SUPREME COURT, STATE OF COLORADO 2 East 14th Ave., Denver, CO 80203	DATE FILED May 26, 2026 9:25 PM FILING ID: DB0E3763EEA1A CASE NUMBER: 2025SC562
Colorado Court of Appeals Case Number 23CA1491; Division V; Opinion by Judge Taubman Arapahoe County District Court; Honorable Eric B. White, Judge; Case Number 20CR1295	
MAURICIO ALVARADO-VASQUEZ, Petitioner, v. **THE PEOPLE OF THE STATE OF COLORADO**, Respondent.	**▲COURT USE ONLY▲**
Attorneys for Amici Curiae Innocence Project, Inc. and the Korey Wise Innocence Project: David H. Herrington (#26PHV8920) Cleary Gottlieb Steen & Hamilton LLP One Liberty Plaza New York, NY 10006 Telephone: (212) 225-2000 Email: dherrington@cgsh.com Jordan Hahn (#26PHV8921) Brooke Purinton (#26PHV8919) Sarah Friedman (#26PHV8922) Ami Ishikawa (#26PHV8918) Cleary Gottlieb Steen & Hamilton LLP 2112 Pennsylvania Avenue Washington, D.C. 20037 Telephone: (202) 974-1500 Email: jhahn@cgsh.com bpurinton@cgsh.com sfriedman@cgsh.com aishikawa@cgsh.com	Case No. 2025SC562

Attorney for Amicus Curiae Innocence Project, Inc.:
V. Marika Meis (#26PHV8913)
Innocence Project
40 Worth St., Suite 701
New York, NY 10013
Phone: (212) 405-6008
E-mail: mmeis@innocenceproject.org

Attorney for Amicus Curiae the Korey Wise Innocence Project:
Jud Lohnes (#33208)
Korey Wise Innocence Project
University of Colorado Law School
Wolf Law Building, 401 UCB
Boulder, Colorado 80309
Phone: (303) 492-8489
E-mail: jud.lohnes@colorado.edu

Attorneys for Amicus Curiae the American Civil Liberties Union of Colorado:
Timothy R. Macdonald (#29180)
Emma Mclean-Riggs (#51307)
American Civil Liberties Union of Colorado
303 E 17th Ave, Suite 350
Denver, CO 80203
Phone: (720) 402-3114
Email: tmacdonald@aclu-co.org
emcleanriggs@aclu-co.org

BRIEF OF AMICI CURIAE INNOCENCE PROJECT, INC., KOREY WISE INNOCENCE PROJECT, AND THE AMERICAN CIVIL LIBERTIES UNION OF COLORADO IN SUPPORT OF PETITIONER ALVARADO-VASQUEZ

CERTIFICATE OF COMPLIANCE

The undersigned certifies that this amicus brief complies with C.A.R. 28, 29, and 32, including all formatting requirements set forth in these rules. Specifically, the undersigned certifies that the amicus brief complies with the applicable word limits set forth in C.A.R. 28(g) and 29(d). It contains 4,590 words.

The amicus brief complies with the content and form requirements set forth in C.A.R. 29(c) and 32.

This amicus brief need not comply with the standard of review requirement set forth in C.A.R. 28(a)(7)(A). *See* C.A.R. 29(c)(3).

The undersigned acknowledges that the brief may be stricken if it fails to comply with any of the requirements of C.A.R. 28, 29, and 32.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Cases

Other Authorities

IDENTITY AND INTEREST OF AMICI CURIAE

Innocence Project, Inc. and Korey Wise Innocence Project ["IP Amici"] are nonprofit organizations dedicated to the exoneration of individuals who have been wrongfully convicted and the reform of the legal and forensic-science systems that contribute to wrongful convictions. IP Amici have a direct institutional interest in the reliability of forensic evidence admitted in Colorado courts, as nearly 52% of the individuals exonerated by post-conviction DNA testing were convicted based at least in part on expert forensic evidence that turned out to be wrong. *See Misapplication of Forensic Science*, Innocence Project, https://innocenceproject.org/misapplication-of-forensic-science (last visited May 24, 2026). IP Amici respectfully submit this brief to describe the substantial scientific and legal deficiencies of individualization opinions by firearm toolmark examiners as a matter of both Colorado evidence and criminal law and federal and Colorado constitutional due process, and to provide the Court with guidance on how to properly limit such testimony.

