No. 24-1268

IN THE

Supreme Court of the United States

RODNEY REED, PETITIONER
v.
BRYAN GOERTZ, *et al.*

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIFTH CIRCUIT

BRIEF FOR CHASE BAUMGARTNER AS AMICUS CURIAE IN SUPPORT OF PETITIONER

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INTEREST OF AMICUS CURIAE[1]

Amicus writes to the Court as a former Lead Forensic Scientist employed by the Texas Department of Public Safety to perform DNA analysis. Amicus has read the opinions from the Texas Court of Criminal Appeals and Fifth Circuit regarding DNA testing in Petitioner's case and believes there is a gap in the scientific understanding within the courts regarding when DNA testing can be informative and what makes evidence acceptable for DNA testing. Amicus respectfully disagrees with the lower courts' reasoning that the evidence is not probative or appropriate for DNA testing because it may be cross-contaminated. Contrary to the courts' reasoning, Texas's accredited policy instructs that "[t]he only way to know if the [evidence] was handled correctly and to check for contamination issues is by viewing the [data] generated."[2]

IDENTITY OF AMICUS CURIAE

Amicus is a former DNA analyst of the Texas Department of Public Safety (TXDPS). He was employed for eight years in the Austin-area crime laboratory and left in 2018 with the title of Lead Forensic Scientist. Currently, he is employed as a

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[1] Pursuant to S. Ct. Rule 37.2(a), amicus curiae notified the counsel of record for all parties of his intention to file this amicus curiae brief on July 1, 2025, at least ten days prior to the date this brief was due. Pursuant to S. Ct. Rule 37.6, no counsel for a party authored this brief in whole or in part. No person or entity other than amicus curiae and counsel for amicus curiae made a monetary contribution to the preparation or submission of this brief.

[2] TEX. DEP'T PUB. SAFETY, *Biology/DNA Training Manual* 233 (2024).

Staff Attorney with the Innocence Project of Texas, after graduating from Baylor Law School in 2022. He was previously an amicus curiae to this Court regarding Petitioner's case in 2022 when this Court held that Petitioner's § 1983 claim was timely and reversed the Fifth Circuit's judgment to have Petitioner's case considered on the merits.[3]

During his tenure with TXDPS, Amicus was responsible for examining evidence, testing evidence for the presence of biological material, performing DNA analysis, reporting his findings, and testifying in court as to those findings. During those eight years, Amicus testified as an expert witness for the State of Texas approximately twenty times. Additionally, he worked directly on hundreds of criminal cases, either by examining the evidence, writing reports, or reviewing case reports and results of other DNA analysts. Amicus's involvement, as confirmed by TXDPS, in Petitioner's case was limited to reviewing non-evidentiary data generated by another DNA analyst. Amicus has not previously reported on or performed scientific analysis on evidence in Petitioner's case. In addition to his regular duties, Amicus trained numerous Forensic Scientists in serology, which is the examination of the evidence for the presence of biological fluids, and DNA analysis.

Amicus was also involved in improving TXDPS's DNA mixture interpretation. Amicus was one of four scientists TXDPS appointed to implement DNA mixture deconvolution software in all of the TXDPS DNA crime laboratories. This software breaks DNA mixtures into separate, component DNA

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[3] *Reed v. Goertz*, 598 U.S. 230, 237 (2023).

profiles of the potential individuals who contributed to the DNA mixture. Additionally, it provides statistics on the likelihood of observing the evidence if it came from the individuals of interest rather than unknown individuals. In short, the software allows for reliable, consistent, and accurate interpretation of DNA mixtures that were once too complex to interpret by DNA analysts alone.

Amicus, as part of the four-scientist team, evaluated the software for scientific accuracy and reliability and implemented it in TXDPS crime laboratories across the state. The implementation team also trained every TXDPS DNA analyst in the use and understanding of this software. For his role in this implementation, TXDPS Crime Laboratory Chief Brady Mills, who at the time held the title of Assistant Division Director, presented Amicus with an Assistant Division Director's Award for Outstanding Performance in which Chief Mills noted:

> [Amicus], along with other team members, helped validate, implement and train the [DNA mixture deconvolution] software for the entire DPS DNA system. This was done under extreme pressure with deadlines to meet. He performed above and beyond expectations and delivered a quality product that has and will have a profound impact on the nature of mixture interpretation in the state of Texas.

