No. 127241

IN THE
SUPREME COURT OF ILLINOIS

People of the State of Illinois, Plaintiff-Appellant,	On Petition for Leave to Appeal From the Appellate Court of Illinois, Fifth Judicial District No. 127241
v.	There on Appeal from the Circuit Court of the Third Judicial Circuit of Madison County, Illinois, No. 82 CF 381
John Prante, Defendant-Appellee.	Honorable Neil T. Schroeder Judge Presiding

BRIEF FOR *AMICI CURIAE* CRIMINAL LAW SCHOLARS, SCIENTISTS, STATISTICIANS, AND THE INNOCENCE NETWORK

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E-FILED
7/21/2022 3:31 PM
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INTEREST OF AMICI CURIAE[1]

The *amici* are law professors, scientists, statisticians, directors, and students at some of America's leading universities who have devoted a substantial part of their teaching, work, research and/or writing to criminal law and procedure, including issues pertaining to the accuracy and reliability of evidence and equity in criminal outcomes. Their work has been published by major university presses and in leading scientific and law journals. The *amici* consist of:[2]

- The Innocence Network;
- Brandon L. Garrett, Neil Williams Professor of Law, Director, Wilson Center for Science and Justice at Duke University School of Law;
- Yvette Garcia Missri, Executive Director, Wilson Center for Science and Justice at Duke University School of Law;
- Gabriel Berumen, J.D. Candidate, Class of 2023, Duke University School of Law;
- Tara Weese, J.D., LL.M., Ph.D. Candidate in Philosophy, Duke University;
- Thomas D. Albright, Ph.D., Professor; Conrad T. Prebys Chair, The Salk Institute for Biological Studies;
- Valena Beety, Professor of Law, Arizona State University Sandra Day O'Connor College of Law;

[1] All parties have consented to the filing of this brief. No counsel for any party has authored this brief in whole or in part, no party or party's counsel contributed money that was intended to fund preparing or submitting this brief, and no person other than *amici* or their counsel contributed money intended to fund preparing or submitting this brief.

[2] The institutional affiliations of the *amici* are included for identification purposes only, and the *amici* are submitting the brief in their personal capacity only.

- Alicia L. Carriquiry, PhD, Distinguished Professor of Liberal Arts and Sciences; President's Chair in Statistics; Director, CSAFE, Iowa State University;

- David L. Faigman, Chancellor & Dean; John F. Digardi Distinguished Professor of Law, University of California Hastings College of the Law;

- David Jaros, Professor; Faculty Director, University of Baltimore Center For Criminal Justice Reform, University of Baltimore School of Law;

- Karen Kafadar, Commonwealth Professor; Chair, Dept of Statistics, University of Virginia;

- Michael J. Saks, Regents Professor, Center for Law, Science & Innovation, Arizona State University Sandra Day O'Connor College of Law;

- Maneka Sinha, Associate Professor of Law, University of Maryland Francis King Carey School of Law;

- J. H. Pate Skene, JD, PhD, Senior Research Scientist, Institute of Cognitive Science, University of Colorado Boulder;

- Colin Starger, Professor of Law; Director, Legal Data and Design Clinic, University of Baltimore School of Law;

- Hal Stern, Chancellor's Professor, Department of Statistics, University of California, Irvine.

The Innocence Network ("the Network") is an association of independent organizations dedicated to providing pro bono legal and/or investigative services to prisoners for whom evidence discovered post-conviction can provide conclusive proof of innocence. The sixty-nine current members of the Network represent hundreds of prisoners with innocence claims in all fifty states, the District of Columbia, and Puerto Rico, as well as Australia, Argentina, Brazil, Canada, Ireland, Israel, Italy, the Netherlands, the United Kingdom, and Taiwan. The Innocence Network and its members are also dedicated to improving the accuracy and reliability of the criminal

justice system in future cases. Drawing on lessons from cases in which the system has convicted innocent persons, the Network advocates for reforms and judicial rulings that would enhance the truth-seeking functions of the criminal justice system and prevent future wrongful convictions.

In nearly half of the 375 exonerations secured through post-conviction DNA testing, the misapplication of forensic disciplines—such as blood-type testing, hair analysis, fingerprint analysis, bite-mark analysis, and more—has played a role in convicting the innocent. The Network's experience litigating to secure the exoneration of hundreds innocent individuals provides the Network with a unique expertise on the impact unreliable or improper scientific or medical evidence has on the fairness and constitutionality of criminal proceedings.

Professor Garrett is the L. Neil Williams Professor of Law at Duke University School of Law — where he has taught since 2018. Garrett also is the Founder and Faculty Director of the Wilson Center for Science and Justice at Duke University. He was previously the Justice Thurgood Marshall Distinguished Professor of Law and White Burkett Miller Professor of Law and Public Affairs at the University of Virginia School of Law. His research, publication, and teaching focuses on, as relevant here, criminal procedure, wrongful convictions, habeas corpus, scientific evidence, and constitutional law, and is particularly focused on reforms that would increase the accuracy and integrity of the criminal system, including through the use of reliable scientific and expert evidence.

Garrett's work, including six books, has been widely cited by courts—including the U.S. Supreme Court, lower federal courts, state supreme courts, and courts in other countries. Garrett also frequently speaks about criminal justice matters before legislative and policymaking bodies, groups of practicing lawyers, law enforcement, and to local and national media. Garrett's book "Convicting the Innocent: Where Criminal Prosecutions Go Wrong," published by Harvard University Press in 2011, comprehensively details the sources of error in the first 250 DNA exonerations in the United States. Garrett is also a Principal Investigator and member of the leadership team for the Center for Statistics and Applications in Forensics (CSAFE)—a collaboration among several university scholars conducting research on how to collect more accurate forensic evidence and more reliably convey that forensic evidence in court. CSAFE is supported by a cooperative agreement with the National Institute of Standards and Technology (NIST)—a federal agency whose mission is to advance measurement science, standards, and technology.

Yvette Garcia Missri is the Executive Director of the Wilson Center for Science and Justice at Duke Law School. Missri, who holds a law degree and a Master's in Public Health, has spent the past twenty years as a leading legal and public health advocate for racial and social justice. In her role, Missri oversees the Wilson Center's research and policy work, including its extensive research to better understand how wrongful convictions occur and to improve the accuracy of evidence used in criminal cases. The Wilson Center is devoted to identifying better ways for law enforcement

to collect eyewitness, confession, forensic, and other evidence, and to enhance the ability of judges, lawyers, and jurors to understand evidence presented in court.

Thomas D. Albright is the Professor and Director of the Vision Center Laboratory at The Salk Institute for Biological Studies, and Conrad T. Prebys Chair in Vision Research. For more than thirty years, Albright has contributed research to the field of vision science and forensic science. Albright's many publications include several titles pertaining forensic science, including *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims* in the Journal of Law and Bioscience, and *A Call For More Science In Forensic Science* in Proceedings of the National Academy of Sciences of the United States of America. Albright's many accolades including serving as a Commissioner for the National Commission on Forensic Science from 2015 to 2017. Albright received his PhD in Psychology and Neuroscience from Princeton University.

