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MOTION AND, IF FILED, DETERMINED

IN THE DISTRICT COURT OF APPEAL  
OF FLORIDA  
SECOND DISTRICT

THOMAS JULIAN CASIAS, )  
 )  
 Appellant, )  
 )  
 v. )  
 )  
 STATE OF FLORIDA, )  
 )  
 Appellee. )  
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Case No. 2D09-4952

Opinion filed June 24, 2011.

Appeal from the Circuit Court for Pinellas  
County; Richard A. Luce, Judge.

James Marion Moorman, Public Defender,  
and William L. Sharwell, Assistant Public  
Defender, Bartow, for Appellant.

Pamela Jo Bondi, Attorney General,  
Tallahassee, and Cerese Crawford Taylor,  
Assistant Attorney General, Tampa, for  
Appellee.

VILLANTI, Judge.

Thomas Julian Casias seeks review of his conviction and sentence for one  
count of burglary of a dwelling. Because the State failed to offer any testimony to  
establish that the statistical analysis presented by the Florida Department of Law

Enforcement (FDLE) crime laboratory analyst was generally accepted within the scientific community, we reverse and remand for a limited evidentiary hearing on this issue. We reject the other arguments raised by Casias without further discussion.

While Sonya Schirmacher was visiting relatives on November 23 and 24, 2006, someone broke into her house through a bathroom window and stole numerous items. There were no eyewitnesses to the crime, and the only evidence available to attempt to identify the perpetrator was a few drops of blood. A sample of this blood was collected, and a DNA test was performed. A national database search identified Casias as a possible contributor of the DNA. Based on this search result, Casias was arrested and charged with burglary of a dwelling. A post-arrest DNA sample was taken from Casias and submitted for further analysis, which confirmed that Casias was a potential contributor of the blood found in Schirmacher's house. The State had no other evidence linking Casias to the offense.

At Casias' trial, FDLE analyst Lisa Johnson testified at length to the process of extracting and analyzing the DNA from the blood sample collected at the scene and the post-arrest sample collected from Casias. She also testified that the DNA extracted from the sample collected at the scene matched that obtained from Casias post-arrest. Then, over Casias' objection, she testified to her conclusion that, based on her comparison of Casias' profile to a statistical database, she would expect to find a DNA profile like Casias' in 1 in 1.7 quadrillion Caucasians, 1 in 30 quadrillion African-Americans, and 1 in 360 trillion Southeastern Hispanics. The jury convicted Casias as charged based on this evidence.

In this appeal, Casias contends that the trial court erred by permitting Johnson to testify concerning the statistical significance of the DNA evidence when the State failed to lay the proper predicate for her testimony. Given the complete lack of any testimony concerning the methodology used in calculating Johnson's population frequency statistics, we are compelled to agree.

When the admissibility of scientific or other technical opinion evidence offered by an expert is challenged, the trial court serves a "gatekeeping" function. As threshold issues to admissibility, the trial court must determine (1) whether the expert testimony will assist the jury in understanding the evidence or determining a fact in issue; (2) whether the expert's testimony is based on a scientific principle or methodology that is generally accepted within the scientific community; and (3) whether the particular witness is qualified to present opinion testimony on the subject at issue. See Ramirez v. State, 651 So. 2d 1164, 1167 (Fla. 1995). The second threshold issue is based on the standard set out in Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923),<sup>1</sup> which requires that the scientific principles or methodologies to which an expert testifies be generally accepted in the scientific community before they will be considered valid in the courts. If the challenged evidence satisfies these three criteria, the court may "open the gate" and allow the expert to testify to his or her opinion. Id. At that point, it is up to the jury to determine what, if any, weight to afford that expert's opinion. Id.

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<sup>1</sup>The Florida Supreme Court adopted the general standard set forth in Frye in Bundy v. State, 471 So. 2d 9, 18 (Fla. 1985), and specifically adopted the Frye test of general acceptance within the scientific community in Stokes v. State, 548 So. 2d 188, 195 (Fla. 1989).

In Casias' case, the scientific evidence at issue was Johnson's analysis of the DNA collected from the scene of the burglary and her comparison of that DNA to the known sample from Casias. In general:

DNA testing requires a two-step process, one biochemical and the other statistical. The first step uses principles of molecular biology and chemistry to determine that two DNA samples look alike. The second step uses statistics to estimate the frequency of the profile in the population. Both steps must satisfy the Frye test.

Butler v. State, 842 So. 2d 817, 827-28 (Fla. 2003) (emphasis added); see also Brim v. State, 695 So. 2d 268 (Fla. 1997).