The American Civil Liberties Union is a nationwide, nonprofit, nonpartisan organization dedicated to the principles of liberty and equality embodied in the federal and state constitutions. The ACLU of Colorado is one of the ACLU's state affiliates. The ACLU is dedicated to the constitutional principles of liberty and equality, including the right to fundamental fairness in the criminal legal system. The

ACLU of Colorado respectfully submits this brief to protect the integrity of criminal trials in this state.

SUMMARY OF THE ARGUMENT

Firearm toolmark ("FATM") individualization—whereby an examiner purports to match a particular gun to particular spent ammunition (or particular ammunition components to each other)—overstates what the mantle of science supports.[1] The exclusion of all other potential sources is simply unsupported by science. Over the past 15 years, such conclusions, and the methodology on which they are based, have been examined and categorically rejected by the scientific community. Courts around the country have increasingly precluded individualization testimony in the light of such recent scientific consensus.

Nonetheless, Mr. Mauricio Alvarado-Vasquez was sentenced to two life sentences without parole when prosecutors relied on just such scientifically unreliable FATM identification testimony. The prosecution's expert used the Association of Firearm and Toolmark Examiners (AFTE)[2] "theory of identification," a purportedly scientific way of "matching" fired ammunition to a single firearm. The

[1] FATM individualization is also referred to as "matching," "identification," or "unqualified source attribution" throughout this brief and by courts and carries the same definition of an exact match to the exclusion of all other guns, as was the testimony here.

[2] AFTE is not an independent scientific body but a professional organization of examiners who make their livelihood from FATM examination and advocate for its purported reliability.

AFTE theory relies on two assumptions: first, that each firearm creates identical unique markings on bullets and cartridge casings every time it is fired; second, that forensic experts can "match" microscopic markings on a fired bullet or cartridge casing—not through any objective measurement process, but by simply looking through a microscope—and pronounce that it was fired from one firearm, to the exclusion of all other firearms. Neither assumption has scientific support: the scientific community has found such methodology and conclusions to be unreliable. They thus fail to satisfy the essential threshold standard for admitting any purported scientific opinion.

Even assuming, *arguendo*, that a court finds that the "scientific principles" underlying FATM analysis satisfy the reliability framework of *People v. Shreck*, 22 P.3d 68, 70 (Colo. 2001) and *Estate of Ford v. Eicher*, 250 P.3d 262, 266 (Colo. 2011)—as this Court did in framing the certified question—FATM identification is capable, at best, of determining whether a particular firearm is a *possible* source. Conclusions beyond class characteristics common to a group of firearms (make, model, and caliber), or that a firearm "cannot be excluded," are scientifically indefensible and therefore inadmissible. The trial court abused its discretion in admitting FATM identification testimony without such limitations on the examiner's testimony, which have been imposed by many courts and that Mr. Alvarado-Vasquez proposed.

The trial court further abused its discretion by not addressing Mr. Alvarado-Vasquez's federal and state constitutional due-process argument that allowing such thoroughly discredited evidence to sustain a criminal conviction undermines the fundamental fairness of a criminal trial.

ARGUMENT

I. A Proper Application of *Shreck* Weighs Against Admitting FATM Individualization Testimony Because It Has Been Categorically Rejected by the Scientific Community and Courts Around the Country Have Precluded Such Testimony in Light of the Scientific Consensus.

To determine whether scientific or other expert testimony is admissible under CRE 702, courts must make determinations as to "(1) the reliability of the scientific principles, (2) the qualifications of the witness, and (3) the usefulness of the testimony to the jury." *Shreck*, 22 P.3d 68, 70. As detailed in the companion amicus brief for *People v. Rodriguez-Ortiz*, the *Shreck-Eicher* factors applicable in this case weigh decisively against unqualified admissibility of FATM identification testimony. *See* Br. of Amici Curiae Innocence Project, Inc., Korey Wise Innocence Project & ACLU in Supp. of Pet'r Rodriguez-Ortiz, No. 2025SC467, *Rodriguez-Ortiz v. People* (Colo. May 26, 2026) [hereinafter Rodriguez-Ortiz Amicus]. In sum: FATM's fundamental premises have never been established through scientific testing; the AFTE methodology lacks objective standards because each and all examiners declare a "match" based on their own subjective, unarticulated threshold of

"sufficient agreement"; reported "error rates" are misleading and understated because the studies on which they are based systematically exclude inconclusive responses (or even count them as correct); use non-representative samples; and employ closed-set designs that inflate accuracy. Moreover, the methodology has not been validated through peer-reviewed publication,[3] lacks meaningful non-judicial applications, and is not generally accepted in the broader scientific community.