Valena Beety is a Professor of Law at the Arizona State University Sandra Day O'Connor College of Law and the deputy director of the Academy for Justice, a criminal justice center connecting research with policy reform. Beety has previously served as both law professor and the founding director of the West Virginia Innocence Project at the West Virginia University College of Law. At West Virginia University, Beety created and was the inaugural director of the first Forensic Justice L.L.M. In practice, Professor Beety has successfully exonerated wrongfully convicted clients, obtained presidential grants of clemency for drug offenses, and served as an elected board member of the national Innocence Network, an invited board member of the

Research Center on Violence, and an appointed commissioner on the West Virginia Governor's Indigent Defense Commission. Beety also serves as the co-editor of the Wrongful Convictions Reader and the Scientific Evidence Treatise.

Alicia L. Carriquiry is a Distinguished Professor and President's Chair in Statistics at Iowa State University, as well as the Director of the Center for Statistics and Applications in Forensic Evidence. Carriquiry serves on the board of advisors for the Center for Integrity in Forensic Sciences and has contributed substantially to the scholarship on statistics and forensic science.

David L. Faigman is the Chancellor and Dean of the University of California Hastings College of the Law, as well as the John F. Digardi Distinguished Professor of Law. Faigman also holds an appointment as Professor in the School of Medicine (Dept. of Psychiatry) at the University of California, San Francisco. He is the author of over 50 articles and essays, including *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims* in the Journal of Law and Bioscience, and has published in a variety of outlets, including Science, Sociological Methods & Research and Nature Reviews Neuroscience. He is also the author of three books, Constitutional Fictions: A Unified Theory of Constitutional Facts (Oxford, 2008), Laboratory of Justice: The Supreme Court's 200-Year Struggle to Integrate Science and the Law (Henry Holt & Co. 2004) and Legal Alchemy: The Use and Misuse of Science in the Law (W.H. Freeman,1999). In addition, Professor Faigman is a co-author/co-editor of the five-volume treatise Modern Scientific Evidence: The Law and Science of Expert Testimony (with Cheng, Mnookin, Murphy Sanders & Slobogin).

The treatise has been cited widely by courts, including several times by the U.S. Supreme Court. Professor Faigman was a member of the National Academy of Sciences panel that investigated the scientific validity of polygraphs, is a member of the MacArthur Law and Neuroscience Network and served as a Senior Advisor to the President's Council of Advisors on Science and Technology's (PCAST's) Report, "Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods."

David Jaros is a Professor of Law at the University of Baltimore School of Law, as well as the Faculty Director for the University of Baltimore Center For Criminal Justice Reform. He is a member of the American Law Institute and is an appointee to the Maryland Task Force to Study Crime Classification and Penalties. His articles have appeared in a number of law reviews including the Columbia Law Review, University Pennsylvania Law Review, Boston College Law Review, and the Iowa Law Review.

Karen Kafadar is the Commonwealth Professor and Chair of the Deptartment of Statistics at the University of Virginia. Professor Kafadar has contributed substantially to scholarship on statistical methodology for forensic science, including as an author of *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims* in the Journal of Law and Bioscience. Among her many accolades, Professor Kafadar has been an Elected Fellow to the American Association for the Advancement of Science for applications of statistics to forensic science. She has acted as a participant in the Roundtable on Forensic Science Discipline Review with

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Michael J. Saks is a Regents Professor in the Sandra Day O'Connor College of Law and Department of Psychology at Arizona State University. He is also a faculty fellow with the Center for Law, Science and Innovation at ASU. Professor Saks' research interests focus on empirical studies of law and the legal system, especially decision-making in the legal process, evidence law, the law's use of science, the behavior of the litigation system, and legal policy affecting medical patient safety. Among his approximately 250 publications (including 11 books), Saks was first author on *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims* in the Journal of Law and Bioscience. He has been co-editor/co-author of "Modern Scientific Evidence" (five volumes) and the "Annotated Reference Manual on Scientific Evidence," and co-author of "The Psychological Foundations of Evidence Law" (2016). His work has earned numerous awards and been cited in a number of judicial opinions, including by the U.S. Supreme Court. Saks's work is among the most-cited research in the NRC report, *Strengthening Forensic Science in the United States.*

Maneka Sinha is an Associate Professor of Law at the University of Maryland Francis King Carey School of Law. Sinha joined the University of Maryland Carey School of Law in 2019 to re-launch the Criminal Defense Clinic. She has extensive

experience in criminal litigation and is recognized for her expertise in forensic science. Sinha's research interests explore the intersection of forensic science evidence and outcomes in criminal cases. Prior to joining University of Maryland, Sinha spent 10 years at the renowned Public Defender Service for the District of Columbia where she served as senior advisor to the agency's director on forensic science. She also served as head of the agency's nationally recognized Forensic Practice Group, training and supervising lawyers involved in forensic science litigation locally and nationwide, while also personally litigating highly complex and novel forensic science issues.

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Colin Starger is a Professor of Law and Associate Dean for Academic Affairs at the University of Baltimore School of Law, as well as the Director of the Legal Data and Design Clinic. An expert in innocence and wrongful convictions, Starger previously worked as a Staff Attorney at the Innocence Project at Cardozo Law

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INTRODUCTION

By ensuring that only valid, reliable expert testimony is admitted into evidence or relied upon to uphold convictions, courts play a crucial role in the prevention and correction of the tragic injustice of wrongful convictions. To protect the integrity of both individual judicial proceedings and the broader justice system, and to assure that wrongful convictions do not evade sufficient post-conviction review, courts must exclude unreliable forensic testimony from admission at criminal trials and allow

individuals who were convicted on now-discredited expert testimony meaningful opportunities to challenge their convictions.

In Illinois, when a party proffers expert testimony that is based on a new or novel scientific methodology, the proponent must show that the methodology is "generally accepted" in its field, pursuant to *Frye v. United States*, 54 App.D.C. 46, 293 F. 1013 (1923) (finding that a novel scientific methodology must be sufficiently established to have gained "general acceptance" in the particular field in which it belongs).

Far from general acceptance, the relevant scientific community now nearly unanimously dismisses bite mark testimony—precisely the sort that was relied upon to convict Defendant-Respondent, John Prante—as inherently unreliable and without any scientific validity. Indeed, in the decades since Prante was convicted, there has been an "emerging realization that the field stands on a quite limited foundation of scientific fact, that there is a lack of valid evidence to support many of the assumptions and assertions made by forensic dentists during bite-mark comparisons, and that error rates by forensic dentists are perhaps the highest of any forensic identification specialty still being practiced."[3] Indeed, leading scientists and scientific groups, including the National Academy of Sciences (NAS) and the Presidential Council of Advisors on Science and Technology, have condemned bite-

[3] Michael J. Saks et al, *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims*, J. Law Biosci. (2016) *supra* n.3 at 548, available at *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5570687/* (quotation marks omitted) (collecting references).

mark analysis as wholly lacking in a methodology which produces reliable results. These groups found that there is absolutely no empirical support for the premise that an injury or mark on human skin can be consistently and correctly identified as an actual bite-mark. Neither is there any empirical support for the premise that bite-mark "experts," forensic odontologists, can reliably identify the individual who inflicted, or could have inflicted, that injury.

Thus, when bite-mark evidence is subjected to the rigors of the *Frye* admissibility test, it becomes clear that any "expert" testimony purporting to identify a mark on human skin as a human "bite-mark" or to identify an alleged "biter" as causing the mark, cannot—and should not—be admitted. To date, the admission of bite-mark comparison testimony, like that used against Prante, has contributed to the wrongful convictions and indictments of more than thirty individuals. *See* https://www.innocenceproject.org/wp-content/uploads/2020/04/Description-of-bite-mark-exonerations-and-statistical-analysis_UPDATED-04.09.2020.pdf. These individuals collectively served over 400 years in prison for crimes that they did not commit. *Id.*

To prevent future wrongful convictions based on now-discredited "bite-mark" evidence, *amici* will urge this Court to take the opportunity presented by this case to explicitly declare that "bite-mark" evidence is inadmissible in criminal courts in Illinois, because it is inherently unreliable and does not meet the *Frye* admissibility standard.

