journal*, Vol. 32, No. 4, Fall 2000, pp. 373-379.
- [6] AFTE Committee for the Advancement of the Science of Firearm & Toolmark Identification, "The Response of the Association of Firearm and Tool Mark Examiners to the National Academy of Sciences 2008 Report Assessing the Feasibility, Accuracy, and Technical Capability of a National Ballistics Database August 20, 2008," *AFTE Journal*, Vol. 40, No. 3, Summer 2008, pp. 234-244.
- [7] Biasotti, A.A., "A Statistical Study of the Individual Characteristics of Fired Bullets," *Journal of Forensic Sciences*, Vol. 4, No. 1, January 1959, pp. 34-50.
- [8] Biasotti, A.A. and Murdock, J.E., "Criteria for Identification' or 'State of the Art' of Firearm and Toolmark Identification," *AFTE Journal*, Vol. 16, No. 4, October 1984, pp. 16-34.
- [9] Nichols, R.G., "Firearm and Toolmark Identification Criteria: A Review of the Literature," (Part I) *Journal of Forensic Sciences*, Vol. 42, No. 3, May 1997, pp. 466-474.
- [10] Bonfanti, M.S. and DeKinder, J., "The Influence of Manufacturing Processes on the Identification of Bullets and Cartridge Cases – A Review of the Literature," *Science and Justice*, Vol. 39, No. 1, 1999, pp. 3-10.
- [11] Nichols, R.G., "Firearm and Toolmark Identification Criteria: A Review of the Literature, Part II," *Journal of Forensic Sciences*, Vol. 48, No. 2, March 2003, pp. 318-327.
- [12] Miller, J., "An Examination of the Application of the Conservative Criteria for Identification of Striated Toolmarks Using Bullets Fired from Ten Consecutively Rifled Barrels," *AFTE Journal*, Vol. 33, No. 2, Spring 2001, pp. 125-132.
- [13] Grzybowski, R., Miller, J., Moran, B., Murdock, J., Nichols, R., and Thompson, R., "Firearm/Toolmark Identification: Passing the Reliability Test under Federal and State Evidentiary Standards," *AFTE Journal*, Vol. 35, No. 2, Spring 2003, pp. 209-241. Of special note in this article is Appendix No. 2 (pp.234-240), which addresses the application of the scientific method to firearm and toolmark examination.
- [14] Nichols, R.G., "Defending the Scientific Foundations of the Firearms and Toolmark Identification Discipline: Responding to Recent Challenges," *Journal of Forensic Sciences*, Vol. 52, No. 3, May 2007, pp. 586-594.
- [15] Nichols, R.G., "Firearm and Toolmark Identification: The Scientific Reliability and Validity of the AFTE Theory of Identification Discussed Within the Framework of a Study of Ten Consecutively Manufactured Extractors," *AFTE Journal*, Vol. 36, No. 1, Winter 2004, pp. 67-88, and Vol. 36, No. 2, Spring 2004, pp. 124.

[16] Stone R.S., "How 'Unique' Are Impressed Toolmarks?" AFTE Journal, Vol. 35, No. 4, Fall 2003, pp. 376-383.

[17] Collins, E.R., "How 'Unique' Are Impressed Toolmarks? - An Empirical Study of 20 Worn Hammer Faces," AFTE Journal, Vol. 37, No. 4, Fall 2005, pp. 252-295.

[18] Neel, M. and Wells, M., "A Comprehensive Statistical Analysis of Striated Tool Mark Examinations, Part 1: Comparing Known Matches and Known Non-Matches," AFTE Journal, Vol. 39, No. 3, Summer 2007, pp. 176-192, and Vol. 39, No. 4, Fall 2007, p. 264.

[19] Howitt, D., Tulleners, F., Cebra, K., and Chen, S., "A Calculation of the Theoretical Significance of Matched Bullets," Journal of Forensic Sciences, Vol. 53, No. 4, July 2008, pp. 868-875.

[20] Biasotti, A. and Murdock, J., Chapter 23, "Firearms and Toolmark Identification" from Modern Scientific Evidence: The Law and Science of Expert Testimony, Volume 2, West Pub. Co., 1997 (1st edition), pp. 124-155; and currently: Biasotti, A., Murdock, J., and Moran, B., Chapter 34, "Firearms and Toolmark Identification" in Modern Scientific Evidence: The Law and Science of Expert Testimony, Volume 4, St. Paul: Thompson-West, 2008-2009 edition, pp. 573-631.

[21] Faden, D., Kidd, J., Craft, J., Chumbley, L.S., Morris, M., Genalo, L., Kreiser, J., and Davis, S., "Statistical Confirmation of Empirical Observations Concerning Tool Mark Striae," AFTE Journal, Vol. 39, No. 3, Summer 2007, pp. 211-216.

[22] Petraco, N., Petraco, N.D.K., Faber, L., and Pizzola, P., "Preparation of Tool Mark Standards with Jewelry Modeling Waxes," Journal of Forensic Sciences, Vol. 54, No. 2, March 2009, pp. 353-358.



