No. 22-899

IN THE

Supreme Court of the United States

JASON SMITH,

Petitioner,

—v.—

STATE OF ARIZONA,

Respondent.

ON WRIT OF CERTIORARI TO THE
COURT OF APPEALS OF THE STATE OF ARIZONA, DIVISION ONE

BRIEF OF THE INNOCENCE NETWORK, FORENSIC JUSTICE PROJECT, AND THE CENTER FOR INTEGRITY IN FORENSIC SCIENCES, INC., AS *AMICI CURIAE* IN SUPPORT OF PETITIONER

JANIS C. PURACAL
BYRON C. LICHSTEIN
FORENSIC JUSTICE PROJECT
333 S.W. Taylor Street, Suite 400
Portland, Oregon 97204
(503) 664-3641

ANNA SORTUN
Counsel of Record
SAMANTHA TAYLOR
TONKON TORP, LLP
888 S.W. 5th Avenue, Suite 1600
Portland, Oregon 97204
(503) 802-2107
anna.sortun@tonkon.com

(*Counsel continued on inside cover*)

Jamie T. Lau
Co-Vice President
Innocence Network
Duke Law Wrongful
Convictions Clinic
210 Science Drive
Durham, North Carolina 27708
(919) 613-7764

Lara Zarowsky
Co-Vice President
Innocence Network
Washington Innocence
Project
P.O. Box 85869
Seattle, Washington 98145
(206) 636-9479

Katherine H. Judson
Keith A. Findley
Center for Integrity in
Forensic Sciences
33 East Main Street, Suite 400
Madison, Wisconsin 53703
(608) 736-2437

Counsel for Amici Curiae

Table of Contents

Table of Authorities

PAGE(S)

Cases

Constitutional Provisions

Other Authorities

PAGE(S)

PAGE(S)

PAGE(S)

I. Interest of *Amici Curiae*

Amici curiae are a broad group of organizations dedicated to ensuring the integrity of our criminal legal system by preventing and correcting wrongful convictions related to the misapplication or misinterpretation of forensic evidence. *Amici* have specific experience examining the causes of wrongful convictions and documenting the role that the misapplication of scientific evidence has played in producing miscarriages of justice. *Amici* have a particular interest in the reliability of forensic evidence and in ensuring that courts faithfully apply the rigor demanded by the Confrontation Clause, an interest directly implicated by Petitioner Jason Smith's case. Crime lab scandals, scientific reviews by esteemed bodies such as the National Academy of Sciences and the President's Council of Advisors on Science and Technology, and exonerations across the country have exposed the fallibility of forensic evidence and the importance of a critical eye. A complete list of each amicus participant is attached as **Appendix A**.[1]

II. Summary of Argument

Forensic evidence is often at the center of criminal prosecutions, but it is well-established that forensic evidence can be both powerful and misleading. Like all other sources of evidence, forensic analysts are vulnerable to error, exaggeration, bias, and outright

---

[1] Pursuant to Sup. Ct. R. 37.6, counsel for *Amici* authored this brief in whole; no party's counsel authored, in whole or in part, this brief; and no person or entity other than *Amici* and their counsel contributed monetarily to preparing or submitting this brief.

fraud. Moreover, forensic evidence can have an outsized effect on jurors. Forensic experts, therefore, must be subject to the same time-honored safeguard applied to all other forms of evidence: cross-examination. As the following sections will explain, the cross-examination must involve the analyst who actually performed the forensic analysis, not a surrogate.

The different ways forensic analyses can go awry have been documented in real-life examples and studied exhaustively by prestigious scientific organizations. The misapplication of forensic science is one of the leading causes of wrongful convictions, present in 24% of proven exonerations. National Registry of Exonerations Database.[2] The types of faulty and misleading forensic evidence present in the exoneration cases runs the gamut from firearms to bitemarks to toxicology and many others. The errors discovered in those cases are merely the tip of the iceberg, meaning there are undoubtedly many more forensic errors that have led to other wrongful convictions, overcharging, over sentencing, and tainted plea decisions.

Apart from the real-life examples in cases, two major federal agency reports authored by leading scientists have described the numerous problems that affect many forensic disciplines. The problems are described in detail below and include: fraud by individuals and laboratories; mistakes due to incompetence, lack of training, and lack of standards; and bias stemming in part from close connection to law enforcement and prosecutors.

