MOTION TO EXCLUDE EXPERT TESTIMONY ON FRICTION RIDGE ANALYSIS, OR, IN THE ALTERNATIVE, TO CURTAIL SUCH TESTIMONY, UNDER *DAUBERT V. MERRELL DOW PHARMACEUTICALS*

[DEFENDANT], by counsel, respectfully moves this Court to exclude expert testimony on the subject of friction ridge analysis, or, in the alternative, to curtail such testimony. Friction ridge analysis used for the purpose of conclusively identifying a particular individual has been discredited by the scientific community, as laid out in a recent report by the National Academy of Sciences. As described below, friction ridge analysis does not satisfy the standards for the admissibility of scientific evidence laid out in Daubert v. Merrell Dow Pharmaceuticals because its conclusions are not quantifiable or testable, the methodology has not been the subject of publication in peer-reviewed scientific journals, the methodology's rate of error is unknown and unknowable, there are no uniform standards or criteria for reaching conclusions, and friction ridge analysis has been rejected by the scientific community. In addition, given this forensic method's significant shortcomings and thoroughly subjective nature, having an expert testify as to the conclusions of a fingerprint analysis would greatly confuse the jury and would be far more prejudicial than probative.

I. STATEMENT OF FACTS

[FILL IN]

II. LEGAL STANDARD

Louisiana Code of Evidence article 702 provides the standard for the admission of expert testimony: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact at 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." A trial court judge plays a "gatekeeping" role when it comes to expert testimony, "ensur[ing] that any and all scientific testimony or evidence admitted is not only relevant, but reliable." Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 589 (1993).[1]

Under Daubert, courts should weigh the following factors when considering the admission of expert testimony:

> (1) whether a theory or technique is falsifiable; in other words, whether the technique can be or has been tested;
>
> (2) whether the theory or practice has been published in scientific, peer-reviewed journals;

[1] The Supreme Court of Louisiana has adopted the guidelines set forth by the U.S. Supreme Court in Daubert. State v. Foret, 628 So. 2d 1116, 1121 (La. 1993).

(3) whether the technique has a known or potential rate of error, and what that rate of error is;

(4) whether standards exist to control the technique's operation; and

(5) the technique's degree of acceptance within the scientific community.

Daubert, 509 U.S. at 589; State v. Young, 35 So. 3d 1042, 1047 (La. 2010).

The standard is flexible and no single factor is determinative. Daubert, 509 U.S. at 589. Importantly, the Daubert factors apply to established and novel theories and techniques alike. Id. The crucial consideration is whether the purported expertise, here friction ridge analysis, is sufficiently scientifically valid to merit a fact-finder's reliance on it.

III. ARGUMENT

A. Despite Its Long Acceptance by Courts, the Scientific Community Has Rejected Friction Ridge Analysis as a Method of Conclusively Identifying a Particular Individual.

Until recently, federal and state courts have admitted friction ridge analysis almost without exception, often without even applying Daubert factors, based on the assumption that the method is scientifically valid and the fact that past courts have accepted the method time and again. See, e.g., United States v. John, 597 F.3d 263, 275 (5th Cir. 2010) (holding that fingerprint evidence satisfies Daubert); United States v. Abreu, 406 F.3d 1304, 1307 (11th Cir. 2005); United States v. Crisp, 324 F.3d 261, 267-70 (4th Cir. 2003) (same); United States v. Collins, 340 F.3d 672, 682-83 (8th Cir. 2003) (same).

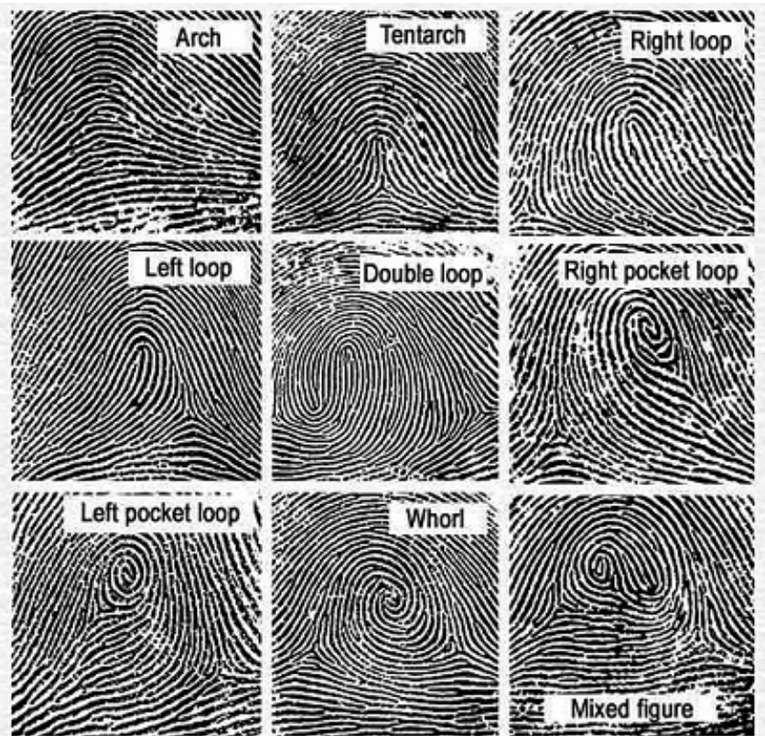
We now know that the scientific community has called into the question the rampant acceptance of friction ridge analysis as a method of conclusively establishing that a particular fingerprint was left by a particular individual. A recent and thorough review of the scientific literature on friction ridge analysis by the prestigious National Academy of Sciences concluded that, for a variety of reasons, friction ridge analysis cannot uniquely identify a specific individual with scientific certainty. Nat'l Acad. Sci., Strengthening Forensic Science in the United States: A Path Forward, at 142 (2010) (hereinafter "NAS Report"), available at http://books.nap.edu/openbook.php?record_id=12589. The sections that follow provide an overview of friction ridge analysis and the National Academy of Sciences' evaluation of this forensic method.