Based on the present state of the science, FATM analysis testimony should only be admitted with limitations. Numerous courts have prohibited individualization testimony. This Court should reach the same conclusion and hold that FATM analysis testimony is only admissible with limitations to class characteristics or, at most, that an examiner "cannot exclude" a gun in evidence as having discharged ammunition.

A. Colorado's *Shreck* Standard Requires Courts to Consider Developments in Science When Assessing Admissibility of a Technique; the Failure to Do So Risks Wrongful Convictions.

Scientific evidence, "by its nature, is ever-evolving." *Shreck*, 22 P.3d at 76. In the field of FATM analysis, recent scientific studies have resoundingly demonstrated

[3] The courts below erroneously treated a second examiner's "verification" as peer-review of the testifying examiner's "results and conclusions." Op. ¶ 44, *Alvarado-Vasquez*. The "verifier" knew the results of the initial comparison at the outset. TR-6/29/2023, p.100:3–24. This "unblind" process invites cognitive bias and is *not* peer reviewed at all. *See* Rodriguez-Ortiz Amicus at 10 n.6.

that the validity of the AFTE theory of identification was never established. From 2008 to 2017, four reports issued by three committees of nationally recognized independent scientists detailed uniform, devastating conclusions regarding the scientific invalidity of FATM individualization evidence. *See* Rodriguez-Ortiz Amicus at 4 (citing the NRC, NAS, and PCAST Reports).

In the wake of these reports, a series of peer-reviewed, published scientific articles have confirmed these scathing findings about the lack of scientific foundational validity or established error rates in the field of FATM identification. *See, e.g.*, Thomas D. Albright, et al., *Science, Evidence, Law and Justice*, 120 Proc. Nat'l Acad. Scis. 1, 9 (2023) ("To become a true science, a forensic pattern discipline must establish an empirical framework for asking the right questions about performance, design studies to assess method validity in precise quantitative terms, and appreciate the operating characteristics of the forensic instrument employed—the human brain—and its high susceptibility to bias under conditions of uncertainty."); Jonathan J. Koehler, et al., *The Scientific Reinvention of Forensic Science*, 120 Proc. Nat'l Acad. Scis. 1, 1 (2023) ("Forensic science is undergoing an evolution in which a long-standing 'trust the examiner' focus is being replaced by a 'trust the scientific method' focus."); Kori Khan & Alicia Carriquiry, *Shining a Light on Forensic Black-Box Studies*, 10 Stats. & Pub. Pol. 1 (2023) [hereinafter Khan & Carriquiry] (explaining how current studies suffer from inappropriate sampling

methods and high rates of missing data, both of which materially affect error-rate estimates); *see also* Wilson Center Amicus Br. in Supp. of Pet. Mauricio Alvarado-Vasquez at 7–22 [hereinafter Wilson Center Amicus]. A 2024 study that evaluated the existing FATM studies that AFTE purports to establish the scientific validity of the field concluded that the error rate of FATM identification could be as high as fifty percent—"as unreliable as flipping a fair coin." *See* Maria Cuellar et al., *Methodological Problems in Every Black-Box Study of Forensic Firearm Comparisons*, L., Probability & Risk 1, 9–12 (2024) [hereinafter Cuellar et al.].

