

Page 157
692 So.2d 157
22 Fla. L. Weekly S203
Gerald D. MURRAY, Appellant,
v.
STATE of Florida, Appellee.
No. 83556.
Supreme Court of Florida.
April 17, 1997.

Page 158

Fletcher N. Baldwin, University of Florida, College of Law, Gainesville; and Wm. J. Sheppard, Richard W. Smith and D. Gray Thomas of Sheppard and White, P.A., Jacksonville, for Appellant.

Robert A. Butterworth, Attorney General and Sara D. Baggett, Assistant Attorney General, West Palm Beach, for Appellee.

PER CURIAM.

We have on appeal the judgment and sentence of the trial court imposing the death penalty upon Gerald Delane Murray. We have jurisdiction. Art. V, § 3(b)(1), Fla. Const. Because we find that the trial court erred in admitting DNA evidence at trial, we reverse Murray's convictions and sentence and remand for a new trial.

FACTS

Murray was convicted of first-degree murder, burglary with an assault, and sexual battery in 1994. The facts surrounding this murder are essentially set forth in *Taylor v. State*, 630 So.2d 1038 (Fla.1993), a case involving the direct appeal of Murray's co-defendant.

APPEAL

Murray raises twenty-three claims of error on appeal. 1 We find claim 3, concerning the

Page 159

admissibility of the DNA typing results, to be dispositive of this case. For purposes of remand, we also address claim 2, concerning the trial court's denial of Murray's motion to suppress hair evidence. Murray's remaining claims of error are rendered moot by our decision here.

DENIAL OF MURRAY'S MOTION TO SUPPRESS

For purposes of remand, we address Murray's claim that the trial court, following a hearing on the matter, erred in denying defendant's motion to suppress hair evidence and allowing the state to introduce this evidence against Murray at trial because the hair samples were taken from Murray in violation of his Fourth Amendment right against unreasonable searches and seizures. Specifically, Murray argues that (1) the state did not have probable cause to support the search warrant which authorized the taking of Murray's hair samples because the supporting affidavit did not mention the need for hair, and, alternatively, (2) Murray never consented to the seizure, but merely submitted to the apparent lawful authority of the police officers.

A trial court's ruling on a motion to suppress comes to us clothed with a presumption of correctness and, as the reviewing court, we must interpret the evidence and reasonable inferences and deductions derived therefrom in a manner most favorable to sustaining the trial court's ruling. *McNamara v. State*, 357 So.2d 410, 412 (Fla.1978). In this case, Detective O'Steen testified at the suppression hearing that on February 15, 1991, Murray was read his Miranda rights and immediately waived them before the police requested his consent to seize physical evidence. Thereafter, Detective O'Steen asked Murray for his consent to give blood, saliva and hair samples, and Murray told him to go ahead, saying, "You won't find nothing." Detective O'Steen further testified that Murray never withdrew his consent. At the bottom of Murray's motion to suppress physical evidence, the trial court wrote, "2-17-94. Denied for reasons recited on record," and signed it, "Alban E. Brooke." 2

Interpreting the evidence and inferences derived therefrom in a manner most favorable to upholding the trial court's ruling, we find the trial court reasonably could have

Page 160

denied Murray's motion to suppress because it found Detective O'Steen's testimony at the suppression hearing that Murray voluntarily consented to give a hair sample to be more credible than Murray's testimony to the contrary. 3 Accordingly, we conclude that the trial court did not abuse its discretion in denying Murray's motion to suppress hair evidence.

DNA EVIDENCE

At trial, the State offered DNA evidence which was premised on the evaluation by an expert witness that Murray's DNA matched one of the five hairs recovered from the crime scene. 4 This evidence was particularly important to the State's case in light of the fact that Murray was eliminated as the donor of all the other seminal and blood stains found at the crime scene.

In his motion in limine to exclude scientific DNA evidence, Murray claimed that Polymerase Chain Reaction (PCR) DNA testing, the method of testing employed by the State in this case, was not generally accepted in the scientific community and therefore did not meet the Frye test for admissibility at trial. In addition, Murray maintained that the probability calculations used by the State's expert to report the frequency of a match between Murray's DNA and the evidence sample recovered from the crime scene also failed to meet the Frye test for admissibility. At the pre-trial suppression hearing on the motion, Murray renewed his two-pronged objection and the State called its expert witness, Mr. Daniel Nippes, to testify about the PCR method of DNA typing as well as the population frequency statistics that he used to calculate the probability of a match between the two DNA samples.