1. Overview of Friction Ridge Analysis

a. Friction Ridges

The surfaces of the hands and feet are covered with tiny ridge-like structures that can leave a reproduction of themselves—such as a fingerprint—by transferring natural oils or other substances onto an object, or by coming into contact with substances like paint or blood in which they leave an impression. The ridge-like structures on the hands and feet are called friction ridges because they create friction for gripping, and the study of the images that friction ridges leave on objects is called friction ridge analysis. Office of the Inspector General, U.S. Dep't of Justice, A Review of the FBI's Handling of the Brandon Mayfield Case 98 (2006) (hereinafter "Mayfield Report"), available at http://www.justice.gov/oig/special/s0601/PDF_list.htm (citing David R. Ashbaugh, Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology at Ch. 3 (1999)).

There are three levels of detail in friction ridge patterns. Level 1 encompasses the general pattern of the ridges, id., such as the following:



Level 2 details are features of individual ridges, such as when ridges come to an end or fork into two ridges. Id. Below are examples of Level 2 details:

BIFURCATION

ENDING RIDGE

(note convergence of adjacent ridges)

ENCLOSURE

DOT

Level 3 details are the very smallest details considered in friction ridge analysis and include the shape of ridge edges, pores in ridges, and the width of ridges. Id. at 99. Some examples of Level 3 details are below:

PORES

RIDGE EDGE SHAPES

INCIPIENT RIDGES

SCARS

The basic assumptions of friction ridge analysis are (1) permanence, meaning that the details of a person's fingerprint are more or less permanent, and (2) uniqueness, meaning that each person's friction ridges form a unique pattern not shared by anyone else. Id.

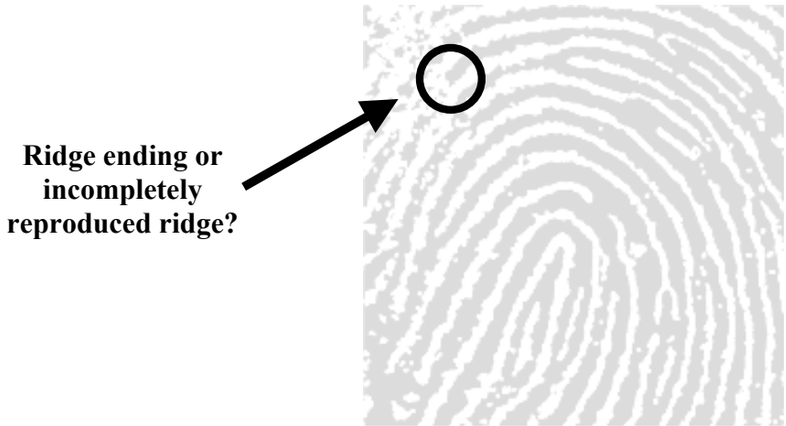
b. Factors Affecting the Quality of Fingerprints

Fingerprints taken by police officers from suspects or others associated with an investigation, often referred to as "known prints," are usually taken under ideal, controlled circumstances, either electronically or with ink, capturing an extremely high level of detail. Id. at

104. Fingerprints collected from evidence or crime scenes, on the other hand, referred to as "latent prints," are almost never left under ideal or controlled circumstances and thus are almost always of much lower quality than known prints. Id.

Latent prints can be distorted in many ways. A flexible surface like a plastic bag may yield a latent print of less quality than a rigid surface like glass, a fingerprint left in drying paint may yield greater detail than one left by the skin's own oils, and the way a finger is moving when it touches a surface—with direct downward pressure or with sideways pressure—will affect whether the fingerprint is smeared and whether ridges appear bent or stretched in the latent print. Id. at 103. Finally, different ways of "lifting" latent prints can affect how details of the print are reproduced. Id. at 103-04.