Amicus's participation with the DNA mixture deconvolution software culminated in him co-authoring a joint publication with thirty-one other crime laboratories. In this publication, thirty-one crime laboratories shared data from all respective studies evaluating the DNA mixture deconvolution

software. The data was reviewed, analyzed, and determined to be scientifically valid as used across the various laboratories. TXDPS and numerous other crime laboratories presently use this software, and Amicus is an expert on its use and application.

SUMMARY OF THE ARGUMENT

The Fifth Circuit affirmed the denial of Petitioner's request for post-conviction DNA under Article 64 of the Texas Code of Criminal Procedure based on the Texas Court of Criminal Appeals' (TCCA) construction of the statute. The Fifth Circuit held, in part, that the denial of Petitioner's request failed to "transgress[] any recognized principle of fairness in operation" and therefore there was no violation of Due Process.[4]

However, as Judge Ho from the Fifth Circuit has pointed out, "[i]n law, as in life, what's good for the goose is good for the gander."[5] The TCCA's construction of Article 64 unfairly requires that evidence a prisoner moves to have DNA tested be free from the specter of contamination, while the State may, and does, test potentially contaminated evidence in every case in which it offers DNA evidence. The double standard requires that inmates, and the courts adjudicating their requests for DNA testing, speculate whether contamination has occurred before being allowed to perform DNA testing, whereas the State may first perform DNA testing, evaluate the evidence for contamination, and

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[4] *Reed v. Goertz*, 136 F.4th 535, 543–45 (5th Cir. 2025) (citing *Dist. Atty's Off. For Third Jud. Dist. v. Osborne*, 557 U.S. 52, 69 (2009)).

[5] *Spell v. Edwards*, 962 F.3d 175, 183 (5th Cir. 2020) (Ho, J., concurring).

even if contamination has occurred, still use the evidence if it meets certain reliability criteria.

Moreover, the reasons the TCCA uses to affirm the trial court's denial of testing contradict fundamental principles of modern forensic DNA testing. The trial court found, and the TCCA adopted, that the chain of custody for the belt was not sufficient for DNA testing because the belt had been commingled with other evidence, was in unsealed packaging, and was handled by ungloved individuals.[6] The Fifth Circuit's decision perpetuates this misunderstanding.[7] The court was seemingly unaware of TXDPS policies that specifically address each of these concerns and its implementation of DNA mixture deconvolution software. This software allows DNA analysts to better report complex DNA mixtures, which may result from a contamination event, and make interpretations that are more accurate and reliable than those that are made without the aid of such software. This significantly reduces the risk of false inclusions and exclusions due to increased complexity of the profile.

All DNA analysis, whether pretrial or post-conviction, runs the potential of being or becoming contaminated. Yet, DNA analysis is routinely offered by the State against the accused and relied upon by judges and juries. To say that potential contamination casts doubt on the "evidence's integrity"[8] only in post-conviction settings ignores the various manners and methods by which evidence may be contaminated at any stage in a case. Even with the potential contamination of this belt, if an

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[6] *Reed v. State*, 541 S.W.3d 759, 769–70 (Tex. Crim. App. 2017).
[7] *Reed v. Goertz*, 136 F.4th 535, 545 (5th Cir. 2025).
[8] *Reed v. State*, 541 S.W.3d 759, 770 (Tex. Crim. App. 2017).

interpretable DNA profile is developed from the belt, the mixture deconvolution software could determine if Petitioner or Mr. Fennell are true donors or non-contributors to the DNA profile with higher than 95% accuracy.[9]

The Fifth Circuit continues its misunderstanding of DNA by citing the TCCA's opinion that "even if Fennell's DNA was found on the items for which Reed sought testing, that finding would show nothing more than the fact that Fennell. . . had touched his fiancé's belt."[10] This not only ignores all the reasonable inferences factfinders draw from DNA in every criminal case, but is also contradicted by scientific research that concludes "[h]ow contact is made with an object will impact the level of transfer," and "increasing the pressure [of the contact] significantly increased the amount of DNA deposited."[11] The research supports that factfinders could use the results of DNA testing to help determine whether an individual merely touched the belt, or used it as a ligature.