As to the PCR methodology, Nippes performed the PCR method of testing the DNA samples in this case with a commercial kit purchased from Cetus Corporation in California and summarily explained that there is "a tremendous amount of built-in constraints to ensure that [the scientists] don't incur contamination that exists more than normally in samples that are recovered from scenes," and vouched that PCR analysis of DNA is generally accepted in the scientific community. 5 As to the admissibility of his population frequency statistics, Nippes testified that his probability calculations were based on the Hellmuth Study Manual, which was published by Cetus Corporation in 1989 or 1990; and were not founded upon any database generated by his own laboratory. Nippes could not testify as to how the Hellmuth database had been created. In fact, Nippes affirmatively admitted--both at the suppression hearing and at trial--that he had absolutely no knowledge of how the database he used in drawing his probability conclusions was assembled.

At the conclusion of Nippes' testimony, the trial court denied Murray's motion to suppress the DNA evidence, concluding:

I think all of this, from the three documents, from this [1992 NRC report] ... [a]nd from the testimony of Mr. Nippes, I'll deny your motion in limine. It appears to me that this is one of the clearer matters of not being an admissibility question

Page 161

but a weight [question]. You're certainly going to argue extensively the weight that the jury can give to whatever weight and conclusions he draws based upon the database, I presume through other matters, such as the question about whether or not the database of Caucasian is somehow corrupted by not knowing whether they're from a particular area or from a general group. There are a number of things, but every one of those goes to weight, not admissibility.

(Emphasis added). At trial, Nippes was qualified as an expert witness and testified as to his conclusions concerning PCR testing of Murray's DNA and the crime scene sample. Most importantly, Nippes explained to the jury that Murray's DNA sample matched the DNA sample recovered from the crime scene, and "91.8 percent of the population would be anticipated to have different DNA types."

We have addressed the admissibility of DNA evidence at trial on several occasions in recent years as this area of forensic science has rapidly developed. In *Hayes v. State*, 660 So.2d 257, 264 (Fla.1995), we relied heavily on the National Research Council's report, *DNA Technology in Forensic Science* (1992), and took judicial notice that DNA test results are generally accepted as reliable in the scientific community, provided the laboratory has followed accepted testing procedures that meet the Frye 6 standard to protect against false readings and contaminations. In utilizing the Frye test, we have emphasized that:

[T]he burden is on the proponent of the evidence to prove the general acceptance of both the underlying scientific principle and the testing procedures used to apply that principle to the facts of the case at hand. The trial judge has the sole responsibility to determine this question. The general acceptance under the Frye test must be established by a preponderance of the evidence.

Ramirez v. State, 651 So.2d 1164, 1168 (Fla.1995) (emphasis added). Recognizing the difficulty of an inquiry such as this one where cutting-edge science often becomes the dispositive factor in resolving critical questions of law and fact, we set out in *Ramirez* a step-by-step analysis that a trial court must make before admitting into evidence the testimony of an expert witness concerning a new scientific principle. We explained that a trial court must determine (1) whether such expert testimony would assist the jury in understanding the evidence or in deciding a fact in issue; (2) whether such testimony is based on a scientific principle which has gained general acceptance in that particular scientific community; and (3) whether the expert witness is sufficiently qualified to render an opinion

on the subject. Finally, if these criteria are met, the expert witness may testify at trial, and the jury can assess the expert's credibility. *Id.* at 1166.

Most recently, in *Brim v. State*, 22 Fla. L. Weekly S45, --- So.2d ---- (Fla. Jan. 16, 1997), we reaffirmed our adherence to the Frye test for the admissibility of DNA evidence, and clarified that each stage of the DNA process, i.e., the methodology for determining DNA profiles, as well as the statistical calculations used to report the test results--both of which are at issue in the instant case--are subject to the Frye test. Because our decision in *Brim* is so critical to the issues before us in this case, the substance of that opinion warrants extensive reiteration again today. As we explained in *Brim*, the DNA testing process consists of two distinct steps. In *Hayes v. State*, 660 So.2d 257 (Fla.1995), we took judicial notice that DNA methodology conducted properly would satisfy the Frye test. *Id.* at 264. This first step of the DNA testing process relies upon principles of molecular

Page 162

biology and chemistry. In oversimplified terms, the results obtained through this first step in the DNA testing process simply indicate that two DNA samples look the same. A second statistical step is needed to give significance to a match. The need for this second step is explained as follows by the National Research Council (NRC):

The insistence on quantitative estimation has been fueled by the observation in the 1992 report (p 74) that "[t]o say that two patterns match, without providing any scientifically valid estimate (or, at least, an upper bound) of the frequency with which such matches might occur by chance, is meaningless." See, e.g., *State v. Carter*, 246 Neb. 953, 524 N.W.2d 763, 783 (1994) (quoting 1992 report); Kaye 1995.