When "new facts falsify old assumptions, courts should not be obliged to defer to past precedents: they should look afresh at the scientific issues." President's Council of Advisors on Sci. & Tech., *Forensic Science in Criminal Courts: Ensuring the Validity of Feature-Comparison Methods* 47, 60, 104, 111, 113, 114 (2016) [hereinafter PCAST Report]. Based on the broader scientific community's systematic discrediting of FATM individualization, courts that have conducted rigorous evidentiary hearings informed by the science have substantially limited the conclusions examiners can provide. *See, e.g.*, *State v. Adams*, 572 P.3d 291 (Or. Ct. App. 2025); *Abruquah v. State*, 296 A.3d 961 (Md. 2023); *United States v. Tibbs*, No. 2016 CF1 19431, 2019 D.C. Super. LEXIS 9 (D.C. Super. Ct. Sep. 5, 2019); *United States v. Shipp*, 422 F. Supp. 3d 762, 778 (E.D.N.Y. 2019). Indeed, the Court of Appeals here acknowledged "that throughout the country firearms toolmark analysis

is undergoing renewed scrutiny," *People v. Alvarado-Vasquez*, 23CA1491 (2025), Op. ¶ 52, but nonetheless erroneously found the trial court did not abuse its discretion in admitting the testifying examiner's FATM identification testimony without any limitations.

Rather than engage with either the scientific community's systematic critique of the scientific invalidity and unreliability of FATM identification or accordingly, the substance of the findings of courts that have limited FATM matching testimony, the Court of Appeals sought to distinguish *Abruquah* and *Adams* on the ground that those courts applied different evidentiary standards. *See* Op. ¶¶ 51, 53, *Alvarado-Vasquez*. To be sure, *Shreck* does not require courts to apply each of its noted factors in every case, but it does demand a fact-specific totality-of-the-circumstances analysis of the scientific reliability of a proffered technique.[4] Here, the courts below failed to do that. Instead of independently evaluating the substance of the NRC, NAS, and PCAST reports, the courts below credited the examiner's *Shreck* hearing testimony that dismissively characterized those reports. CF, p.2086, ¶¶ 4–6, *Alvarado-Vasquez* (Jan. 27, 2023); Op. ¶ 44, *Alvarado-Vasquez*. In effect, the court permitted the prosecution's own practitioner-expert to serve as the arbiter of whether the scientific community had discredited his discipline and his methodology.

[4] The *Shreck* factors, including the *Daubert* factors, are key to assessing scientific reliability. *See* Rodriguez-Ortiz Amicus at 7–8.

Moreover, after dismissing recent decisions that have placed limitations on FATM identification testimony, the Court of Appeals adopted the analysis from *Rodriguez-Ortiz*. *See* Op. ¶¶ 51, 55, *Alvarado-Vasquez*. But *Rodriguez-Ortiz* itself was a product of the same deference: the trial court had initially scheduled a *Shreck* hearing, but after the prosecution moved to reconsider, it vacated the hearing and issued a written order based solely on its review of orders in *People v. Purpera*, No. 2016CR7798 (Colo. Dist. Ct., Denver Cnty. Aug. 12, 2018), and *People v. Holmes*, No. 2012CR1522 (Colo. Dist. Ct., Arapahoe Cnty. Sept. 2, 2014). *See People v. Rodriguez-Ortiz*, 2025 COA 61, ¶ 44. At no point in this chain did any court independently evaluate the NAS or PCAST Reports as to whether the AFTE methodology meets the standard of scientific reliability or validity, nor determine the true error rate for the field. This Court should break the self-reinforcing cycle in which courts admit FATM matching evidence by deferring to prior courts that themselves deferred to still earlier courts—none of which independently evaluated the actual scientific validity of the underlying methodology. *See Tibbs*, 2019 DC Super LEXIS 9, at *17–18.

A proper application of Rule 702 under *Shreck* precludes FATM identification testimony absent limitations to class characteristics or, at most, that a specific gun cannot be excluded as having fired the ammunition in question.

A rigorous application of CRE 403—which is a mandatory component of the *Shreck* analysis that the courts below failed to undertake—compels the same result. Because FATM individualization evidence presents an overwhelming risk of misleading the jury through its veneer of a reliable methodology and yielding supposed scientific certainty of a "match," its prejudicial effect substantially outweighs its probative value. Connecting a defendant to a murder weapon through an examiner's internal, subjective feeling of "comfort"—a determination that no one can verify, challenge, or test but is presented as authoritative scientific evidence—is neither "reasonably reliable" nor "helpful to the jury." *Eicher*, 250 P.3d at 266.