Amici will also ask this Court to hold that petitioners, like Prante, who demonstrate that their conviction was secured by faulty, yet highly prejudicial, bite-mark "expert" testimony—and who could not have previously raised the claim due to the recency of the scientific community's repudiation of the technique—must be granted leave to file a successive post-conviction petition to challenge the constitutionality of their conviction, pursuant to 725 ILCS 5/122-1, lest wrongful convictions be improperly upheld.

ARGUMENT

I. TO PREVENT WRONGFUL CONVICTIONS AND ASSURE THE INTEGRITY OF CRIMINAL TRIALS, THIS COURT SHOULD ANNOUNCE THAT BITE-MARK IDENTIFICATION AND COMPARISON TESTIMONY IS INADMISSIBLE UNDER *FRYE*

Bite-mark identification and comparison used to be a widely accepted forensic technique, thought to be capable of accurately identifying injuries as human "bite-marks" and identifying the alleged "biter" by comparing the suspect's "dentition" to the purported "bite." However, in more recent years—as a result of scientific research, various reviews of the technique by scientific bodies, and the discovery of many wrongful convictions based on bite-mark testimony—there has been a significant evolution and shift in the scientific community's understanding of bite-mark analysis. In the decades since Prante's trial and conviction, the scientific community has re-evaluated and roundly discredited bite-mark evidence as inherently unreliable.[4] Indeed, as discussed below, *all* available empirical studies and

[4] *See e.g.*, President's Council of Advisors on Sci. & Tech., *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (2016),

reviews by scientific bodies reveal major problems with the reliability and validity of bite-mark analysis. Accordingly, bite-mark analysis is not "generally accepted" as reliable in the relevant scientific field. *Accord In re Commitment of Simons*, 213 Ill.2d 523, 614-15 (2004) (under the *Frye* standard, scientific evidence is admissible only if the process's methods or principles have gained "general acceptance" in its field).

The ever-growing list of innocent people who have been wrongfully convicted based upon faulty bite-mark testimony, discussed further *infra*, underscores the urgency in *amici's* ask that this Court issue a ruling precluding bite-mark evidence from admission in criminal trials.

A. The relevant scientific community has rejected bite-mark comparison testimony as inherently unreliable.

Testimony that purports to identify a patterned injury[5] as a result of a human bite, and/or identify the "biter" who produced that injury ("bite-mark comparison testimony"), has been determined to be scientifically invalid and unreliable in at least three comprehensive scientific reports, each more emphatic than the last in its conclusions:

- The National Academy of Sciences 2009 Report by the Committee on Identifying the Needs of the Forensic Science Community National Research

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https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf.; M. Chris Fabricant & Tucker Carrington, *The Shifted Paradigm: Forensic Science's Overdue Evolution From Magic To Law*, 4 Va. J. Crim. L. 1 (2016) (using empirical evidence, historical record, and scientific advancement, argues forensic science's predicted paradigm shift toward fundamental change has already occurred and necessitates the reevaluation and rejection of objectively erroneous forensics including bite mark evidence).

[5] A patterned injury is one which has a distinct pattern that may reproduce the characteristics of the object causing the injury. The pattern may be caused by impact of a weapon or other object on the body, or by contact of the body with a patterned surface.

> Council, entitled *Strengthening Forensic Science in the United States: A Path Forward* (hereinafter, "the NAS Report");[6]

- The 2016 Report of the Texas Forensic Science Commission ("TFSC");[7] and
- The 2016 Report by the Presidential Council of Advisors on Science and Technology ("PCAST Report"),[8]

The 2009 NAS Report was the first independent examination of the purported scientific foundations for bite-mark comparison testimony by a neutral committee of scientists and represents the culmination of nearly four years of work.[9] This authoritative and groundbreaking report demonstrated the lack of biological, statistical, and epistemological foundation for bite-mark comparison testimony. Although the NAS Report discussed numerous forensic fields, the NAS was most critical of bite-mark comparison testimony, with the NAS concluding that:

> (1) The ability of human dentition, if unique, to transfer a unique pattern to human skin and the ability of the skin to maintain that uniqueness has not been scientifically established.

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[6] Available at https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf.

[7] Tex. Forensic Sci. Comm'n, *Forensic Bitemark Comparison Complaint Filed by National Innocence Project on Behalf of Steven Mark Chaney–Final Report* (2016) (hereinafter "*TFSC Report*"), http://www.txcourts.gov/media/1440871/finalbitemarkreport.pdf.

[8] *See* President's Council of Advisors on Sci. & Tech., *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (2016), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf.

[9] Before issuing its report, the NAS heard extensive testimony from a vast array of scientists, law enforcement officials, medical examiners, crime laboratory officials, investigators, attorneys and leaders of professional and standard-setting organizations, including the American Board of Forensic Odontology, and conducted an extensive review of bite-mark literature and research. PCAST Report at 2.

> (2) A standard for the type, quality, and number of individual characteristics required to indicate that a bite mark has reached a threshold of evidentiary value has not been established.

NAS Report at 175-76. The NAS Report further found that no valid studies had ever been conducted to determine what aspects of the teeth and bite-mark can or should be measured to make any such comparisons, and that "there is no established science indicating what percentage of the population or subgroup of the population could also have produced the bite." *Id.* at 174. As such, testimony purporting to identify a probable match between a biter and a bite-mark has "inherent weaknesses" and "basic problems" which have "led to questioning of the value and scientific objectivity" of the discipline. *Id.* at 174, 176.

Seven years after the NAS Report, a blue-ribbon panel of scientists and lawyers from the TFSC formally recommended a moratorium on admitting bite-mark comparison testimony in all Texas criminal cases, finding that, although bite-mark comparison evidence had been admitted in Texas criminal proceedings for years, there is no scientific basis for continuing to admit such evidence. *See* TFSC Report, 1-12; 15-16. The TFSC was particularly troubled by a 2014 American Board of Forensic Odontology ("ABFO") study, discussed further below, that highlighted the "inability of ABFO Diplomates [forensic dentists certified by the ABFO] to agree on the threshold question of whether a patterned injury constitutes a human bite mark." *Id.* at 13. After considering the relevant evidence, the TFSC made two "threshold observations that should be universally accepted among forensic odontologists and

stakeholders in the broader criminal justice community." *Id.* at 11. First, "there *is no scientific basis for stating that a particular patterned injury can be associated to an individual's dentition*." *Id.* at 11-12 (emphasis added). Second, there is "no scientific basis for assigning probability or statistical weight to an association [of a bite mark to a biter]," despite the fact that "these types of claims were once thought to be acceptable." *Id.* at 12.