National Press Releases

[Home](#) • [News](#) • [Press Room](#) • [Press Releases](#) • [FBI Testimony on Microscopic Hair Analysis Contained Errors in at Least 90 Percent of Cases in Ongoing Review...](#)

FBI Testimony on Microscopic Hair Analysis Contained Errors in at Least 90 Percent of Cases in Ongoing Review

26 of 28 FBI Analysts Provided Testimony or Reports with Errors

Washington, D.C.

April 20, 2015

Contacts:

- Paul Cates, Innocence Project, pcates@innocenceproject.org
- Ivan Dominguez, NACDL, idinguez@nacdl.org
- Emily Pierce, Department of Justice, (202) 514-2007
- Michael P. Kortan, Federal Bureau of Investigation, (202) 324-5352

The United States Department of Justice (DOJ), the Federal Bureau of Investigation (FBI), the Innocence Project, and the National Association of Criminal Defense Lawyers (NACDL) reported today that the FBI has concluded that the examiners' testimony in at least 90 percent of trial transcripts the Bureau analyzed as part of its Microscopic Hair Comparison Analysis Review contained erroneous statements. Twenty-six of 28 FBI agent/analysts provided either testimony with erroneous statements or submitted laboratory reports with erroneous statements. The review focuses on cases worked prior to 2000, when mitochondrial DNA testing on hair became routine at the FBI. The DOJ, FBI, Innocence Project, and NACDL have been working jointly on this review and share the same goal of ensuring the integrity of the American justice system in all respects. All of the parties are committed to addressing this situation properly and will continue to work together in a collaborative and professional manner.

"The Department has been working together with the Innocence Project and NACDL to address errors made in statements by FBI examiners regarding microscopic hair analysis in the context of testimony and laboratory reports. Such statements are no longer being made by the FBI, and the FBI is also now employing mitochondrial DNA hair analysis in addition to microscopic analysis," said Amy Hess, Executive Assistant Director, Science and Technology Branch, FBI. "However, the Department and the FBI are committed to ensuring that affected defendants are notified of past errors and that justice is done in every instance. The Department and the FBI also are committed to ensuring the accuracy of future hair analysis testimony, as well as the application of all disciplines of forensic science. The Department and FBI have devoted considerable resources to this effort and will continue to do so until all of the identified hair cases are addressed."

"These findings confirm that FBI microscopic hair analysts committed widespread, systematic error, grossly exaggerating the significance of their data under oath with the consequence of unfairly bolstering the prosecutions' case," said Peter Neufeld, Co-Director of the Innocence Project, which is affiliated with Cardozo School of Law. "While the FBI and DOJ are to be commended for bringing these errors to light and notifying many of the people adversely affected, this epic miscarriage of justice calls for a rigorous review to determine how this started almost four decades ago and why it took so long to come to light. We also need lawmakers in Washington to step up and demand research and national standards to prevent the exaggeration of results in reports and in testimony by crime lab analysts."

Norman L. Reimer, Executor Director of NACDL added, "It will be many months before we can know how many people were wrongly convicted based on this flawed evidence, but it seems certain that there will be many whose liberty was deprived and lives destroyed by prosecutorial reliance on this flawed, albeit highly persuasive evidence. Just as we need lawmakers to prevent future systemic failures, we need courts to give those who were impacted by this evidence a second look at their convictions."

The FBI and DOJ agreed to conduct a review of criminal cases involving microscopic hair analysis after the exoneration of three men convicted at least in part because of testimony by three different FBI hair examiners whose testimony was scientifically flawed. The Innocence Project and NACDL, with its examiners David Koropp, Partner at Winston & Strawn LLP, and his colleagues, and Michael R. Bromwich, Managing Principal of The Bromwich Group, who served as the Inspector General of DOJ from 1994-1999, worked with the FBI and DOJ in determining the scope and protocols for the review. The review encompasses cases where FBI microscopic hair comparison was used to link a defendant to a crime and covers cases in both federal and state court systems. It does not, however, cover cases where hair comparison was conducted by state and local crime labs, whose examiners may have been trained by the FBI. The FBI has trained hundreds of state hair examiners in annual two-week training

Recent National Press Releases

- 01.05.16 **Mark A. Morgan Named Assistant Director of the FBI's Training Division**
- 12.30.15 **Joshua Skule Named Assistant Director of the Directorate of Intelligence**
- 12.21.15 **E.W. Priestap Named Assistant Director of the Counterintelligence Division**
- 12.15.15 **Randall C. Thysse Named Special Agent in Charge of Omaha Division**
- 12.15.15 **Douglas A. Leff Named Special Agent in Charge of San Juan Division**
- 12.14.15 **FBI Releases 2014 Crime Statistics from the National Incident-Based Reporting System**
- 12.09.15 **Charles H. Kable, IV Named Special Agent in Charge of Counterintelligence Division of the Washington Field Office**
- 12.03.15 **FBI Commemorates 75th Anniversary of Legal Attaché in Mexico City**
- 12.01.15 **Randall C. Coleman Named Executive Assistant Director of the Criminal, Cyber, Response, and Services Branch**
- 12.01.15 **Terry Wade Named Special Agent in Charge of Albuquerque Division**

[More National Press Releases](#)

courses.

