

**STATE OF MINNESOTA
IN COURT OF APPEALS
A12-0193**

State of Minnesota,
Respondent,

vs.

Terrell Matthew Dixon,
Appellant.

**Filed November 5, 2012
Affirmed
Stoneburner, Judge**

Hennepin County District Court
File No. 27-CR-10-3378

Lori Swanson, Attorney General, St. Paul, Minnesota; and

Michael O. Freeman, Hennepin County Attorney, Michael Richardson, Assistant County Attorney, Minneapolis, Minnesota (for respondent)

William Ward, Hennepin County Public Defender, Mary F. Moriarty, Assistant Public Defender, Minneapolis, Minnesota (for appellant)

Considered and decided by Connolly, Presiding Judge; Stoneburner, Judge; and Ross, Judge.

S Y L L A B U S

1. Because friction-ridge-print identification using the methodology of analysis, comparison, evaluation-verification (ACE-V) is used mainly in connection with forensics, individuals actually involved with friction-ridge-print analysis using the ACE-V methodology, as well as individuals engaged in researching the validity of ACE-V analysis, constitute the relevant scientific community that must widely share the view that

friction-ridge-print identification is reliable for purposes of establishing the admissibility of such identification evidence under the *Frye* prong of the *Frye-Mack* standard.

2. The state, proponent of friction-ridge-print-identification evidence in this case, met its burden of showing that ACE-V friction-ridge-print analysis, conducted by experienced examiners using appropriate standards and controls, is widely accepted as scientifically reliable by the relevant scientific community.

3. The record supports the district court's finding that the friction-ridge-print analysis performed in this case conformed to the procedures necessary to ensure reliability.

4. The district court did not abuse its discretion by holding that the friction-ridge-print examiner in this case could testify that she made her identification determination "to a reasonable scientific certainty."

O P I N I O N

STONEBURNER, Judge

Appellant was charged with first-degree burglary based primarily on finger- and palm-print evidence collected at the scene. Appellant requested a *Frye-Mack* hearing to determine the admissibility of evidence that he is the source of the prints found. After a four-day *Frye-Mack* hearing, the district court concluded that the state had met its burden to establish that friction-ridge-print identification using the ACE-V methodology is generally accepted by experts in the field as reliable and that the examiner in this case complied with the appropriate standards and controls and could testify that she reached her resulting conclusions "to a reasonable scientific certainty." The underlying case was

then submitted to the district court on stipulated facts. The district court found appellant guilty of first-degree burglary and imposed a sentence. This appeal followed, challenging the admission of the identification evidence.

FACTS

In December 2009, Minneapolis Police Department forensic scientist Jenny Bunkers, a crime-scene investigator, responded with police officers to the scene of a residential burglary. Bunkers photographed and processed the scene for latent-print evidence. She collected evidence of ten latent prints and took them to the Minneapolis Crime Laboratory (the lab) for analysis. Bunkers is certified through the International Association for Identification (IAI) in crime-scene investigation and, at the time of her involvement in this case, she had completed three of four parts of the examination for certification as a latent-print examiner.¹

In 2009, the lab was accredited through the American Society of Laboratory Directors – Laboratory Accreditation Board (ASCLD-LAB). Accreditation is valid for five years, with annual audits that include submitting a report to ASCLD documenting an internal audit, proficiency tests, review of standard operating procedures (SOPs), any management changes, new trainees, competency tests passed, and any corrective action for nonconformities. The report is verified by a team from ASCLD.