Therefore, since the potential contamination addressed in the TCCA's opinion does not make the evidence unacceptable for DNA analysis, nor would the results be meaningless, the Fifth Circuit overlooked the "absurdity"[12] of the TCCA's denial of

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[9] Chase Baumgartner et al., *Method Validation: STRmix mixture interpretation software and likelihood ratio*, TEX. DEP'T OF PUB. SAFETY (2016) (supporting data reproduced in Appendix).

[10] *Reed v. Goertz*, 136 F.4th 535, 547 (5th Cir. 2025) (referencing *Reed v. State*, 541 S.W.3d at 773–77).

[11] Van Oorschot et al., *DNA transfer in forensic science: A review*, 38 FORENSIC SCI. INT'L: GENETICS 140, 147 (2019).

[12] *Washington v. Tex.*, 388 U.S. 14, 22 (1967) (holding that "[t]he *absurdity* of the rule, [which disqualified an alleged accomplice

Petitioner's Article 64 motion on such grounds when the State routinely offers similar evidence and where the State's own protocols, promulgated by TXDPS, expressly allow for such testing under the same conditions. A system that enforces and allows for 'DNA testing for me, but not for thee' when the only difference is which party offers the evidence is not a system concerned with the "evidence's integrity,"[13] but rather one that has drawn an arbitrary line in the sand between the State and defendants.

ARGUMENT

To order post-conviction DNA testing, Article 64 of the Texas Code of Criminal Procedure requires that the evidence "has been subjected to a chain of custody sufficient to establish that it has not been substituted, tampered with, replaced, or altered in any material respect."[14] When examining this requirement in Petitioner's case, the TCCA considered whether the trial court was correct is determining which items of evidence "have been *contaminated*, tampered with, or altered," and therefore failed to satisfy Article 64's chain of custody requirement.[15] The court found that the State's expert's testimony established that the belt failed the statutory requirements as it was not individually packaged, was in unsealed packaging, and subsequently handled by individuals without

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from testifying on behalf of the defendant, was] amply demonstrated by the exceptions that. . . the accused accomplice may be called by the prosecution to testify against the defendant") (emphasis added).

[13] *Reed v. State*, 541 S.W.3d 759, 770 (Tex. Crim. App. 2017).

[14] TEX. CODE CRIM. PROC. ANN. art. 64.03(a)(1)(A)(ii).

[15] *Reed v. State*, 541 S.W.3d 759, 769 (Tex. Crim. App. 2017) (emphasis added).

gloves.[16]

To the court, those issues "cast[] doubt on the evidence's integrity, especially for the specific testing [Petitioner] seeks" and supported denying Petitioner's request for DNA testing.[17] By reading a no-potential-contamination requirement into Chapter 64, the TCCA, and the Fifth Circuit adopting that interpretation, ignores that—even if the evidence is 'altered' by the addition of a contaminating profile—the probative DNA profiles can still be developed and reported accurately; an outcome the TCCA has already acknowledged.[18]

A. Contamination can only be detected after DNA analysis is conducted.

A glaring issue with reading a non-contamination requirement into the statute prior to allowing for post-conviction DNA testing is that contamination can only be detected after DNA testing is performed. This principle is written in TXDPS's own training manual where it educates fledgling scientists that:

> [t]he only way to know if the [evidence] was handled correctly and to check for contamination issues is by viewing the electropherograms generated.[19]

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[16] *Id.* at 770.

[17] *Id.*

[18] *Skinner v. State*, 665 S.W.3d 1 (Tex. Crim. App. 2022) (noting that a bloody knife and dishtowel had contaminating DNA profiles from court and TXDPS personnel yet found that those items still had probative DNA profiles of Skinner and the victims, which supported finding that Skinner did not carry his Chapter 64.04 burden).