Certainly, a judge's or juror's untutored impression of how unusual a DNA profile is could be very wrong. This possibility militates in favor of going beyond a simple statement of a match, to give the trier of fact some expert guidance about its probative value. As noted above, however, there are a variety of procedures--qualitative as well as quantitative--that might accomplish this objective

....

Except for strong claims of uniqueness, purely qualitative presentations suffer from ambiguity. Professional forecasters, physicians, science writers, students, and soldiers show high variability in translating verbal probability expressions to numerical expressions (Mosteller and Youtz 1990; Wallsten and Budesco 1990). Judges and jurors are likely to show a similar variability in interpreting the meaning of such verbal expressions. To help a court or jury to understand the importance of a match, most experts provide quantitative, rather than qualitative, estimates of the frequency of an incriminating profile in one or more races or an upper bound on the frequency.

Committee on DNA Forensic Science & Commission on DNA Forensic Science, National Academy of Sciences, *The Evaluation of Forensic DNA Evidence* (Prepublication Copy) at 6-24--6-26 (1996) (footnotes omitted).

This second step of the DNA testing process does not rely upon principles of molecular biology or chemistry. Instead, the calculation of population frequency statistics is based on principles of statistics and population genetics. Accordingly, calculation techniques used in determining and reporting DNA population frequencies must also satisfy the Frye test. It is clear that the DNA testing process consists of two distinct steps and that both steps must satisfy the requirements of Frye.

Brim, 22 Fla. L. Weekly at S45, --- So.2d at ---- (footnote omitted). We went on to explain in *Brim* exactly why it is essential that both steps of the DNA process must independently meet the Frye standard for admissibility and again emphasized the critical role that the trial judge plays in conducting this inquiry before such evidence is presented to the jury:

DNA evidence is an important scientific tool that can assist in the identification of perpetrators of criminal offenses and, consequently, substantially improve the judicial process in a search for the truth. We have previously taken judicial notice that the first step of the DNA testing process, if properly conducted, will satisfy the Frye test. *Hayes*, 660 So.2d at 264. It is important to recognize, though, that DNA testing is a two-step process. The fact that a match is found in the first step of the DNA testing process may be "meaningless" without qualitative or quantitative estimates demonstrating the significance of the match. We acknowledge that arguments have been made that the statistics or population genetics used in calculating population frequency estimates are not new or novel scientific evidence and, consequently, should not be subjected to a Frye analysis. We disagree. In 1992, the NRC made the following observation:

Unlike many of the technical aspects of DNA typing that are validated by daily use in hundreds of laboratories, the extraordinary population-frequency estimates

Page 163

sometimes reported for DNA typing do not arise in research or medical applications that would provide useful validation of the frequency of any particular person's DNA profile. Because it is impossible or impractical to draw a large enough population to test calculated frequencies for any particular DNA profile much below 1 in 1,000, there is not a sufficient body of empirical data on which to base a claim that such frequency calculations are reliable or valid per se.

DNA Technology in Forensic Science at 77. We heed the NRC's warning that we should be cautious when using standard statistical principles in the field of DNA testing. In the absence of an independent validation method, we find that the Frye test is appropriate when using statistics or population genetics to calculate population frequency statistics. Consequently, the techniques and methods utilized in both steps of the DNA testing process must satisfy the Frye test.

... Despite the federal adoption of a more lenient standard in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), we have maintained the higher standard of reliability as dictated by Frye. E.g., *Ramirez v. State*, 651 So.2d 1164 (Fla.1995). This standard requires a determination, by the judge, that the basic underlying principles of scientific evidence have been sufficiently tested and accepted by the relevant scientific community. To that end, we have expressly held that the trial judge must treat new or novel scientific evidence as a matter of admissibility (for the judge) rather than a matter of weight (for the jury).