---

[2] https://www.law.umich.edu/special/exoneration/Pages/about.aspx (all Internet materials as visited Nov. 15, 2023).

While no single tool can completely ameliorate all of these problems, cross-examination is the historically recognized tool for exposing these same issues. And as this Court has recognized, the prospect of facing cross-examination creates incentives for forensic analysts to perform their work honestly, transparently, and accurately. Foregoing a cross-examination requirement of the original analyst prevents the criminally accused from being able to reveal the fraud, bias, or error that may have tainted the evidence against them, and insulates dishonest, incompetent, and error-prone analysts from having to defend the quality of their work.

III. Argument

A. This Court has recognized the importance of cross-examining the original forensic analyst who performed the work.

Cross-examination has long-been recognized as "the greatest legal engine ever invented for the discovery of truth." *California v. Green*, 399 U.S. 149, 158 (1970) (quoting 5 Wigmore § 1367). The Confrontation Clause of the Sixth Amendment affords the accused in criminal prosecutions the right "to be confronted with the witnesses against" them. U.S. CONST. amend. VI. As a result, this Court, in *Crawford v. Washington*, insisted upon cross-examination and rejected the notion of a judicial determination of reliability for absent witnesses. 541 U.S. 36, 54 (2004).

There is no forensic evidence exception to the rule. *See Bullcoming v. New Mexico*, 564 U.S. 647, 658 (2011) (citing *Melendez-Diaz v. Massachusetts*, 557 U.S. 305, 317–21 (2009)). The Court was unequivocal

in *Melendez-Diaz*, a case involving forensic evidence: "[t]his case involves little more than the application of our holding in *Crawford v. Washington*." 557 U.S. at 329. Confrontation of the forensic analyst can expose or deter an inaccurate or fraudulent analysis, weed out an incompetent examiner, or reveal the analyst's lack of proper training or deficiency in judgment. *See id.* at 318–320. To ensure all of these things are possible, the Confrontation Clause promises the right to cross-examine the original testing analyst. The Court affirmed the constitutional guarantee again in *Bullcoming*.

That guarantee is eroded when a surrogate analyst is allowed to testify in place of the original testing analyst. *See Stuart v. Alabama*, 139 S. Ct. 36, 36 (2018) (Gorsuch, J., dissenting from the denial of certiorari). While cross-examination of the original analyst can expose bias, mistakes, and even outright fraud in the analysis, the same is not true of a surrogate analyst whose lack of personal knowledge about the testing process may insulate the opinion from challenge. Our criminal legal system depends on adversarial testing and cross-examination to guard against "mischief and mistake and the risk of false convictions they invite." *Id.* A newer understanding of forensics highlights the need for confrontation in all forensic disciplines.

B. Forensic evidence is uniquely powerful in its ability to influence—and potentially mislead—jurors and factfinders.

"Expert evidence can be both powerful and quite misleading because of the difficulty in evaluating it." J. Weinstein, *Rule 702 of the Federal Rules of Evidence Is Sound; It Should Not Be Amended*, 138

F.R.D. 631, 632 (1991). Indeed, this Court (and many others) have cautioned about the outsized influence of "scientific" evidence. *See, e.g.*, *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 595 (1993); *United States v. Frazier*, 387 F.3d 1244, 1263 (11th Cir. 2004) ("[E]xpert testimony may be assigned talismanic significance in the eyes of lay jurors.").

The power of flawed forensics to mislead juries—this presumption of infallibility—has been echoed by numerous scholars and studies. For example, studies have found that jurors give outsized weight to forensic evidence. *See* R. Underwood, *Evaluating Scientific and Forensic Evidence*, 24 AM. J. TRIAL ADVOC. 149, 166 (2000); *see also* T. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 YALE L.J. 1050, 1068 (2006) ("[W]idespread evidence [indicates] people already overestimate the probative value of scientific evidence."). Indeed, as one study put it, "jurors in this country often accept state forensic testimony as if each prosecution expert witness is the NASA scientist who first put man on the moon." M. Godsey & M. Alao, *She Blinded Me with Science: Wrongful Convictions and the "Reverse CSI Effect,"* 17 TEX. WESLEYAN L. REV. 481, 495 (2011).