The government identified nearly 3,000 cases in which FBI examiners may have submitted reports or testified in trials using microscopic hair analysis. As of March 2015, the FBI had reviewed approximately 500 cases. The majority of these cases were trials and the transcript of examiner testimony was reviewed. Some of these cases ended in guilty pleas, limiting the review to the original lab report. In the 268 cases where examiners provided testimony used to inculcate a defendant at trial, erroneous statements were made in 257 (96 percent) of the cases. Defendants in at least 35 of these cases received the death penalty and errors were identified in 33 (94 percent) of those cases. Nine of these defendants have already been executed and five died of other causes while on death row. The states with capital cases included Arizona, California, Florida, Indiana, Missouri, Ohio, Oklahoma, Pennsylvania, Tennessee, and Texas. It should be noted that this is an ongoing process and that the numbers referenced above will change.

All but two of 28 FBI examiners provided testimony that contained erroneous statements or authored lab reports with such statements. The review has shown that the FBI examiners testified in cases in 41 states.

In light of these findings, the Department of Justice and FBI have committed to working with the Innocence Project and NACDL to take the following steps:

- Conduct an independent investigation of the FBI Laboratory protocols, practices, and procedures to determine how this occurred and why it was allowed to continue for so long.
- Continue aggressive measures and review the process to determine whether additional steps could be taken to secure the transcripts and/or lab reports and review the hundreds of remaining cases that may contain invalid scientific statements.
- Strongly encourage the states again to conduct their own independent reviews where its examiners were trained by the FBI.

The Innocence Project, NACDL, and Winston & Strawn LLP are assisting the Department of Justice as it works to locate and notify defense counsel of the results of this review—especially critical in the cases of each person where error was identified in accordance with the protocols established for the review. NACDL is working to ensure that all individuals who were defendants in affected cases will have access to a volunteer lawyer to review this new evidence, advise them on how it may impact their conviction, and challenge convictions based on the invalid evidence in appropriate cases. The legal groups are not releasing the names of the defendants affected at this time, leaving it to the defendants and their lawyers to determine what to do with the information and whether to disclose the error to the press.

The FBI has agreed to provide free DNA testing where there is either a court order or a request for testing by the prosecution. Additionally, in federal cases, DOJ will not raise procedural objections, such as statute of limitations and procedural default claims, in response to defendants' petitions seeking a new, fair trial because of the faulty evidence. But the majority of the FBI examiner testimony was provided in state court prosecutions, and it will be up to the individual states to determine if they will follow DOJ's leading in permitting these cases to be litigated.

Before mitochondrial DNA testing was used to analyze hair in criminal cases, prosecutors throughout the country routinely relied on microscopic hair comparison to link a criminal defendant to a crime. The practice was deemed "highly unreliable" in the 2009 National Academy of Sciences report on forensic science, *Strengthening Forensic Science in the United States: A Path Forward*. Nevertheless, some jurisdictions continue to use hair analysis where mitochondrial DNA testing is deemed too expensive, time consuming or is otherwise unavailable. According to Innocence Project data, 74 of the 329 wrongful convictions overturned by DNA evidence involved faulty hair evidence.

Over the course of 25 years, the FBI conducted multiple two-week training courses that reached several hundred state and local hair examiners throughout the country and that incorporated some of the same scientifically flawed language that the FBI's examiners had used in some lab reports and often in trial testimony. In response to the FBI/DOJ review, the Texas Forensic Science Commission has already begun a review of cases handled by analysts at state and local crime labs. Similar audits are needed in most other states.

- More on FBI/DOJ Microscopic Hair Comparison Analysis Review

[Accessibility](#) | [eRulemaking](#) | [Freedom of Information Act](#) | [Legal Notices](#) | [Legal Policies and Disclaimers](#) | [Links](#) | [Privacy Policy](#) | [USA.gov](#) | [White House](#)
 FBI.gov is an official site of the U.S. government, U.S. Department of Justice

Close



Laboratory Services

[Home](#) • [About Us](#) • [Laboratory Services](#) • [Scientific Analysis](#) • [FBI/DOJ Microscopic Hair Comparison Analysis Review](#)

FBI/DOJ Microscopic Hair Comparison Analysis Review

Updates:

- [4/20/15 Press Release: FBI Testimony on Microscopic Hair Analysis Contained Errors in at Least 90 Percent of Cases in Ongoing Review](#)
- [4/19/15 Press Release: Department of Justice and FBI Joint Statement on Microscopic Hair Analysis](#)

The FBI, in conjunction with the Department of Justice (DOJ), is engaged in a review of scientific testimony provided by FBI Laboratory examiners in cases involving microscopic hair comparisons.