The crucial point is that any distortions in a latent print can give rise to two problems. First, the latent print may exhibit Level 2 or Level 3 details that do not actually exist in the friction ridges that left the fingerprint, such as a blot that makes it appear as if two ridges meet when they actually do not. Second, the latent print may not exhibit all of the Level 2 and Level 3 details that exist in the actual friction ridges. For example, what appears in a latent print to be a ridge ending may actually be a continuing ridge that was not reproduced in its entirety.



Either problem can be crucially misleading because Level 2 and Level 3 details are what fingerprint examiners rely on to make an identification. As stated in a document titled "Standards for Conclusions," published by the Scientific Working Group on Friction Ridge Analysis, Study and Technology (hereinafter "SWGFAST"), "The presence of one discrepancy is sufficient to exclude" a potential suspect, but "[d]istortion is not a discrepancy and is not a basis for exclusion." SWGFAST, Standards for Conclusions, available at www.swgfast.org. The examiner's task, then, is to "distinguish those features on a latent print that reflect true events in the friction skin from those features that result from the imperfect conditions under which latent prints are often made or developed." Mayfield Report at 106.

c. The Process of Friction Ridge Analysis

Fingerprint examiners typically follow a four-step process, known by the acronym ACE-V, which stands for Analysis, Comparison, Evaluation, and Verification. NAS Report at 137. In the analysis stage, the examiner reviews the latent and known prints for the details described above, taking into account a number of variables:

(1) Condition of the skin—natural ridge structure (robustness of the ridge structure), consequences of aging, superficial damage to the skin, permanent scars, skin diseases, and masking attempts.

(2) Type of residue—natural residue (sweat residue, oily residue, combinations of sweat and oil); other types of residue (blood, paint, etc.); amount of residue (heavy, medium, or light); and where the residue accumulates (top of the ridge, both edges of the ridge, one edge of the ridge, or in the furrows).

(3) Mechanics of touch—underlying structures of the hands and feet (bone creates areas of high pressure on the surface of the skin); flexibility of the ridges, furrows, and creases; the distance adjacent ridges can be pushed together or pulled apart during lateral movement; the distance the length of a ridge might be compressed or stretched; the rotation of ridge systems during torsion; and the effect of ridge flow on these factors.

(4) Nature of the surface touched—texture (rough or smooth), flexibility (rigid or pliable), shape (flat or curved), condition (clean or dirty), and background colors and patterns.

(5) Development technique—chemical signature of the technique and consistency of the chemical signature across the impression.

(6) Capture technique—photograph (digital or film) or lifting material (e.g., tape or gelatin lifter).

(7) Size of the latent print or the percentage of the surface that is available for comparison.

Id. at 137-38. If the latent or known prints do not have sufficient detail for identification or exclusion, then the examiner need not take on the remainder of the process and reaches a conclusion of "Inconclusive." Id. at 138; SWGFAST, Standards for Conclusions.

In the second step, Comparison, the examiner visually compares corresponding details of the known and latent print. The details compared are those described above, as well as ridge counts, the length of ridges, the thickness of ridges and the gaps between them, crease patterns, scars, and temporary features. NAS Report at 138.

In the third step, Evaluation, the examiner decides whether there is sufficient agreement in the details of the latent and known prints to establish an identification, defined by SWGFAST as "agreement of sufficient friction ridge details in sequence." SWGFAST, Standards for Conclusions. How much detail agreement is "sufficient" to support an identification is based on

the experience of the examiner, NAS Report at 138, and cannot be reduced to a simple formula or a quota of agreeing details. Two prints may have a dozen points of correspondence, but, as noted above, only one discrepancy is sufficient to defeat an identification. "There is no scientific basis for requiring that a predetermined number of corresponding friction ridge details be present in two impressions in order to effect individualization." SWGFAST, Standards for Conclusions.

In the final step, Verification, a second examiner repeats the other steps of the process to see whether she arrives at the same conclusion, though the second examiner may know the conclusion reached by the first examiner in advance. NAS Report at 138.

2. Evaluation of Friction Ridge Analysis by the National Academy of Sciences

On November 22, 2005, the Science, State, Justice, Commerce, and Related Agencies Appropriations Act of 2006 became law. 119 Stat. 2290 (2005). Through this act, Congress directed the United States Attorney General to provide funding to the National Academy of Sciences ("NAS") to convene a committee, known at the Committee on Identifying the Needs of the Forensic Science Community, to study the current state and remaining needs of the forensic sciences. NAS Report at 2. This Committee was formed under the auspices of the NAS's Committee on Science, Technology, and Law and the Committee on Applied and Theoretical Statistics, and "was composed of many talented professionals, some expert in various areas of forensic science, others in law, and still others in different fields of science and engineering." Id. at xx. After three years of study, including a review of all published scientific literature related to particular forensic methods, the NAS issued a report that revealed that some forensic disciplines, including friction ridge analysis, severely lack scientific validity. Id. at 3. The report's central finding was that other than DNA analysis, "no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." Id. at 5. Additionally, imprecise or exaggerated expert testimony has sometimes contributed to the admission of erroneous or misleading evidence. Id. at 3.