Shreck requires that trial courts respond when scientific consensus changes over time. The history of forensic science in criminal courts demonstrates the grave consequences of the judiciary's failure to uphold its gatekeeping function of preventing unreliable "scientific" testimony from reaching jurors. Techniques such as microscopic hair comparison and bitemark analysis—once treated as settled science—have been entirely discredited, and courts have responded. *See, e.g.*, *Misapplication of Forensic Science*, Innocence Project, https://innocenceproject.org/misapplication-of-forensic-science (last visited May 24, 2026); *Gimenez v. Ochoa*, 821 F.3d 1136, 1144 (9th Cir. 2016) (pointing to "an age where forensics that were once considered unassailable are subject to serious doubt"). Those disciplines, now known to be scientifically unreliable, contributed to numerous wrongful convictions

that were later overturned. The risk that this type of evidence will produce wrongful convictions is material and immediate.

FATM individualization presents the same risk. Wrongful convictions involving firearm identification have already occurred, although the true scope of such errors is likely greater than documented exonerations reveal. *See* Rodriguez-Ortiz Amicus at 6 (citing exonerations of Darrell Siggers, Patrick Pursley, and Anthony Ray Hinton). These miscarriages of justice are the direct result of juries relying on purported "scientific" evidence of individualization that the courts admitted as reliable under CRE 702 or its equivalent, but that is merely a subjective opinion in a discipline incapable of scientifically and reliably connecting a gun to a fired component.

Recognizing that FATM methodology and attendant individualization opinions likewise have been revealed to be grossly exaggerated, courts have responded by reining in manifestly misleading individualization testimony. *See* cases cited at p. 13, *infra.* This Court should do so as well.

B. FATM Testimony Should be Limited to Class Characteristics or, at Most, that a Firearm Cannot be Excluded as the Source of Ammunition.

The fundamental scientific deficiencies of FATM analysis preclude a reliable link between an examiner's subjective *observations* of toolmarks that the examiner could, but deliberately does not, measure—such as similarities and differences (as

to, e.g., length, depth, and width of marks)—and the definitive *conclusion* that a specific piece of ammunition came from a specific gun. The "scientific principles" underlying FATM identification consist of an expert's subjective interpretation of physical patterns presented in the language of scientific certainty. The testifying examiner here declared a "match" according to his personal standard, noting that "sufficient agreement is reached when the agreement of [] individual characteristics exceeds *anything that I've seen* from known non-matches." TR-12/20/2022, p.172:4–10 (emphasis added). This reflects the fallacy of an examiner relying on his memory of every prior close "non-match" to conclude a close enough "match" to individualize. The examiner's own personal body of work, at most, merely establishes that the markings he saw were more similar than non-matches he had previously encountered, not that the firearm recovered in evidence was the *only* possible source.

Accordingly, this Court should follow other courts in limiting the presentation of FATM evidence, as Mr. Alvarado-Vasquez argued below. Examiners should be barred from offering individualization testimony and instead be limited to (1) class characteristics;[5] and (2) at most, testimony that a particular piece of ammunition

[5] "'[C]lass characteristics' are marks manufacturers intend to imprint on the bullets or casings in order to brand their products," which allow examiners to determine characteristics shared by a group of guns such as the make, model, and caliber—e.g., a Colt .45 caliber. *Ross*, 68 Misc. 3d at 902.

"cannot be excluded" as having originated from a given source. *See, e.g.*, *United States v. Briscoe*, 703 F. Supp. 3d 1288, 1308 (D.N.M. 2023) (prohibiting individualization, certainty, and use of the word "match"); *People v. Ross*, 68 Misc. 3d 899, 918 (Sup. Ct. Bronx Cnty. 2020) (limiting testimony to "class characteristics"); *see also Tibbs*, 2019 DC Super LEXIS 9, at *80 (restricting expert to stating that the firearm "cannot be excluded" as the source); *United States v. Shipp*, 422 F. Supp. 3d at 766 (permitting testimony that a gun "cannot be excluded" as the source, but prohibiting identification of a "match" or that the specific firearm is the definitive source).

To stay within the limits of science, an FATM examiner's testimony should consist only of the following. First, the examiner may explain the FATM analysis—e.g., the process of using a comparison microscope—and describe the relevant evidence. *See Ross*, 68 Misc.3d at 918. Next, the "examiner may explain the reasons for an opinion that class characteristics are present." *Id*. Finally, if class characteristics match, the examiner may "indicate that the firearm *cannot be ruled out* as the source of [an ammunition component]." *Id.* In other words, the examiner may present an opinion that the firearm "cannot be excluded" as having fired specific ammunition. The only possible scientifically supported expert testimony opining on an association between a firearm and a specific piece of ammunition is that it was excluded or "cannot be excluded" as having originated from a particular firearm.