The purpose of the review is to ensure that FBI Laboratory examiner testimony regarding microscopic hair comparison analysis met accepted scientific standards. In cases in which those standards were not met, remedial action may be taken if appropriate.

It's important to note that microscopic hair comparison analysis is a valid scientific technique still conducted by the FBI Laboratory. The science of microscopic hair comparisons is not the subject of the review. In 1996, the FBI Laboratory developed and implemented mitochondrial DNA (mtDNA) analysis in conjunction with probative hair analysis because it is the most effective protocol for the forensic examination of hair, and it provides a more meaningful association than either technique used alone.

Cases with hair evidence recovered from a crime scene are examined both visually and through a microscope. If these hairs share similar characteristics with a known hair sample, a probative association may be established. A probative association can occur when there is a transfer of hair from a victim directly to a suspect or from a victim to the weapon used during the commission of a crime. Recovery of hair found inside a victim's house that is microscopically similar to the victim's hair is an example of a non-probative association because you would expect to find the victim's hair in their home.

The FBI will review cases with a probative association if they meet the following criteria:

1. The defendant was convicted;
2. DNA analysis was **not** conducted on the evidentiary hair;
3. The case was submitted to the FBI Laboratory and the analysis occurred prior to December 31, 1999; and
4. The FBI provided the contributing law enforcement agency a Laboratory report regarding the results of the microscopic hair comparison.

The review is being conducted with the assistance of the Innocence Project (IP) and the National Association of Criminal Defense Lawyers (NACDL). Among other things, the IP and NACDL are providing an independent review of transcripts that meet the review criteria. This independent review is further described in: "The Hair Microscopy Review Project: An Historic Breakthrough For Law Enforcement and A Daunting Challenge For the Defense Bar," originally published in the NACDL magazine, *The Champion*, July 2013.

As reviews are completed, DOJ provides the results of the FBI, IP, and NACDL reviews to prosecutors and defense counsel associated with the case.

While the FBI is working closely with the IP and the NACDL to identify relevant cases, the FBI welcomes the public's assistance in identifying any cases that may be subject to this review—particularly those that occurred before 1982.

Further information can be obtained by contacting the FBI Hair Review Team at FBICaseReview@ic.fbi.gov.



Biometric Analysis

- Combined DNA Index System (CODIS)
- DNA Casework
- Federal DNA Database
- Latent Print

Forensic Response

- Chemical, Biological, Radiological, & Nuclear Sciences
- Crime Scene Documentation
- Evidence Response Team
- Forensic Imaging
- Hazardous Evidence Response
- Operational Projects
- Scientific Response
- Technical Hazards Response

Scientific Analysis

- Chemistry
- Counterterrorism & Forensic Science Research
- Cryptanalysis & Racketeering
- Firearms/Toolmarks
- Questioned Documents
- Trace Evidence

Terrorist Explosive Device Analytical Center (TEDAC)

- Explosives

More About Us

- Laboratory Annual Report
- Forensic Services Handbook (pdf)
- Quick Reference Guide (pdf)
- Forensic Science Communication
- Scientific Working Groups
- News and Features
- Laboratory Positions
- Visiting Scientist Program

SCIENTIFIC ANALYSIS

Public Safety

FBI admits flaws in hair analysis over decades

By Spencer S. Hsu April 18

The Justice Department and FBI have formally acknowledged that nearly every examiner in an elite FBI forensic unit gave flawed testimony in almost all trials in which they offered evidence against criminal defendants over more than a two-decade period before 2000.

Of 28 examiners with the FBI Laboratory's microscopic hair comparison unit, 26 overstated forensic matches in ways that favored prosecutors in more than 95 percent of the 268 trials reviewed so far, according to the National Association of Criminal Defense Lawyers (NACDL) and the Innocence Project, which are assisting the government with the country's largest post-conviction review of questioned forensic evidence.

The cases include those of 32 defendants sentenced to death. Of those, 14 have been executed or died in prison, the groups said under an agreement with the government to release results after the review of the first 200 convictions.

The FBI errors alone do not mean there was not other evidence of a convict's guilt. Defendants and federal and state prosecutors in 46 states and the District are being notified to determine whether there are grounds for appeals. Four defendants were previously exonerated.

The admissions mark a watershed in one of the country's largest forensic scandals, highlighting the failure of the nation's courts for decades to keep bogus scientific information from juries, legal analysts said. The question now, they said, is how state authorities and the courts will respond to findings that confirm long-suspected problems with subjective, pattern-based forensic techniques — like hair and bite-mark comparisons — that have contributed to wrongful convictions in more than one-quarter of 329 DNA-exoneration cases since 1989.

In a statement, the FBI and Justice Department vowed to continue to devote resources to address all cases and said they "are committed to ensuring that affected defendants are notified of past errors and

that justice is done in every instance. The Department and the FBI are also committed to ensuring the accuracy of future hair analysis testimony, as well as the application of all disciplines of forensic science.”

