

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF GEORGIA
COLUMBUS DIVISION

UNITED STATES OF AMERICA,

*

vs.

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CASE NO. 4:05-CR-21 (CDL)

MICHAEL ANTONIO NATSON,

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Defendant

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O R D E R

Defendant has filed motions to exclude the expert testimony of the Government's firearm and toolmark identification expert, Paul Tangren ("Tangren"), and the Government's DNA expert, Shaun Weiss ("Weiss"). Defendant contends that their testimony does not meet the standards of Rule 702 of the Federal Rules of Evidence. The Court held a *Daubert* hearing to determine the admissibility of the proffered testimony. Based upon that hearing, the Court finds that: (1) the two experts are qualified to give the opinions they gave; (2) the proffered testimony is based upon sufficient facts and data; (3) the testimony is the product of reliable principles and methods; and (4) the witnesses applied the principles and methods reliably to the facts of the case.

The Court further finds that the testimony of the Government's toolmark identification expert, Tangren, is probative of a central issue in the case and is admissible. However, with regard to the Government's DNA expert, Weiss, the Court finds that his expert testimony is not probative of any of the issues in the case, and insofar as his testimony may have some probative value, that

probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, and the possibility of misleading the jury. Accordingly, as further explained in the following discussion, the proffered testimony of the Government's toolmarking identification expert is admissible, and the testimony of the Government's DNA expert is not.

BACKGROUND

A. Firearms Toolmark Expert—Paul Tangren

The Government indicted Defendant for murdering Ardena Carter (who was his girlfriend) and her unborn child. The murder allegedly occurred on or about September 12, 2003. Over three months later, on December 16, 2003, a hunter discovered the victims' remains on Fort Benning Military Reservation.

During its investigation, the Government learned that Defendant owned a 9mm Sig Sauer pistol—Model P-239, serial number SA-32512. The Government obtained custody of that pistol. On March 29, 2004, the Government obtained from the scene of the alleged crime a discharged 9 mm ammunition cartridge. The pistol and cartridge were submitted to the FBI laboratory in Quantico, Virginia, for toolmark identification analysis by FBI Special Agent and certified toolmark examiner, Paul Tangren. Upon completion of his testing and analysis, Tangren concluded that, in his opinion, the cartridge found at the crime scene was fired from Defendant's pistol. The Defendant seeks to exclude this expert testimony.

B. DNA Expert—Shaun Weiss

The Government contends that part of Defendant's motive for the crime was that Ms. Carter was pregnant with Defendant's child. In order to establish Defendant's paternity of the fetus, the Government obtained a DNA sample from Defendant, and sent that sample, along with the fetal bones it discovered during its investigation, to a DNA laboratory for testing. The DNA testing was conducted using the PCR, Polymerase Chain Reaction, method.

Shaun Weiss, the Government's DNA expert, opined that the DNA testing was compromised because sufficient samples of DNA could not be obtained from the fetal bones. Therefore, the testing resulted in only a partial DNA profile which indicated that 5 of 13 genetic markers matched. Based upon these results, Weiss opined that (1) the testing was inconclusive as to whether Defendant was the father of the fetus, (2) that based upon the testing it is his opinion that the Defendant is 26 times more likely to be the father of the fetus than a random person, and (3) there is a 96.30% probability that Defendant is the father. Additionally, Weiss emphasized that this level of likelihood, which may appear to the layperson as significantly high, is substantially lower than the probability that the DNA scientific community is comfortable relying upon to establish paternity. According to Weiss, the statistical probability of paternity must be at 99.99% for the DNA scientific community to consider a DNA test to show a paternity match. Therefore, Weiss would not opine to a

reasonable degree of certainty that Defendant was the father of the fetus. Instead, he could only testify to a reasonable degree of certainty that the Defendant could not be excluded as the father. In other words, he could testify with certainty that Defendant was "possibly" the father, along with thousands of other random persons. Defendant seeks to exclude Weiss's testimony.

DISCUSSION

A. Rule 702 of the Federal Rules of Evidence

Rule 702 of the Federal Rules of Evidence governs the admissibility of expert opinions. It provides:

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

The drafters of Rule 702 did not draft upon a blank slate. To understand the Rule and apply it appropriately requires an understanding of its origins.