In scientific communities, however, there has been a growing skepticism about the supposed infallibility of some forensic evidence, its handling in crime laboratories, and its interpretation in the courtroom. *See* NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD, 4 (2009) (hereinafter "NAS Report")[3]; PRESIDENT'S COUNCIL OF ADVISORS ON SCI. AND TECH.,

[3] https://nap.nationalacademies.org/catalog/12589/strengthening-forensic-science-in-the-united-states-a-path-forward

FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS 25 (2016) (hereinafter "PCAST Report").[4] Those concerns, as discussed below, heighten the need for meaningful cross-examination.

C. Errors in forensic evidence, and the various reasons for those errors, are now well recognized.

In 2009, the National Academy of Sciences ("NAS") issued a congressionally mandated report that was highly critical of a number of forensic disciplines used in the criminal legal system. NAS Report at 1. The committee that authored the report consisted of members from the forensics community, legal experts, and a variety of independent scientists. *Id.* at v. The committee heard expert testimony from a broad array of scientific and forensic experts, and reviewed voluminous published materials, studies, and reports. *Id.* at 2.

The NAS Report concluded that, with the exception of nuclear 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 7. The NAS Report made clear that "problems, irregularities, and miscarriages of justice [could not] simply be attributed to a handful of rogue analysts or underperforming laboratories." PCAST Report at 4 (summarizing the NAS Report). The NAS Report,

---

[4] https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf

instead, found that the problems are systemic and pervasive. *Id.*

In 2016, the President's Council of Advisors on Science and Technology ("PCAST") issued another groundbreaking report about forensic sciences, again highlighting major systemic problems. PCAST Report at 7. PCAST reviewed "six forensic feature-comparison methods: (1) DNA analysis of single-source and simple-mixture samples, (2) DNA analysis of complex-mixture samples, (3) bitemarks, (4) latent fingerprints, (5) firearms identification, and (6) footwear analysis." *Id.* at 7. While the NAS Report cast significant doubt on many of these forensic disciplines seven years earlier, the PCAST Report confirmed the potential for errors as applied in all six. *Id.* PCAST found that, while DNA analysis of single-source and simple-mixture samples remains the gold standard for objective methodology, the other forensic areas rely fundamentally and unavoidably on subjective judgments made by individual analysts who often have little-to-no standards to guide those judgments. *Id.* Even DNA has subjective components, as discussed below. *Id.*

The PCAST Report (and the NAS Report before it) make clear that the criminal legal system cannot presuppose the reliability of forensic evidence. The methods found problematic in those reports continue to taint convictions, and the same pattern is repeating itself with newer technologies such as facial recognition and genetic genealogy. *See*, *e.g.*, C. Garvie, *Garbage In, Garbage Out*, GEORGETOWN LAW CENTER ON PRIVACY & TECHNOLOGY (May 16, 2019)[5]; N. Akpan, *Genetic Genealogy Can Help Solve Cases.*

[5] https://www.flawedfacedata.com

It Can Also Accuse the Wrong Person, PBS NEWS HOUR (Nov. 7, 2019).[6] The right to meaningful cross-examination before the jury is essential given the myriad problems with forensic disciplines and the mistaken presumption of infallibility.

D. Meaningful cross-examination can expose problems.

The devastating impact of erroneous and incompetent expert testimony cannot be overstated. The danger is not simply that jurors may overvalue expert testimony; it is that jurors may surrender their critical thinking because scientific-sounding evidence "associates 'science' with truth." *See State of Oregon v. O'Key*, 899 P.2d 663, 672 n.6 (Or. 1995) (quoting *State ex rel. Hamilton v. City Court of City of Mesa*, 799 P.2d 855, 859 (Ariz. 1990)).