Bunkers applied the ACE-V methodology under the lab’s SOPs. The “ACE” portion of the analysis involves: (A) analyzing the latent prints to determine if there is

¹ The portion of the latent-print certification that Bunkers had not completed consists of a review of testimony she has given in court to determine that she can accurately answer questions in court.

sufficient detail to proceed; (C) comparing the latent prints with exemplars of known sources obtained from print cards of known individuals or from a database search; and (E) evaluating the results to conclude that (1) a particular individual made the latent print (identification), (2) someone else made the latent print (exclusion), or (3) no conclusion can be reached (inconclusion). “V” stands for verification, which is always performed under the lab’s SOPs when there is identification. For verification, an identification evaluation is given to another lab examiner who conducts an independent ACE analysis of the latent print or prints as a quality-control check on the first examiner.²

In this case, Bunkers identified seven prints (four fingerprints and three palm prints) as having sufficient detail to proceed to the comparison stage. Because there were no known suspects, she ran the latent prints through the Midwest Automated Fingerprint Identification Network (MAFIN), which contains fingerprint exemplars for approximately 3.4 million individuals. MAFIN contains fingerprints from all convicted felons from Minnesota, North Dakota, and South Dakota, as well as fingerprints of other individuals, such as all of the employees of the Minnesota Bureau of Criminal Apprehension (BCA). MAFIN also contains approximately 500,000 palm print exemplars.

² It is within the discretion of the first examiner to determine whether the verification is blind (where the second examiner does not know the results of the first test) or non-blind (where the second examiner has the results of the first examination at the time the second examiner conducts the ACE analysis). The lab generally uses blind verification only in the most difficult cases. The verifications of Bunkers’s identifications in this case were non-blind.

Bunkers initially entered two latent fingerprints obtained from the scene of the burglary into MAFIN, requesting the ten best matches. For both prints, MAFIN identified the fingerprint card of appellant Terrell Matthew Dixon as the number one match. Bunkers made her own comparison of the latent prints to Dixon's exemplar, evaluated the results, and concluded "identification." Bunkers's identification conclusion for each print was validated by another lab examiner. Bunkers notified an investigator on the case of the identification and continued to examine the rest of the prints obtained from the scene. Bunkers's comparison of the remaining prints to Dixon's finger- and palm-print exemplars resulted in Bunkers's conclusion of "identification" for all of the latent prints as being from Dixon. These identifications were verified.

Based primarily on the print-identification evidence, Dixon was charged with first-degree burglary in violation of Minn. Stat. § 609.582, subd. 1(b) (2008). At Dixon's request, the district court conducted a *Frye-Mack* hearing to determine the admissibility of the print-identification evidence.

During the *Frye* portion of the hearing, the state first called Glenn Langenburg, a BCA forensic scientist III. Langenburg has a B.S. in forensic science from Michigan State University, a master's degree in analytical chemistry from the University of Minnesota, and is completing a Ph.D. in forensic science, dealing specifically with the ACE-V methodology, at the University of Lausanne, Switzerland. Langenburg has conducted research regarding the validity of the ACE-V methodology and has published extensively. He was elected to the Scientific Working Group on Friction Ridge Analysis,

Study and Technology (SWGFAST) in 2004.³ Langenburg was one of the latent-print experts who testified before the National Academy of Sciences (NAS) committee that, in 2009, issued *Strengthening Forensic Science in the United States: A Path Forward* (2009 NAS report), a nearly 350-page report based on a study of forensic science conducted by a NAS committee formed in 2006. The district court noted that Dixon “does not dispute that [Langenburg] is a national (and maybe international) expert in Friction Ridge Analysis.”

Langenburg testified that friction-ridge-print analysis relies on two foundational principles: (1) friction-ridge skin is unique, and (2) friction-ridge skin is permanent. These foundational principles are not challenged by Dixon. Langenburg testified in detail about the ACE-V methodology performed according to SWGFAST guidelines and procedures. He also described the databases available in Minnesota for obtaining exemplars for comparison of latent prints. Langenburg described his own research and the research of others testing the accuracy, reliability, and validity of latent-print analysis using the ACE-V methodology. Langenburg opined that latent-print examination is generally accepted within the relevant scientific community as consistent and highly accurate if applied by trained, competent experts.

³ SWGFAST was created in 1995 to provide guidance on friction-ridge-print evidence. The 40 members of SWGFAST include agency employees from federal, state, local, and foreign bodies and from the academic and private sectors. SWGFAST drafts guidelines that are adopted only after community review and comment. Accepted guidelines are reconsidered five years after adoption. Guidelines address automation training, digital imaging, friction-ridge-print analysis for latent-print examination, latent-print proficiency testing, professional conduct, minimum qualifications and competency for latent-print trainees, quality assurance, interpretation and conclusions, and validation research.