In its review of friction ridge analysis, the National Academy of Sciences thoroughly reviewed all of the literature relating to friction ridge analysis, heard testimony from trained examiners, and reviewed cases in which friction ridge analysis was used as evidence, and the NAS found that the method has significant shortcomings, which are outlined below.

a. Fundamental Assumptions of Friction Ridge Analysis Have Never Been Verified Scientifically.

As noted earlier, friction ridge analysis operates from the assumption that no two people have the same fingerprints. This assumption has not been established scientifically. No scientific study has ever established the frequency with which any friction ridge features—even Level 1 features like the whorl or arch pattern—occur in the human population. Moreover, because latent prints usually present only a portion of a total fingerprint, it is important to note that no scientific study has ever established the frequency with which *portions* of a fingerprint occur in the human population. In other words, it may be rare for two people to have the exact same total fingerprint, but how rare is it for part of one person's fingerprint to resemble a portion of someone else's fingerprint? Finally, even if all fingerprints are absolutely unique, no scientific study has ever established that their uniqueness can always be recognized:

> Uniqueness and persistence are necessary conditions for friction ridge identification to be feasible, but those conditions do not imply that anyone can reliably discern whether or not two friction ridge impressions were made by the same person. Uniqueness does not guarantee that prints from two different people are always sufficiently different that they cannot be confused, or that two impressions made by the same finger will also be sufficiently similar to be discerned as coming from the same source. The impression left by a finger will differ every time, because of inevitable variations in pressure, which change the degree of contact between each part of the ridge structure and the impression medium. None of the variabilities—of features across a population of fingers or of repeated impressions left by the same finger—has been characterized, quantified, or compared.

Id. at 144. Because there are no studies of how often fingerprint patterns recur in the human population—either overall fingerprint patterns or portions of fingerprints—as well as no studies of whether the uniqueness of fingerprints can always be recognized, friction ridge analysts cannot answer a basic question that goes to the heart of their field's reliability: What is the likelihood that a fingerprint made by a random finger would match the known print just as closely as the latent print in this case?

b. Friction Ridge Analysis Is Subjective.

"[T]he assessment of latent prints from crime scenes is based largely on human interpretation." Id. at 139. Friction ridge analysis is inherently subjective, relying as it does on an examiner's visual observations and decisions about whether pairs of visual phenomena are similar or dissimilar. Id. The subjective nature of the comparisons makes them difficult to repeat or assess. As described below, the Verification stage of the ACE-V process does not answer the problem of the lack of repeatability because a verification is still valid even though the second examiner relies on different points of correspondence to reach a conclusion. Id. In addition,

whether a fingerprint comparison results in an identification is a subjective assessment that is totally within the discretion of the examiner: "the criteria for identification are much harder to define, because they depend on an examiner's ability to discern patterns (possibly complex) among myriad features and on the examiner's experience judging the discriminatory value in those patterns." Id.

c. Friction Ridge Analysis Has No Known Error Rate.

Friction ridge analysts have claimed at times that friction ridge analysis has a zero error rate. Id. at 142. Such claims "are not scientifically plausible." Id. In fact, no reliable studies have been able to establish the error rate for friction ridge analysis, and, as currently formulated in the ACE-V paradigm, it is not even clear whether friction ridge analysis can be subjected to error rate testing. Id. The NAS Report explained the issue this way:

> ACE-V provides a broadly stated framework for conducting friction ridge analyses. However, this framework is not specific enough to qualify as a validated method for this type of analysis. ACE-V does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that two analysts following it will obtain the same results. For these reasons, merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results.

Id. As the legal scholar and fingerprint expert Jennifer Mnookin has noted, "ACE-V as it exists now may be a cluster of practices, a point of view or an analytic framework. But it is not yet a testable scientific method." Jennifer L. Mnookin, The Validity of Latent Fingerprint Identification: Confessions of a Fingerprinting Moderate, 7 L. Probability & Risk 127, 132 (2008).

d. Friction Ridge Analysis Lacks Uniform Criteria.

As noted above, there is no set formula or criteria for what level of correspondence between two prints is sufficient for an examiner to declare that they came from the same source. Neither are there any formulas or criteria for what factors permit an examiner to say that a discrepancy between a latent print and a known print can be attributed to distortion rather than the two prints coming from different people. "[T]he ACE-V method does not specify particular measurements or a standard test protocol, and examiners must make subjective assessments throughout. . . . [T]he threshold for making a source identification is deliberately kept subjective[, and] the outcome of a friction ridge analysis is not necessarily repeatable from examiner to examiner." Id. at 139. The lack of uniformity leaves the examiner with an incredible

amount of discretion and makes it difficult, if not impossible, to evaluate the examiner's conclusions.

e. Unlike Other Methods of Identification, Examiners Do Not Identify the Criteria for Their Comparisons Before Analyzing Fingerprints.