[19] TEX. DEP'T PUB. SAFETY, *Biology/DNA Training Manual* 233

An electropherogram is a "graphic representation of the separation of [DNA] molecules by electrophoresis in which the data appear as 'peaks' along a line," which is the "end result" of DNA analysis.[20]

The concept that contamination is only detectable at the conclusion of DNA analysis is so fundamental that most scientific articles take for granted that the reader understands it and do not expressly state the concept. Rather, the articles are legion that detail the methodology for detecting contamination requires examining the alleles, or "peaks", within the electropherogram, the "end result" of DNA analysis.[21] Therefore, to determine that contamination has occurred prior to DNA testing is antithetical to the science of forensic DNA analysis

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(2024) (the word 'evidence' was used in lieu of the words 'practice sample' from the original text. A trainee's practice samples are synonymous with a trained Forensic Scientist's evidence).

[20] JOHN M. BUTLER, *Fundamentals of Forensic DNA typing* 199, 447 (2010).

[21] *Id.*, *see e.g.* Mado Vandewoestyne et al., *Sources of DNA contamination and Decontamination Procedures in the Forensic Laboratory*, J. FORENSIC RESEARCH 1 (2011) (examining alleles, or the 'peaks' of an electropherogram, to determine if contamination occurred); Ketsaraporn Nontiapirom et al., *Assessment and prevention of forensic DNA contamination in DNA profiling from latent fingerprint*, 7 FORENSIC SCI. INT'L: GENETICS SUPP. SERIES 546 (2019) (concluding that by examining the electropherograms, the experiment supported that fingerprint brush hairs are a potential source of contamination); Ines Pickram et al., *Contamination incidents in the pre-analytical phase of forensic DNA analysis in Austria-Statistics for 17 years*, 31 FORENSIC SCI. INT'L: GENETICS 12 (2017) (concluding that "[t]he detection of contamination incidents can be significantly enhanced with the availability of DNA elimination databases (EDB)," which requires an electropherogram).

and TXDPS's policies.

B. Petitioner requested routine DNA analysis.

The TCCA indicated that the DNA testing Petitioner requests is prone to integrity issues as it is "a relatively new DNA technique that can develop a DNA profile from epithelial cells left by those handling the item."[22] The court noted that this technique is called "touch DNA."[23]

Though perhaps not as widely appreciated as blood, semen or hair, skin cells have been a known source of testable DNA for nearly thirty years.[24] Touch DNA analysis is DNA analysis that is conducted on skin tissue or cells on items of evidence, even in the absence of suspected biological *fluids* such as blood or semen.[25] TXDPS performs touch DNA analysis as it recognizes that even "[t]he slightest amount of DNA can now be detected with the very sensitive technologies in use." [26]

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[22] *Reed v. State*, 541 S.W.3d 759, 769 (Tex. Crim. App. 2017).
[23] *Id.*
[24] Roland A.H. van Oorschot & Maxwell K. Jones, *DNA fingerprints from fingerprints*, 387 NATURE 767 (1997) (developing DNA profiles from fingerprints); Alex Lowe et al., *The propensity of individuals to deposit DNA and secondary transfer of low-level DNA from individuals to inert surfaces*, 129 FORENSIC SCI. INT'L 25, 25–34 (2002) (determining that developing a full DNA profile from an item a person has merely touched is possible); NAT'L INST. OF JUSTICE, *Understanding DNA Evidence: A Guide for Victim Service Providers* (2001) (informing victim service providers where to collect potential skin cells for subsequent DNA analysis).
[25] TEX. DEP'T OF PUB. SAFETY, *Crime Laboratory Division Manual* 97 (2025) (emphasis added).
[26] *Id.* at 77 (discussing how DNA can be detected after simply "touching a surface").

C. The potential contamination in this case is a typical concern in DNA analysis.

The conditions under which the evidence has been stored or handled before submission to a laboratory are never fully known by laboratory staff. Because of this unknown storage and handling, contamination is a possibility, and is in fact considered, in every DNA analysis. For this reason, TXDPS has developed rigorous protocols for discovering and reporting DNA profiles even when the evidence is contaminated. It is not a unique concern of skin cells that casts doubt on the integrity of DNA, rather contamination is a concern in every DNA analysis.