The state also called Dr. Cedric Neumann, an assistant professor in forensic science and statistics at Pennsylvania State University. Dr. Neumann has a Ph.D. in forensic science from the University of Lausanne, Switzerland. He is a trained latent-print examiner who conducts research within the discipline, and he routinely interacts with other trained examiners. He also trains examiners. He has been a member of SWGFAST since 2008 and is a member of numerous other professional organizations and committees specializing in latent-print comparison. Dr. Neumann serves on the editorial board of the Journal of Forensic Identification, is a regular reviewer for the Journal of Forensic Sciences, and takes part in various informal research groups that meet to discuss research in latent-print analysis. The district court found that Dr. Neumann is recognized by Dixon as an expert in friction-ridge-print analysis and is a member of the relevant scientific community qualified to opine as to the views of experts in the field of latent-print examination.

Dr. Neumann testified about a very recent study conducted by the FBI in response to the 2009 NAS report. The FBI study involved 169 latent-print examiners and the examination of many thousands of latent prints using the ACE methodology without the verification step. The overall false-positive-identification rate was 0.1%. Dr. Neumann testified about a number of his own studies, some conducted after the 2009 NAS report, which support his conclusion that friction-ridge-print analysis is accurate, reliable, and extremely powerful. The district court found that Dr. Neumann “credibly testified that experts in the forensic science community widely share the view that the results of latent

fingerprint examination using ACE-V methodology and conducted using appropriate standards and controls are scientifically reliable.”

For the *Mack* portion of the hearing, the state called Bunkers, who testified in detail about her examination of the latent prints in this case using the ACE-V process according to the lab’s SOPs, which include SWGFAST guidelines and standards.

Dixon called Dr. Simon Cole, an associate professor of criminology, law, and society at the University of California, Irvine. Dr. Cole has a Ph.D. in science and technology studies from Cornell University.⁴ Among other articles and portions of books, Dr. Cole authored a book titled *Suspect Identities: A History of Fingerprinting and Criminal Identification*, published by Harvard University Press in 2001. Dr. Cole, who is not a latent-print examiner, testified that his work can be characterized as “the sociology of forensic science.” Dr. Cole labeled himself a “meta expert,” an “expert about experts.” He opined that he is qualified to give an opinion about whether the use of ACE-V is generally accepted in the relevant scientific community because “it’s a sociological question in a sense . . . simply polling the relevant scientific community,” which, Dr. Cole states, he endeavored to do for an article published in 2008. Based on his count, Dr. Cole opined that ACE-V is not generally accepted in the relevant scientific community. Dr. Cole testified that more recent studies about latent-print analysis have not changed his opinion. The district court concluded that Dr. Cole is “a partisan advocate who views fingerprints as junk science” and found Dr. Cole’s testimony flawed,

⁴ Dr. Cole described science and technology studies as an interdisciplinary program comprising history, sociology, philosophy, and policy studies of science and technology: “We study how scientific facts are made and how technological artifacts are made.”

biased, and unpersuasive.⁵ On appeal, Dixon does not challenge the district court's credibility findings.

The defense also called Dr. Sandy Zabell, who teaches law and statistics at Northwestern University. Dr. Zabell has a master's degree in biochemistry and molecular biology and a Ph.D. in mathematics from Harvard University. Dr. Zabell has authored numerous published articles and was on the NAS committee that developed the third edition of the *Reference Manual on Scientific Evidence*, designed primarily for the federal judiciary.

Dr. Zabell, who has taught about the statistical methods used in forensic DNA, became interested in the lack of support for statements being made by the "fingerprint profession" that fingerprint analysis is 100% accurate. Dr. Zabell testified that the issue of whether or not in some ultimate sense the surface of a finger contains enough detail to uniquely identify a person is different from the question of whether or not there is enough detail in a given latent print to make an identification by matching it with an exemplar. Dr. Zabell testified that the ACE-V is a framework, rather than a methodology, in the sense that it lays out a careful sequence of steps such that if two people carry them out you would expect that they should essentially always come up with the same conclusion.