1. The Predecessors of Rule 702

a. *The Frye Test*

Courts have traditionally been skeptical of expert opinion testimony and have struggled with when an "expert" should be permitted to share his opinions with a jury. In one of the earliest federal cases, *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923),

the issue was whether the results of a "deception test" (a precursor to the lie detector) measuring changes in systolic blood pressure were admissible in a criminal trial. The Court of Appeals for the District of Columbia excluded the evidence, finding that it lacked the required "standing and scientific recognition among physiological and psychological authorities" *Id.* at 1014. This "general acceptance standard" eventually became the majority rule in this country; thus, the *Frye* test was born.

Under the *Frye* test, the only issue was whether the theories or techniques were "generally accepted" in the scientific community. No independent determinations of reliability were made under this evidentiary standard. Notwithstanding the value of its simplicity, the *Frye* test had certain limitations. In addition to its vagueness, it arbitrarily ignored the delay between scientific discovery and general acceptance. Thus, the *Frye* test resulted in the exclusion of reliable evidence that may be the result of a novel scientific technique. These inadequacies became widely recognized by many courts.

b. Adoption of Federal Rules of Evidence

When the Federal Rules of Evidence were adopted in 1975, they included a former version of Rule 702. That version, which includes part of the language of present Rule 702, stated:

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.

This previous version of Rule 702 established an "assist the trier of fact" standard: Does the expert testimony help the trier of fact decide a relevant issue? The Rule did not mention *Frye* and did not use the phrase "general acceptance." Its adoption subsequently created a conflict among the federal circuits. Some courts rejected the *Frye* "general acceptance test" altogether in favor of what appeared to be a more simplified "assist the trier of fact" standard. See generally *United States v. Williams*, 583 F.2d 1194 (2d Cir. 1978), cert. denied, 439 U.S. 1117 (1979); *United States v. Downing*, 753 F.2d 1224 (3d Cir. 1985). Other courts developed a hybrid test that combined the "general acceptance" standard with the "assist the trier of fact" standard. See generally *Christopherson v. Allied-Signal Corp.*, 939 F.2d 1106 (5th Cir. 1991).

c. *Daubert to the Rescue*

In 1993, the Supreme Court attempted to reconcile the conflict among the circuit courts regarding the application of the appropriate expert testimony standard. In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the Supreme Court was presented with the issue of whether the Ninth Circuit Court of Appeals committed reversible error by excluding the opinions of the plaintiff's experts based upon an application of the *Frye* "general acceptance" test. The Supreme Court reversed the Ninth Circuit,

holding that the enactment of the Federal Rules of Evidence liberalized the admission of expert evidence and superceded the *Frye* test. *Id.* at 587.

According to the Supreme Court, the standard under Federal Rule of Evidence 702 does not depend upon whether the evidence is "generally accepted," but requires that the evidence be reliable and relevant. The Court established the district courts as the "gatekeepers" for determining whether the proffered evidence meets the Federal Rule of Evidence 702 standard. As explained by the Court, "faced with a proffer of expert scientific testimony . . . the trial judge must determine at the outset . . . whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue." *Id.* at 592. "This entails a preliminary assessment of whether the reasoning or methodology . . . can be applied to the facts in issue." *Id.* at 592-93.

To assist the district courts in performing their gatekeeper role, the Supreme Court in *Daubert* listed four non-exclusive factors to be considered: (1) whether the theory or technique can be or has been tested; (2) whether it has been subjected to peer review and publication; (3) whether it has a known or potential rate of error; and (4) whether it has been generally accepted within the scientific community. *Id.* at 592-94.

It did not take long for additional issues not completely answered in *Daubert* to percolate back up to the Supreme Court. In *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), the Court explained that the *Daubert* gatekeeping function applied to an expert's conclusions as well as his principles and methodology. 522 U.S. at 145-46. In other words, expert opinions could no longer be admitted solely upon the *ipse dixit* of the expert. *Id.* at 146. The analysis, not the credentials of the expert alone, must close the gap analytically between the data and the opinion. *Id.* at 146-47.