Crime Laboratories recognize three manners of contamination: "(1) internal contamination between the samples and the DNA analysts, (2) cross-contamination between evidence of same case or different cases, and (3) external contamination which happens between the DNA samples and the police force or crime scene experts or manufacturers of reagents or consumables."[27] In post-conviction testing, the third manner of external contamination can be expanded to include judges, jurors, and court personnel. While it is external contamination the TCCA has an issue in Petitioner's case, DNA analysts routinely conduct testing aware that any of the three manners may affect a particular case.

Again, the trial court found, and the TCCA and Fifth Circuit perpetuate in their opinions, that the belt was contaminated or tampered with because the belt was not individually packaged and individuals

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[27] Noora R. Al-Snan & Najib M. Alraimi, *Comparison between various DNA sterilization procedures applied in forensic analysis*, 12 EGYPTIAN J. OF FORENSIC SCIS. 5, 5 (2022).

handled the belt without gloves.[28] Though not central to its finding, the court also noted that the belt was found in "unsealed boxes."[29]

i. TXDPS has protocols for accepting and testing unsealed evidence.

TXDPS procedures allow for the crime laboratories to accept and receive evidence in unsealed or improperly sealed packaging.[30] If evidence is submitted without a proper seal TXDPS either asks the customer to apply a proper seal at the time of submission, or TXDPS will apply a proper seal if the customer is unavailable.[31] This is done to ensure that the laboratory does not add to issues that may affect the evidence, but the laboratory does not require guaranteed-pristine evidence before it is appropriate for analysis. On the contrary, it is common enough that law enforcement submits evidence in unsealed containers that a policy for handling such circumstances exists. The laboratory makes no assumptions about the state of the evidence before it arrives at the laboratory and is aware that contamination before submission by law enforcement is always a possibility.

ii. TXDPS has protocols for accepting evidence that is commingled.

TXDPS does support that packaging items of evidence separately is the best practice to prevent

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[28] *Reed v. State*, 541 S.W.3d 759, 770 (Tex. Crim. App. 2017).
[29] *Id.* at 767.
[30] TEX. DEP'T OF PUB. SAFETY, *Crime Laboratory Division Manual* 282 (2025).
[31] *Id.*

cross-contamination between items.[32] The concern over contamination is discussed *infra*. However, TXDPS also notes that some evidence may be packaged together. For example, TXDPS's policy expressly states that "[s]wabs that are collected from a single stain may be packaged together in the same container."[33] When discussing the packaging of articles of clothing, TXDPS instructs that the evidence collected from one individual should not be packaged with evidence collected from a second individual; the clear implication is that clothing from the same person may be packaged together.[34] In Amicus's experience, evidence collected from the same area or individual was often submitted in the same container or packaging. Regardless, if this commingling caused cross-contamination between the evidence, TXDPS has protocols for detecting and addressing contamination.

iii. TXDPS does not require law enforcement wear gloves when collecting evidence.

In instructing law enforcement on evidence collection, TXDPS's policy is that "[a]ll individuals at a crime scene *should* wear personal protective equipment such as gloves."[35] Notably, TXDPS does not require that law enforcement investigators *must* wear gloves when collecting evidence. Therefore, while TXDPS prefers evidence to be handled with gloved hands, being handled without gloves will not preclude the evidence from being submitted or tested. Importantly, TXDPS does require that items "used to

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[32] *Id.* at 205.
[33] *Id.*
[34] *See id.*
[35] *Id.* at 112 (emphasis added).

package evidentiary items *must* be clean and not previously used,"[36] proving that TXDPS understands the mandatory and permissive nature of the words must and should. TXDPS does note that the reason gloves should be worn is "to prevent or limit contamination of the evidence."[37]

However, even the use of gloves cannot guarantee the prevention of cross-contamination. At least one study has found that, while wearing gloves, "DNA can potentially be re-distributed from the original area on the exhibit to other areas during examination via the gloves."[38] In reviewing this study, Interpol determined that gloves are a potential source of contamination in DNA analysis.[39] All to say, not even the use of gloves can remove the potential for contamination in forensic DNA analysis.

D. TXDPS has protocols for determining true donors even in cases of contamination.

All of these concerns over the storage and handling of the evidence (whether it be the handling by ungloved hands, being stored in an unsealed box, or being commingled with other evidence) all relate to the possibility that the evidence has become contaminated and therefore inappropriate for DNA testing.