Peter Neufeld, co-founder of the Innocence Project, commended the FBI and department for the collaboration but said, “The FBI’s three-decade use of microscopic hair analysis to incriminate defendants was a complete disaster.”

“We need an exhaustive investigation that looks at how the FBI, state governments that relied on examiners trained by the FBI and the courts allowed this to happen and why it wasn’t stopped much sooner,” Neufeld said.

Norman L. Reimer, the NACDL’s executive director, said, “Hopefully, this project establishes a precedent so that in future situations it will not take years to remediate the injustice.”

While unnamed federal officials previously acknowledged widespread problems, the FBI until now has withheld comment because findings might not be representative.

Sen. Richard Blumenthal (D-Conn.), a former prosecutor, called on the FBI and Justice Department to notify defendants in all 2,500 targeted cases involving an FBI hair match about the problem even if their case has not been completed, and to redouble efforts in the three-year-old review to retrieve information on each case.

“These findings are appalling and chilling in their indictment of our criminal justice system, not only for potentially innocent defendants who have been wrongly imprisoned and even executed, but for prosecutors who have relied on fabricated and false evidence despite their intentions to faithfully enforce the law,” Blumenthal said.

Senate Judiciary Committee Chairman Charles E. Grassley (R-Iowa) and the panel’s ranking Democrat, Patrick J. Leahy (Vt.), urged the bureau to conduct “a root-cause analysis” to prevent future breakdowns.

“It is critical that the Bureau identify and address the systemic factors that allowed this far-reaching problem to occur and continue for more than a decade,” the lawmakers wrote FBI Director James B. Comey on March 27, as findings were being finalized.

The FBI is waiting to complete all reviews to assess causes but has acknowledged that hair examiners until 2012 lacked written standards defining scientifically appropriate and erroneous ways to explain

results in court. The bureau expects this year to complete similar standards for testimony and lab reports for 19 forensic disciplines.

Federal authorities launched the investigation in 2012 after The Washington Post reported that flawed forensic hair matches might have led to the convictions of hundreds of potentially innocent people since at least the 1970s, typically for murder, rape and other violent crimes nationwide.

The review confirmed that FBI experts systematically testified to the near-certainty of “matches” of crime-scene hairs to defendants, backing their claims by citing incomplete or misleading statistics drawn from their case work.

In reality, there is no accepted research on how often hair from different people may appear the same. Since 2000, the lab has used visual hair comparison to rule out someone as a possible source of hair or in combination with more accurate DNA testing.

Warnings about the problem have been mounting. In 2002, the FBI reported that its own DNA testing found that examiners reported false hair matches more than 11 percent of the time. In the District, the only jurisdiction where defenders and prosecutors have re-investigated all FBI hair convictions, three of seven defendants whose trials included flawed FBI testimony have been exonerated through DNA testing since 2009, and courts have exonerated two more men. All five served 20 to 30 years in prison for rape or murder.

University of Virginia law professor Brandon L. Garrett said the results reveal a “mass disaster” inside the criminal justice system, one that it has been unable to self-correct because courts rely on outdated precedents admitting scientifically invalid testimony at trial and, under the legal doctrine of finality, make it difficult for convicts to challenge old evidence.

“The tools don’t exist to handle systematic errors in our criminal justice system,” Garrett said. “The FBI deserves every recognition for doing something really remarkable here. The problem is there may be few judges, prosecutors or defense lawyers who are able or willing to do anything about it.”

Federal authorities are offering new DNA testing in cases with errors, if sought by a judge or prosecutor, and agreeing to drop procedural objections to appeals in federal cases.

However, biological evidence in the cases often is lost or unavailable. Among states, only California and Texas specifically allow appeals when experts recant or scientific advances undermine forensic evidence at trial.

Defense attorneys say scientifically invalid forensic testimony should be considered as violations of due process, as courts have held with false or misleading testimony.

The FBI searched more than 21,000 federal and state requests to its hair comparison unit from 1972 through 1999, identifying for review roughly 2,500 cases where examiners declared hair matches.

Reviews of 342 defendants' convictions were completed as of early March, the NACDL and Innocence Project reported. In addition to the 268 trials in which FBI hair evidence was used against defendants, the review found cases in which defendants pleaded guilty, FBI examiners did not testify, did not assert a match or gave exculpatory testimony.

When such cases are included, by the FBI's count examiners made statements exceeding the limits of science in about 90 percent of testimonies, including 34 death-penalty cases.

The findings likely scratch the surface. The FBI said as of mid-April that reviews of about 350 trial testimonies and 900 lab reports are nearly complete, with about 1,200 cases remaining.

The bureau said it is difficult to check cases before 1985, when files were computerized. It has been unable to review 700 cases because police or prosecutors did not respond to requests for information.

Also, the same FBI examiners whose work is under review taught 500 to 1,000 state and local crime lab analysts to testify in the same ways.