Two years later, in *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999), the Supreme Court further refined *Daubert* by making it clear that the gatekeeping it required applies to all expert testimony, including non-scientific evidence. The Court explained that one of the goals of *Daubert* gatekeeping is to ensure that an expert "employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Id.* at 152.

d. 2000 Amendment to Rule 702

In 2000, Rule 702 was amended. Although the drafters of the amendment did not view it as a codification of *Daubert*, it came close. The new Rule sought to clarify the "assist the trier of fact" standard that existed in the previous version of Federal Rule of Evidence 702. In addition to assisting the trier of fact, the amended Rule expressly requires that for a qualified expert's opinion

to be admissible it must: (1) be based upon sufficient facts or data; (2) be the product of reliable principles and methods; and (3) apply the principles and methods reliably to the facts of the case. Fed. R. Evid. 702. In addition to the four *Daubert* reliability factors, the advisory committee notes list five additional reliability factors that a court could consider in performing its gatekeeping function. Those additional factors are: (1) whether the expert proposes to testify about matters growing naturally out of research he conducted independent of litigation or whether the opinions were developed expressly for the purpose of testifying; (2) whether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion; (3) whether the expert has adequately accounted for obvious alternative explanations; (4) whether the expert has been as careful as he would be in his regular professional work outside his paid litigation consulting; and (5) whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert would give.

2. The Rule 702 Analytical Framework

Based upon the language of Rule 702, its history and the relevant Supreme Court decisions, the Court finds that the following analytical framework for evaluating the admissibility of expert testimony is appropriate. In deciding whether expert testimony is admissible, the Court must consider (1) whether the expert is qualified; (2) whether the opinion is reliable and based upon a

scientifically valid methodology using the *Daubert* and other reliability factors; and (3) whether the testimony fits the case because it is relevant and will assist the trier of fact. Whether expert testimony ultimately makes its way through the Rule 702/*Daubert* gate depends upon the resolution of these issues.

B. The Government's DNA Expert-Shaun Weiss

Defendant does not contest the reliability of the scientific method use by Weiss to reach his opinion. Instead, he argues that Weiss's opinions should be excluded because he did not reliably apply that method to the facts of the case. As the Court explained during the hearing, Weiss reliably applied a scientifically valid DNA testing method to the facts of this case and concluded that the DNA testing did not exclude Defendant as the father of the fetus. Weiss's testing and ultimate opinion are completely consistent with the reliability components of Rule 702. However, for the testimony to be admissible, it must be relevant to an issue in the case. The Government argues that it is probative of paternity, which is relevant to motive. While the Government concedes that the testing does not conclusively establish paternity, it maintains that the results have some probative value on paternity because the testing demonstrates that the Defendant cannot be excluded as the father. In other words, it is not impossible that Defendant is the father.

The Court rejects the Government's position. Weiss concedes that he cannot opine to a reasonable degree of certainty that

Defendant is the father of the fetus. Any such opinion would be rejected by the DNA scientific community, which requires over a 99% probability result to conclude that a DNA test establishes paternity. The only conclusion that Weiss can reach from his testing is that the Defendant is "possibly" the father. The possibility that Defendant is the father may be higher than others at 26 to 1, but it does not rise to any reasonable level of scientific certainty. It would be sheer speculation for a jury to determine from Weiss's testimony that Defendant is the father. Therefore, the Court finds that the testimony is not relevant and would not assist the trier of fact. Accordingly, it is not admissible under Federal Rules of Evidence 702, 401, and 402.¹

Even if Weiss's testimony had some probative value and could provide some assistance to the trier of fact, the Court finds that the testimony must still be excluded. Rule 403 of the Federal Rules of Evidence provides in relevant part that "[a]lthough relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the

¹As previously discussed, Rule 702 requires that for expert testimony to be admissible, it must "assist the trier of fact to understand the evidence or to determine a fact in issue." Evidence can be reliable under Rule 702, yet the reliable testimony may not be relevant to any issue in the case and thus it cannot "assist the trier of fact." Fed. R. Evid. 702.

In addition to the Rule 702 "assist the trier of fact" standard, evidence may be excluded separate and apart from Rule 702 when it is not relevant. See Fed. R. Evid. 402 ("Evidence which is not relevant is not admissible."); Fed. R. Evid. 401 (defining relevant evidence as "evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence").

issues, or misleading the jury" The only reliable testimony that Weiss can provide in this case is that Defendant cannot be excluded as the father of the fetus. Although that testimony may be admissible if Defendant took the position that it is impossible for him to be the father, it is not admissible, in the absence of such a position by Defendant, to suggest that he is likely the father. Hearing Weiss's testimony that the odds are 26 to 1 that Defendant is the father and that he has a 96.30% statistical chance of being the father, a juror could easily be misled and confused into concluding that these "probabilities" are significantly high, whereas the undisputed scientific evidence is that they are significantly low. When such statistics are combined with the imprimatur of "DNA testing," the Court finds it likely that a jury could place too much weight on the testimony and reach a conclusion that is unsupportable scientifically, i.e., that Defendant is the father. The Court finds that the probative value of the evidence is substantially outweighed by the danger of unfair prejudice, confusion of the issues, and the possibility of misleading the jury. Accordingly, it is inadmissible under Rule 403.²

