No. 23-6960

IN THE

Supreme Court of the United States

TASHA MERCEDEZ SHELBY,

Petitioner,

v.

STATE OF MISSISSIPPI,

Respondent.

On Petition for a Writ of Certiorari
to the Supreme Court of Mississippi

BRIEF OF AMICI CURIAE SOUTHERN CENTER FOR HUMAN RIGHTS AND THE CENTER FOR INTEGRITY IN FORENSIC SCIENCE IN SUPPORT OF PETITIONER

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INTEREST OF *AMICI CURIAE*[1]

The Southern Center for Human Rights ("SCHR") is a nonprofit law office based in Atlanta, Georgia that works for fairness and equality in the criminal legal system. For over 40 years, SCHR has represented poor people facing the death penalty, life without parole, and other serious criminal sentences. The organization has a significant interest in this petition for certiorari because SCHR's current docket includes clients convicted on a theory of shaken baby syndrome and other unreliable forensic science. SCHR is committed to ensuring the validity of evidence used to convict persons of criminal offenses and that such persons receive due process in our nation's court systems.

The Center for Integrity in Forensic Science ("CIFS") is a nonprofit organization dedicated to improving the reliability and safety of criminal prosecutions through strengthening the forensic sciences. CIFS's work includes education through conducting independent research on the use of forensic sciences in criminal convictions and engaging with academic groups that research in this area. CIFS also engages in advocacy by partnering with legal practitioners and organizations on a range of projects including the direct representation of wrongfully convicted clients, amicus support in cases

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[1] No party or counsel for a party authored this brief in whole or in part, and no person other than *amici* or their counsel made a monetary contribution intended to fund the preparation or submission of this brief. The parties were timely notified that *amici curiae* intended to file this brief.

involving convictions based on undermined forensic science, and more.

Amici have unique insight into the role discredited scientific evidence has too often played in wrongful convictions and miscarriages of justice. The real-world perspectives amici possess can impart to this Court a deeper awareness regarding the perils faced by persons whose criminal convictions rely on scientific understanding that is later discovered to be incorrect. Unfortunately, this case is by no means isolated. There is routinely little recourse to challenge convictions when scientific developments expose critical falsehoods in the evidence used to convict.[2] As lawyers and researchers in this area of law, amici are well qualified to speak to this issue.

INTRODUCTION AND SUMMARY OF ARGUMENT

Accurate and reliable evidence is an indispensable component for criminal convictions to comport with constitutional due process. Accuracy and reliability, however, are not always static; they may be subject to

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[2] Numerous studies have revealed the criminal legal system's common use of faulty scientific theories. *See, e.g.,* Carrie Leonetti, *The Myth of the Appropriate Response to Trauma: "Abnormal Reactions" As Evidence of Guilt*, 58 Gonz. L. Rev. 379 (2023) (behavioral responses to tragedy); Brett Murphy, *They Called 911 for Help. Police and Prosecutors Used a New Junk Science to Decide They Were Liars*, ProPublica.org (Dec. 28, 2022), https://perma.cc/S3NA-3CYB (911 call analysis); Comm. on Identifying the Needs of the Forensic Sciences Community-Nat'l Rsch. Council, *Strengthening Forensic Science in the United States: A Path Forward* (2009), https://perma.cc/4R58-JPSH (calling for significant improvements to the forensic sciences).

new discoveries and perfected over time. In any individual case, our criminal legal system accounts for this reality by permitting factfinders to consider competing scientific views as they exist at the time of criminal prosecution. But where the scientific understanding has evolved to the point of undermining the basis for a previous conviction, due process under the law also requires courts to apply that new understanding to previously adjudicated cases.

Shaken Baby Syndrome ("SBS") is a case in point.[3] The hypothesis underlying SBS diagnoses has gone from being taken for granted as a scientific truth, to being severely undermined by the scientific community's improved understanding of biomechanics and medical conditions.[4] This shift in the consensus is reflected in peer-reviewed studies as well as the official positions of professional medical associations.