Because Butler and Brim require application of the Frye test of general acceptance within the scientific community to both steps of the DNA analysis, it is not sufficient for an expert to testify merely to the results of a statistical analysis. Instead, the expert must also testify to the methodology he or she used to apply the information obtained from that database to the DNA profile at issue in the case so that the court can determine whether the methodology actually used is generally accepted within the scientific community. Compare Darling v. State, 808 So. 2d 145, 158 (Fla. 2002) (finding a DNA expert's testimony legally sufficient when he "testified regarding the general acceptance in the scientific community of the methodology used, and demonstrated his knowledge and experience regarding both the methodology and the databases employed"), with Brim, 695 So. 2d at 272 (reversing for a limited evidentiary hearing when the "record fail[ed] to show complete details of the State's calculation methods," which meant that the court could not evaluate "whether the methods used to calculate the State's population frequency statistics would satisfy the Frye test," and noting that the burden is on the proponent of the evidence to prove the general

acceptance of both the underlying scientific principles and the procedures used to apply that principle to the facts at hand), and Perdomo v. State, 829 So. 2d 280, 283 (Fla. 3d DCA 2002) (reversing for a limited evidentiary hearing when the court was "unable to discern from [the expert's] testimony concerning his education and experience, the database and the methodology used to compute the frequency statistics whether he demonstrated the requisite knowledge" to offer an opinion).

Here, the State first elicited testimony about FDLE analyst Johnson's educational background and work experience. The State also established that Johnson had extensive training through FDLE in basic serology and DNA analysis and that she had been qualified to testify as an expert in the past on "[s]erology, DNA and statistics." Johnson then offered extensive testimony concerning how she had extracted and tested the DNA samples and how she had determined that the two samples matched.

At that point, the prosecutor turned to the statistical analysis of the DNA samples. The following discussion ensued:

Q. Now with respect to statistics, are you familiar with the field of statistics?

A. Yes.

Q. Have you testified as an expert with respect to statistics?

A. Yes, I have.

...

Q. In the past, based on your specialized knowledge and expertise in statistics, have you been able to give an opinion regarding statistics in a court of law?

A. Yes, I have.

Q. Have you received any specialized training in classes in statistics that enable you to apply it to DNA?

A. Yes, I took several statistics courses throughout my college career, as well as received specific DNA analysis statistics training as part of my training with FDLE.

Q. And based on that training, does FDLE permit you to engage in statistical analysis regarding DNA analysis?

A. Yes.

Q. Now, how is it that statistics are applied to DNA results?

A. When an unknown and a known profile are determined to match one another, that means that that person could be the source of that DNA profile – the statistics are calculated to determine how common or how rare that particular unknown sample profile is in a given population. So when I do determine that there is a match, I calculate the statistics to show how rare or how common that particular profile is in the populations to show in case – if it were to have not come from the individual it matched, to give weights to that particular match.

Q. Now how are you able to do a statistical analysis? Is there a database that is used? Can you explain to the members of the jury how you are able to do this statistical analysis?

A. There is a database published in the Journal of Forensic Sciences. There is a database for each of the three ethnic groups which are Caucasians, African-Americans and Southeastern Hispanics. Each of the databases have been published, and it consists of approximately 200 individuals in each database. Basically what they did was collected [sic] DNA profiles from these 200 individuals and recorded their DNA types at each of those 13 areas and then recorded how often those particular types showed up in each population, and then I used that to estimate how often I would expect the entire DNA profile to be found in a given population.

Q. And when you say the entire DNA profile, is that the 13 different areas with the two numbers attached that we had previously discussed?

A. That's correct.

Q. Now, this database that you're discussing that helps you to do a statistical analysis, is it generally accepted in the scientific community as an accurate and reliable measure for these statistical purposes?

A. Yes. As it was published in the Journal of Forensic Sciences, it was open to review by statisticians and population geneticists, and it has been determined to be a valid database to be used for these calculations.

Q. So you indicated it had been published and peer-reviewed?

A. Yes.

Q. Now, obviously, you conducted a statistical analysis with respect to the DNA results in this particular case.

A. Yes, I did.

Q. And what were you able to determine?

At this point, defense counsel objected that the State had failed to lay "an adequate predicate" for Johnson "to opine the statistical frequency basis." Defense counsel cited Perdomo and Gibson v. State, 915 So. 2d 199 (Fla. 4th DCA 2005), and noted that Johnson's testimony was comparable to the testimony found insufficient in those cases. Counsel then argued:

More specifically, on page 4 in the Gibson case, there was a lot more information given as to [the expert's] qualifications to testify as to population for statistics than we actually have here, including there was training to do so and that there was education and experience, but the Third DCA felt that was not a statistician because the testimony concerning education and experience and the database and the methodology to compute the frequencies of statistics were inadequate to demonstrate this particular expert's knowledge, and I don't think we're any further along than these cases suggest.