As a result, faulty and misleading forensics are one of the leading causes of wrongful convictions across the country. Innocence Project, *Forensic Problems and Wrongful Convictions* (Feb. 18, 2009).[7] To date, the National Registry of Exonerations documents 3,420 exonerations in the United States since 1989. National Registry of Exonerations Database.[8] Approximately 24 percent of those innocent individuals were wrongly convicted, at least in part, as a result of faulty and misleading forensic evidence. *See* G. LaPorte, *Wrongful Convictions and DNA*

---

[6] https://www.pbs.org/newshour/science/genetic-genealogy-can-help-solve-cold-cases-it-can-also-accuse-the-wrong-person

[7] https://innocenceproject.org/forensic-problems-and-wrongful-convictions/

[8] https://www.law.umich.edu/special/exoneration/Pages/about.aspx

Exonerations: Understanding the Role of Forensic Science, NIJ J. 279 (Apr. 2018).[9] Beyond wrongful convictions, false forensics have also led to overcharging and over sentencing, resulting in incarceration of disproportionate length, especially in cases involving drug testing such as this one, as well as plea decisions tainted by the influence of false forensic evidence.

Because forensic evidence may not always be reliable, the criminally accused must be afforded every constitutional guarantee to defend themselves against faulty or misleading forensics, and, at a minimum, that includes the right to cross-examine the analyst who conducted the testing. As discussed below, confrontation is essential to permit the criminally accused the opportunity to test the state's evidence through the adversarial method. Cross-examination will expose fraud, mistakes or incompetence, or judgment that consists of nothing more than the *ipse dixit* of the analyst. *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997) ("[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert."). More broadly, cross-examination provides the jury with information necessary to assess the weight, if any, to give the forensic opinion, and a requirement of confrontation serves to encourage scientific rigor as a general matter.

---

[9] https://nij.ojp.gov/library/publications/wrongful-convictions-and-dna-exonerations-understanding-role-forensic-science

1. Cross-examination can expose fraud.

Not all errors in forensic testing are inadvertent. There have been many documented cases of fraudulent testimony, unlawful tampering with evidence, and "drylabbing," where an analyst claims results without actually performing the lab work. The number of exonerations cited above from the National Registry does not include the tens of thousands of cases in which misconduct at government-run labs has led to reversals and dismissals *en masse* due to lab scandals across the country.

For example, in 2017, the Massachusetts Supreme Judicial Court ordered the dismissal of more than 20,000 convictions after state drug lab chemist Annie Dookhan was caught tampering with evidence and falsifying test results. *Bridgeman v. District Attorney for the Suffolk District*, 67 N.E.3d 673 (Mass. 2017); *Court Approves Single Largest Dismissal of Convictions in U.S. History*, CBS NEWS (Apr. 20, 2017).[10] Thousands more convictions were dismissed later that year after another chemist, Sonja Farak, was caught stealing drugs and tampering with evidence. *Committee for Public Counsel Services v. Attorney General*, 108 N.E.3d 966 (Mass. 2018); *6,000 Drug Cases Linked to "Rogue Chemist" at Mass. Crime Lab to be Dismissed*, CBS NEWS (Dec. 29, 2017).[11] In 2021, the Suffolk County District Attorney announced that she would be dropping charges in tens of thousands of cases because of a

---

[10] https://www.cbsnews.com/news/more-than-21000-drug-convictions-officially-thrown-out-after-chemists-tampering/

[11] https://www.cbsnews.com/news/6000-drug-cases-linked-to-rogue-chemist-at-mass-crime-lab-to-be-dismissed/

decade of misconduct by the lab analysts, and the Middlesex County District Attorney moved the Supreme Judicial Court in Massachusetts to investigate. T. Matthews, *State Drug Lab Scandal: DA to Drop Convictions, Charges for Thousands of Cases Tied to Chemists Annie Dookhan, Sonja Farak*, MASSLIVE (Mar. 22, 2021)[12]; M. Mulvihill, *More Cases Tied to Scandal-Plagued Drug Lab Could be Tossed in 'Nightmare Scenario' for State's Criminal Justice System*, THE BOSTON GLOBE (Mar. 26, 2021).[13]

The scandal in the Massachusetts lab is one of the largest drug lab scandals in history, but it does not stand alone. In Houston, a government lab technician fabricated results in drug cases, and it was estimated that about one out of every three reports he submitted was flawed. J.M. Smith, *Forget CSI: A Disaster is Happening in America's Crime Labs*, BUSINESS INSIDER (Apr. 30, 2014).[14] In Florida, a government lab analyst was arrested for stealing drugs and tampering with evidence in thousands of cases. N. Valencia & S. Almasy, *Florida Crime Lab Chemist Arrested on Charges of Selling Stolen Drug Evidence*, CNN (Feb. 4, 2014).[15]