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[3] Because the SBS hypothesis in its original form has been debunked, today it is referred to as "Abusive Head Trauma." Keith A. Findley et al., *Shaken Baby Syndrome, Abusive Head Trauma and Actual Innocence: Getting it Right*, 12 Hous. J. Health L. & Pol'y 209 (2012).

[4] The SBS hypothesis refers to the belief that when a child presents to a medical provider with subdural hematoma (bleeding within the coverings of the brain), retinal hemorrhage (bleeding at the back of the eye) and encephalopathy (brain dysfunction which may also be accompanied by swelling), the cause of those findings can be nothing but shaking or shaking with impact. No one suggests shaking a baby is safe or acceptable; the debate is, instead, about whether a doctor can reliably determine that shaking has occurred by observing these signs.

Federal courts have recognized changed scientific evidence as grounds for a due process claim, and numerous state courts have overturned convictions based on the wealth of new evidence controverting long-held beliefs about SBS. These decisions vindicate due process rights when convictions that previously passed constitutional muster are called into question because the science on which they hinged has been discredited. This Court should make the recognition of this due process right uniform across the country, particularly where, as here, there is no dispute that the official state death certificate *has changed* in response to scientific developments and now asserts that the cause of death was an accident and not a homicide.

ARGUMENT

I. Prevailing Scientific Consensus Now Discredits Shaken Baby Syndrome.

Medical research has thoroughly discredited the cornerstone of the SBS hypothesis, which is the presumption that a child must have suffered from violent shaking if the child presented with certain medical findings. The modern rejection of this now outdated hypothesis is evidenced by the sea change in the scientific literature on SBS.

A. SBS Originally Relied on Circular Reasoning and Flawed Methodologies.

In the 1990s, the dominant opinion in the medical profession was that if a child presented with certain diagnostic criteria and no history of a dramatic, severe accident such as a multi-story fall or high-speed crash, the child's injuries could only be explained by SBS. Many doctors believed, and routinely testified, that only extreme, violent shaking could cause the "triad" of medical findings historically associated with SBS: retinal hemorrhages (bleeding into the back of the eyes), subdural hematoma (bleeding between the layers of tissue that cover the brain), and cerebral edema (brain swelling). *See generally* Deborah Tuerkheimer, *Flawed Convictions: "Shaken Baby Syndrome" and the Inertia of Injustice* 39 n.43 (2014) (quoting Brian Holmgrem, *Prosecuting the Shaken Infant Case, The Shaken Baby Syndrome: A Multidisciplinary Approach* 275, 307 (Stephen Lazoritz & Vincent J. Palusci, eds. 2001)). SBS was taught in medical schools "as the primary or exclusive cause of the Triad . . . not as a hypothesis but as

scientific fact." *See* Keith A. Findley et al., *Shaken Baby Syndrome, Abusive Head Trauma and Actual Innocence: Getting It Right*, 12 Hous. J. Health L. & Pol'y 209, 232 (2012) [hereinafter *Getting It Right*]. Perhaps most significantly, in 1993 and 2001, the American Academy of Pediatrics (AAP) issued "highly influential" statements on SBS advising that the presence of any subdural hemorrhage (one of the "triad" symptoms) "should trigger a 'presumption of child abuse.'" Randy Papetti et al., *Outside the Echo Chamber: A Response to the "Consensus Statement on Abusive Head Trauma in Infants and Young Children*," 59 Santa Clara L. Rev. 299, 305–06 (2019) (emphasis added); Randy Papetti, *The History of Shaken Baby Syndrome, in Shaken Baby Syndrome: Investigating the Abusive Head Trauma Controversy* 11, 13 (Keith A. Findley et al., eds. 2023) (same). But we now know that the "evidence" supporting SBS was not evidence; instead, it was based on circular reasoning and flawed methodology.