In 2016, the PCAST, an advisory group of the nation's leading scientists and engineers,[10] conducted an "extensive literature review" of more than 2,000 articles, papers, and other relevant literature, and heard testimony from across the spectrum of the forensic science community. PCAST Report at 2. Like the NAS and the TFSC before it, the PCAST found that the available research on bite-marks "cast[s] serious doubt on the fundamental premises of the field," and demonstrates that "forensic odontologists do not consistently agree even on whether an injury is a human bite mark at all." *Id.* at 83-85. As virtually every independent scientist and scientific had concluded, PCAST likewise found that bite mark evidence is "clearly scientifically unreliable" and that "bitemark analysis does not meet the scientific standards for

[10] The PCAST is the sole body of advisors from outside the federal government charged with making science, technology, and innovation policy recommendations to the President and the White House. Established by Executive Order, it is an independent Federal Advisory Committee comprised of distinguished individuals from industry, academia, and non-profit organizations with a range of perspectives and expertise. *See* whitehouse.gov/pcast/, last visited July 13, 2022.

foundational validity and is far from meeting such standards." *Id.* at 87. Further, the PCAST concluded that "the prospects of developing bite mark analysis into a scientifically valid method [are too] low" to justify "devoting significant resources to such efforts." *Id.* at 9.

This wholesale repudiation of bite-mark comparison testimony has been echoed by dozens of prominent scientists, statisticians, and law-and-science scholars or practitioners, who have publicly stated that bite-mark comparison evidence "stands on a foundation of very thin scientific support—if any at all." *See, e.g.,* Application for Leave to File Amici Curiae Brief of Michael J. Saks, Thomas Albright, Thomas L. Bohan, Barbara E. Bierer and 34 other Scientists, Statisticians and Law-And-Science Scholars and Practitioners in Support of the Petition for Writ of Habeas Corpus by William Joseph Richards, filed in *Richards v. Fox*, No. S223651, 2015 WL 5779457 (Cal. 2015). Even within the forensic odontology community there is considerable dissent; many high-profile forensic dentists who were once ardent advocates for and defenders of bite-mark comparison testimony now reject its use in criminal cases. *See* https://innocenceproject.org/what-is-bite-mark-evidence-forensic-science/.

In short, the overwhelming majority of the relevant scientific community has affirmatively rejected the validity of bite-mark identification and comparison testimony. Moreover, the lack of even a single study showing that forensic odontologists can produce verifiable, reliable results when attempting to identify a

bite-mark and compare a putative biter with an injury thought to be a "bite-mark," confirms that this technique has been properly denounced by the community as unreliable and that testimony purporting to identify an injury as a "bite mark," or an individual as the source of that mark, must be excluded.

1. Even experienced, credentialed forensic dentists cannot reliably determine whether an injury on a human body is or is not a bite-mark.

Bite-mark comparison testimony depends on the notion that practitioners can reliably determine that an injury was caused by a bite (and can differentiate it from other injuries). Significantly, multiple studies, conducted since Prante's conviction, have affirmatively established that forensic dentists or other "experts" cannot reliably or consistently identify whether a patterned injury on a human has been caused by a bite, rendering the entire technique of bite-mark analysis fundamentally flawed.[11]

In 2016, the ABFO published the results of a comprehensive examination (hereinafter "the ABFO Study") that established that even the most experienced forensic odontologists are incapable of reaching consensus on the threshold question

[11] *See e.g.*, Mark Page, et al., *Expert Interpretation of Bitemark Injuries—A Contemporary Study*, 58(3) J. FORENSIC SCI. 664, 670 (May 2013) (finding that the inability of forensic dentists to consistently and reliably identify a human bite-mark as such, "indicates a fundamental flaw in the methodology of bitemark analysis and should lead to concerns regarding the reliability of any conclusions reached about matching such a bitemark to a dentition.").

of whether an injury is or is not a bite-mark.[12] More specifically, in the ABFO Study, two researchers, in consultation with the ABFO, gave photographs of 100 patterned injuries to 38 ABFO-certified diplomates (with an average of 20 years of experience), then asked them to answer a series of questions.[13]

First, the ABFO diplomates were asked: "[i]s there sufficient evidence in the presented materials to render an opinion on whether the patterned injury is a human bite mark?"[14] Significantly, in nearly all instances—96%—the diplomates disagreed on whether there was even sufficient evidence to enable them to render an opinion about whether the injury was a bite-mark (as opposed to another type of injury).

Second, the diplomates were asked whether the depicted injury is "a human bite mark, not a human bite mark, or suggestive of such a mark?"[15] Notably, the ABFO-certified analysts could not reach full consensus as to whether or not *any* of the 100 injuries depicted was a human bite-mark.[16] Rather, for 84 of the 100 patterned injuries that the ABFO experts were shown, there was substantial disagreement as to whether the injury at issue was or was not a bite-mark.[17]

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[12] Michael J. Saks et al, *Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims*, J. LAW BIOSCI., 1-38 (2016), available at *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5570687/*.
[13] Saks, *supra* note 14.
[14] *Id.*
[15] *Id.*
[16] *Id.*
[17] *Id.*

Third, the diplomates were asked "[d]oes the injury have distinct, identifiable arches and individual tooth marks?"—a question meant to test whether the odontologists agreed that the injury depicted specific, individualized marks traditionally associated with the purportedly unique dentition of an alleged "biter."[18] By this point, the participants were in near-complete disagreement—there were just 8 out of the 100 case studies for which at least 90 percent of the analysts were still in agreement.[19]

A forensic method of comparison is reliable only if, when presented with the same evidence, examiners of similar training and experience—in this case those who have passed the ABFO exam and met the other qualifications for diplomate status—reach the same conclusions. In the ABFO Study, *none of the 100 case studies resulted in unanimous agreement* and only 8% of the cases obtained even 90% agreement among the examiners. The ABFO Study thus exposed fundamental problems with bite-mark identification and comparison testimony that go substantially beyond those first identified by the NAS.

Another study published in May 2013 likewise documented the extreme unreliability of bite-mark analysis. Mark Page, et al., *Expert Interpretation of Bitemark Injuries—A Contemporary Study*, 58(3) J. FORENSIC SCI. 664 (May 2013). In that study, 15 Australian forensic dentists—the majority of those practicing

[18] *Id.*
[19] *Id.*

forensic odontology in Australia—were asked to analyze six images of potential bite marks. The results were similar to the 2014 ABFO Study, in that the dentists' conclusions as to whether these injuries were in fact bite-marks were "highly variable." *Id.* at 671. The 2013 study concluded that "[w]hile most odontologists would suggest they can determine with a reasonable degree of certainty what is and what is not a bite mark, there is little evidence to support this claim." *Id.* at 664**.** This lack of consensus on the question of whether the injuries were even bite-marks exemplifies the "fundamental flaw in the methodology of bite-mark analysis and should lead to concerns regarding the reliability of any conclusions reached about matching such a bitemark to a dentition." *Id.* at 670.

Put simply, the research demonstrates that even highly credentialed, experienced, board-certified forensic dentists cannot reliably answer the threshold inquiry necessary to offer bite-mark testimony: whether the injury at issue is or is not a bite-mark. Only forensic evidence that results from scientifically acceptable methods which produce reliable, verifiable results, should be admissible in a court of law. The scientific research and reviews clearly demonstrate that such reliability, or reproducibility, simply does not exist in the practice of bite-mark analysis.

2. There is no scientific basis for the claim that a forensic odontologist can accurately identify an individual source of a patterned injury.