(Emphasis added.) In response, the court stated that the expert need not be a statistician or a mathematician and that Johnson had "sufficient knowledge of the authorities pertinent to the database that she's referred to, the three categories, and she has testified in the past." On that basis, the court overruled the objection and permitted Johnson to provide the statistical evidence. Casias renewed his objection to Johnson's statistical analysis when the State offered her report into evidence.

Casias' challenge to Johnson's testimony implicates both the second and third threshold issues. The record is clear that the State never offered any evidence as to what methodology Johnson used to generate her statistical analysis. Ipso facto,

there was no evidence presented to address whether that methodology was generally accepted in the scientific community. Without such evidence, the trial court, whose gatekeeping role required it to determine whether the methodology used to generate the statistical analysis satisfied the Frye test, see Brim, 695 So. 2d at 272, simply had no basis to do so. Moreover, without evidence concerning the methodology used by Johnson, the trial court had no basis upon which to find that she was qualified, whether by education, experience, or otherwise, to present opinion testimony concerning the population frequency statistics she generated.

In this regard, this case is quite similar to Gibson. There, the DNA analyst "explained that in performing the statistical analysis, she uses nationally recognized and accepted scientific procedures. [She] used three different populations, Caucasian, African-American, and Hispanic, in her analysis." 915 So. 2d at 200. She also testified that she had training in the necessary statistical analysis, "was required to know how it works, the basis behind the formulas and must be able to do the calculations by hand." Id. at 200-01. However, she "never identified, much less displayed 'sufficient knowledge of' the database or method she used for the statistical component of her opinion." Id. at 202. In finding the evidence insufficient, the court noted that the expert never "explain[ed] what method she used, nor did she demonstrate any knowledge of the authorities pertinent to the database." Id. Because the evidence was insufficient to satisfy this threshold burden, the court remanded for a limited evidentiary hearing to determine whether the expert had sufficient knowledge to present the statistical evidence. Id.



Here, as in Gibson, Johnson never identified or explained the methodology she used to complete her statistical analysis. And, unlike the expert in Gibson, Johnson did not testify that she knew how the statistical program worked, that she was required to know how it works, or that she was able to do the statistical calculations by hand. Thus, Johnson's testimony laid an even less sufficient predicate for the admission of the statistical analysis than that found insufficient in Gibson. Because the predicate laid by the State was legally insufficient, the trial court should have sustained Casias' objection and excluded the evidence. And since the DNA evidence was the sole evidence connecting Casias to this offense, the error in admitting this evidence was not harmless.

Nevertheless, while we agree with Casias that the admission of this evidence was error in this instance, we do not agree that he is automatically entitled to a new trial. Instead, as in Brim and Gibson, we reverse and remand for a limited evidentiary hearing. At that hearing, the trial court must hear evidence concerning what methodology Johnson used to calculate the population frequency statistics she offered at trial. See Brim, 695 So. 2d at 275. Based on that evidence, the court must determine whether the methodology used satisfies Frye's requirement of general acceptance within the scientific community.<sup>2</sup> Id. If the trial court finds that the

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<sup>2</sup>We note that at least one statistical methodology—the product rule—has already been found to satisfy the requirements of Frye. See, e.g., Butler v. State, 842 So. 2d 817, 829 (Fla. 2003); Brim, 695 So. 2d at 272. If Johnson testifies that she used the product rule to generate her statistics, or any other statistical methodology that has already been found to be generally accepted within the scientific community, the State need not prove anew that the chosen methodology satisfies Frye. However, if Johnson testifies to using a statistical methodology that has not been previously determined to satisfy the requirements of Frye, the court will need to hold a full Frye hearing in order to make the necessary determination.

methodology used satisfies the Frye test, Casias' conviction will stand. See id. If not, Casias is entitled to a new trial.<sup>3</sup> Id.

Reversed and remanded with instructions.

CASANUEVA, C.J., and MORRIS, J., Concur.

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<sup>3</sup>We are not blind to the irony of the trial court holding a "gatekeeping" hearing after the gate has already been opened and the evidence admitted. Nevertheless, since the court, rather than the jury, is the gatekeeper, Casias will have suffered no prejudice if the evidence would have been admitted had the court held the hearing at the proper time. If that is the case, a retrial, at which the jury would hear exactly the same evidence, would be a waste of judicial resources.