Early researchers consistently classified cases exhibiting the triad as abusive if parents could not prove their innocence by pointing to a major trauma. Absent other obvious explanations, medical experts concluded that the triad of findings was a powerful, near-conclusive, indicator of abuse. *See, e.g.*, *Getting It Right*, *supra*, at 274–76 (citing Gaurav Bhardwaj et al., *A Systematic Review of the Diagnostic Accuracy of Ocular Signs in Pediatric Abusive Head Trauma*, 117 Ophthalmol. 983, 985 (2010)). But these researchers "select[ed] cases by the presence of the very clinical findings and test results they [sought] to validate as diagnostic." Mark Donohoe, *Evidence-Based Medicine in Shaken Baby Syndrome; Part I: Literature Review,*

1966-1998, 24 Am. J. Forens. Med. & Pathol. 239, 239 (2003). Because the injuries were *assumed* to be the result of SBS, alternate explanations for these injuries—including short falls—were mistakenly dismissed. *Getting It Right*, *supra*, at 205–17, 225; Edward J. Imwinkelried, *Shaken Baby Syndrome: A Genuine Battle of the Scientific (and Non-Scientific) Experts,* 46 Crim. L. Bull. Art. 156 (2010). In other words, the research purportedly validating the SBS triad was self-defeating in its circularity: if the triad was present, it was SBS, thus SBS necessarily causes the triad. Keith Findley, *Can Confession Substitute for Science?*, *in Shaken Baby Syndrome: Investigating the Abusive Head Trauma Controversy*, *supra*, at 189–90; *see also* Niels Lynøe & Anders Eriksson, *The Swedish Systematic Literature Review on Suspected Traumatic Shaking (Shaken Baby Syndrome) and Its Aftermath*, *in Shaken Baby Syndrome: Investigating the Abusive Head Trauma Controversy*, *supra*, at 161–78.

B. Current Medical Science No Longer Accepts the Premise Underlying SBS.

The mainstream scientific community has now thoroughly repudiated the reliability of the "triad." Thanks to increased data, newly available technologies, and modern analyses, "there is now widespread, if not universal, agreement that the presence of the triad alone—or its individual components—is not enough to diagnose abuse." *Getting It Right*, *supra*, at 213. As described in a leading forensic neuropathology text, "Virtually all of the hallowed tenets of SBS have been challenged on the basis of scientific principles and found wanting or

wrong." Papetti et al., *Outside the Echo Chamber, supra*, at 303 (quoting Jan E. Lesstma, *Forensic Neuropathology* (3d ed. 2014)); Papetti, *The History of Shaken Baby Syndrome*, *supra*, at 16 (same). Proponents and skeptics of the SBS hypothesis alike now acknowledge that non-abusive causes can produce the medical findings historically associated with SBS and that abuse cannot be presumed based on these findings. *See* Deborah Tuerkheimer, *The Next Innocence Project: Shaken Baby Syndrome and the Criminal Courts*, 87(1) Wash. U. L. Rev. 1, 17–18 (2009). The consensus has shifted to such an extent that even the question of whether SBS can be a valid diagnosis *at all* is controversial. *See, e.g.*, Marvin Miller, *How I Became a Shaken Baby Syndrome Sceptic Pediatrician: A Review of the Observations That Challenge the Existence of Shaken Baby Syndrome*, *in Shaken Baby Syndrome: Investigating the Abusive Head Trauma Controversy*, *supra*, at 148–60.