As noted in the NAS Report, a typical DNA profile reports how often certain base pairs repeat in 13 specific segments of DNA. Scientific studies have established mathematically the probability that a base pair will be repeated at each of the 13 segments in the human population. From this data, scientists can determine exactly how likely it is that two sets of DNA with matching DNA profiles came from the same person. Id.

This kind of analysis is significantly different from friction ridge analysis. A fingerprint examiner has no equivalent to the 13 pre-determined segments of DNA; any portion of a fingerprint is subject to analysis. A fingerprint examiner has no idea how frequently friction ridge details or patterns occur in the human population, and so she has no idea, aside from her own experience in looking at fingerprints, how much weight each corresponding detail should bear in the overall analysis.

> [B]efore examining two fingerprints, one cannot say a priori which features should be compared. . . . Because a feature that was helpful during a previous comparison might not exist on these prints or might not have been captured in the latent impression, the process does not allow one to stipulate specific measurements in advance, as is done for DNA analysis. . . . [P]opulation statistics for fingerprints have not been developed, and friction ridge analysis relies on subjective judgments by the examiner.

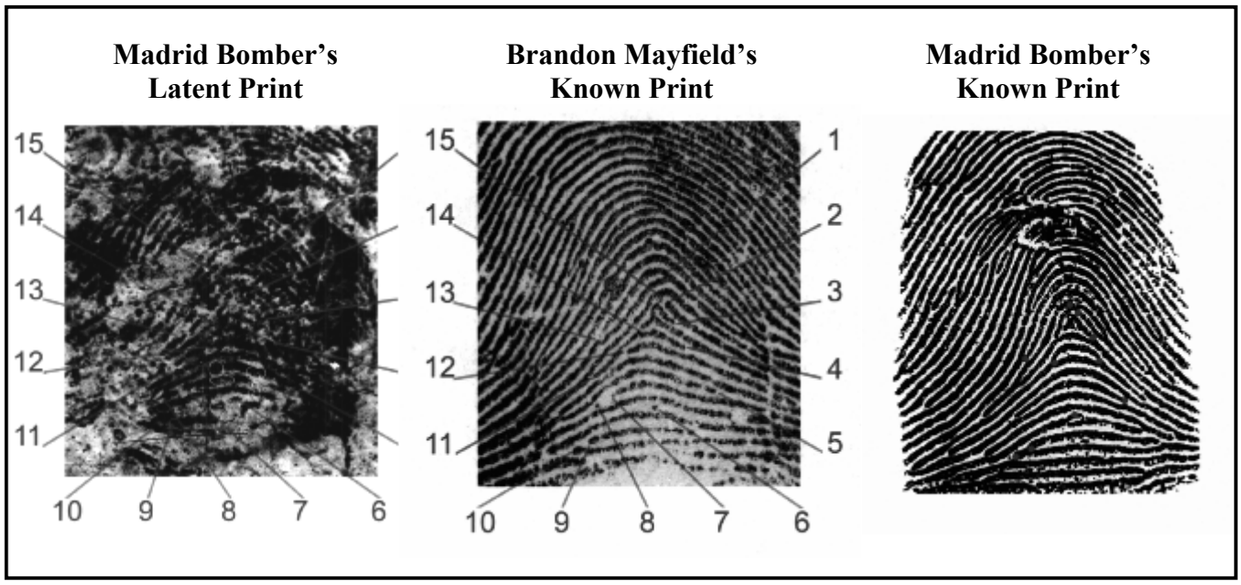
Id. The inability to identify the criteria for a comparison in advance leaves substantial discretion in the hands of the examiner, makes any conclusions difficult to evaluate, and increases the likelihood of a misidentification.

f. Friction Ridge Analysis Presents Many Opportunities for Conscious Abuse and Honest Mistakes.

As noted above, one of the most critical distinctions an examiner has to make is whether a detail can be attributed to the actual friction ridge pattern or if instead it is a distortion resulting from how the fingerprint was left or collected. Considering the importance of this decision in light of the total lack of criteria for making or evaluating the examiner's decision, it is obvious that an examiner can very easily abuse her authority or make an honest mistake.

It was exactly this kind of honest mistake that led to the erroneous identification of Brandon Mayfield as the Madrid train bomber by the FBI in 2004. In that case, most of a fingerprint on a bag of detonators found at the bombing site was very similar to Mayfield's

fingerprint, but the upper left portion of the latent print was entirely different. As the Department of Justice report on the case noted, "The examiners explained this difference as being the result of a separate touch, possibly by a different finger or a different person." Mayfield Report at 9. In other words, examiners found that the discrepancy between the latent print and the known print was attributable to distortion in the way the latent print was left on the bag. This was an honest mistake, but it led to the identification (and the detention) of an innocent person.