⁵ The district court reviewed the 2008 article authored by Dr. Cole in which he claims that his count of nonacceptors of the reliability of fingerprint evidence outnumbers acceptors and that the *Frye* jurisdictions should exclude fingerprint evidence. The district court found that Dr. Cole refused to count fingerprint examiners because they are "not scientists," and that, in addition to counting degreed scientists as nonacceptors, Dr. Cole also counted "anyone he [could] find who does not accept fingerprint analysis regardless of scientific training including law professors, a psychologist, a political scientist, a linguist, and a person with a BA in English."

But there is no ACE-V manual and there is no precise statement as to how certain determinations are made. Dr. Zabell contrasted the ACE-V framework with the methodology for determining identification using DNA, in which calculations for statistical analysis are painstakingly laid out at every stage of the process.

Dr. Zabell considers himself part of the relevant scientific community qualified to opine about the acceptance of the scientific foundation of latent-print analysis, but not in the relevant community qualified to opine about coming to a judgment about a particular print analysis. Dr. Zabell testified that ACE-V is not accepted as an objective, scientifically validated protocol but that it is viewed by many in the scientific community as a framework for subjective assessment with a limited amount of detail. Dr. Zabell stressed that he does not use “subjective” in a pejorative sense. Dr. Zabell testified that it is not his opinion that fingerprint evidence is unreliable or should not be allowed in court; rather, it is his opinion that it should be allowed with various safeguards about what an examiner can say. The district court found Dr. Zabell’s testimony helpful.

In rebuttal, the state recalled Langenburg, who was permitted by the district court to present new evidence based on a number of tests he ran in the BCA laboratory, after his direct testimony, on the latent prints involved in this case. These tests verified Bunkers’s identification conclusions. Using, as an example, the conclusiveness of the comparison of one of the latent prints, Langenburg testified that, in his opinion, it would be appropriate for Bunkers to testify that “Dixon has been identified as the source of [that print].” Langenburg testified that, in his opinion, the likelihood of someone else being the source is “vanishingly small” and small enough that he would dismiss as not a

“practical possibility that someone else could share as much information with that latent print . . . to that level of agreement.” Langenburg testified that the scientific support for identification is found in the error-rate studies that continue to show that latent-print examiners are making decisions with exceptionally low error rates.

The district court initially orally granted the state’s motion to admit latent-print identification evidence at trial and followed the oral order with a written order, incorporating a 29-page thoroughly detailed memorandum supporting the order. The district court stated that, under Minnesota caselaw, the relevant scientific community consists of “experts in the field,” citing *State v. Hull*, 788 N.W.2d 91, 103 (Minn. 2010), *State v. Traylor*, 656 N.W.2d 885, 891 (Minn. 2003), and *State v. Roman Nose*, 649 N.W.2d 815, 818 (Minn. 2002). The district court also cited *State v. Fenney*, 448 N.W.2d 54, 59 (Minn. 1989), for the proposition that when the test at issue is used mainly in connection with forensics, forensics is the relevant field and those actually involved with performing the involved test constitute the relevant experts in the field for purposes of the *Frye* analysis. The district court concluded:

Finger print analysis using the ACE-V methodology is widely accepted as reliable by experts in the relevant field. The analysis [in this case] met the appropriate standards and controls established by SWGFAST. [And] [t]he finger print examiner may offer an opinion, to a reasonable degree of scientific certainty, that [a] latent print and the exemplar print share the same source.

Dixon then agreed to a stipulated-facts trial. The district court found him guilty and sentenced him. This appeal challenging the district court’s *Frye-Mack* decision followed.