Today, it is well documented that *many* conditions can produce the "triad" of medical findings historically associated with SBS, including: residual birth trauma; congenital malformations; genetic conditions; metabolic disorders; coagulation disorders; infectious disease; vasculitis and autoimmune conditions; malignancies; toxins and poisons; nutritional deficiencies; complications from medical-surgical procedures; motor vehicle crashes; and playground injuries. Deborah Tuerkheimer, *Science-Dependent Prosecution and the Problem of Epistemic Contingency: A Study of Shaken Baby Syndrome*, 62 Ala. L. Rev. 513, 517 & nn.27–28 (2011) (collecting research studies); Kent P. Hymel et al., *Intracranial*

Hemorrhage and Rebleeding in Suspected Victims of Abusive Head Trauma: Addressing the Forensic Controversies, 7 Child Maltreatment 329, 333–37 (2002); *Getting It Right*, *supra*, at 214 (citing Andrew P. Sirotnak, *Medical Disorders that Mimic Abusive Head Trauma, in Abusive Head Trauma in Infants and Children: A Medical, Legal, and Forensic Reference* 191–226 (Geo. Wash. Med. Publ'g 2006); M. Denise Dowd, *Epidemiology of Traumatic Brain Injury: Recognizing Unintentional Head Injuries in Children, in Abusive Head Trauma in Infants and Children: A Medical, Legal, and Forensic Reference*, *supra*, at 11–14)).

In addition to these other possible causes, research shows that short falls *can and do* produce the triad. *See, e.g.*, John Plunkett, *Fatal Pediatric Head Injuries Caused by Short-Distance Falls,* 22 Am. J. Forensic Med. Pathol. 1 (2001) (detailing 18 fatal falls, including a toddler's videotaped fall from a 28-inch playhouse, thereby conclusively proving that such a fall can cause the triad previously believed to be pathognomonic of abuse); Rachel M. Kurinsky, *Pediatric Injuries Associated with High Chairs and Chairs in the United States, 2003–2010,* 53 Clin. Pediatr. 372, 374 (2014) (finding that children had similar head injuries from falling off chairs). Biomechanical re-creations—performed by biomechanical engineering researchers with no interested medical opinions—have corroborated that a short fall creates sufficient force to cause the triad. *See* Chris Van Ee et al., *Child ATD Reconstruction of a Fatal Pediatric Fall*, 43758 ASME Int'l Mech. Eng'g Cong. Expo. 395, 395–400 (2009).

Recognizing the erroneous science behind the triad, former proponents of the SBS hypothesis have repudiated their prior conclusions, including Dr. Norman Guthkelch, the neurosurgeon who first articulated the SBS hypothesis. *Getting It Right*, *supra*, at 243.[5] Even those experts who adhere to some of the outdated, repudiated beliefs underlying SBS determinations now acknowledge that household falls and other causes can lead to medical findings traditionally presumptive of abuse—including those findings observed in this case. *See, e.g.*, Cindy W. Christian & Robert Block, *Abusive Head Trauma in Infants and Children*, 123 Pediatrics 1409, 1409–11 (2009); Arabinda Kumar Choudhary et al., *Consensus Statement on Abusive Head Trauma in Infants & Young Children*, 48 Pediatr. Radiol. 1048, 1048–65 (2018). *See generally* Papetti, *The History of Shaken Baby Syndrome*, *supra*, at 11, 24–26.

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[5] In 2012, Guthkelch retracted his prior opinions and stressed that his original hypothesis remains unproven, announcing that "there was not a vestige of proof . . . that shaking, and nothing else, caused the triad." *Getting It Right*, *supra*, at 243 (citing A. Norman Guthkelch, *Problems of Infant Retino-Dural Hemorrhage with Minimal External Injury*, 12 Hous. J. Health L. & Pol'y 201, 202–04, 206 (2012)). Likewise, the American Academy of Pediatrics now acknowledges that many non-abusive events can cause a child to exhibit the triad. Cindy W. Christian & Robert Block, *Abusive Head Trauma in Infants and Children*, 123 Pediatrics 1409, 1410 (2009) (recognizing that accidents can cause the triad of injuries).