Texas, New York and North Carolina authorities are reviewing their hair examiner cases, with ad hoc efforts underway in about 15 other states.

Spencer S. Hsu is an investigative reporter, two-time Pulitzer finalist and national Emmy award nominee.



U.S. Department of Justice

950 Pennsylvania Ave., NW
Washington, DC 20530

VIA E-MAIL

May 6, 2013

Deforest R. Allgood, Esq.
District Attorney's Office
Oktibbeha County, P.O. Box 1044
Columbus, MS 39703

Re: Manning v. Mississippi, 2013-DR-00491-SCT

Dear Mr. Allgood:

We write to advise you of additional results of a review by the United States Department of Justice (the "Department") and the Federal Bureau of Investigation ("FBI" and collectively with the Department "DOJ") of laboratory reports and testimony by FBI Laboratory examiners in this case. Through this review, we previously determined that testimony containing erroneous statements regarding microscopic hair comparison analysis was used in this case. (See Letters dated May 2 and 4, 2013.) Those errors and the process through which they were identified were explained in more detail in our May 2 and 4, 2013 letters.

I. Additional Error Identified in this Matter

In the course of its review of this case, the FBI provides the following with regard to testimony provided by an FBI firearms examiner:

The science regarding firearms examinations does not permit examiner testimony that a specific gun fired a specific bullet to the exclusion of all other guns in the world. The examiner could testify to that information, to a reasonable degree of scientific certainty, but not absolutely. Any individual association or identification conclusion effected through this examination process is based not on absolute certainty but rather a reasonable degree of

scientific certainty. As with any process involving human judgment, claims of infallibility or impossibility of error are not supported by scientific standards.

(A copy of the FBI Ballistics Analysis Report, dated May 6, 2013, is attached.)

II. Report of Action Taken

To assist us in monitoring the status of cases involving microscopic hair analysis comparisons, we ask that you please advise us, if you intend to take any action based on the information that we are providing to you. Please send this information to USAEO.HairReview@usdoj.gov, and let us know if we can be of any assistance.

III. Additional Notifications

You should be aware that we are also notifying the governor's office, attorney general's office, and the defense, as well as the Innocence Project and the National Association of Criminal Defense Lawyers of the errors. The Innocence Project and the National Association of Criminal Defense Lawyers have expressed an interest in determining whether improper reports or testimony affected any convictions and, if so, to ensure appropriate remedial actions are taken. To assist them in their evaluation, we will provide them with information from our files, including copies of FBI Laboratory examiners' reports and testimony, as well as our assessment of those reports and testimony.

If you have any questions regarding this matter please contact us at the email address provided above.

Sincerely,

 /s/
John Crabb Jr.
Special Counsel

Encl.

- cc: David Voisin, Esq. (via e-mail)
Jack Wilson, Deputy Counsel, Office of the Governor (via e-mail)
Jim Hood, Attorney General (via e-mail)
Peter J. Neufeld, Esq., Co-Director, Innocence Project (via e-mail)
Norman Reimer, Esq., Director, NADCL (via e-mail)

May 7, 2013

With Hours to Go, Execution Is Postponed

By **CAMPBELL ROBERTSON**

A Mississippi man scheduled to be put to death on Tuesday was granted a stay of execution by the State Supreme Court, after the United States Department of Justice sent lawyers and officials involved in the case several letters disavowing the degree of certainty expressed by F.B.I. forensic experts at the man's trial.

About 2 p.m., just four hours before the scheduled execution, the court voted 8 to 1 to grant a reprieve "until further order" to Willie Jerome Manning, 44, who was convicted in 1994 of murdering two college students.

The justices in favor did not explain their reasoning or put a time limit on the reprieve. The dissenting justice issued a blistering objection, saying Mr. Manning had exhausted the challenges to his conviction and attacking the Justice Department for the letters, along with several other unrelated issues.

Starting Thursday, the Justice Department sent three letters calling certain aspects of the trial testimony of two F.B.I. experts "erroneous." Defense lawyers cited these letters as reasons to put off the execution until DNA tests could be conducted on crime scene evidence, including a rape kit, a request that Mr. Manning had made unsuccessfully several times before.

The state attorney general, Jim Hood, denied the requests, saying that there was "overwhelming evidence of guilt" and that the letters did not repudiate the testimony of the F.B.I. experts, but only made some clarifications.

In a statement on Tuesday evening, Mr. Hood said his office had filed a report with the court stating that the rape kit, along with some other physical evidence, was not found to have biological residue that could be tested for DNA.

Lawyers for the Innocence Project, who are helping Mr. Manning's defense, said that in more than a dozen exoneration cases in the past, DNA samples had been found in rape kits years or even decades after the samples initially tested negative for any biological evidence.

The Justice Department letters offered to make the F.B.I. available to conduct DNA testing on hair fragments found at the scene.

Many involved in the case, as well as outside legal experts, said they could not recall the Justice Department's sending such letters in the last few days before an execution.