However, TXDPS has procedures on how to

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[36] *Id.* at 113 (emphasis added).
[37] *Id.* at 112.
[38] Mariya Goray et al., *DNA transfer: DNA acquired by gloves during casework examinations*, 38 FORENSIC SCI. INT'L: GENETICS 167, 172 (2019).
[39] John M. Butler & Sheila Willis, *Interpol review of forensic biology and forensic DNA typing 2016-2019*, 2 FORENSIC SCI. INT'L: SYNERGY 352, 361 (2020).

detect, attempt to remove, and issue results for contaminated evidence. TXDPS, in fact, has different processes for whether the contamination was introduced by the laboratory or whether the contamination occurred before submission to the laboratory.[40] TXDPS calls contamination that occurred prior to submission and that is detected in the evidence despite proper laboratory procedure, unresolved contamination.[41] This unresolved contamination is the third manner of contamination where external contamination has occurred between the DNA samples and the police force, crime scene experts, or individuals present in the courtroom. In Petitioner's case, any potential contamination happened at trial, before the laboratory received the evidence for post-conviction testing. Therefore, if contamination were present, TXDPS would consider this unresolved contamination.

TXDPS allows for the interpretation and reporting of DNA profiles "even in the presence of unresolved contamination."[42] However, to report these results TXDPS does require that either "[t]he source of the contamination is identified as a staff member, law enforcement member, manufacturer staff, vendor-reported contamination profile, . . . or the source of the contamination is determined to have minimal impact on the DNA results."[43] Here, it is possible that TXDPS could report the results under either standard. The identity of all potential contaminators (i.e., the prosecutor, defense counsel, court clerk, and jurors) are known. It would be

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[40] TEX. DEP'T OF PUB. SAFETY, *Biology/DNA Manual* 53–54 (2025).
[41] *Id.*
[42] *Id.* at 54.
[43] *Id.* at 55.

possible to collect buccal swabs from these individuals and compare their known reference DNA profiles to any DNA profiles developed from the belt to detect and report *if* the belt is contaminated, in compliance with TXDPS policy.

E. Any potential contamination could minimally impact DNA test results.

Securing reference samples from all potential contaminators does have some practical drawbacks. In Petitioner's case, there are a number of potential individuals from whom to obtain reference samples. However, it may not be necessary to obtain reference samples from all potential individuals.

Another allowance TXDPS policy makes is that even if the source of the contamination is not identified, results can still be reported as long as "the source of the contamination is determined to have minimal impact on the DNA results."[44] Instances where a contaminating profile would clearly have a minimal impact on the evidence would include single-source DNA profiles attributable to Ms. Stites, Petitioner, or Fennell. DPS reports single-source profiles as "as originating from a single individual,"[45] meaning that no contaminating DNA could be detected in a profile that was reported as a single-source profile attributable to these three known individuals.

Even more complex DNA profiles still have the potential to only be minimally impacted by any potential contamination. For example, on the belt, because Ms. Stites's DNA can be expected to be present, a two-person mixture of Ms. Stites and Fennell or Petitioner would also be likely to be determined to be

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[44] *Id.*

[45] *Id.* at 363

minimally impacted, if impacted at all, by any contamination. This is not an exhaustive list of scenarios in which the evidence could be minimally impacted by any potential contamination, it is intended to be illustrative by highlighting a few of the simpler examples.

F. The software can determine true donors from non-donors in complex mixtures.

If TXDPS secures the relevant known reference samples or determines that the DNA profiles were minimally impacted by any potential contamination, TXDPS can determine, even if mixed with contaminating DNA profiles, whether the evidence supports that Petitioner or Mr. Fennell are true donors—i.e. their DNA is present—to the belt or non-contributors—i.e. their DNA is not present on the evidence.

The deconvolution software was extensively tested against highly complex mixtures with varying quality and quantity of DNA. In evaluating the software, TXDPS performed over 100,000 comparisons of known non-contributors to DNA mixtures.[46] The software was able to accurately exclude 93.5% of known non-contributors.[47] Similarly, when examining known true donors, the

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[46] Chase Baumgartner et al., *Method Validation: STRmix mixture interpretation software and likelihood ratio* at 11, TEX. DEP'T OF PUB. SAFETY (2016).