Toxicology is not the only area that has seen scandal. One of the earliest forensic lab scandals

---

[12] https://www.masslive.com/news/2021/03/state-drug-lab-scandal-da-to-drop-convictions-charges-for-thousands-of-cases-tied-to-chemists-annie-dookhan-sanja-farak.html

[13] https://www.bostonglobe.com/2021/03/26/metro/more-cases-tied-scandal-plagued-drug-lab-could-be-tossed-nightmare-scenario-states-criminal-justice-system/

[14] https://www.businessinsider.com/forensic-csi-crime-labs-disaster-2014-4?op=1

[15] https://www.cnn.com/2014/02/04/justice/florida-chemist-prescription-drug-evidence/index.html

involved a serologist at the West Virginia State Police Crime Laboratory whose misconduct tainted nearly 200 criminal cases. P. Giannelli, *Scientific Fraud*, 46(6) CRIM. L. BULLETIN 1313 (2010). Suspicion arose in 1992 after DNA evidence exonerated Glen Woodall, who was serving two life sentences without parole plus 203–335 years in prison for a double rape conviction in 1987. *Id.* at 1314. Woodall was convicted largely on the strength of testimony provided by serologist Fred Zain. *Id.* In 1993, the Supreme Court of Appeals of West Virginia appointed a special judge to supervise an investigation into the state laboratory's Serology Division. *Matter of Investigation of W. Virginia State Police Crime Laboratory, Serology Div.*, 438 S.E.2d 501, 503 (W. Va. 1993). The resulting report, written in conjunction with the American Society of Crime Laboratory Directors (ASCLD), found that Zain's misconduct included:

> (1) overstating the strength of results; (2) overstating the frequency of genetic matches on individual pieces of evidence; (3) misreporting the frequency of genetic matches on multiple pieces of evidence; (4) reporting that multiple items had been tested, when only a single item had been tested; (5) reporting inconclusive results as conclusive; (6) repeatedly altering laboratory records; (7) grouping results to create the erroneous impression that genetic markers had been obtained from all samples tested; (8) failing to report conflicting results; (9) failing to conduct or to report conducting additional testing to resolve conflicting results; (10) implying a match with a suspect when testing supported only a match with

> the victim; and (11) reporting scientifically impossible or improbable results.

Id. at 503. Over the years following Zain, reports document notorious cases of lab misconduct in California, Massachusetts, Minnesota, New York, North Carolina, Oklahoma, Oregon, and West Virginia, among others. *See*, *e.g.*, M. Hansen, *Crime Labs Under the Microscope after a String of Shoddy, Suspect and Fraudulent Results*, A.B.A.J., Sept. 1, 2013[16]; R. Balko, *Two FBI Officials Say the State of Forensics is Fine. Here's Why They're Wrong.*, WASH. POST, June 6, 2018[17]; M. Bernstein, *Former State Police Forensic Scientist Sentenced to 3 Years in Federal Prison*, THE OREGONIAN, Dec. 12, 2016.[18]

Each of the lab scandals across the country has revealed weaknesses in the government lab infrastructure that was once thought beyond reproach. Even before the unprecedented fraud in Massachusetts and elsewhere, this Court, in the 2009 *Melendez-Diaz* decision, recognized that cross-examination may detect, or even deter, fraud. *Melendez-Diaz*, 557 U.S. at 319. Justice Scalia explained: "Like the eyewitness who has fabricated his account to the police, the analyst who provides false results may, under oath in open court, reconsider his false testimony. And, of course, the prospect of confrontation will deter fraudulent analysis in the first place." *Id.* (citations omitted).

---

[16] https://www.abajournal.com/magazine/article/crime_labs_under_the_microscope_after_a_string_of_shoddy_suspect_and_fraudu/

[17] https://www.washingtonpost.com/news/the-watch/wp/2018/06/06/two-fbi-officials-say-the-state-of-forensics-is-fine-heres-why-theyre-wrong/

[18] https://www.oregonlive.com/portland/2016/12/former_oregon_state_police_for.html

Surrogate testimony, as *Bullcoming* acknowledged, cannot "expose any lapses or lies on the certifying analyst's part." 564 U.S. at 661–62.