The problem of forensic dentists' inability to reliably identify human bite-marks as such is compounded when they are asked to make conclusions regarding

the identity of the purported "biter." As the NAS, TFSC, and PCAST all found, there is no valid, reliable method of identifying the source of a purported bite-mark. Substantial research conclusively establishes that "[t]he scientific basis is insufficient to conclude that bite mark comparisons can result in a conclusive match." NAS Report at 175; *id*. at 7 (forensic odontologists lack "the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source"); *id*. at 174 ("[t]here is no science on the reproducibility of the different methods of analysis that lead to conclusions about the probability of a match. This includes reproducibility between experts and with the same expert over time."). Significantly, the NAS Report concluded that "[e]ven when using the [ABFO] guidelines, different experts provide widely differing results and a high percentage of false positive matches of bite marks using controlled comparison studies." NAS Report at 174.

This high rate of error is, in large part, explained by the fact that bite-mark comparison rest on two assumptions that have, in recent years, been established as entirely invalid: (1) that the biting surfaces of teeth are measurably distinct or unique from the teeth of others; and (2), that this "uniqueness" or "distinctiveness" can be accurately recorded or preserved in human skin. First, the very notion that each individual's dentition is unique, has been flatly contradicted by the NAS Report and other scientific studies. As the NAS Report explains, "[n]o thorough study has been conducted of a large population to establish the uniqueness of bite marks…". NAS Report at 174. Further, a substantial body of peer-reviewed scientific research largely

post-dating the NAS Report demonstrates that not only has this uniqueness *not* been scientifically established, but that it *cannot* be, at least as it relates to the limited features of the teeth likely to be represented in a bite-mark (i.e., a narrow surface of less than eight teeth, as opposed to 32 teeth with five sides). These studies repeatedly found significant numbers of random matches between dentitions, even within the limited number of samples included in the studies, demonstrating that human biting surfaces are not measurably distinct from one another.[20]

Moreover, as with the supposed uniqueness of the dentition, a more recent body of science—much of which emerged after publication of the NAS Report—demonstrates that due to its various physical and biological properties, human skin cannot accurately record whatever measurably distinct features may be present in the human dentition. *See e.g.*, PCAST Report at 83, 84 (noting that a 2010 study "concluded that skin deformation distorts bitemarks so substantially and so variably that current procedures for comparing bitemarks are unable to reliably exclude or

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[20] *See* Mary A. Bush, Peter J. Bush, & H. David Sheets, *Statistical Evidence for the Similarity of the Human Dentition*, 56 J. Forensic Sci. 118, 122 (2011) (concluding that "statements concerning dental uniqueness with respect to bitemark analysis in an open population are unsupportable"); H. David Sheets et al., *Dental Shape Match Rates in Selected and Orthodontically Treated Populations in New York State: A Two Dimensional Study*, 56 J. Forensic Sci. 621 (2011) (concluding that statements of certainty concerning individuality of human dentition "should be approached with caution"); Mary A. Bush, Peter J. Bush & H. David Sheets, *Similarity and Match Rates of the Human Dentition In 3 Dimensions: Relevance to Bitemark Analysis*, 125 Int. J. Leg. Med. 779 (2011) (concluding that their study "suggests that there may not be a scientific basis for a general expression of dental uniqueness when the incisal edges of the six anterior teeth are considered.").

include a suspect as a potential biter").[21] These published, peer-reviewed studies have demonstrated that skin's natural tension lines and tissue movement distort bite-marks, often dramatically. Moreover, bite marks from the same dentition may appear substantially different depending on the angle and movement of the body and whether the mark was made parallel or perpendicular to the skin's tension lines.[22]

Indeed, skin is so unreliable as a medium that dentitions from distinct sets of teeth, if similarly aligned on the body, may create marks indistinguishable from one another. Even more concerning in the criminal context, research also revealed that dentitions may appear to match marks they did not create.[23] Thus, even assuming that human dentition is distinct—a claim without any scientific foundation—such

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[21] Mary A. Bush et al., *A Study of Multiple Bitemarks Inflicted in Human Skin by a Single Dentition Using Geometric Morphometric Analysis*, 211 FORENSIC SCI. INT. 1 (2011) (bite-marks in skin from a single dentition were substantially different than dentition that produced it); Mary A. Bush et al*., The Response of Skin to Applied Stress: Investigation of Bitemark Distortion in a Cadaver Model*, 55 J. FORENSIC SCI. 71 (2010) (bite force variation created unpredictable skin damage); Mary A. Bush et al., *Inquiry into the Scientific Basis For Bitemark Profiling and Arbitrary Distortion Compensation*, 55 J. Forensic Sci. 976 (2010) (same)); Raymond G. Miller et al., *Uniqueness of the Dentition as Impressed in Human Skin: A Cadaver Model*, 54 J. Forensic Sci. 909 (2009) (finding some dentitions were closer matches to marks they did not make than the dentition that actually created the marks).

[22] Mary A. Bush et al., *Biomechanical Factors in Human Dermal Bitemarks in a Cadaver Model*, 54 J. Forensic Sci. 167 (2009) (same dentition can create significantly different marks depending on body's movement, angle, and location relevant to tension, often referred to as "Langer" lines).

[23] *See, e.g.*, Miller et al., *Uniqueness of the Dentition as Impressed in Human Skin: A Cadaver Model*, at 912 Mary A. Bush et al., *Biomechanical Factors in Human Dermal Bitemarks in a Cadaver Model*, 54 J. Forensic Sci. 167 (2009); Mary A Bush et al., *A Study of Multiple Bitemarks Inflicted in Human Skin by a Single Dentition Using Geometric Morphometric Analysis*, 211 Forensic Sci. Int'l 1 (2011).

"uniqueness" cannot be faithfully recorded in human skin or reliably "matched" to a suspect's dentition, as the forensic dentists purported to do in Prante's case.

Even the ABFO itself, presumably the leading supporter of bite-mark comparison evidence in this country, has recognized the inherent weakness in the field. Following the PCAST Report, discussed above, the ABFO revised its standards and guidelines for board-certified forensic odontologists. *See generally American Board of Forensic Odontology Diplomates Reference Manual*, Mar. 2019 ("ABFO Reference Manual"), available at https://tinyurl.com/eh4kbda2. As relevant here, forensic dentists are no longer authorized to conclude that a given unknown bite-mark was made by a specific set of teeth. In other words, the analyzing dentist cannot conclude a given injury "matches" the dental impression of a suspect nor offer any similar probabilistic testimony—like that provided at Prante's trial—affirmatively identifying a source dentition to an unknown bite-mark. Rather, according to even the ABFO, the most a forensic dentist may validly conclude after comparing a bite-mark with a given set of teeth, is that the results are either inconclusive, or that the dentition can or cannot be excluded as having made the bite-mark. *See* ABFO Reference Manual at 102-03. Additionally, forensic dentists may no longer offer testimony "to a reasonable degree of scientific (or dental) certainty"—as the State's experts in Prante's case did. *See* ABFO Reference Manual at 4. As reported by the National Commission on Forensic Science[24] in its

[24] The National Commission on Forensic Sciences consisted of forensic science service providers, research scientists, academics, law enforcement officials, prosecuting attorneys, defense attorneys, and judges. It was established in 2013 by the Department of Justice, in partnership with the National Institute of Standards and

recommendations to the Attorney General issued in March of 2016: "These terms have no scientific meaning and may mislead factfinders about the level of objectivity involved in the analysis, its scientific reliability and limitations, and the ability of the analysis to reach a conclusion." Nat'l Comm'n on Forensic Sci., *Recommendations to the Attorney General Regarding Use of the Term "Reasonable Scientific Certainty"* (Mar. 22, 2016) at 1, available at https://tinyurl.com/2bp3k896.