As the NAS Report noted, "A criticism of the latent print community is that the examiners can too easily explain a 'difference' as an 'acceptable distortion' in order to make an identification." NAS Report at 145 (citing Mayfield Report).

g. There is a Significant Risk of Bias in Friction Ridge Analysis.

In the eyewitness identification context, courts have recognized for many years that the so-called "show-up" identification, where a suspect is paraded before a witness and asked whether the suspect is the perpetrator, can be unduly suggestive. And yet fingerprint examiners are faced with the "show-up" problem all the time: they are asked to determine if a suspect print matches a known print, or they are asked to verify another examiner's conclusion of a match. This kind of contextual information can be tremendously biasing. Jennifer Mnookin describes one study of biasing in the fingerprint context, a study that relates to the Mayfield case described above:

> [A] small handful of fingerprint examiners were each given a pair of fingerprints. The examiners were informed that they were examining the prints from the Brandon Mayfield scandal, in which a latent print found in connection with the Madrid bombing was erroneously identified by several top-notch, highly experienced fingerprint examiners as belonging to Oregon attorney and Muslim convert Brandon Mayfield. Actually, each examiner was handed not the Mayfield prints, but instead a pair of prints that each examiner had previously testified to be a certain match. Looking at the same prints that they had previously sworn, under

> oath, in court, to be a match (but of course not knowing that they were looking at prints they had formally identified as a match), four out of the five examiners changed their minds. One now said that they could not decide whether the prints matched, and three others directly contradicted their earlier conclusion, now asserting that these prints did not come from the same source after all.

Mnookin, 7 L. Probability & Risk at 130 (citing Itiel E. Dror, David Charlton & Alisa E. Peron, Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications, 156 Forensic Sci. Int. 74 (2006)).

In the recent Supreme Court case Melendez-Diaz v. Massachusetts, 129 S. Ct. 2527 (U.S. 2009), the Court held that criminal defendants have a right under the Confrontation Clause to cross-examine any forensic expert whose work the State wishes to offer into evidence. Among the rationales offered in the Court's opinion, which was authored by Justice Scalia, was the significant risk of forensic examiners' bias:

> Forensic evidence is not uniquely immune from the risk of manipulation . . . . A forensic analyst responding to a request from a law enforcement official may feel pressure—or have an incentive—to alter the evidence in a manner favorable to the prosecution.

Id. at 2536 (citing NAS Report).

h. The Field of Friction Ridge Analysis Lacks a Training Requirement or Difficult Proficiency Tests.

The field of friction ridge analysis is not centralized. There is no national requirement that friction ridge analysts receive particular kinds or amounts of training to claim the title, and friction ridge analysts can work with both accredited crime laboratories and with nonaccredited facilities like police identification units or private practices. NAS Report at 136. The training of latent print examiners varies from agency to agency—some agencies have a formal training process, some do not. Id. While there are some training programs available, the content of the programs is not audited. Id.

In addition, the field of friction ridge analysis lacks reliable proficiency tests by which an examiner's skill could be assessed:

> [P]roficiency tests and procedures have never been assessed for their validity or their reliability. The validity of a proficiency test would be shown by high correlation with other independent measures of skill and ability, such as supervisor ratings, or the quality and quantity of training and experience. The proficiency test manufacturers have never reported any correlations with these independent measures, so nothing is known about the validity of these tests. Further, no information has ever been reported on the reliability of these tests, the degree to which examiners receive the same score when they take a comparable form of the test again. If not reliable, they cannot be valid. . . .
>
> In addition, none of the proficiency tests contain fingerprints of known difficulty because the profession lacks a quantitative measure of print quality

(difficulty). **One expert observed that the prints used in the FBI proficiency test are so easy they are a joke**.

> Further, the prints used in proficiency tests do not reflect normal casework. They are predominately or entirely of value in contrast to casework, in which the majority of latent prints are of no value. These proficiency tests do not include many, if any, exclusions, though, again, the most common outcome in casework is exclusion. When an examiner receives a particular score on such a test, it is impossible to interpret that score other than relative to other examiners who took the same test. The results cannot be generalized to the examiner's performance on the job, or accuracy in court, because the difficulty of the test items is unknown, and the other parameters do not correspond to normal casework.

Lyn Haber & Ralph Norman Haber, Scientific Validation of Fingerprint Evidence Under Daubert, 7 L. Probability & Risk 87, 95 (2008) (emphasis added, citations omitted).

B. The Friction Ridge Analysis Offered in This Case Is Unreliable and, Based on the Present Consensus of the Scientific Community, Should Be Excluded from This Trial.

