

# No. 09-70036

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IN THE UNITED STATES COURT OF APPEALS  
FOR THE FIFTH CIRCUIT

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LARRY RAY SWEARINGEN,

Petitioner-Appellant,

v.

RICK THALER, DIRECTOR, TEXAS DEPARTMENT OF CRIMINAL  
JUSTICE, CORRECTIONAL INSTITUTIONS DIVISION

Respondent-Appellee.

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Appeal from the United States District Court  
For the Southern District of Texas, Houston Division

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**BRIEF OF AMICUS CURIAE DR. HARRELL GILL-KING IN SUPPORT  
OF PETITIONER-APPELLANT LARRY RAY SWEARINGEN AND  
REVERSAL OF THE DISTRICT COURT'S JUDGMENT**

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### CONSENT OF PARTIES

Pursuant to Fed. R. App. P. 29(a), this brief is filed with the consent of all parties.

/s/ Meir Feder

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## **INTEREST OF AMICUS CURIAE**

Dr. Harrell Gill-King is a board certified forensic anthropologist with over thirty years experience providing estimates of the post mortem interval for human remains at various stages of decomposition. Dr. Gill-King currently serves as the director of the Laboratory of Forensic Anthropology, a publicly supported laboratory which, along with training law enforcement in forensic techniques, provides forensic analysis to public-interest agencies free of charge.

Dr. Gill-King holds a Ph. D. in Physical Anthropology from Southern Methodist University and completed postdoctoral training in Hard Tissue Pathology at the Southwestern Institute of Forensic Sciences, a part of the University of Texas Southwestern Medical Center. In addition to having held numerous teaching, research, and administrative posts, Dr. Gill-King has also served as a consultant to a number of federal and state agencies, including the Federal Bureau of Investigation, the U.S. Department of Defense, the Criminal Investigation Division of the U.S. Army, and the Attorneys General of Texas and California.

Dr. Gill-King is both personally and professionally dedicated to improving the accuracy and integrity of our criminal justice system through the proper use of forensic science. He accordingly has a substantial interest in ensuring that courts accurately interpret the meaning of forensic evidence to convict the guilty and

acquit the innocent, and is well-situated to assist this Court in ensuring that forensic science is properly evaluated. Dr. Gill-King's interests in the judicial system's proper use of forensic science is particularly compelling where, as here, a district court's erroneous assumptions about what science should look like will—if left uncorrected—result in the execution of an innocent man.

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## ARGUMENT

I. THE DISTRICT COURT ERRONEOUSLY CONCLUDED THAT MR. SWEARINGEN FAILED TO ESTABLISH HIS “ACTUAL INNOCENCE” BY CLEAR AND CONVINCING EVIDENCE.

A. ***The District Court Made Erroneous Scientific Assumptions To Disregard Uncontroverted Forensic Evidence That Establishes With Scientific Certainty That Mr. Swearingen Is Actually Innocent.***

As the district court’s decision notes, Mr. Swearingen has proffered sixteen expert opinions in this case from seven different experts, all of which concluded “with scientific certainty” that the victim was either killed or placed in the woods sometime after December 11, 1998, the date Mr. Swearingen was placed in custody. Order at 33-35. The scientists that offered those opinions are not challenged in their expertise, and their opinions are uncontroverted. Nonetheless, the district court concluded that “inconsistencies” between those opinions undermined their credibility. This conclusion is patently wrong, and it is predicated on a fundamental misunderstanding of the scientific disciplines at issue.

The district court’s decision in this case, issued in the absence of hearing, rejected the overwhelming and uncontroverted scientific proof in favor of the district court’s own speculation—*unsupported by any opposing expert opinion*—drawn from *circumstantial* evidence. In purporting to find the scientific consensus in this case lacking in credibility, the district court’s exercise in do-it-yourself

forensic science strayed dangerously both from accepted scientific principles and from the proper role of a court in assessing scientific evidence.

Simply put, the volume of reliable, admissible scientific testimony on the relevant question of whether the victim was murdered at a time when Mr. Swearingen was capable of committing the offense is unmistakable and leaves no room for the conclusion that a reasonable juror would still convict. *See* 28 U.S.C. § 2444(b)(2)(B)(ii).<sup>1</sup> The district court's contrary conclusion fundamentally misunderstands the role of histology, a scientific discipline that yields the most accurate predictions of post mortem interval in the short term.

Histology—the forensic science by which the microscopic anatomy of cells and tissues are analyzed—is a well recognized area of scientific inquiry. Indeed, juries in the Fifth Circuit routinely rely on histological evidence alone to establish a time of death for purposes of securing a conviction. Like other fields of science, a histological examination will yield a reliable range of conclusions. Where that range is supported by a volume of opinion, it does not become less powerful, let alone unreliable, merely because it operates as a range.