ISSUES

- I. **What is the relevant scientific community for the purpose of applying the *Frye* analysis to the admission of identification evidence based on latent-print analysis?**
- II. **Did the state meet its burden to demonstrate that friction-ridge-print analysis using the ACE-V methodology is generally accepted within the relevant scientific community?**
- III. **Did the district court err in finding that the ACE-V process performed in this case is reliable?**
- IV. **Did the district court abuse its discretion by holding that the latent-print examiner could testify that her opinion is “to a reasonable degree of scientific certainty”?**

ANALYSIS

***Frye-Mack* analysis**

Minnesota applies the two-pronged standard for the admissibility of novel scientific evidence comprised of *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), and *State v. Mack*, 292 N.W.2d 764, 768-69, 772 (Minn. 1980). *See Goeb v. Tharaldson*, 615 N.W.2d 800, 809, 814 (Minn. 2000) (reaffirming Minnesota’s adherence to the *Frye-Mack* standard). Under *Frye*, the proponent of novel scientific evidence is required to show that the scientific principle or test about which an expert is to testify is generally accepted within the relevant scientific community. *Id.* at 809. Under *Mack*, the proponent of particular evidence derived from the application of the scientific principle or

test must “establish that the test itself is reliable and that its administration in the particular instance conformed to the procedure necessary to ensure reliability.” *Id.* at 814 (quoting *State v. Moore*, 458 N.W.2d 90, 98 (Minn. 1990)).⁶ “The trial court determines whether the *Frye-Mack* standard has been satisfied by means of a pretrial hearing. When the scientific technique that produces the evidence is no longer novel or emerging, then the pretrial hearing should focus on the second prong of the *Frye-Mack* standard.” *Roman Nose*, 649 N.W.2d at 819 (footnote omitted).

Because friction-ridge-print analysis has long been used in courts throughout the United States, district courts have primarily focused on the admissibility of the particular evidence proffered under a *Mack* analysis. But in *Hull*, Hull argued that the district court erred by limiting a hearing on the admissibility of fingerprint-identification evidence to the *Mack* analysis based on the district court’s conclusion that “fingerprints have been generally accepted as scientifically reliable for a long time.” 788 N.W.2d at 103. Hull argued that the Minnesota Supreme Court has never squarely held that fingerprint analysis is generally accepted in the scientific community. *Id.* at 103-04. The supreme court declined to reach the issue of whether the district erred in failing to hold a complete *Frye-Mack* hearing before admitting fingerprint evidence, concluding that any error in the admission of that evidence was harmless because “there is no reasonable possibility that the admission of the evidence significantly affected the verdict.” *Id.* at 104. But the majority noted its agreement with the position taken by Justice Meyer in her concurrence

⁶ Additionally, “as with all testimony by experts, the evidence must satisfy the requirements of Minn. R. Evid. 402 and 702—be relevant, be given by a witness qualified as an expert, and be helpful to the trier of fact.” *Goeb*, 615 N.W.2d at 814.

that “lengthy use of a method by law enforcement, and even lengthy unquestioning acceptance by courts, does not [by itself] exempt expert evidence from scrutiny under the first prong of *Frye-Mack*” *Id.* at 103 n.3 (alteration in original). Both the majority opinion and Justice Meyer’s concurrence in *Hull* referenced the 2009 NAS report, which called attention to the need for scientific studies on friction-ridge-print analysis. *Id.* at 104 n.4; *id.* at 109-10 (Meyer, J., concurring).

Based on *Hull*, the district court granted Dixon’s request for a full *Frye-Mack* hearing in this case. In addition to testimony from witnesses outlined above, the district court admitted 35 exhibits, including the 2009 NAS report and reports authored by Langenburg, Dr. Neumannn, and Dr. Zabell. The district court also reviewed caselaw, starting with the first reported case on the admissibility of fingerprint evidence, *People v. Jennings*, 96 N.E. 1077, 1082 (Ill. 1911) (holding that there is a scientific basis for the system of fingerprint identification and that this identification method is in such general and common use that the courts cannot refuse to take judicial cognizance of it). The district court concluded that fingerprint identification evidence is currently admitted in all states and in all 11 federal circuits and that no published opinion has held that fingerprint evidence is not accepted in the relevant scientific community.