²The Government expressed concern at the hearing that the Court's exclusion of its expert DNA evidence will unduly prejudice the Government. The Government argues that this will create the misimpression to the jury that the Government failed to put up any DNA evidence because the DNA test conclusively showed that Defendant is *not* the father of the fetus. The Court reaffirms its ruling at the hearing that it would consider allowing evidence for the limited purpose of establishing that, due to the decomposed nature of the fetal bones, adequate DNA samples could not be obtained for DNA testing, and therefore, no definitive paternity results could be obtained. The parties were ordered to confer and attempt to develop a

**C. The Government's Firearms Toolmark Identification
Expert-Paul Tangren**

Defendant acknowledged at the hearing that the toolmark identification methodology used by the Government's toolmark identification expert is not unique and in fact is well accepted in the toolmark identification community. Defendant further acknowledged that the Government's expert applied that methodology in the same manner that other experts in the field apply the methodology. Defendant argues, however, that the entire methodology, even if it is well accepted, is inherently unreliable. Thus, any evidence based upon it should be excluded under Federal Rule of Evidence 702.

1. Toolmark Identification Methodology

Toolmark identification is a branch of forensic science in which microscopes are used to study and compare toolmarks for the purpose of characterizing and identifying the tools that produced them. The Government's expert used toolmark identification to determine whether the gun obtained from Defendant fired the cartridge found at the crime scene.

To understand the methodology one must first become familiar with the terminology used in this area. A "toolmark" is damage that a hard object inflicts on a soft object during direct physical contact. A "tool" is any object that leaves one or more toolmarks on

stipulation on this issue, and to notify the Court if one could not be reached so that the Court could modify this Order as necessary.

another object. There are two types of toolmarks: (1) "impression" toolmarks that are produced by direct pressure of a tool against the surface of another object, applied without lateral motion; and (2) "striation" toolmarks that are an abrasion-type toolmark produced by sliding a tool across the surface of another object. Toolmarks have two characteristics: "class characteristics" and "individual characteristics." A class characteristic is any feature, or set of features, that points to a group source. These are generally the result of intentional design decisions of the tool maker. These characteristics are useful for determining the tool type and for elimination purposes. For example, these characteristics may permit a trained examiner to determine that the mark came from a general type of firearm or class of firearms. An individual characteristic is any feature, or set of features, that point to a single source. Individual characteristics are produced by unique defects in the tool. They are the randomly produced, unintended by-products of tool manufacture or subsequent use. These characteristics are useful in identifying specific tools. For example, these characteristics permit a trained examiner to determine whether a mark came from a specific firearm.

The methodology followed by toolmark examiners involves a comparison of toolmarks from different specimens to determine whether the separate toolmarks have consistent class characteristics and sufficient agreement in individual characteristics. If they do, then

the experienced toolmark examiner makes an identification and concludes that the same tool made the separate, but sufficiently similar, marks. This identification is possible because each tool makes a unique toolmark. The reason for these unique marks is that the manufacturing components that make the tools wear down during use; shavings and chips get under the cutting edges of these manufacturing components during use; and many manufacturing methods act randomly. These manufacturing processes result in defects in the manufacturing components that make unique impressions and create toolmarks. Toolmark identification can be applied effectively for firearms identification because each firearm is typically made of a hard surface, usually steel. During firing, steel surfaces of the firearm, typically the breech face of the firearm, make an impression mark on the softer metal base of an ammunition cartridge. A trained examiner is able to recognize similar toolmark patterns and distinguish dissimilar patterns.

The theory underlying firearm toolmark identification rests upon two propositions: (1) class and microscopic marks imparted to objects by *different* tools will rarely, if ever, display agreement sufficient to lead a qualified examiner to conclude the objects were marked by the same tool and hence a qualified examiner will rarely commit a false positive error (misidentification); and (2) most manufacturing processes involve the transfer of rapidly changing or random microscopic marks onto barrel bores, breech faces, and firing

pins, thus providing firearms with distinctly unique toolmarks, which can be identified and matched by a trained examiner.