At a minimum, courts cannot guard against widespread abuse by subjecting forensic evidence to *less* scrutiny or by *insulating* analysts from cross-examination.

2. Cross-examination can expose mistakes in the process.

Forensic analysts are not immune to mistakes and incompetence. Confronting an expert on his or her process and training are traditional areas that are ripe for cross-examination. Scientific and academic experts have documented the subjective nature of many forensic disciplines, NAS Report at 185–86, and the criminally accused must be entitled to cross-examine the person exercising that subjective judgment.

Mistakes and incompetence in that exercise are not uncommon. In 2021, the D.C. Department of Forensic Sciences lost its accreditation after a casework review triggered by a failed proficiency test by a firearms examiner launched multiple audits. *See* S. Hsu & K. Alexander, *Forensic Errors Trigger Reviews of D.C. Crime Lab Ballistics Unit, Prosecutors Say*, WASH. POST, Mar. 24, 2017[19]; J. Moore, *Sweeping Report Urges DC to Review Every Case Handled by Firearms, Fingerprint Units at Troubled Crime Lab*, WTOP

[19] https://www.washingtonpost.com/local/public-safety/forensic-errors-trigger-reviews-of-dc-crime-lab-ballistics-unit-prosecutors-say/2017/03/24/2d67cdcc-0e75-11e7-ab07-07d9f521f6b5_story.html

NEWS, Dec. 14, 2021.[20] The audits revealed that three separate firearms examiners had committed misidentifications of cartridge casings relevant to an ongoing murder prosecution. Hsu, *Forensic Errors Trigger Reviews of D.C. Crime Lab Ballistics Unit, Prosecutors Say*, *supra*. Following the loss of accreditation, the laboratory fired all of its firearms examination personnel, and D.C. began efforts to review every case completed by the unit over the last decade. Moore, *Sweeping Report Urges DC to Review Every Case Handled by Firearms, supra*.

Before D.C., a team from the Michigan State Police Forensic Science Division conducted an audit in 2008 of the Detroit Police Department firearms unit, including a random reanalysis of 250 real-world cases and an additional 33 cases that were known to have been prosecuted. *See* Michigan State Police Forensic Science Division, *Audit of the Detroit Police Department Forensic Services Laboratory Firearms Unit* (Oct. 28, 2008)[21]; *see also* N. Bunkley, *Detroit Police Lab is Closed After Audit Finds Serious Errors in Many Cases*, N.Y. TIMES (Sept. 25, 2008).[22] The results of the audit were striking (enough to shutter the unit): in ten percent (29) of the 283 cases reanalyzed, firearms examiners from the DPD's firearms unit had committed serious errors (defined as false identifications or false exclusions). *Id.* The majority of those errors (24) fell into the category of misidentifications. *Id.*

---

[20] https://wtop.com/dc/2021/12/sweeping-report-urges-dc-to-review-every-case-handled-by-firearms-fingerprint-units-at-troubled-crime-lab/

[21] https://www.sado.org/content/pub/10559_MSP-DCL-Audit.pdf

[22] https://www.nytimes.com/2008/09/26/us/26detroit.html

Even otherwise reliable techniques involve human judgment, making them subject to error in the process that will not be apparent within the four corners of the forensic report. For example, DNA testing is not without its flaws. DNA testing involves a number of steps to transform a mixture of biological material collected through a criminal investigation into a DNA profile that can be used as the basis for identification. The analyst must first sample the evidence by deciding which pieces of physical evidence to swab, cut, or scrape to obtain DNA for testing. The process proceeds with (1) extraction (releasing the DNA from the nucleus of the cell), (2) quantitation (determining how much DNA exists in the sample), (3) amplification (producing multiple copies of the DNA in order to characterize it), (4) separation (separating amplified DNA to permit a subsequent identification), and (5) analysis and interpretation (quantitatively and qualitatively comparing DNA evidence samples to known DNA profiles for purposes of identification). Mistakes during any one of those steps can result in contamination, loss of important data, or errors in identification.