"I think the term is 'unprecedented,' " said Forrest Allgood, the original prosecutor.

In December 1992, Jon Steckler and Tiffany Miller were found killed. A token found at the crime scene appeared to be among several items stolen from a car that same night, items that Mr. Manning was later found to have been trying to sell.

Other than hair fragments found in Ms. Miller's car, little forensic evidence was presented at trial. One witness testified that Mr. Manning had confessed to the murders while in jail, though defense lawyers said the witness's account was inconsistent with known facts.

Another witness, a former girlfriend, said she had once seen Mr. Manning firing a gun into a tree. An F.B.I. firearms expert testified that bullets found in the tree had been fired from the same gun as the bullets used in the murders.

A letter sent by the Justice Department late Monday said a firearms expert could not testify that "a specific gun fired a specific bullet to the exclusion of all other guns in the world."

"The examiner could testify to that information, to a reasonable degree of scientific certainty, but not absolutely," the letter read.

Mr. Allgood, the prosecutor, said he believed the distinction, "quite frankly, is semantics."

It was not the only testimony the Justice Department expressed reservations about. In two previous letters, federal officials challenged a separate F.B.I. expert's analysis of hair fragments, saying the expert could not have determined that the hairs were from an African-American, as he testified. An expert could say only that a hair fragment "possesses certain traits that are associated" with a racial group, the letter said.

Opinions

A setback for forensic science

By William C. Thompson May 8 at 4:30 PM

The writer is a professor of criminology and law at the University of California at Irvine, a member of the Human Factors Subcommittee of the National Commission on Forensic Science and vice chair of the Human Factors Committee of the Organization of Scientific Area Committees, a federal body charged with promulgating standards and guidelines on forensic science.

The top managers of the District's highly regarded crime laboratory were forced to resign or terminated last month after a dispute between the crime lab and the U.S. Attorney's Office over interpretation and reporting of DNA evidence. News reports suggested it was simply a matter of incompetence.

Outside experts hired by the U.S. Attorney's Office issued a highly critical report. Their criticisms were supported by an audit performed on behalf of the mayor's office by a national accrediting agency. The mayor and other city officials undoubtedly assumed that, if the lab could not figure out the right way to do DNA testing, the managers should be replaced. But that simple-minded analysis reflects a serious misunderstanding about the details of the matter and the larger issues at stake.

A key issue is whether the crime laboratory will remain independent from law enforcement. In 2009, the National Academy of Sciences recommended that crime labs be separated from law enforcement control. The academy concluded that many of the problems that plague forensic science — inadequately validated methods, bias, overstatement of findings — are partly attributable to excessive influence by police and prosecutors, who rely heavily on forensic science evidence to obtain convictions.

The District followed the academy's recommendation. In 2011, the D.C. Council established the Department of Forensic Sciences as an independent agency. Max M. Houck, a highly regarded forensic scientist, was appointed director. The laboratory began operation in October 2012 and quickly obtained accreditation, drawing nationwide attention from those interested in reform and improvement of forensic science.

Houck worked to ensure the independence and transparency of the laboratory. With the help of the lab's legal counsel, he developed new lines of communication between the laboratory and the groups it served — including police, prosecutors and defense lawyers. The laboratory ended a policy that had allowed prosecutors to have preferential access to laboratory information and to control what defense lawyers were allowed to see. Under the new administration, prosecutors and defense lawyers were given equal access.

That the lab's legal counsel was among those sacked suggests that the firings were about more than interpretation of DNA tests. If misinterpretation is the real problem, why was firing the laboratory's legal counsel the solution? Were the complaints about DNA interpretation an excuse to strike back at a laboratory management that had denied them some of the prerogatives that laboratories have traditionally granted to prosecutors — a way to bring an independent laboratory back under law enforcement control?

The complaints concerned the lab's interpretation of DNA tests in a special class of cases that are notoriously difficult to interpret — those in which the quantity of DNA recovered is too small to yield a complete genetic profile. To draw conclusions from such evidence, analysts must make subjective judgments about matters that cannot be determined with certainty, such as the exact number of contributors and the probability that the test failed to detect certain genetic characteristics of certain contributors.

Reasonable experts have long been divided over the best way to analyze such evidence and how to report the results. While the method used by the D.C. lab is open to criticism, a 2013 study by the National Institute of Standards and Technology suggests that a majority of DNA laboratories in the United States follow the same method. The audit team pointed to several cases in which it deemed the lab's interpretations to be problematic, but one could find similar examples in the casework of accredited crime laboratories nationwide.

These problems have never caused an accrediting agency to demand suspension of testing in a DNA laboratory. Why was that step taken now?

It is noteworthy that the audit agency met privately with representatives of the U.S. Attorney's Office and experts they hired before the audit. A request by the Public Defender Service to have a representative at the meeting was denied.