The ABFO's changes reflect a concession of sorts, in line with advancements in scientific understanding since the time of Prante's 1983 trial,[25] that bite-mark

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Technology, "to enhance the practice and improve the reliability of forensic science." U.S. Dep't of Justice, Nat'l Comm'n on Forensic Sci., https://www.justice.gov/ncfs.

[25] Another unscientific claim that was once routinely made by forensic odontologists in criminal matters—and which was testified to by Dr. Campbell, one of the State's forensic odontologists in this case, *see People v. Prante*, 2021 IL App (5th) 200074, ¶ 30—is that bite-mark comparison is comparable to fingerprint analysis and comparison. However, unlike the Automated Fingerprint Identification System (AFIS) used for fingerprint analysis, there is "no central repository of bite marks and patterns" for which to compare the teeth marks found on a victim or inanimate object. *NAS Report* at 174. Therefore, there is no way of knowing what percentage of the population may have also produced the marks. *Id*. Rather, the forensic odontologist comparing bite-marks on a victim's body generally only relies on the dental molds or x-rays of those pertinent to the case-at-hand. *Id*. This results in an alarming potential for bias, particularly if the odontologist is informed that the dentition belongs to the suspect in a criminal matter or is provided other biasing information regarding the investigation. *Id.; see generally* Mohammed A. Almazrouei, Itiel E. Dror, & Ruth M. Morgan, *The forensic disclosure model: What should be disclosed* to*, and* by*, forensic experts?* International Journal of Law, Crime & Justice (2019) (explaining that, in recent years, "[a] growing body of empirical research has demonstrated the existence of biases in forensic expert decision making across forensic domains[.]"); Baylee D. Jenkins, et al., *Testing the Forensic Confirmation Bias: How Jailhouse Informants Violate Evidentiary Independence*, Journal of Police and Criminal Psychology, at *2 (2021) (noting that "research has found that contextual information can change the perceptions of . . . forensic experts in their analyses of forensic evidence") (internal citation omitted).

comparison testimony, which purports to identify a particular human as the cause of an alleged bite-mark, is unreliable and inadmissible.

For all of these reasons, as the relevant scientific community now overwhelmingly agrees, "expert" testimony purporting to "match" a person's dentition with a purported "bite-mark" is unreliable, unscientific, and is no longer practiced even by the ABFO, the leading proponents of bite-mark analysis.

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In sum, as the PCAST Report concluded: "bitemark analysis does not meet the scientific standards for foundational validity and is far from meeting such standards. To the contrary, available scientific evidence strongly suggests that examiners cannot consistently agree on whether an injury *is* a human bitemark and cannot identify the source of bitemark with reasonable accuracy." PCAST Report at 87 (emphasis in original). For these reasons, as explored further below, bite-mark evidence cannot meet the *Frye* standard and should be declared categorically inadmissible in criminal proceedings in Illinois.

B. *Frye* prohibits the admission of bite-mark evidence.

This Court has acknowledged that science is "not static" and "methods must exist for reexamining the validity of scientific tests when new information is acquired." *People v. Basler*, 193 Ill.2d 545, 740 N.E.2d 1 (2000). This Court now has before it ample record evidence upon which to reexamine the validity, or lack-thereof, of bite-mark analysis, and to conclude that bite-mark identification and comparison testimony is inadmissible in Illinois criminal matters.

Under the *Frye* standard, the movant of novel[26] expert testimony must show 1) that the method or technique relied upon by the proffered expert is scientific and 2) that the expert's method "[is] sufficiently established to have gained general acceptance in the particular field in which it belongs." *Frye v. United States*, 54 App.D.C. 46, 47, 293 F. 1013, 1014 (1923). Significantly, a method can be "scientific" in that it involves a process of observation and experimentation, and still lack reliability or general acceptance in its field.[27] For the reasons that follow, *amici* submit that bite-mark analysis is precisely that—a technique that relies on observation and experimentation and thus is subject to *Frye* scrutiny, yet, because it is wholly lacking in scientific validity, it must be precluded under *Frye*.

First, under this Court's precedent, *Frye* applies to the question of the admissibility of bite-mark evidence "because [bite-mark analysis] is based on a scientific principle[28] that is not common knowledge[.]" *People v. McKown*, 226 Ill. 2d

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[26] Bite-mark analysis is properly considered novel "because no *Frye* hearing has ever been held in Illinois to determine if [bite-mark analysis] has achieved general acceptance[]" as a reliable way in which to determine whether an injury is or is not a human bite-mark and/or to reliably "match" that bite-mark with particular person's dentition. *People v. McKown*, 226 Ill. 2d 245, 257, 875 N.E.2d 1029, 1036 (2007). *See People v. Prante*, 2021 IL App (5th) 200074, ¶ 77, 180 N.E.3d 875, 898, appeal allowed, 175 N.E.3d 68 (Ill. 2021) (noting that "[a]lthough bite mark evidence has been admitted into evidence in Illinois for more than 50 years, . . . Illinois courts have never subjected bite mark evidence to the rigors of *Frye*.").

[27] Indeed, when the prosecution in *Frye* proffered evidence from a systolic blood pressure deception test, the D.C. Circuit recognized the test's scientific nature, but it ultimately found the test to be generally unaccepted in the scientific community. The test results were therefore inadmissible. *See Frye*, 54 App.D.C. at 47.

[28] Specifically, although inherently unreliable, bite-mark analysis involves ostensibly "scientific" methods of observation and experimentation. First, a preliminary visual analysis is made to determine whether marks may be the results of human teeth. ABFO 2018 Guidelines. If the odontologist determines the injury resulted from human teeth, "the examiner creates photographs or impressions of the questioned

245, 255, 875 N.E.2d 1029, 1035 (2007).[29] *Accord In re Det. of New*, 2014 IL 116306, ¶ 28, 21 N.E.3d 406, 412 (clarifying that *Frye* applies to challenges regarding the "underlying scientific principle, test, or technique used to generate" an expert's conclusion).

Second, to determine whether a scientific technique is generally accepted in the relevant scientific community, a reviewing court may rely upon appropriate sources outside of the record, including legal and scientific articles and opinions from other jurisdictions. *In re Commitment of Simons,* 213 Ill.2d 523 (2004)

at 530-31. As explored *supra*, and as presented in Prante's successive post-conviction petition, bite-mark evidence has been deemed by the relevant scientific

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bitemark and of the suspect's dentition; compares the bitemark and the dentition; and determines if the dentition (1) cannot be excluded as having made the bitemark, (2) can be excluded as having made the bitemark, or (3) is inconclusive." PCAST Report. Bite mark analysis methodology, as determined by the American Board of Forensics Odontology (ABFO), also involves "experimentation." Forensics odontologists use overlays which compare "a dentition to a pattern or patterned injury determined to be a bitemark." They may also utilize simulated test bites with the aid of dental casts, and additional comparison techniques. ABFO 2018 Report.