Human judgment and decision-making during testing can also lead to errors. For example, the decision of what to include or omit from sampling will shape what DNA profiles are generated in the investigation. As another example, decisions about what data to interpret as representing the DNA of the contributor, as opposed to artifacts generated during testing, will dictate the outcome of the test. Even decisions about the number of contributors in a mixed sample from multiple contributors requires the analyst's subjective judgment before that analyst can

rely on more sophisticated software systems to assess those profiles.

As the New York Court of Appeals—the state's highest court—recognized in an opinion upholding the right to confront the original analyst who witnessed, performed, or supervised the generation of a DNA profile, "[w]e will not indulge in the science fiction that DNA evidence is merely machine-generated, a concept that reduces DNA testing to an automated exercise requiring no skill set or application of expertise or judgment." *People v. John*, 52 N.E.3d 1114, 1125 (N.Y. 2016). Instead, "the sophisticated software programs require trained analysts who engage in skilled interpretation of data from the electrophoresis instrument, using the computer software with its color images, particularly as to the peaks in the graphs, *to construct the DNA profile*." *Id.* (emphasis added).

Cross-examination of the testing analyst increases the likelihood that mistakes during the process are exposed. The same is true for the many forensic disciplines that rely on the analyst's subjective observations and judgment to arrive at a conclusion.

3. Cross-examination can expose bias.

Human factors, including conscious and unconscious bias, can taint the results of any forensic test. Biases are specific to the individual examiner who conducted the test and of course are not included in the forensic report. The biases of the original analyst cannot be addressed by a surrogate analyst.

Unconscious bias, or "cognitive bias," is a fundamental part of all human decision-making, especially in subjective matters. The PCAST Report

emphasizes "[s]ubjective methods require particularly careful scrutiny because their heavy reliance on human judgment means they are especially vulnerable to human error, inconsistency across examiners, and cognitive bias. In the forensic feature-comparison disciplines, cognitive bias includes the phenomena that, in certain settings, humans may tend naturally to focus on similarities between samples and discount differences and may also be influenced by extraneous information and external pressures about a case." PCAST Report at 5.

The NAS Report, and the PCAST Report after it, flagged a number of different types of cognitive bias in forensic disciplines. For example, analysts working for labs operated and funded by state or local governments may be subject to "motivational bias." NAS Report at 183; PCAST Report at 31. As the NAS Report explained, "[t]he majority of [laboratories producing forensic evidence] are administered by law enforcement agencies, such as police departments, where the laboratory administrator reports to the head of the agency." NAS Report at 183. And "[b]ecause forensic scientists often are driven in their work by a need to answer a particular question related to the issues of a particular case, they sometimes face pressure to sacrifice appropriate methodology for the sake of expediency." *Id.* at 23–24. This Court recognized in *Melendez-Diaz* that "[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." *Melendez-Diaz*, 557 U.S. at 318.

Forensic opinions may also be the result of "confirmation bias" or "expectation bias." Confirmation bias arises when the analyst—consciously or

unconsciously—tends to seek and interpret information in a way that conforms to the analyst's pre-existing beliefs or assumptions. *See* PCAST Report at 31. Expectation bias occurs when the analyst expects a certain outcome from testing and, as a result, focuses on only the data that leads to that outcome, discounting or discarding data that is inconsistent with the expected result. *See* G. Cooper & V. Meterko, *Cognitive Bias Research in Forensic Science: A Systematic Review*, 297 FORENSIC SCI. INT'L 35, 36 (2019).

Research confirms that the problem of bias in forensic disciplines is compounded by task irrelevant information provided to the analyst during the process, such as police reports, background checks, and even conversations with police or prosecutors. I. Dror, *Cognitive and Human Factors in Expert Decision Making: Six Fallacies and the Eight Sources of Bias*, 92 ANAL. CHEM. 7998, 8001 (2020). Often, cross-examining the analyst who conducted the tests is critical and the only way to learn the full extent of the biasing information to which that analyst may have been exposed.

Expert witnesses are routinely subjected to cross-examination for bias. This Court recognized nearly 50 years ago that "[t]he partiality of a witness is subject to exploration at trial, and is 'always relevant as discrediting the witness and affecting the weight of his testimony.'" *Davis v. Alaska*, 415 U.S. 308, 316 (1974) (quoting 3A J. Wigmore, Evidence § 940 at 775 (Chadbourn rev. 1970)). The bias of the forensic analyst is no different. Because so many forensic disciplines rely on the subjective observations of the forensic analyst, cross-examination on a surrogate will not do. A surrogate analyst cannot effectively

respond to questions that will expose unconscious bias that may have infected the original analysis.