Standard of review

“The standard of review of admissibility determinations under *Frye-Mack* is two-pronged.” *Goeb*, 615 N.W.2d at 815. Whether the scientific technique is generally accepted in the relevant scientific field is a question of law that this court reviews de novo. *Id.* Whether “the [scientific technique] itself is reliable and . . . its administration

in the particular instance conformed to the procedure necessary to ensure reliability” is reviewed for an abuse of discretion. *Id.* at 814-15 (quoting *Moore*, 458 N.W.2d at 98).

I. Composition of the relevant scientific community

Dixon first argues that “[t]he district court erred in finding that the relevant scientific community consist[s] of latent print examiners.” Although Dixon correctly states that the district court, in defining the relevant scientific community, relied in part on *Fenney*, 448 N.W.2d at 59, Dixon incorrectly states that the district court limited the relevant scientific community in this case to latent-print examiners.

In *Fenney*, the supreme court quoted *State v. Anderson*, 379 N.W.2d 70, 79 (Minn. 1985), for the proposition that “[t]he scientific technique on which expert testimony is based must be scientifically reliable and broadly accepted *in its field*,” and noted that “[t]he test, then requires neither unanimity nor acceptance outside its particular field.” 448 N.W.2d at 57-58. At issue in *Fenney* was the forensic use of electrophoretic testing of dried bloodstains. *Id.* at 58. The district court in *Fenney* concluded that the evidence was admissible because the electrophoresis process is accepted as reliable by the relevant scientific community, which consisted of criminal analysts and War Memorial Blood Bank personnel, and the test was performed correctly. *Id.*

Fenney argued to the supreme court that the district court erred in identifying the relevant scientific community, relying on a 1986 opinion from Michigan that excluded practitioners of electrophoresis from the relevant scientific community by requiring that witnesses qualified to testify as members of the relevant scientific community must be “‘disinterested and impartial’ experts whose ‘livelihood [s are] not intimately connected

with the new technique.” *Id.* at 60 (quoting *People v. Young*, 391 N.W.2d 270, 274, 276 (Mich. 1986)). The Minnesota Supreme Court concluded that “[t]he *Young* decision is flawed from the Minnesota perspective Minnesota’s interpretation of *Frye* requires ‘experts in its field’ and has no such narrow requirement of disinterestedness.” *Id.* The supreme court, noting that the testimony established that electrophoretic testing of dried bloodstains is mainly used in connection with forensics, stated that “[t]aking forensics as the relevant field, then those actually involved with electrophoretic typing of dried bloodstains constitute the experts who must widely share the view that the results are reliable.” *Id.* at 59. The supreme court noted that, arguably, Fenney’s witness was not an “‘expert’ ‘in the particular field’ as is required by the [*Frye-Mack*] standard” because the witness had never done electrophoresis on dried bloodstains. *Id.* But the supreme court did not decide that issue “because the ‘widely shared’ view of all the experts who testified was that electrophoretic testing of dried aged bloodstains was reliable as long as certain standards were met and controls applied.” *Id.*

Dixon argues that the district court in this case read *Fenney* too narrowly, noting that Minnesota courts have repeatedly rejected arguments to admit polygraph evidence based on the testimony of lie-detector practitioners concerning reliability. Dixon cites *State v. Anderson*, 379 N.W.2d 70, 79 (Minn. 1985), and *State v. Michaeloff*, 324 N.W.2d 926, 927 (Minn. 1982), but although these cases reject polygraph evidence as not sufficiently reliable, neither of these cases excludes lie-detector practitioners from the relevant scientific community for purposes of a *Frye* hearing. In *State v. Kolander*, the

supreme court implied that lie-detector operators are, in fact, part of the relevant scientific community for purposes of a *Frye* analysis, stating:

We have no doubt that the lie detector is valuable in investigative work of law enforcement agencies . . . but we are in accord with the rule that the lie detector has not yet attained such scientific and psychological accuracy, *nor its operators such sureness of interpretation of results shown therefrom*, as to justify submission thereof to a jury as evidence of the guilt or innocence of a person accused of a crime.