Anything short of this qualifier vastly overstates the reliability of FATM evidence. *See* Wilson Center Amicus at 25–29. This Court should adopt a similar framework for limiting unsupportable scientific assertions.

The distinction between qualified testimony—limited to what the science permits—and unqualified testimony must turn on the actual words an examiner uses to connect spent ammunition to a particular gun, not on whether the examiner concedes the method's subjectivity on cross-examination. *See Abruquah*, 296 A.3d at 995–96. The courts below found that the examiner's testimony here was distinguishable from the "unqualified" testimony at issue in *Abruquah* because it "was subject to numerous caveats." Op. ¶ 56, *Alvarado-Vasquez*. Not so.

The examiner here told the jury that two cartridge cases were "fired from" the gun alleged to belong to Mr. Alvarado-Vasquez, and that he could identify three fired projectiles as being "all fired from" the same gun. TR-6/29/2023, pp.77, 83. This is straightforward individualization testimony, pure and simple. Indeed, throughout his testimony, the examiner neglected to qualify his opinion (e.g., probably from the same gun), his degree of certainty, or to provide an error rate.[6] The jury heard

[6] At the *Shreck* hearing, the examiner testified that the 2014 Ames I study placed the field's error rate at approximately one percent. *See* TR-12/20/22, p.209:5–21. The trial court pointed to this low claimed error rate as a factor that distinguishes it from previously discredited areas of forensic science. Trial Court Order, ¶ 5 (Jan. 27, 2023). However, this purported error rate is the product of systemic design flaws in FATM validation studies. *See* Rodriguez-Ortiz Amicus at 11; Wilson Center Amicus at 15–16. The true error rate is akin to flipping a coin. *See* Cuellar et al.

repeatedly that what the examiner had was a "match." Next, his isolated acknowledgments that his determinations are "subjective-based" and that "[t]here's not a numerical standard" were grudgingly presented only on cross-examination. TR-6/29/2023, pp.97:10–20, 106:2. This testimony did nothing to correct or qualify his false individualization claims. Finally, he described subjective judgments as a valid basis for reaching FATM match conclusions, not as a qualification of his ultimate conclusions. The examiner's testimony thus fell far short of qualified testimony that comports with any scientific consensus.

Given the complete lack of scientific basis for the examiner's methodology and individualization findings provided in this case, this Court should limit FATM expert testimony to class characteristics or, at most, that a gun "cannot be excluded" as having fired an ammunition component.

C. Cross-Examination Cannot Cure the Prejudice Caused by FATM Individualization Testimony.

"Before expert testimony may be presented to a jury, it must pass through the gate of admissibility—a gate trial courts have been entrusted with vigilantly guarding." *People v. Cooper*, 2021 CO 69, ¶ 1. To the extent *Shreck* suggested that defense cross-examination and presentation of contrary evidence can help address evidentiary concerns, *see* 22 P.3d at 78—and the courts below accepted the same reasoning, *see* Op. ¶¶ 47, 57, *Alvarado-Vasquez*—they are insufficient to cure the fundamental prejudice caused by the initial admission. The methodology of FATM

identification is too subjective to be meaningfully tested through cross-examination, and the resulting testimony still carries an unjustifiable veneer of scientific reliability and certainty that persists regardless of any concessions elicited. There is well-documented evidence, as recognized by this Court, that "jurors may give undue weight to evidence having an 'aura of scientific infallibility.'" *Brooks v. People*, 975 P.2d 1105, 1112 (Colo. 1999). Expert testimony that frames a subjective visual comparison as definitive scientific evidence presents precisely this false impression of scientific infallibility.