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<sup>1</sup> Amicus' observations in this case are limited to the second prong of the ADEPA's requirements for filing a successive habeas action. That prong requires Mr. Swearingen to show that "the facts underlying [his] claim, if proven and viewed in light of the evidence as a whole, would be sufficient to establish by clear and convincing evidence that, but for constitutional error, no reasonable factfinder would have found [him] guilty of the underlying offense."

By way of analogy, this court and others often confront the challenge of accident reconstruction. Physicists and others trained in accident reconstruction can make highly accurate and reliable estimates of the speed of a vehicle based on known human response times and the length of skid marks. *See, e.g., Thomson v. Rook*, 255 F.Supp.2d 584, 584-87 (E.D. Tex. 2001). If, in a negligence per se case, ten qualified experts examined skid marks and came to the unanimous conclusion that the driver was traveling at speeds between 70 and 75 miles per hour, the fact that several opinions differed, as between 70 and 75 miles per hour, would hardly be cause for rejecting the sheer volume of proof that the driver was speeding, that is, was exceeding 55 miles per hour at the time of the accident. Likewise, in the face of this unimpeached scientific evidence it would be difficult to suggest that some form of less reliable circumstantial evidence could alter the clear and convincing scientific proof that the driver was speeding.

And yet, that is precisely what the district court has done here. Crediting circumstantial evidence of guilt over uncontroverted and unimpeachable histological evidence of innocence is patently *unreasonable*, yet that is what the district court assumed “reasonable” jurors would do.

This Court, however, must assume that *reasonable* jurors would not make erroneous scientific assumptions, especially when those assumptions are not

grounded in any controverting scientific evidence. When the scientific opinions *already in the record* are properly understood for what they are, it is clear that no reasonable jury could have convicted Mr. Swearingen. Accordingly, the district court's judgment should be reversed, and Mr. Swearingen should be permitted to proceed with his successive habeas.

1. **Slight Variations In Estimates Of Date Of Death Or Time Of Exposure Enhance, Rather Than Discredit, The Scientific Consensus That The Victim Died And Was Placed In The Woods After Mr. Swearingen Was Already In Custody.**

The district court relied heavily on what it characterized as “inconsistencies” between the scientific estimates of the time of death in this case. The notion that variations of the sort seen in this case undermine the authority of all of the forensic estimates is simply wrong, and it is predicated on a fundamental misunderstanding of the scientific disciplines at issue.

What the district court viewed as “inconsistencies” between the experts' opinions are, from a scientific perspective, expected variances in the precision of the experts' conclusion that actually enhances the accuracy of the unanimous consensus of expert opinion that the victim's remains were left in the woods after December 11, 1998. Scientific efforts to estimate post mortem interval speak in ranges, not exact dates or minutes—this reflects the limits of the precision within which a time of death can be determined, not a lack of accuracy. And these ranges

naturally increase as the time from date of death increases. For example, a surgeon in an operating room may be able to pinpoint a time of death within a fifteen minute window. But as the time from death increases, so, too, will the range within which science can accurately place that death. In fact, no credible scientist would attempt to pinpoint an exact date of death/period of exposure.

The mere fact that scientific estimates of post mortem interval generally yield ranges rather than precise dates does not somehow undermine the efficacy of the entire scientific endeavor or the accuracy of the conclusions that it produces. This is especially true where seven different experts through sixteen separate reports all place the victim's date of death/date of exposure in an approximately twenty-day period after December 11, 1998. Indeed, the scientifically significant fact here is not the variances between reports, but the remarkable unanimity of opinion that the victim's remains were exposed for only a short period of time—during which, critically, Mr. Swearingen was indisputably incarcerated.

Simply put, there is no scientific basis for the district court's speculation that variances amongst the experts' reports undercuts the credibility of their unanimous scientific conclusion on the critical fact at issue here. In making this finding, the district court simply imposed a criterion on the science that science itself does not require and cannot countenance.

Neither is there any scientific basis for the district court's conclusion that slight variations in date of death/time of exposure between different opinions of the same experts somehow undercut their collective credibility on the operative question: whether the victim died at a time when Mr. Swearingen was incapable of committing the murder. Order at 35.

Established scientific standards and procedures require forensic opinions to be revised based on newly available evidence; the record shows that is exactly what happened here. Both of the experts that the district court criticizes—Dr. Larkin and Dr. White—revised their opinions only after considering new evidence. Order at 33-35. Established scientific standards dictate that scientific opinions and conclusions may, and often should, change when new facts are presented. And those new facts are themselves the means by which the earlier and later opinions are reconciled. Again, the district court is imposing its own erroneous assumptions about proper science to discredit opinions that—from a scientific perspective—are certain. Indeed, the narrowing of an estimated post mortem period based on newly considered evidence confirms, rather than discredits, the scientific validity of the estimation.