236 Minn. 209, 221-22, 52 N.W.2d 458, 465 (1952) (emphasis added).

Dixon argues that Dr. Zabell is a member of the relevant scientific community, and he points out that Dr. Zabell testified that the 2009 NAS report should be considered to be the work of the relevant scientific community. But Dixon concedes that Dr. Zabell also testified that Langenburg and Dr. Neumann should be included in the relevant scientific community because they are forensic scientists who have serious scientific training. And, contrary to Dixon’s assertion, the district court appears to have included Dr. Zabell, as well as Langenburg and Dr. Neumann, in the relevant scientific community. The district court noted that Dr. Zabell does not advocate for the exclusion of latent-print identification evidence as unreliable.⁷ And the district court did not

⁷ Dr. Zabell’s opinion appears to support an argument not advanced in this case that admissibility of latent-print-identification testimony is more properly analyzed under Minn. R. Evid. 702. The supreme court has stated that the analysis of foundational reliability under rule 702 “is nearly identical to the analysis done under the second prong of the *Frye-Mack* test. . . . Therefore, it makes little difference whether the district court call[s] the analysis a ‘*Frye-Mack*’ analysis or a “Rule 702” analysis. As long as the district court considered the relevant foundational reliability factors, we will not reverse its evidentiary finding absent an abuse of discretion.” *Doe v. Archdiocese of St. Paul*, 817 N.W.2d 150, 168 (Minn. 2012).

exclude the NAS committee from the relevant scientific community; rather, the district court pointed out that the 2009 NAS report “does not say that fingerprint evidence is not accepted in the relevant scientific community and does not say, under either *Daubert* or *Frye*, that it should be excluded from court.” Additionally, the district court’s research did not produce, nor has Dixon cited, “a single case where a court has relied on the NAS Report to exclude fingerprint evidence.” The district court cited a number of cases in which the 2009 NAS report was analyzed and fingerprint evidence was held to be admissible. *See United States v. Rose*, 672 F. Supp. 2d 723, 725-26 (D. Md. 2009); *Johnston v. State*, 27 So.3d 11, 20-21 (Fla. 2010); *Commonwealth v. Gambora*, 933 N.E.2d 50, 58 (Mass. 2010).

The district court stated that the relevant scientific community in this case consists of experts in the field, and the district court’s analysis includes as such experts those actually involved in latent-print analysis and those who actually research the reliability of latent-print analysis. We conclude that the district court has appropriately defined the relevant scientific community for purposes of the *Frye* standard.

II. Acceptance of the ACE-V methodology of friction-ridge-print analysis by experts in the field

The district court, stating that “[t]he fact that friction ridge analysis can and should be improved and strengthened does not mean that it is inadmissible under *Frye*,” concluded, based on the record, that experts in the relevant scientific field widely accept the ACE-V methodology and individualization and believe that the ACE-V methodology produces scientifically reliable results admissible at trial. Our painstaking review of the

Frye-Mack hearing record leads us to the same conclusion. As Dr. Zabell testified, the fact that there is a subjective component to print analysis does not mean that the analysis is not reliable or accurate, but only means that testimony about the conclusions should be related to an examiner's experience and knowledge. And the 2009 NAS report states that "friction ridge analysis has served as a valuable tool, both to identify the guilty and to exclude the innocent." 2009 NAS report at 142. We conclude that the state met its burden with regard to the *Frye* portion of the *Frye-Mack* standard.

III. *Mack* analysis of the reliability of the particular evidence offered

"District court determinations under the [*Mack*] prong [of the *Frye-Mack* standard], foundational reliability, are reviewed under an abuse of discretion standard, as are determinations of expert witness qualifications and helpfulness." *Goeb*, 615 N.W.2d at 815. Bunkers, the examiner in this case, testified about her certification and the accreditation of the lab, and detailed the process she followed to reach the conclusion of identification, a conclusion that was verified by an independent examiner, and later by Langenburg's independent analysis of the same prints. Langenburg testified at length about the process and results by which he too came to an identification conclusion that was verified. He further testified that the probability of anyone but Dixon being the source of the latent prints was so small "that we would . . . have dismissed it."