II. Convictions Based on Discredited Scientific Principles Raise Cognizable Due Process Claims.

A. Federal Courts Have Recognized that Changed Scientific Understanding Presents a Standalone Due Process Claim.

Numerous federal circuits have concluded that due process is implicated when the science used to secure a conviction has been undermined. Over a decade ago, the United States Court of Appeals for the Third Circuit recognized that post-conviction challenges based on changed scientific understanding raise a due process claim. *Han Tak Lee v. Glunt* (*Lee I*), 667 F.3d 397, 407–08 (3d Cir. 2012); *see also Han Tak Lee v. Houtzdale SCI* (*Lee II*), 798 F.3d 159, 162 (3d Cir. 2015). In the *Lee* cases, the appellant was convicted of arson and the murder of his daughter, largely based on expert fire- and gas-science theories that later scientific developments undermined. *Lee II*, 798 F.3d at 166–67. The Third Circuit held that if these new scientific developments established that expert testimony at the original trial was fundamentally unreliable, a conviction based on the undermined testimony violated the appellant's due process rights. *Id.* at 161. It then affirmed the district court's grant of *habeas* relief because, without the undermined scientific evidence, the state could not prove guilt beyond a reasonable doubt. *Id.* at 169.

Just one year later, the Ninth Circuit reached a similar conclusion and applied the same due process principles to a case involving SBS. *Gimenez v. Ochoa*, 821 F.3d 1136, 1143–45 (9th Cir. 2016). In *Gimenez*,

expert testimony was the "linchpin" of the prosecution's SBS theory that the defendant had murdered his daughter by violently shaking her. *Id.* at 1139–40. The defendant asserted in the Ninth Circuit that changed scientific understanding about SBS undermined the prosecution's trial theory and provided grounds for a federal due process claim. *Id.* at 1143–44. The Ninth Circuit agreed, noting that "courts have long considered arguments that the introduction of faulty evidence violates a petitioner's due process right." *Id.* at 1143.

Following a similar logic, where a state's SBS theory was not adequately contested once the scientific understanding had begun to change, courts have found a failure to contest the theory sufficient to support a claim of ineffective assistance of counsel, even in post-conviction proceedings. *See Ceasor v. Ocwieja*, 655 F. App'x 263, 278–88 (6th Cir. 2016) (granting habeas relief when appellate counsel failed to move for a separate hearing related to trial counsel's failure to present expert testimony contesting the state's SBS theory); *see also Del Prete v. Thompson*, 10 F. Supp. 3d 907, 955, 958 (N.D. Ill. 2014) ("[N]o reasonable juror, hearing all of the evidence both old and new . . . would have found her guilty beyond a reasonable doubt . . . .").

B. The Changed Scientific Understanding Around SBS is a Nationally Relevant Issue.

In recent years—months, even—several states have overturned convictions based on SBS in light of the new scientific understanding discussed above.

Even before the American Academy of Pediatrics formally changed its position on SBS, the Wisconsin Supreme Court held that advances in the science around SBS constituted newly discovered evidence warranting a new trial. *State v. Edmonds*, 746 N.W.2d 590 (Wis. 2008). The Wisconsin Supreme Court observed that "there ha[d] been a shift in mainstream medical opinion" since the appellant's 1990s conviction based on the outdated SBS theory. *Id.* at 598–99. The Court definitively held that, were the jury presented with the current state of medical opinions as they existed at the time of the appeal, that jury would have "reasonable doubt as to [the appellant's] guilt." *Id.* at 599. The Texas Court of Criminal Appeals reached the same conclusion *in Ex parte Henderson*, when it remanded with instructions to hold a new evidentiary hearing, to include testimony discrediting the outdated SBS theory. 384 S.W.3d 833, 833–34 (Tex. Crim. App. 2012) (per curiam); *see also id.* at 835 (Price, J., concurring) ("[S]he has established that her conviction violated her right to due process . . . [because] her conviction was based in critical part upon an opinion from the medical examiner that he has now disowned because it has been shown by subsequent scientific developments to be highly questionable.")