Id. at S46, at ---- (footnote omitted). Under our caselaw then, the resolution of the case before us is an easy one. Here, the trial judge failed to conduct the step-by-step inquiry set out in *Ramirez* as to whether either the PCR method of DNA typing used by the State's expert, or the probability calculations used to report the test results, could be admitted at trial--a determination that was his alone to make. Instead, the trial court simply allowed the DNA evidence to be admitted at trial under the faulty rationale that the scientific principles underlying this evidence was more appropriately resolved by the jury as a "matter of weight." It is exactly this mistake which we have cautioned trial judges not to make. As we explained in *Ramirez* and *Brim*, and emphasize again today, "[T]he burden is on the proponent of the evidence to prove the general acceptance of both the underlying scientific principle and the testing procedures used to apply that principle to the facts at hand. The trial judge has the sole responsibility to determine this question." *Brim*, 22 Fla. L. Weekly at S46, --- So.2d at ---- (quoting *Ramirez*, 651 So.2d at 1168).

Not only was the trial court's failure to make a determination as to the admissibility of this evidence clearly error under our caselaw, but the paucity of information in this record concerning the application of the PCR methodology to the DNA evidence at issue here leads us to the conclusion that even if the trial court had attempted to determine whether this evidence met the Frye standard, there is no way the court could have found it admissible.

In this case, the State completely failed to carry its burden as the proponent of the DNA evidence. Not only did the State's expert repeatedly avoid answering questions as the actual procedures used in conducting the PCR DNA tests at issue here, he also affirmatively misled the trial court as to the NRC's acceptance of PCR DNA methodology at the time of hearing. His testimony was equally unenlightening as to the probability calculations he used to report to the jury that Murray's DNA sample matched the DNA sample recovered from the crime scene, and "91.8 percent of the population would be anticipated to have different DNA types." As we noted above, the State's expert based this conclusion on population frequency statistics from a database about which he had no knowledge and which was not generated by his own laboratory.

Page 164

Under the de novo standard of review we have in this area of law, 7 we find that the evidence proffered by the State here falls far short of all three requirements set out in *Ramirez* for the admission at trial of expert testimony concerning a new or novel scientific principle like DNA. First, the expert's testimony here is not the kind that will assist the jury in understanding the DNA evidence or determining a fact in issue because the expert simply did not explain how he performed the DNA tests or the basis of his statistical conclusions. Second, this evidence did not meet the "general acceptance" standard of Frye for admissibility because the expert here misled the court as to the general acceptance of the PCR method of DNA testing in the relevant scientific community. And, third, this expert was simply not qualified to report the population frequency statistics at issue here because the expert had no knowledge about the database upon which his calculations were based. See *Ramirez*, 651 So.2d at 1167. We have previously stated that an expert witness may not testify to matters that fall outside his area of expertise. *Jordan v. State*, No. 84,252, --- So.2d ---- (Fla. Apr. 17, 1997); *Hall v. State*, 568 So.2d 882, 884 (Fla.1990). The expert in this case explicitly stated that he possessed no knowledge as to the manner in which the relevant database was created. As we stated in *Jordan*, it is not absolutely necessary for an expert witness to demonstrate practical experience in the field in which he will testify. We are not ruling that the expert in this case could only testify if he helped to assemble the database. We are finding, though, that this expert must, at the very least, demonstrate a sufficient knowledge of the database grounded in the study of authoritative sources. Such a knowledge was not demonstrated. In fact, this

expert had no insight into the assembly of the relevant database. The qualification of this expert witness was clearly erroneous. Because of the damaging nature of the DNA evidence offered in this case, the error cannot be considered harmless beyond a reasonable doubt. 8 Thus, the State completely failed to offer a proper expert witness or to demonstrate the reliability of the DNA processes and calculations utilized. For both reasons, we reverse the convictions and sentence in this case and remand for a new trial to be conducted within 120 days after this decision becomes final. 9

KOGAN, C.J., and OVERTON, SHAW, GRIMES, HARDING, WELLS and ANSTEAD, JJ., concur.