The first step in the identification process is to evaluate a specimen's class characteristics. In evaluating class characteristics, the qualified examiner relies upon the FBI general rifling characteristics database, collections of test-fired specimens, and the FBI reference firearm collection. After the examiner identifies the class of firearm, he narrows the examination to the individual characteristics to determine if the submitted specimens were fired from the same firearm. To conduct this evaluation, the qualified examiner test fires a cartridge from the submitted firearm and compares it microscopically with the submitted cartridge to determine if the marks on the cartridges match.

2. Toolmark Testing and Opinions in this Case

In this case, the Government's expert first obtained the Defendant's 9mm pistol along with a fired 9mm cartridge that the Government contends was found near the crime scene. He test fired the pistol and retained the 9mm cartridge that he fired from Defendant's pistol. He then microscopically compared that fired cartridge with the fired cartridge that was obtained from the crime scene. Based upon his training and experience, the expert located similar marks on the bases of the two cartridges. According to his testimony, these toolmarks were sufficiently similar to allow him to identify Defendant's gun as the gun that fired the cartridge found at

the crime scene. He opined that he held this opinion to a 100% degree of certainty. To determine whether this opinion and supporting testimony are admissible, the Court must decide (1) whether Tangren is qualified to give these opinions; (2) whether his opinions are reliable and based upon a scientifically valid methodology; and (3) whether his testimony fits the case because it is relevant and will assist the trier of fact.

a. Qualifications

Tangren is a supervisory special agent and Firearm and Toolmark Examiner for the FBI. Since 1993, he has conducted forensic examinations of toolmark evidence, including firearms, on a full time basis for the FBI Laboratory in Quantico, Virginia. He has been certified by that laboratory as a Firearm and Toolmark Examiner. He has received extensive training in this area and has conducted thousands of toolmark evidence evaluations. He has been employed with the FBI since 1979 when he started as a physical science technician assigned to the FBI Laboratory's Firearm and Toolmark Unit. Prior to becoming a certified toolmark examiner, he had other scientific experience as a chemist and physical science technician assigned to the FBI Laboratory's Gunshot Residues and Metals Analysis Unit. He also has an intimate knowledge of how firearms operate, having received extensive firearm training from the FBI. Prior to joining the FBI, he received a B.S. degree in physics. He is a member of the Association of Firearm and Toolmark Examiners and has

continued his training in this area. The Court finds that Tangren is qualified to give the opinions he proffered at the hearing in the area of firearm toolmark identification.

b. Reliability of Methodology

The Court also finds Tangren's opinions reliable and based upon a scientifically valid methodology. Evidence was presented at the hearing that the toolmark testing methodology he employed has been tested, has been subjected to peer review, has an ascertainable error rate, and is generally accepted in the scientific community. Tangren's opinions and the bases for them arise from research that has been conducted as part of his employment with the FBI and not as a paid consultant. Evidence was also presented that Tangren's field of expertise is well established and is known to reach reliable results regarding the types of opinions Tangren proffered at the hearing. The Court finds that Tangren's opinions are sufficiently reliable to be admitted and considered by the jury.

c. Relevance and Helpfulness

Finally, the Court finds that Tangren's testimony fits this case. It is relevant to a central issue in the case, whether the victim was shot with a gun owned by the Defendant, and it will assist the trier of fact. Defendant suggests that the lay juror can simply look at the microscopic photographs of the two cartridge casings and determine for themselves whether they are sufficiently similar to constitute a match. While a lay person could reach a lay opinion as

to how the microscopic images appear comparatively, they are not trained to take the next step and determine the meaning of what they see. Tangren's training and experience allow him to evaluate whether the similarities are sufficiently in agreement to conclude that the two cartridges were fired from the same gun. This analysis requires expert testimony to assist the trier of fact.

CONCLUSION

Defendant's Motions in Limine (Docs. 49 and 83) seeking to exclude the expert testimony of the Government's DNA expert, Shaun Weiss, are granted, and Defendant's Motion in Limine (Doc. 49) seeking to exclude the expert testimony of the Government's firearm and toolmark identification expert, Paul Tangren, is denied.

IT IS SO ORDERED, this 5th day of January, 2007.

S/Clay D. Land

CLAY D. LAND
UNITED STATES DISTRICT JUDGE