[47] *Id.* (supporting data reproduced in App'x Table 1 at 1a, showing that for the total 105,412 comparisons to non-donors for DNA mixtures, i.e. not single source profiles, 6,868 individuals were not excluded).

software correctly included 85.3% of individuals.[48] Moreover, most of the errors in these analyses occurred when examining complex four-person mixtures. Error rates for mixtures of five or more individuals' DNA were not calculated; as those mixtures are currently too complex for interpretation, even with the aid of the software.[49]

However, if the DNA profile from the belt is determined to be a mixture of four or fewer individuals then the profile can be further simplified by assuming Ms. Stites's DNA is on the belt. This is common practice on clothing[50] and essentially would transform a four-person mixture into a three-person mixture by telling the software that Ms. Stites is one of the contributors on the belt. The software performs exponentially better at three person-mixtures excluding 97.6% of known non-contributors and including 96.6% of true donors.[51] Even in this worst-case scenario of developing the most complex, contaminated DNA profile that can still be interpreted, TXDPS analysts, with the use of the software, could accurately include or exclude

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[48] *Id.* (supporting data reproduced in App'x Table 2 at 2a, showing that for the 196 comparisons to true donors for DNA mixtures, i.e. not single source profiles, 29 individuals were not included).

[49] TEX. DEP'T PUB. SAFETY, *Biology/DNA Manual* 297 (2025).

[50] *Id.* at 299.

[51] Chase Baumgartner et al., *Method Validation: STRmix mixture interpretation software and likelihood ratio* at 11, TEX. DEP'T OF PUB. SAFETY (2016) (supporting data reproduced in App'x Tables 1–2 at 1a–2a, showing that for the 77,976 comparisons to non-donors for DNA mixtures of three individuals or less, i.e. not four person mixtures or single source, 1,853 individuals were not excluded, and for the 120 comparisons to true donors for the same DNA mixtures, only 4 individuals were not included).

Petitioner or Mr. Fennell with above 95% accuracy.

G. The courts misunderstand the exculpatory value DNA testing could add.

The Fifth Circuit perpetuates the TCCA's misunderstanding about DNA evidence by stating that "even if Fennell's DNA was found on the items for which Reed sought testing, that finding would show nothing more than the fact that Fennell. . . had touched his fiancé's belt."[52]

This finding ignores the fact that the location and amount of DNA can provide meaningful context to factfinders. Consider a homicide by stabbing, does finding an individual's DNA on the handle of the murder weapon not allow the jury, or the court analyzing a claim for post-conviction relief, to infer that the individual fatally wielded the item, or must those factfinders limit their consideration to "nothing more" than the individual touched it?

A study conducted in 2019, which reviewed nearly 300 scientific articles on DNA transfer, concluded that "[h]ow contact is made with an object will impact the level of transfer."[53] Specifically, "when two objects come into contact with each other, more DNA tends to be transferred when pressure with friction is applied compared to passive contact or pressure contact without friction."[54] Especially relevant to Petitioner's case is that the article concluded that "when surfaces were contacted by fingertips,

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[52] *Reed v. Goertz*, 136 F.4th 535, 547 (5th Cir. 2025) (referencing *Reed v. State*, 541 S.W.3d at 773–77).

[53] Roland A.H. Van Oorschot et al., *DNA transfer in forensic science: A review*, 38 FORENSIC SCI. INT'L: GENETICS 140, 147 (2019).

[54] *Id.*

increasing the pressure significantly increased the amount of DNA deposited, which resulted in the detection of more alleles from both the donor and unknown sources."[55] TXDPS recognizes this phenomena: that how and where contact is made can be critical to a criminal proceeding as it instructs Texas scientists to consider "[t]he type of evidence, how the evidence may have been used/handled, and the duration of the use/handling. . . when determining if the evidence will be processed for [touch] DNA analysis."[56]

The article provides an example on how "different parts of an object may possess different levels of DNA, possibly from different sources."[57] Take for example, "[t]he switch or plug of a standing lamp [which] may be targeted for the normal user, but other areas not frequently touched, like the lamp's stem, may be targeted for DNA from the intruder who is suspected of having grabbed it there to use as a weapon of opportunity, or the lamp's base targeted for DNA from the victim whose injuries are suspected to have been caused by contact with it during an assault."[58]

Let us assume that the normal user is the victim; the court's rationale in Petitioner's case would mean that finding the victim's DNA on the base of the lamp provides no support that the lamp was used to bludgeon the victim. After all, it is the victim's lamp, and the DNA could have been deposited there from

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[55] *Id.*

[56] TEX. DEP'T OF PUB. SAFETY, *Crime Laboratory Division Manual* 99 (2025).