[29] *Amici* acknowledge that there is appellate court precedent in Illinois—which predates all of the scientific studies undermining the reliability of bite-mark analysis noted above—reasoning that bite-mark analysis should not be scrutinized under *Frye* because it does not involve an "intermediate mechanical stage in which reliability may be questioned." *People v. Milone,* 43 Ill.App.3d 385, 396 (1976) (holding that because bite-mark evidence relied on observation but did not involve an "intermediate mechanical stage in which reliability may be questioned," it did not constitute a "scientific process" and thus *Frye* did not apply). This precedent is, of course, non-binding on this Court, outdated, and has been called into question by more recent appellate law. *See People v. Ferguson*, 172 Ill.App.3d 1 (1988). In *Ferguson*, the Appellate Court determined that the trial court abused its discretion in allowing an expert to testify about a mere visual comparison of shoe prints without applying the *Frye* standard. *Id*. The court rejected *Milone*'s limited application of *Frye* to only methods involving an "intermediate stage," and held that the "general acceptability" requirement includes methodology involving only a visual comparison. *Id*.

community to be inherently unreliable. Indeed, study after study demonstrates that there is no reliable, scientific basis for identifying an injury as caused by a human bite, for "matching" a particular patterned injury with an individual's dentition, nor for assigning probability or statistical weight to such an association. Such widespread acknowledgement in the scientific community that the methodology used in bite-mark analysis cannot produce reliable results, renders bite-mark testimony inadmissible under *Frye*. *Accord State of Georgia v. Sheila Denton*, No. 04-R-330, 2020 WL 7232303, at *13 (Ware Co. Super Ct. Feb. 7, 2020) (Gillis, C.J.) ("[I]t is uncontroverted that bite mark analysis and testimony . . . has been proven to be unreliable and not generally accepted within the scientific community of forensic odontology."); *see also generally People v. Nelson*, 235 Ill. 2d 386, 431, 922 N.E.2d 1056, 1081 (2009) ("The determination of the reliability of an expert's methodology is naturally subsumed by the inquiry into whether it is generally accepted in the scientific community.").

Indeed, in light of the recent shift in scientific consensus that bite-marks are inherently unreliable, courts around the country have begun to acknowledge the problems with this forensic technique and have suggested that bite-mark evidence may not be admissible in criminal matters. *See e.g.*, *State v. Roden*, 437 P.3d 1203, 1209 (Or. Ct. App. 2019) (finding that the admission of bite-mark evidence was improper because the State could not provide any peer-reviewed studies validating bite-mark analysis, and in light of "studies highlighting concerns within the scientific community regarding the high rate of error and lack of objective, standardized results

in bite-mark analysis and identification"); *Starks v. City of Waukegan*, 123 F. Supp. 3d 1036, 1052 (N.D. Ill. July 24, 2015) (finding it "doubtful that 'expert' bite mark analysis would pass muster under Federal Rule of Evidence 702 in a case tried in federal court," because FRE 702(c) requires that "expert testimony be 'the product of reliable principles and methods'"); *Commonwealth v. Kunco*, No. 395 WDA 2017, 2017 WL 5017626, at *6 (Pa. Super. Ct. Nov. 3, 2017) (acknowledging testimony provided by three ABFO-certified forensic dentists at a post-conviction hearing, in which the dentists confirmed that the change in the ABFO guidelines represents a shift in scientific understanding of the inherent flaws of bite-mark analysis, and noting that it is impossible to accurately identify an alleged biter); *Ege v. Yukins*, 485 F.3d 364, 376 (6th Cir. 2007) (finding "[b]ite mark evidence may by its very nature be overly prejudicial and unreliable," and granting habeas relief because trial counsel was ineffective for not objecting under *Frye* to its introduction); *Ex parte Chaney*, 563 S.W.3d 239, 258 (Tex. Crim. App. 2018) (observing that "bitemark evidence, which once appeared proof positive of . . . [the accused's] guilt, no longer proves anything"). Given the complete lack of scientific reliability of "bite-mark" evidence, as well as the inordinate sway that experts have over juries, discussed further below, it is essential that this Court hold that bite-mark evidence is categorically inadmissible under *Frye* in criminal courts in Illinois. Indeed, as this Court has explained, the very "purpose of the *Frye* test is to exclude . . . scientific evidence that undeservedly creates a perception of certainty when the basis for the evidence or opinion is actually invalid." *In re Det. of New*, 2014 IL 116306, ¶ 26, 21 N.E.3d 406, 411. Without a ruling from

this Court prohibiting the admission of bite-mark evidence under *Frye*, courts in Illinois may continue to admit "expert" testimony of forensic dentists regarding unreliable, invalid "bite-mark" evidence, which, in turn, will invariably result in the conviction of innocent people by jurors that, understandably, yet, falsely, "perce[ive]" the expert's testimony as "certain[]" proof of the accused's guilt. *Id.*

To prevent such future miscarriages of justices, this Court should join the growing number of courts around the nation expressing concern about the admissibility of testimony regarding bite-mark identification and comparison, and hold that bite-mark evidence, like that admitted at Mr. Prante's trial, is categorically inadmissible in criminal matters in Illinois under *Frye*.

II. BITE-MARK EVIDENCE PROFERRED BY EXPERT WITNESSES IS HIGHLY PREJUDICIAL AND THUS HAS RESULTED IN COUNTLESS WRONGFUL CONVICTIONS; MR. PRANTE, AND PETITIONERS LIKE HIM, MUST BE AFFORDED MEANINGFUL POST-CONVICTION SCRUTINY OF THEIR CONVICTIONS PREMISED ON THIS FALSE EVIDENCE.

Here, Prante seeks leave to file a successive post-conviction petition, pursuant to the Illinois Post-Conviction Hearing Act, 725 ILCS 5/122-1(f) (2019). Under the Act, courts must grant leave where "fundamental fairness requires relaxation of the statutory bar to a successive petition[,]" in that a petition satisfies the two-pronged "cause-and-prejudice test." *People v. Pitsonbarger*, 205 Ill. 2d 444, 459 (2002). Here, "cause"—meaning, an "objective factor that impeded [the petitioner's] ability to raise a specific claim during [the] initial post-conviction proceedings," 725 ILCS 5/122-1(f)—is not in dispute. What is in dispute is whether Prante was "prejudiced," or whether he has demonstrated that the faulty bite-mark testimony presented by the

State expert's witnesses "so infected the trial that the resulting conviction . . . violated due process." *Id.*

Amici submit that—particularly in consideration of the role expert witnesses' have played in securing wrongful bite-mark convictions and the social science demonstrating the impact of expert testimony upon jurors—a review of the record of Prante's trial makes abundantly clear that the false, unreliable bite-mark evidence was a central piece of the State's case-in-chief, and infected the proceeding in its entirety. To assure that Prante, and other potentially innocent individuals whose convictions rest upon faulty bite-mark evidence, have a fair opportunity to challenge their convictions, this Court should hold that Prante has met the requisite statutory burdens to proceed with his post-conviction claims.