* * *

The fallibility and importance of forensic evidence in criminal prosecutions underscore the need for this Court to ensure a meaningful right to confrontation. "[T]he analysts who write reports introduced as evidence must be made available for confrontation even if they have the scientific acumen of Mme. Curie and the veracity of Mother Teresa." *Bullcoming*, 564 U.S. at 661 (*quoting Melendez-Diaz*, 557 U.S. at 317) (internal quotation marks omitted).

IV. Conclusion

The judgment below should be reversed.

Dated November 20, 2023

Respectfully submitted,

ANNA SORTUN
Counsel of Record
SAMANTHA TAYLOR
TONKON TORP, LLP
888 S.W. 5th Avenue, Suite 1600
Portland, Oregon 97204
(503) 802-2107
anna.sortun@tonkon.com

JANIS C. PURACAL
BYRON C. LICHSTEIN
FORENSIC JUSTICE PROJECT
333 S.W. Taylor Street, Suite 400
Portland, Oregon 97204
(503) 664-3641

JAMIE T. LAU
CO-VICE PRESIDENT,
INNOCENCE NETWORK
DUKE LAW WRONGFUL
CONVICTIONS CLINIC
210 Science Drive
Durham, North Carolina 27708
(919) 613-7764

LARA ZAROWSKY
CO-VICE PRESIDENT,
INNOCENCE NETWORK
WASHINGTON INNOCENCE PROJECT
P.O. Box 85869
Seattle, Washington 98145
(206) 636-9479

KATHERINE H. JUDSON
KEITH A. FINDLEY
CENTER FOR INTEGRITY
IN FORENSIC SCIENCES
33 East Main Street, Suite 400
Madison, Wisconsin 53703
(608) 736-2437

Counsel for Amici Curiae

Appendix A

List of *Amici Curiae* (in alphabetical order)

- Center for Integrity in Forensic Science
- Forensic Justice Project
- The Innocence Network, member organizations include: the Actual Innocence Clinic at the University of Texas School of Law, After Innocence, Alaska Innocence Project, Arizona Justice Project, Boston College Innocence Program, California Innocence Project, Center on Wrongful Convictions, Committee for Public Counsel Services Innocence Program, Connecticut Innocence Project, Duke Law Center for Criminal Justice and Professional Responsibility, Exoneration Project, George C. Cochran Innocence Project at the University of Mississippi School of Law, Georgia Innocence Project, Hawai'i Innocence Project, Idaho Innocence Project, Illinois Innocence Project, Indiana University McKinney Wrongful Conviction Clinic, Innocence Delaware, Inc., Innocence Project, Innocence Project Argentina, Innocence Project at the University of Virginia School of Law, Innocence Project Brasil, Innocence Project London, Innocence Project New Orleans, Innocence Project of Florida, Innocence Project of Texas, Italy Innocence Project, Justicia Reinvindicada Puerto Rico Innocence Project, Korey Wise Innocence Project, Loyola Law School Project for the Innocent, Manchester Innocence Project, Michigan Innocence Clinic, Mid-Atlantic Innocence Project, Midwest Innocence Project, Montana Innocence

Project, New England Innocence Project, New York Law School Post-Conviction Innocence Clinic, North Carolina Center on Actual Innocence, Northern California Innocence Project, Office of the Ohio Public Defender Wrongful Conviction Project, Ohio Innocence Project, Oklahoma Innocence Project, Oregon Innocence Project, Osgoode Hall Innocence Project, Rocky Mountain Innocence Center, Taiwan Innocence Project, Thurgood Marshall School of Law Innocence Project, University of Arizona Innocence Project, University of Baltimore Innocence Project Clinic, University of Baltimore Innocence Project Clinic, University of British Columbia Innocence Project at the Allard School of Law, University of Miami Law Innocence Clinic, Wake Forest University School of Law Innocence and Justice Clinic, Washington Innocence Project, West Virginia Innocence Project, Wisconsin Innocence Project, and Witness to Innocence