[57] Roland A.H. Van Oorschot et al., *DNA transfer in forensic science: A review*, 38 FORENSIC SCI. INT'L: GENETICS 140, 148 (2019).

[58] *Id.*

normal use. While that is certainly true, it contravenes all the reasonable inferences our factfinders derive from DNA evidence in every trial.

CONCLUSION

The science of forensic DNA analysis is unaffected whether a criminal proceeding is pre-trial, post-trial, or in trial, or whether it is being offered to convict or exonerate. The Fifth Circuit failed to appreciate the arbitrary nature of the rationale the TCAA used to deny Petitioner DNA testing, when those same concerns do not prevent the State from pursuing or presenting its DNA evidence. The possibility of contamination has long been appreciated and accounted for by the forensic DNA community. With advances in technology, now more than ever, forensic DNA analysis can answer difficult questions about who is and is not connected to a piece of evidence even when that evidence is potentially contaminated. Research proves that evidence that is potentially contaminated can still give rise to meaningful exculpatory information, just as it can give rise to inculpatory information.

Currently, the courts have denied Petitioner's statutory right to DNA testing based on a guess. DNA testing has to be performed to know, rather than speculate, whether the evidence was handled correctly and to check for contamination.[59] Therefore, the current construction of Article 64 is not rooted in science and seems to "transgress[a] recognized principle of fairness in operation"[60] when the

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[59] TEX. DEP'T PUB. SAFETY, *Biology/DNA Training Manual* 233 (2024).

[60] *Reed v. Goertz*, 136 F.4th 535, 543 (5th Cir. 2025).

potential for contamination only "casts doubt on the evidence's integrity"[61] post-trial, and not when the State wishes to offer it against an accused while he still enjoys the presumption of innocence.

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[61] *Reed v. State*, 541 S.W.3d 759, 770 (Tex. Crim. App. 2017).

APPENDIX

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Table 1 - Data on false inclusions:

	Single Source	Two-Person	Three-Person	Four-Person
Total number of comparisons to non-donors	51,984	57,760	20,216	27,436
Maximum inclusionary Likelihood Ratio (LR) for a non-donor	2,037	1,848	2,880	805
Largest DNA amount (nanograms) of individual donor resulting in false inclusion	0.063	0.125	0.143	0.4
	Number of False Inclusion Occurrences			
$LR > 10^4$	0	0	0	0
$10^3 < LR < 10^4$	1 (0.002%)	1 (0.002%)	1 (0.005%)	0
$10^2 < LR < 10^3$	17 (0.03%)	10 (0.02%)	2 0.01%)	21 (0.08%)
$10^1 < LR < 10^2$	490 (0.9%)	174 (0.3%)	9 (0.04%)	171 (0.6%)
$10^0 < LR < 10^1$	661 (1.3%)	1,628 (2.8%)	28 (0.14%)	4,823 (17.6%)

Table 2 - Data on false exclusions:

	Single Source	Two-Person	Three-Person	Four-Person
Total number of comparisons to known donors	36	80	40	76
Maximum exclusionary Likelihood Ratio (LR) for a known donor	N/A	0.002	N/A	0.020
Largest DNA amount (nanograms) of individual donor resulting in false exclusion	N/A	0.025	N/A	0.2
	Number of False Exclusion Occurrences			
$10^0 > LR > 10^{-1}$	0	1 (1.3%)	0	21 (27.6%)
$10^{-1} > LR > 10^{-2}$	0	1 (1.3%)	0	4 (5.3%)
$10^{-2} > LR > 10^{-3}$	0	2 (2.5%)	0	0
$10^{-3} > LR > 10^{-4}$	0	0	0	0
$LR < 10^{-4}$	0	0	0	0