Here, the prosecution wishes to offer expert testimony related to friction ridge analysis for the purpose of absolute identification—to show that a latent print found at the crime scene came from the defendant as a matter of scientific certainty. However, as discussed above, friction ridge analysis is simply not a scientific—or even *reliable*—method for making this kind of conclusive identification.

Furthermore, the examiner in this case did not specify which friction ridge features of the latent print and known print were similar and which features were dissimilar, how much weight he gave each feature, how many features he considered, whether he attributed any dissimilarities to distortion and why he considered them to be distortions rather than evidence that the prints came from different sources, or any other information that would allow a fact-finder to weigh the evidence appropriately. All we have is the examiner's bald assertion that the latent print and known print match, a conclusion that is simply impossible to prove, given the limitations of friction ridge analysis.

1. Friction Ridge Analysis Does Not Satisfy Daubert.

The friction ridge analysis offered in this case fails under each prong of the Daubert test:

- **Not quantifiable or testable:** The examiner's conclusion is a purely subjective statement that two objects had similar visual characteristics; such a conclusion is totally unquantifiable and so there is no way to determine the reliability of the examiner's analysis. NAS Report at 5-6 (2010).

- **Not peer reviewed:** As discussed above, the ACE-V methodology, which was employed in this case, has never been subjected to peer review in a scientific publication. The Verification stage of the analysis is not what is meant as "peer review," and anyway the verification was fatally flawed. The second examiner was biased by knowing that the first examiner concluded that the latent print and known print came from the same source; the second examiner did not truly evaluate the first examiner's results because he relied on

different criteria in his analysis; and neither examiner sufficiently documented the steps of their analysis so that it could be adequately compared and assessed.

- **No known rate of error:** As discussed above, the rate of error of the ACE-V methodology has never been scientifically established.

- **No uniform standards:** As described above, friction ridge analysts are not able to define criteria for their comparisons before making an actual comparison, there is no agreement about what features of friction ridge patterns are most probative in making comparisons, and the field has no specific criteria for an analyst to use in deciding whether two fingerprints came from the same source. In addition, the proficiency of the examiner in this case has never been reliably tested, as no reliable proficiency tests exist.

- **Not accepted by the scientific community:** The Report of the National Academy of Sciences on friction ridge analysis is equivalent to the scientific community's assessment of this forensic methodology. The NAS's assessment, as described in detail above, found friction ridge analysis as a method of identification to suffer from numerous scientific shortcomings.

2. A Recent Louisiana Supreme Court Opinion Supports the Exclusion of Friction Ridge Analysis from This Case.

In State v. Young, 35 So. 3d 1042 (La. 2010), the Louisiana Supreme Court found that a trial court had abused its discretion in admitting expert testimony on the psychology of eyewitness identification. The Court based its ruling on three factors. First, the Court found that labeling someone an "expert" in the field of eyewitness identification would unduly influence the jury and may lead them to credit the expert's testimony more than the other evidence at trial. Id. at 1050. Second, the Court was concerned that jurors exposed to an eyewitness identification expert would be misled "into believing that a certain factor in an eyewitness identification makes the identification less reliable than it truly is." Id. Finally, the Court noted that expert testimony on eyewitness identification "can be more prejudicial than probative because it focuses on the things that produce error without reference to those factors that improve the accuracy of the identifications." Id.

This Court should bar expert testimony on friction ridge analysis, just as the Supreme Court barred the admission of expert eyewitness identification testimony in Young. As noted above, an overriding concern in Young was that a potentially persuasive expert testifying as to the generalities of the inaccuracies of eyewitness observations—a matter the Court found had no scientific basis—would greatly influence the jury because he would be labeled an "expert." Here, an expert testifying as to similarities between latent and known prints—which, as discussed above, have no scientific meaning at all—would unfairly prejudice the jury because jurors would assume that the expert's opinion is reliable and scientifically valid. Merely being labeled as a specialist in fingerprint identification will mislead a jury about this discredited forensic method.

See id. (noting that "merely being labeled" an expert can unduly influence the jury); State v. Higgins, 898 So. 2d 1219, 1240 (La. 2005) (same); United States v. Angleton, 269 F.Supp.2d 868, 873-74 (S.D. Tx. 2003) (noting that the "aura" of testimony from an expert in a faulty discipline can mislead a jury to its validity); United States v. Lester, 254 F.Supp.2d 602, 608-09 (E.D. Va. 2003) (noting that expert testimony has the potential to be substantially prejudicial because of the "aura effect" associated with such testimony). In addition, if the fingerprint examiner is allowed to testify that the similarities between the latent and known print led him to conclude that they "matched," the jury will be misled into believing that the similarities make the identification far more reliable than it actually is. Finally, testimony from the fingerprint examiner about his conclusion of a match would "be more prejudicial than probative because it [will] focus[] on the things that [are similar in the prints] without reference to those factors that [are dissimilar]." Young, 35 So. 3d at 1050.