**2. Under Established Scientific Standards, Dr. White And Dr. Pustelnik Were Not Required To Reconcile Their Histological Estimates With Entomology And Other Less Reliable Measures Of Post Mortem Interval.**

The district court further erred by discrediting Dr. White and Dr. Pustelnik for not “reconciling” their histological opinions with entomological and photographic evidence. Order at 37. Again, the district court’s conclusion is predicated on a fundamental misunderstanding of the forensic science. Initially, it is important for this Court to understand the hierarchy of the sciences at issue here. Histology is indisputably the most accurate scientific tool for determining post mortem interval in the short term, whereas entomology consistently yields far less reliable results. Indeed, it is accepted in the scientific community that entomological estimates of post mortem interval should be used only when direct decompositional rate methods, such as histology, are not possible. Moreover, the discrepancies between histology and entomology are enhanced on the record in this case because the methods used to collect the entomological specimens fall well short of the established scientific procedures and standards.<sup>2</sup> Given the substandard collection methods used in this case, entomology is virtually worthless as a means of estimating the victim’s post mortem interval. Under these

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<sup>2</sup> D.A. Wolf, Harrell Gill-King, and M. Lee Goff, *Coleopterid Peritrophic Membrane: Interpret with Caution*, Proceedings American Academy of Forensic Sciences 12:298 (2006); Harrell Gill-King, *Collection of Entomological Evidence from Decomposed, Burned, Buried, and Submerged Human Remains*, Proc. American Entomological Society Annual Meeting, Dallas, Texas (1994); W.D. Lord and J.F. Burger, *The Collection and Preservation of Forensically Important Entomological Materials*, The Journal of Forensic Sciences 28:936 (1983).

circumstances, there was simply no scientific reason for Dr. White and Dr. Pustelnik to even attempt to reconcile their histology with entomology.

Moreover, the district court mistakenly assumed that any and all evidence that might suggest a lengthy post mortem interval would permit a reasonable jury to disregard the histological evidence. This assumption finds no support in science. Where, as here, proper histological estimates of post mortem interval have been conducted, histology is the lens through which all other evidence of post mortem interval should be viewed and the method with which other approaches must be reconciled, not vice versa.<sup>3</sup> When this proper scientific approach is employed, seeming inconsistencies noted by the district court quickly fade away.

To suggest otherwise would undermine the very foundation with which the state sought to establish Mr. Swearingen's guilt at trial. The expert testimony introduced at trial by the state presumed that a histological analysis of post-mortem data can lend itself to reasonably estimating time of death. That this estimation has now changed based on newly available data (*i.e.*, internal organs that were not considered in the initial histological analysis) does not undermine histology or the trial court's initial decision to admit this science into evidence. Rather, it merely

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<sup>3</sup> See Marcus Nashalskey and Patricia McFeeley, *Time of Death*, Handbook of Forensic Pathology, 2d, Richard Froede (2003). Of course, in the very short term there are more accurate methods of estimating time of death, such as body temperature or an examination of the decedent's eyes. But beyond this initial period (usually hours), histology is the best method of estimating post mortem interval.

illustrates that new variables yield new histological conclusions—something that is true of all scientific disciplines. If this were not so, then not only is the scientific basis for Mr. Swearingen’s successive habeas application unsound, but so to is the scientific evidence that led to his conviction, because that evidence also assumed that a histological analysis of a given set of data could be used to accurately determine when the victim died.

The district court also faulted Dr. White and Dr. Pustelnik for not reconciling their views with what the Court itself perceived to be “significant decomposition to the head and neck.” Order at 38. Initially, it should be noted that no reasonable scientist would consider the decomposition of the victim’s head and neck alone significant; rather, the state of decomposition of the victim’s head and neck is perfectly consistent with a short post mortem interval. Moreover, the substantial weight that the district court places on purportedly significant decomposition of the victim’s head and neck flows from a layman’s misconception that decomposition is the same as autolysis (or self digestion—the destruction of the body’s tissues or cells by the action of substances, such as enzymes, that are produced within the body itself). It is not. Autolysis is merely a subset of decomposition. Further, decomposition is inherently less reliable than histology in estimating post mortem interval. Accordingly, when histological estimates of post mortem interval seemingly conflict with the extent to which physical remains have

decomposed, accepted science requires the decomposition to be explained by something other than autolysis, if plausible.