1 The twenty-three claims are as follows: (1) the trial court abused its discretion in permitting the state to peremptorily challenge three jurors; (2) the trial court abused its discretion in denying Murray's motion to suppress hair evidence seized pursuant to an allegedly defective search warrant; (3) the trial court abused its discretion in allowing the state's expert to testify about the results of DNA typing because the state's method of DNA typing and probability calculations do not meet the Frye test for admissibility; (4) the trial court abused its discretion in admitting hair evidence where the testimony of the state's witnesses at trial revealed evidence of probable tampering; (5) the trial court abused its discretion in denying Murray's motions for continuance of the trial and penalty phase; (6) the trial court abused its discretion in admitting evidence of Murray's pre-trial escape, theft of automobiles, and possession of false identification; (7) the trial court abused its discretion in excluding the testimony of three defense witnesses concerning Murray's true motive for escape; (8) the prosecutor's comments during the guilt phase closing argument deprived Murray of a fair trial; (9) the evidence at trial was insufficient to support Murray's convictions; (10) the trial court erred in finding the especially heinous, atrocious or cruel aggravating factor; (11) the trial court abused its discretion in overruling Murray's objection to the standard heinous, atrocious, or cruel instruction and denying Murray's requested instruction on that aggravator; (12) the trial court abused its discretion in rejecting Murray's statutory and nonstatutory mitigating factors; (13) the trial court improperly doubled the felony murder and pecuniary gain aggravating factors; (14) the trial court erred in finding that the murder was committed for pecuniary gain; (15) the trial court abused its discretion in admitting hearsay evidence concerning Murray's prior violent felonies at the penalty phase; (16) the prosecutor's comments during the penalty phase closing argument deprived Murray of a fair trial; (17) section 921.141(7), Florida Statutes (1995), which allows presentation of victim impact evidence in a capital sentencing proceeding unconstitutional; (18) the trial court's use of Murray's contemporaneous convictions for burglary and sexual battery to support the felony murder aggravating factor violated Murray's right against double jeopardy; (19) the trial court improperly instructed the jury regarding its role in the sentencing process; (20) the record does not support the death penalty; (21) Florida's death penalty statute is unconstitutional because electrocution constitutes cruel and unusual punishment; (22) Murray's death sentence is disproportionate; and, finally, (23) the trial court erred in enhancing Murray's sentence for burglary and imposing it to run consecutively to his sentence of death.

2 The record contains no other oral or written denial, and no factual findings.

3 Because the trial court could have denied Murray's motion to suppress hair evidence on a finding that Murray voluntarily consented to giving the hair sample, Murray's further contention that his hair sample was taken pursuant to a defective search warrant is moot. See *Washington v. State*, 653 So.2d 362 (Fla.1994), and cases cited therein, stating that although a warrantless search is per se unreasonable under the Fourth Amendment, it will be considered lawful if conducted pursuant to consent which was given voluntarily and freely.

4 Test results concerning the other four hairs were inconclusive.

5 Nippes told the court that the report of the National Research Council (NRC), *DNA Technology in Forensic Science* (1992) [hereinafter NRC Report], "was an endorsement of the

Page 164

forensic DNA application to forensic science whether it was RFLP or PCR." In fact, the NRC's 1992 report expressly withheld endorsement of PCR methodology. The committee explained that although the PCR method has "enormous promise," "it has not yet achieved full acceptance in the forensic setting." NRC Report, at 70. Specifically in relation to the use of PCR testing with commercial kits, one of which was used in this case, the NRC report cautioned: "The committee sees a potential for introduction of unreliable kits and the misuse of kits. The existence of kits suggests ease of use and low chance of technical error. The committee believes that nonexpert laboratories will run a significant chance of error in using kits." NRC Report, at 69.

6 In *Frye v. United States*, 293 F. 1013, 1014 (D.C.Cir.1923), the court explained:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in the twilight zone the evidential force of the principle must be recognized, and while the court will go a long way in admitting expert testimony deduced from a well-recognized scientific principle

or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

7 See *Brim*, 22 Fla. L. Weekly at S47, --- So.2d at ----.

8 We acknowledge that in *Brim* we ordered a limited remand in a situation seemingly similar to the one at issue. There, however, the sole issue to be determined on remand was whether the methodology originally used at trial would satisfy a Frye test in light of recent scientific developments. We were unable to discern the answer from the record. In *Brim*, though, there was not an improperly qualified expert witness. The instant case is distinguishable from *Brim* and, accordingly, the compound errors found here necessitate a new trial. We also note that the trial court did not have the benefit of our opinions in *Brim* and *Ramirez* at the time of the trial in this case.

9 We recognize that 120 days may be a schedule difficult to meet for a full retrial. The Chief Judge, if necessary, may seek an extension of this time from the Chief Justice.