Observers will be watching very closely to see whether the new management of the laboratory maintains the policies of openness and independence ushered in by Houck, or whether the laboratory returns to a more traditional model in which prosecutors have preferential access and influence.

In any event, this sends a strong message to laboratory directors nationwide who come into conflict with local prosecutors. The message is be afraid, be very afraid. That, in itself, is a serious setback for efforts to protect the scientific independence of crime laboratories.

Read more about this issue:

[The Post's View: D.C.'s inadequate crime lab](#)

[The Post's View: D.C.'s crime lab goes under the microscope](#)



National Press Releases

[Home](#) • [News](#) • [Press Room](#) • [Press Releases](#) • [FBI Laboratory Announces Discontinuation of Bullet Lead Examinations](#)

FBI Laboratory Announces Discontinuation of Bullet Lead Examinations

Washington, D.C.
September 01, 2005

FBI National Press Office
(202) 324-3691

Washington, D.C. -- The FBI Laboratory today announced that, after extensive study and consideration, it will no longer conduct the examination of bullet lead. Bullet lead examinations have historically been performed in limited circumstances, typically when a firearm has not been recovered or when a fired bullet is too mutilated for comparison of physical markings. Bullet lead examinations use analytical chemistry to determine the amounts of trace elements (such as copper, arsenic, antimony, tin, etc.) found within bullets. The result of that analysis allows crime-scene bullets to be compared to bullets associated with a suspect. Since the early 1980's the FBI Laboratory has conducted bullet lead examinations in approximately 2,500 cases submitted by federal, state, local, and foreign law enforcement agencies. In less than 20% of those cases was the result introduced into evidence at trial.

In 2002, the FBI asked the National Research Council (NRC) of the National Academy of Science to have an independent committee of experts evaluate the scientific basis of comparative bullet lead analysis. Specifically, the FBI divided the bullet lead examination into three parts (the scientific method, the data analysis, and the interpretation of the results) and asked the NRC for an impartial review of each area. The technology reviewed by the NRC had been used by the FBI Laboratory since 1996. The NRC's recommendations, following the study, were set forth in a report entitled "Forensic Analysis: Weighing Bullet Lead Evidence."

The NRC found that the FBI Laboratory's analytical instrumentation is appropriate and the best available technology with respect to precision and accuracy for the elements analyzed. It also found that the elements selected by the FBI for this analysis are appropriate. The NRC expressed concerns, however, relating to the interpretation of the results of bullet lead examinations.

Following the issuance of the report the FBI Laboratory embarked on an exhaustive 14-month review to study the recommendations, offered by the NRC, including an evaluation of statistical methodologies. Although the NRC stated that the FBI Laboratory did not need to suspend bullet lead examinations while undertaking this review, the FBI elected to do so while the review was pending.

One factor significantly influenced the Laboratory's decision to no longer conduct the examination of bullet lead: neither scientists nor bullet manufacturers are able to definitively attest to the significance of an association made between bullets in the course of a bullet lead examination. While the FBI Laboratory still firmly supports the scientific foundation of bullet lead analysis, given the costs of maintaining the equipment, the resources necessary to do the examination, and its relative probative value, the FBI Laboratory has decided that it will no longer conduct this exam.

Letters outlining the FBI Laboratory's decision to discontinue these examinations are being sent to approximately 300 agencies that received laboratory reports indicating positive results since 1996. The letters are being sent so that these agencies may take whatever steps they deem appropriate, if any, given the facts of their particular case. It is important to note that the FBI Laboratory has not determined that previously issued bullet lead reports were in error.

The NRC's report is available through the National Academies Press website at (www.nap.edu).

Recent National Press Releases

- 01.05.16 **Mark A. Morgan Named Assistant Director of the FBI's Training Division**
- 12.30.15 **Joshua Skule Named Assistant Director of the Directorate of Intelligence**
- 12.21.15 **E.W. Priestap Named Assistant Director of the Counterintelligence Division**
- 12.15.15 **Randall C. Thyse Named Special Agent in Charge of Omaha Division**
- 12.15.15 **Douglas A. Leff Named Special Agent in Charge of San Juan Division**
- 12.14.15 **FBI Releases 2014 Crime Statistics from the National Incident-Based Reporting System**
- 12.09.15 **Charles H. Kable, IV Named Special Agent in Charge of Counterintelligence Division of the Washington Field Office**
- 12.03.15 **FBI Commemorates 75th Anniversary of Legal Attaché in Mexico City**
- 12.01.15 **Randall C. Coleman Named Executive Assistant Director of the Criminal, Cyber, Response, and Services Branch**
- 12.01.15 **Terry Wade Named Special Agent in Charge of Albuquerque Division**

[More National Press Releases](#)

[Accessibility](#) | [eRulemaking](#) | [Freedom of Information Act](#) | [Legal Notices](#) | [Legal Policies and Disclaimers](#) | [Links](#) | [Privacy Policy](#) | [USA.gov](#) | [White House](#)
FBI.gov is an official site of the U.S. government, U.S. Department of Justice

Close