Here, the record contains ample evidence that the partial skeletalization of the victim's head and the gaping lesion in the neck was the result of animal scavenging, which rapidly increases decomposition, and not the result of autolysis over an extended period of time. Dr. Carter—the state's expert who now agrees that the condition of the victim's internal organs "support[] a forensic opinion that the body had not been exposed more than two weeks in the forest environment," Order at 14,—attributed the disfigurement and insult to scavenging in the body of her report and in handwritten comments on the diagrams of the head and neck region that she attached to it. Indeed, the mere fact that tissues in the condition necessary to conduct a histological examination existed at all in this case—including tissues in the victim's internal organs, virtually compels the conclusion that decomposition of the victim's head and neck was not a natural occurrence.

Shortly after an individual dies, enzymes begin to digest the cells in the major organs. The most energy demanding organs, such as the heart, begin this process first, usually within a few days. The detail seen in the slide of cardiac tissue from the victim, as observed by Dr. White and Dr. Pustelnik, shows that this process had barely begun, indicating that the victim could not have been dead for

more than a few days. Accordingly, the district judge erred by assuming on this record that what she perceived to be evidence of decomposition was relevant to the length of the victim's post mortem interval and would thus permit a reasonable jury to disregard the opinions of seven different experts. In all events, rather than engaging in her own scientific analysis, the district judge should have resolved any concerns she had about decomposition by holding a hearing, where scientific experts could have explained the relationship between decomposition and histology.

The district court's reliance on the contents of the victim's stomach as a competing indicator of post mortem interval is similarly flawed. Even in the absence of the histological evidence, science tells us that any remaining food in the stomach of a deceased individual indicates a relatively short post mortem interval. And from a scientific perspective, stomach contents could never alter an estimate of post mortem interval grounded in histology. Again, by relying on its own reasoning, instead of scientific realities, the district court is reaching conclusions that no "reasonable" juror ever could.<sup>4</sup>

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<sup>4</sup> The district court's reliance on purported fungal growth is likewise improper from a scientific perspective. The fungal growth referenced by the district court is not well developed and is in no way inconsistent with the histological estimates of post mortem interval.

In sum, histology is the best scientific measure of post mortem interval, and Dr. White and Dr. Pustelnik considered all the evidence necessary to make a proper histological estimation of the time period the victim was exposed in the woods. The district court's observation that these scientists failed to reconcile their histology with the victim's body "in light of the evidence as a whole," Order at 37, reflects a preconceived and unscientific notion that all scientific evidence is equally indicative of post mortem period. That is simply not the case. Where, as here, proper histological estimates have been made, science mandates that all seemingly contrary evidence be reconciled with histology and not vice versa. The district court erred to the extent it concluded that reasonable jurors could do otherwise.

**3. The Forensic Experts Properly Ignored *Non-scientific* Circumstantial Evidence In Forming Their Opinions On Post Mortem Interval.**

Remarkably, the district court faults the scientific opinions in this case for not addressing all the evidence, including non-scientific evidence. This is simply untenable. Scientific evidence—assuming the underlying methodology is sound—is by definition independent of, and not subject to impeachment by, non-scientific evidence. To return to the car accident analogy, a reconstruction expert could not properly allow his calculations to be tailored to non-scientific evidence. Likewise a histological determination of time of death is, and must be, independent of

circumstantial evidence of the sort cited by the district court: the rate at which microscopic cellular changes occur is governed by established scientific principles that are not subject to impeachment by evidence about, say, the relationship between the defendant and the decedent. The entire point of the expert analysis is its detached character. Accordingly, the district court simply has it backward. It is the scientist that *strays* from scientific evidence whose opinion loses credibility.

### CONCLUSION

Seven different forensic experts through sixteen separate reports have now told the judicial system that Mr. Swearingen could not have committed this crime. Their credentials are impeccable, their motives are unquestioned, and their opinions have gone uncontroverted. Bending over backward to discredit these opinions based on evidence and purported inconsistencies that *science itself* says are not relevant would not only result in the execution of an innocent man, it would constitute an indictment of science's entire role in the judicial system's search for justice.

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that on April 26, 2010, a copy of the foregoing Amicus Brief was served upon all counsel of record via the Fifth Circuit's Electronic Case Filing (ECF) system.

/s/ Meir Feder

**CERTIFICATE OF COMPLIANCE**

1. This brief complies with the type-volume limitation for amicus briefs in Fed. R. App. P. 29(d) because this brief contains 3,307 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft® Office Word 2003 in 14-point font Times New Roman type (with the exception of footnotes, which pursuant to Local Rule 32.1, are in a proportionally spaced typeface in 12 point Times Roman).

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/s/ Meir Feder

Dated: April 26, 2010

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