The Supreme Judicial Court of Massachusetts has expressed similar misgivings about the *bona fides* of convictions based on SBS. In *Commonwealth v. Millien*, 50 N.E.3d 808 (Mass. 2016), Massachusetts's highest court determined that a trial attorney was ineffective for failing to present evidence challenging the state's expert testimony regarding SBS. *Millien*, 50 N.E.3d at 809–10. The Court noted that, had

counsel retained an expert, the jury would have been informed of the "numerous scientific studies" that undermined the state's expert. *Id.* at 821–22. Failure to present such evidence deprived the petitioner of due process and the right to effective assistance of counsel. *See also Kaiser v. State*, — N.W.3d —, No. A22-0749, 2024 WL 1080968, at *5 (Minn. Mar. 13, 2024) (affirming a lower court decision granting post-conviction relief because expert witnesses presented false testimony that a medical condition observed in a deceased child could be caused only by abusive head trauma).

And lower state courts are following suit. A Michigan appellate court discerned the clear "'shift in scientific consensus'" surrounding the SBS hypothesis, and noted a "dramatic[]" change in the scientific method underlying the "conclusiveness of the triad." *People v. Miller*, No. 346321, 2021 WL 1326733, at *3 (Mich. Ct. App. Apr. 8, 2021); *accord People v. Bailey*, 999 N.Y.S.2d 713, 717–18 (Cnty. Ct. 2014) (acknowledging the "progressive change in the attitude toward pediatric head trauma" and the now apparent "discrepancy in the classical [understanding of] shaken baby [syndrome]" with respect to the cause of certain injuries). More recently, a court in New Jersey concluded that "the lack of biomechanical support renders the [hypothesis] scientifically unreliable"—simply "junk science." *State v. Nieves*, 302 A.3d 595, 615, 621 (N.J. App. Div. 2023). Mississippi, too, recognizes the force of the changed scientific understanding around SBS. In *Wilkerson v. State*, the Mississippi Court of Appeals sitting *en banc* held that "changes in experts' 'scientific understanding' on . . . SBS may constitute newly

discovered evidence." *Wilkerson v. State*, 307 So. 3d 1231, 1243 (Miss. Ct. App. 2020) (en banc).

In all, the foregoing case law shows that the long-held premise behind SBS (*i.e.*, that the presence of the "triad" conclusively establishes that a child was violently shaken) is not sound science, and where a state relied on that science to secure a criminal conviction, a due process claim exists. *See Chambers v. Mississippi*, 410 U.S. 284, 289–94, 302 (1973) (holding that "where constitutional rights directly affecting the ascertainment of guilt are implicated," state rulings that do not accord with due process cannot "defeat the ends of justice"); *Washington v. Texas*, 388 U.S. 14, 23 (1967) ("[T]he petitioner in this case was denied his [constitutional] right . . . because the State [rule] arbitrarily denied him the right . . . ."); *Rock v. Arkansas*, 483 U.S. 44, 57–58 (1987) ("The Arkansas Supreme Court failed to perform the constitutional [due process] analysis that is necessary when a defendant's [constitutional right] is at stake."); *see also Del Prete*, 10 F. Supp. 3d at n.10 ("[A] claim of shaken baby syndrome is more an article of faith than a proposition of science.").

This right is even more pronounced where a state acknowledges that key scientific evidence has been undermined. *See Ege v. Yukins*, 485 F.3d 364, 370, 374–75 (6th Cir. 2007) (holding that a conviction based on undermined scientific evidence violated due process where a county prosecutor's office later discovered that the scientific evidence it relied on was derived from an unreliable source). Here, in the years since trial, and in the wake of this changed scientific understanding around SBS, there is no dispute that

the operative state death certificate has been changed to indicate that the manner of death in this case was "accident." Where, as here, the science underlying a conviction has been discredited, this Court should ensure that the Due Process clause affords relief.

CONCLUSION

Criminal convictions founded on discredited scientific theories violate the fundamental right to due process under the law, regardless of whether the discredited scientific theory exists at the time of trial, or only later becomes apparent through scientific developments and a changed scientific consensus. When the latter arises, federal due process requires that courts afford relief to those defendants and afford them the benefit of new scientific insights.

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