The opinion of the court below illustrates this problem: the Court of Appeals found that the examiner's concessions about the subjectivity of FATM analysis "were . . . elicited at trial during cross-examination, which is precisely the way the *Shreck* court envisioned handling concerns about invalid scientific assertions." Op. ¶ 57, *Alvarado-Vasquez*. This reasoning conflates expert conclusions based on reliable (if imperfect) methodology that can conceivably be tempered through cross-examination with those that are scientifically unreliable and thus, so fundamentally flawed that no amount of cross-examination can cure their inherent lack of cognizable scientific foundation. The scientific literature now rejects the validity of FATM identification, yet cross-examination can only elicit a concession from the expert that the method is subjective. Any testimony on cross-examination relating to the subjectivity of the analysis or the deficiencies of the personally-determined

matching thresholds cannot sway a jury after they hear a court-qualified forensic expert testify—using the language of science—that "there was a match: this gun fired this bullet." The "aura of scientific infallibility" persists. *Brooks*, 975 P.2d at 1112. To defer assessment of FATM analysis and "expert opinion" to cross-examination is to neglect the gatekeeping role entirely.

Juries overwhelmingly accept an examiner's conclusion because they are told it is "science."[7] Indeed, the examiner's own belief in the technique, rather than the science behind it, can sway the listener. A defendant has no means of contesting the conclusion other than asking the jury to disbelieve a witness whom the court has qualified as an "expert"—a contest the defendant will almost always lose, especially when there are no limitations on the testimony. *See* Wilson Center Amicus at 28–29.

[7] The Court of Appeals' alternate holding underscores this very problem. The court found that the examiner's testimony was admissible because it was based, "in part," on "his training and experience, which alone can substantiate admission." Op. ¶ 55, *Alvarado-Vasquez* (citing *Brooks*, 975 P.2d at 1106 (holding that scent-tracking evidence was experience-based specialized knowledge not dependent on scientific explanation)). But FATM examiners do not present their conclusions to juries as the product of mere experience. The examiner here testified that "the science of firearm and toolmark examination and analysis" has existed for "over a hundred years" and that "[t]he methods he uses are accepted in the scientific community." TR-12/20/2022, p.160:2–5, p.162:4–8.

The FATM method is so intentionally cloaked in science that the appearance of science cannot be stripped away by artifice. *Adams*, 572 P.3d at 295. Allowing FATM identification testimony to be admitted as merely "experiential" while the examiner presents it to the jury as science permits the worst of both worlds: the testimony evades scientific scrutiny at the gatekeeping stage but retains its scientific aura when it reaches the jury.

The trial court here found that the examiner "couldn't be more certain that his science is valid, legitimate, and that allows him to render the opinions he does . . . . [B]ased upon the certainty with which [the examiner] has rendered his opinion, I'm not going to limit his opinion." TR-6/28/23 (pretrial MIL hearing), p.23:9–11. When the judge is so credulous, can jurors be expected to be skeptical?

II. Even if FATM Analysis Satisfies *Shreck*, the Trial Court Abused Its Discretion in Failing to Address Mr. Alvarado-Vasquez's Argument that It Does Not Comply with Due Process.

The Court of Appeals declined to reach Mr. Alvarado-Vasquez's preserved due-process argument, noting, in a footnote, that it need not address the issue because it found that the trial court did not abuse its discretion in admitting the examiner's testimony under *Shreck*. *See* Op. ¶ 48 n.4, *Alvarado-Vasquez* (citing *People v. Genrich*, 2019 COA 132M (*Genrich II*)). But the Court should have reached this constitutional question precisely because it decided against Mr. Alvarado-Vasquez on *Shreck* admissibility. In *Genrich II*, the Court's ruling in the defendant's favor on his newly discovered evidence claim and remanding for a hearing obviated the need to address the due-process argument. *See* 2019 COA 132M, ¶ 69. Here, the opposite occurred: the Court of Appeals found the trial court *did not* abuse its discretion in admitting the testimony, leaving Mr. Alvarado-Vasquez without the benefit of either safeguard. This Court should address this gap.

FATM identification testimony, without limitations—even if it were to pass *Shreck*'s evidentiary gatekeeping—independently violates due process under the Fourteenth Amendment of the United States Constitution and Article II, Section 25 of the Colorado Constitution. Due process safeguards the integrity of judicial proceedings and demands heightened scrutiny when the risk of wrongful conviction is particularly acute. The United States Supreme Court has acknowledged that the Due Process Clause imposes an admissibility constraint when evidence "is so extremely unfair that its admission violates fundamental conceptions of justice." *Perry v. New Hampshire*, 565 U.S. 228, 237 (2012); *Bredemeier v. Phillips*, 786 F. Supp. 3d 1300, 1332 (C.D. Cal. 2025) (the Due Process Clause places a limit on the use of unreliable evidence by "imped[ing] convictions based on dubious evidence") (internal quotations omitted).