3. Cross-Examination Will Not Sufficiently Protect the Defendant from Juror Confusion and Cannot Meaningfully Challenge the Examiner's Conclusions.

Few aspects of law enforcement are more thoroughly engrained in the public's consciousness than fingerprints. Through countless movies, television shows, articles, and books—from Mark Twain's Puddn'head Wilson to Harrison Ford's The Fugitive to many episodes of CSI: Miami—members of the general public have been told time and again that a fingerprint "match" can conclusively establish a connection between evidence and a specific individual. No amount of cross-examination by the defense will disabuse them of this notion. As one state high court justice recently explained:

> While we normally leave the humbling of inflated opinions to cross-examination, there is a danger that the mystique of fingerprint identification, which has had a captivating hold on the criminal justice system and society at large for more than one hundred years, is such that cross-examination may not be enough to rectify the effect of a fingerprint expert's use of such terms as "individualized," "absolute," and "match" when testifying, as opposed to presenting the testimony as his or her "opinion" that the latent fingerprints are the defendant's.

Commonwealth v. Gambora, 933 N.E.2d 50, 66 (Mass. 2010) (Spina, J., concurring).

In addition, because of the ultimately subjective nature of friction ridge analysis, the basis of the examiner's conclusion—his perceptions, as informed by his training and experience—cannot be subjected to meaningful scrutiny through questioning on cross-examination. Recall that the fingerprint examiner's work in this case amounted to visually comparing pairs of fingerprint details and determining (1) whether the pairs were similar or dissimilar and (2) whether dissimilarities support a conclusion that two different fingers made the prints or if

instead they were simply distortions resulting from the way the prints were left or collected. In making these decisions, the SWGFAST protocols tell us that the examiner did not follow any specific standards but instead relied on his subjective perceptions, as informed by his training and experience. In other words, he made the crucial decisions about similarity, dissimilarity, and possible distortion by reference to his visual perceptions and how those perceptions stacked up against the hundreds or thousands of fingerprints he analyzed in the past, either in his training or in casework. That information—the perceptions themselves and how those perceptions compared to past comparisons—is the sole basis of the examiner's conclusion, and none of that information is available to the defense.

If the examiner had relied on an identifiable, specific standard, the defense could challenge on cross-examination whether the examiner followed that standard correctly and whether that standard was actually reliable in this case. But since the examiner relied on his own perceptions and experiences in looking at fingerprints—a subject to which the defense has no access—the defense has no way to challenge on cross-examination whether the examiner's decisions appropriately relied on his experiences and whether those experiences are a reliable basis for drawing conclusions about the fingerprints in this case.

C. In the Alternative, this Court Should Limit the Scope of the Expert's Testimony to Exclude Any Conclusions of Absolute Identification Because Such Conclusions Do Not Rest on Reliable Scientific Foundation.

Expert testimony should be limited if there is a significant gap between the existing data and the conclusions drawn by the expert witness during testimony. General Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997). In Joiner, an expert witness testified that a study found that the incidence of lung cancer deaths among workers was somewhat higher than would ordinarily be expected due to their exposure to PCBs, but the trial court excluded his testimony because the studies he relied on did not support his conclusions, as there was "simply too great an analytical gap between the data and the opinion proffered." Id. An expert's testimony must be limited to those conclusions that are supported by the evidence and whatever scientific inquiry has been made into the field at issue.

Here, the friction ridge analyst has issued a report stating that two of the examined fingerprints, latent and known, came from the same source, but that conclusion is simply not valid. Without any idea of what features of the two prints were found to be similar, what features were found to be dissimilar, why dissimilar features did not result in an exclusion, and how

common each similar feature is in the human population, it is impossible to say with any accuracy how likely it is that two fingerprints came from the same source.

The only permissible testimony here—the only testimony that would be supported by the evidence—would be a recitation of the specific features that the examiner found to be similar or dissimilar. Given that no reliable scientific study has ever been done to analyze the frequency of these features in fingerprints, the friction ridge analyst has no more idea than the jury does what inferences should be drawn from the similarities or differences, or whether one outweighs the other. The examiner cannot be permitted to testify about any conclusions he may have drawn from the similarities or differences, and he certainly cannot be permitted to testify that the fingerprints "matched." As discussed above, there is no scientific basis for such testimony.

IV. CONCLUSION

Under the applicable standards of Louisiana Code of Evidence article 702, this Court should only allow expert testimony that is reliable. Friction ridge analysis is not a reliable method of absolute identification because of the great disparities in the ways that the comparisons are performed, a lack of standardization of operational principles, and, most importantly, its inability to conclusively demonstrate a connection between the latent print and the known print.

For these reasons and those set forth above, the defendant respectfully requests that this Court exclude the testimony of the friction ridge analyst in this case. In the alternative, the defendant respectfully requests this Court to limit the scope of the examiner's testimony to a recitation of the features of the latent and known prints that the examiner found to be similar and dissimilar.