Despite Dixon's criticism about Bunkers's failure to completely document every step of the process she followed and her failure to use a blind verification, the record is overwhelming that Bunkers's analysis conformed to the procedures necessary to ensure reliability.

IV. Permissible opinion testimony

The district court specified what testimony by Bunkers would be permitted at trial. The district court stated that Bunkers could testify about her training and experience, the lab's certification and procedures, and the procedures that she followed in this case. The district court stated that Bunkers could testify that she obtained ten possible candidates for comparison from MAFIN, but she could not testify that Dixon was the number-one candidate or that the fingerprint card she obtained for Dixon is from the Minneapolis police repository of people booked for, or convicted of, felonies. The district court held that Bunkers "may offer her conclusion of identification and she may state her opinion as to her level of certainty or confidence in that opinion" by stating that her opinion is "to a reasonable scientific certainty."

On appeal, Dixon challenges as error the district court's ruling that Bunkers may testify that her opinion is "to a reasonable degree of scientific certainty." "The admission of expert testimony is within the broad discretion accorded" to a district court judge whose rulings will be reversed only if the district court clearly abuses that discretion. *State v. Ritt*, 599 N.W.2d 802, 810 (Minn. 1999); *see also State v. Grecinger*, 569 N.W.2d 189, 194 (Minn. 1997) (stating that reversal of evidentiary rulings requires "apparent error").

Dixon implies that allowing Bunkers to use the phrase "to a reasonable scientific certainty" is an "assertion of absolute certainty" that could mislead a jury, pointing out that the 2009 NAS report criticizes the use of certainty in the absence of a statistically validated model or validated standards for declaring a match. But Dixon cites no

authority, controlling or persuasive, that the permitted phrase constitutes an assertion of absolute certainty or that any appellate court has found that permitting a latent-print examiner to so testify constitutes an abuse of discretion.

Minnesota courts have held that experts in various fields may offer opinion testimony “to a reasonable scientific certainty,” implicitly holding that the phrase does not imply “to the exclusion of all others.” *See State v. Bloom*, 516 N.W.2d 159, 168 (Minn. 1994) (allowing a properly qualified expert to express an opinion “to a reasonable scientific certainty” that the appellant is the source of the DNA while not allowing the expert to say that a particular profile is unique); *see also State v. Riley*, 568 N.W.2d 518, 526 (Minn. 1997) (concluding that it was not error for the district court to permit a ballistics expert to testify to a “reasonable degree of scientific certainty” that the handgun was the source of the collected shell casings because the expert proffered qualitative testimony and did not testify conclusively that the shells could not have come from any other gun); *State v. Jensen*, 482 N.W.2d 238, 239-40 (Minn. App. 1992) (holding that the district court did not err in allowing experts in blood alcohol concentration analysis to testify that “based on the[ir] calculations and assumptions they could conclude with a reasonable degree of scientific certainty that [appellant’s] alcohol concentration at the time of the accident fell within their estimated ranges,” despite the fact that it was possible that his alcohol concentration fell outside the range, because this court could not say the trial court abused its discretion in determining that the experts’ estimates were probably correct and had a reasonable basis), *review denied* (Minn. May 15, 1992). The district court did not abuse its discretion by allowing Bunkers to so testify in this case.

DECISION

The district court did not err in defining the relevant scientific community for purposes of the *Frye* hearing as individuals experienced in latent-print analysis and individuals involved in testing the validity of the ACE-V methodology. The state, proponent of the friction-ridge-print-identification evidence in this case, met its burden of demonstrating that the ACE-V method of friction-ridge-print analysis is widely accepted as reliable by experts in the field. The district court did not abuse its discretion by finding that the state met the second prong of the *Frye-Mack* test by demonstrating that the identification process in this case is reliable. And the district court did not abuse its discretion by allowing the person who made the print identification to testify that she framed her identification opinion “to a reasonable scientific certainty.”

Affirmed.