Admission of "scientific" evidence that is unreliable but carries the powerful appearance of certainty—like FATM identification—deprives defendants of a fair trial in violation of their due-process protection against the admission of unreliable and misleading evidence. *See Genrich II*, ¶¶ 134-139 (Berger, J., concurring) (citing *Han Tak Lee v. Houtzdale SCI*, 798 F.3d 159, 166 (3d Cir. 2015) (quoting *Han Tak Lee v. Glunt*, 667 F.3d 397, 403 (3d Cir. 2012) (finding that the admission of scientifically unreliable expert fire science testimony would violate due process guarantees if the "expert testimony undermined the fundamental fairness of the

entire trial because the probative value of [that] evidence, though relevant, [was] greatly outweighed by the prejudice to the accused from its admission")).

CONCLUSION

Although some FATM testimony may be admissible under the *Shreck-Eicher* test, individualization testimony *without* Amici's proposed limitations cannot clear the bar for admissibility. Amici ask this Court to hold that testimony connecting a firearm to ammunition components must be limited to opinions that class characteristics correspond with one another and, at most, that the firearm "cannot be excluded" as having fired ammunition. As other courts have increasingly recognized, such limitations are protective against inaccurate evidence and unfair verdicts.

Counsel for Amici Curiae Innocence Project, Inc., and the Korey Wise Innocence Project
/s/ *David H. Herrington*
David H. Herrington, #26PHV8920
Cleary Gottlieb Steen & Hamilton LLP
One Liberty Plaza
New York, NY 10006
(212) 225-2000
dherrington@cgsh.com
/s/ *Jordan Hahn*
Jordan Hahn, #26PHV8921
/s/ *Brooke Purinton*
Brooke Purinton, #26PHV8919
/s/ *Sarah Friedman*
Sarah Friedman, #26PHV8922
/s/ *Ami Ishikawa*
Ami Ishikawa, #26PHV8918
Cleary Gottlieb Steen & Hamilton LLP
2112 Pennsylvania Avenue
Washington, DC 20037
(202) 974-1500
jhahn@cgsh.com
bpurinton@cgsh.com
sfriedman@cgsh.com
aishikawa@cgsh.com

Counsel for Amicus Curiae Innocence Project, Inc.
/s/ *Marika Meis*
V. Marika Meis, #26PHV8913
Innocence Project
40 Worth St., Suite 701
New York, NY 10013
(212) 405-6008
mmeis@innocenceproject.org

Counsel for Amicus Curiae the Korey Wise Innocence Project
/s/ *Jud Lohnes*
Jud Lohnes, #33208
Korey Wise Innocence Project
University of Colorado Law School
Wolf Law Building, 401 UCB
Boulder, Colorado 80309
(303) 492-8489
Jud.Lohnes@colorado.edu

Counsel for Amicus Curiae the American Civil Liberties Union of Colorado

/s/ *Emma Mclean-Riggs*
Timothy R. Macdonald, #29180
Emma Mclean-Riggs, #51307
American Civil Liberties Union of Colorado
303 E 17th Ave, Suite 350
Denver, CO 80203
(720) 402-3114
tmacdonald@aclu-co.org
emcleanriggs@aclu-co.org

CERTIFICATE OF SERVICE

I certify that on May 26, 2026, a true and correct copy of **BRIEF OF AMICI CURIAE INNOCENCE PROJECT, INC., KOREY WISE INNOCENCE PROJECT, AND THE AMERICAN CIVIL LIBERTIES UNION OF COLORADO IN SUPPORT OF PETITIONER ALVARADO-VASQUEZ** was filed through the Colorado Courts E-Filing System, with e-service to the following:

Eric Samler, #32349
Colorado State Public Defender
1300 Broadway, Suite 300
Denver, CO 80203

Allison S. Block, #58239
Assistant Attorney General
1300 Broadway, 9th Floor
Denver, CO 80203

/s/ *Jud Lohnes*
Jud Lohnes, # 33208
Korey Wise Innocence Project
University of Colorado Law School
Wolf Law Building, 401 UCB
Boulder, Colorado 80309
(303) 492-8489
Jud.Lohnes@colorado.edu