A. Faulty Forensic Testimony, including False Bite-Mark Evidence, Causes Wrongful Convictions of the Innocent

The United States Supreme Court has recognized "the threat to fair criminal trials posed by the potential for incompetent or fraudulent prosecution forensics experts." *Hinton v. Alabama*, 571 U.S. 263, 276 (2014). It is undisputed that our criminal justice system "'produces erroneous convictions based on discredited forensics.'" *Melendez-Diaz v. Massachusetts*, 557 U.S. 305, 319 (2009) (quoting Metzger, Cheating the Constitution, 59 Vand. L.Rev. 475, 491 (2006)). Indeed, after examining cases in which exonerating evidence resulted in the overturning of criminal convictions, one study "'concluded that invalid forensic testimony contributed to the convictions in ***60% of the cases.***'" *Hinton*, 571 U.S. at 276 (quoting *Melendez-Diaz*, 557 U.S. at 319 (emphasis added)). Similarly, misapplication of

forensic science was found in nearly half of more than 350 DNA exoneration cases examined by the Innocence Project.[30]

Bite-mark evidence in particular has been responsible for dozens of wrongful convictions.[31] These convictions were, largely, caused by bite-mark "experts" testifying with a very high (though false) degree of confidence regarding a "match" between the bite-mark in question and the dentition of the (actually innocent) defendant.[32] For example, Keith Allen Harward was convicted of a 1982 murder and rape based largely on the testimony of an ABFO board-certified Diplomate regarding bite marks on one of the victims.[33] The Diplomate testified that it would be a "[p]ractical impossibility" that anyone other than Harward made the bite-marks in question.[34] However, post-conviction DNA evidence later excluded Harward as the perpetrator and identified the actual person responsible for the victim's murder. Consequently, after serving over three decades of wrongful imprisonment, Harward was declared innocent in 2016.[35]

Similarly, Robert Lee Stinson served over 20 years in prison for rape and murder he did not commit based on the testimony of two board-certified ABFO

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[30] *See Misapplication of Forensic Science*, Innocence Project, https://innocenceproject.org/?causes=misapplication-forensic-science (last visited July 14, 2022).

[31] *See https://www.innocenceproject.org/wp-content/uploads/2020/04/Description-of-bite-mark-exonerations-and-statistical-analysis_UPDATED-04.09.2020.pdf* (last visited July 14, 2022).

[32] *See id.*

[33] *Id.* at 1.

[34] *Id.*

[35] *Id.*

Diplomates at his 1985 trial, one of whom falsely testified that there was "no margin for error" in his conclusion that bite-marks on the victim were made by teeth "identical" to Stinson's.[36] However, DNA testing later conclusively proved Stinson's innocence, and Stinson was freed in 2009.[37]

B. Expert Witnesses Have a Demonstrably Biasing Impact on Jurors

As exemplified by the wrongful convictions of Harward and Stinson, "expert" witnesses—like those that testified in Prante's trial—hold enormously persuasive power over juries, that can result in the wrongful conviction and unjust imprisonment of innocent people. Indeed, social science reveals that jurors generally defer to expert testimony and that even labeling a witness an "expert" alone increases the value that jurors assign to that witness's testimony, because jurors generally presume that scientific evidence brought before them via "expert" testimony has been thoroughly vetted and screened by the court before its presentation.[38] Indeed, participants of a 2009 study found that evidence presented by an expert witness at a trial was more convincing than when that very same evidence was presented to them in other contexts.[39] Likewise, other studies have found that jurors are persuaded by clinicians

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[36] *Id.* at 1-2.
[37] *Id.* at 2.
[38] *See* Schweitzer, N. J., & Saks, M. (2009). The gatekeeper effect: The impact of judges' admissibility decisions on the persuasiveness of expert testimony. *Psychology, Public Policy, and Law, 15*, 1-18.
[39] *Id.*

who testify as "experts," even when their testimony is based solely on personal experience and is unsupported by reliable scientific testimony.[40]

Further, cross-examination of an expert witness has little to no effect on juries, even when cross-examination is well-constructed and exposes considerable flaws and weaknesses of the expert's direct testimony.[41] Additionally, studies demonstrate that judicial instructions "expressing limitations of forensic science had no appreciable effect" on juror appraisal of forensic expert testimony.[42] *See also* Tom R. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 Yale L.J. 1050, 1068 (2006) ("There is widespread evidence indicating that people already overestimate the probative value of scientific evidence."); Richard H. Underwood, *Evaluating Scientific and Forensic Evidence*, 24 Am. J. Trial Advoc. 149, 166 (2000) ("Given their lack of scientific sophistication and innumeracy, jurors are likely to overestimate the significance of [expert testimony]."). *See also* Mark A. Godsey & Marie Alao, *She Blinded Me with Science: Wrongful Convictions and the "Reverse CSI Effect,"* 17 Tex. Wesleyan L. Rev 481, 495 (2011) (noting that "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").

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[40] Daniel A. Cross & Bruce D., *The Effects of Clinical and Scientific Expert Testimony in Capital Sentencing*, 7(2) Psych., Pub. Pol., and Law, 267 (2001).
[41] Levett, L. M., & Kovera, M. B. (2008). *The Effectiveness Of Opposing Expert Witnesses For Educating Jurors About Unreliable Expert Evidence*, Law and Human Behavior, 32, 363–374. doi:10.1007/s10979-007-9113-9.
[42] McQuiston-Surrett, D., Saks, M.J., *The Testimony of Forensic Identification Science: What Expert Witnesses Say and What Factfinders Hear*, Law Hum Behav. 33, 436 (2009), https://doi-org.proxy.lib.duke.edu/10.1007/s10979-008-9169-1.

Thus, even a skillful cross-examination of a state witness or a curative jury instruction does not mitigate the powerfully prejudicial impact of scientifically flawed "expert" testimony. As such, "bite-mark" identification and comparison testimony, proffered by a witness who is qualified as an "expert" by the trial judge, has an incredibly biasing, prejudicial impact, particularly if, as here, the expert purports to have conclusively "matched" the accused with the alleged "bite-marks" on a victim.

C. Prante has Met his Burden to be Granted Leave pursuant to 725 ILCS 5/122-1

Particularly in light of the social science, discussed above, demonstrating how impactful expert testimony is upon factfinders, *amici* urge this Court to find that Prante has met his burden to be granted leave to file his successive petition.[43] Here, the jury heard confident, conclusive "expert" testimony from multiple State witnesses, who falsely told the jury that they could accurately identify Mr. Prante as the source of the purported "bite-marks" on the victim—as if the bite-marks were fingerprint evidence. Moreover, the jury that convicted Mr. Prante heard the prosecution emphasize the alleged importance of the false bite-mark evidence in *voire dire* and during opening and closing arguments. Thus, to somehow find that Mr. Prante has not established the requisite prejudice to be granted leave to file his successive petition, would be to ignore the powerful impact of the now-discredited

[43] *Amici* submit that Prante has met the requisite standards for being granted leave to file both his due process and actual innocence claims, but will focus primarily on the due process claim, and the significant prejudice that the false bite-mark evidence had upon his trial proceedings.

bite-mark testimony, which, although false, was shrouded with legitimacy by labeling it "expert" testimony.

Accordingly, and for all the reasons laid out in this brief, the evidence demonstrating the repudiation of the highly prejudicial bite-mark evidence presented at Mr. Prante's trial establishes, at minimum, a *prima facie* case to allow Mr. Prante leave to file his due process and actual innocence claims in a successive petition.

III. CONCLUSION

This Court should find that the complete repudiation of the bite-mark evidence presented at Mr. Prante's trial presents a *prima facie* case to allow leave to present his due process and actual innocence claims in a successive petition. Such meaningful post-conviction scrutiny of convictions for individuals who were convicted on now-discredited expert testimony, is critical to ensure fundamental fairness, justice, and to halt the insidious damage of a wrongful conviction.

Moreover, to prevent future wrongful convictions based on a false "expert" testimony regarding bite-mark analysis, *amici* urge this Court to explicitly declare that bite-mark identification and comparison testimony is inadmissible under *Frye*.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE
WITH SUPREME COURT RULE 341

I certify that this brief conforms to the requirements of Rules 341(a) and (b). The length of the brief, excluding the pages containing the Rule 341(d) cover, the Rule 341(h)(1) table of contents and statements of points and authorities, the Rule341(c) certification of compliance, the certificate of service, and those matters to be appended to the brief under Rule 342(a) is 40 pages.

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