

DISTRICT COURT OF APPEAL OF THE STATE OF FLORIDA  
FOURTH DISTRICT

**LAJAYVIAN D. DANIELS,**  
Appellant,

v.

**STATE OF FLORIDA,**  
Appellee.

No. 4D19-822

[February 24, 2021]

Appeal from the Circuit Court for the Fifteenth Judicial Circuit, Palm Beach County; Joseph George Marx, Judge; L.T. Case No. 50-2015-CF-009320-AXXX-MB.

Carey Haughwout, Public Defender, and Christine C. Geraghty, Assistant Public Defender, West Palm Beach, for appellant.

Ashley Moody, Attorney General, Tallahassee, and Jessenia J. Concepcion, Assistant Attorney General, West Palm Beach, for appellee.

CONNER, J.

Appellant, Lajayvian D. Daniels, appeals his convictions and sentences for first degree murder with a firearm and robbery with a firearm, raising five issues on appeal. We affirm without discussion the trial court's rulings on four issues, but we write to explain our affirmance on the fifth issue because it concerns a matter of first impression in Florida. The issue involves the admissibility of expert evidence of a probabilistic genotype software program used to analyze DNA samples collected while investigating a crime that contain mixtures of genetic material from multiple people. We determine the trial court properly admitted the evidence.

*Background*

Appellant was indicted for first degree murder with a firearm and robbery with a firearm in connection with a robbery and shooting resulting in the death of a gas station employee. For purposes of the issue we address on appeal, we focus on the pertinent facts and procedural

background regarding the DNA evidence Appellant argues was erroneously admitted.

The forensic quality assurance manager for the Palm Beach County Sheriff's Office ("PBSO") crime lab testified at trial about DNA samples collected from the articles discovered during the investigation. Additionally, she produced DNA reference profiles for four people: Appellant, the victim, a second suspect, and Appellant's girlfriend. She compared those profiles to five DNA samples obtained from five clothing items believed to be related to the crime. The five samples contained a mixture of DNA from different persons. Because PBSO did not have sufficient statistical calculation tools to analyze samples with DNA mixtures, the forensic quality assurance manager sent the PBSO data files for those five samples to Cybergenetics, a private lab, for further analysis. Cybergenetics specializes in DNA mixtures. Cybergenetics was the developer of TrueAllele, a computer software designed to analyze complex data to determine the individual profiles of genetic material in DNA mixtures.

A DNA analyst at Cybergenetics testified at trial that the TrueAllele software can separate the different genetic types present in samples in order to calculate match statistics or the level of association between crime evidence and references. TrueAllele is a probabilistic genotyping system that relies on Bayesian probability modeling and "Markov Chain" and "Monte Carlo" statistical sampling. She explained that a Cybergenetics analyst entered the data compiled by the PBSO DNA analyst into the TrueAllele program and entered how many people were suspected of contributing to the mixture. TrueAllele then separated the genetic types present in the five clothing samples into individual profiles and compared those profiles to a reference sample to calculate a match statistic. The Cybergenetics DNA analyst that testified at trial was not the same Cybergenetics analyst that entered the PBSO lab data into the TrueAllele software, but she was one of the three reviewers of the TrueAllele analysis required as a standard protocol by Cybergenetics. She was the witness who authenticated and discussed at trial the TrueAllele analysis report admitted into evidence.

The TrueAllele analysis found a statistical match between one clothing item and Appellant that was 872 trillion times more probable than a coincidental match to an unrelated person. As to a second item, the match was 77.1 million times more probable than a coincidental match to an unrelated person. As to a third item, the match was 194 quadrillion times more probable than a coincidental match to an unrelated person. As to a

fourth item, the match was 789 billion times more probable than a coincidental match from an unrelated person.

The jury returned a verdict of guilty as charged on both counts. The trial court sentenced Appellant to concurrent life sentences.

### *Appellant's Motion to Exclude TrueAllele Evidence*

Prior to trial, the defense filed a “Motion to Exclude the Interpretation of DNA Mixtures by the TrueAllele Software Due to the Failure to Perform the Required Internal Validation.” The motion argued that this evidence did not meet the requirements for admissibility under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) or *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), because the TrueAllele program was not “internally validated” prior to being used on the data generated at PBSO. After acknowledging that TrueAllele evidence has never been litigated in Florida and the issue of the lack of internal validation has not been ruled upon in any other jurisdictions regarding the TrueAllele software, the motion focused on an unpublished New York county court decision issued in *People v. Hillary*,<sup>1</sup> which addressed an issue of a lack of internal validation with regards to STRmix, a different probabilistic genotype software.

The matter proceeded to a lengthy hearing. The State’s witness at the hearing was the Cybergeneics DNA analyst who testified about the development of TrueAllele as a validated probabilistic genotyping system. She explained the science behind the software and how it works to determine probabilities. She testified that, in this case, PBSO sent data on five different samples collected from clothing for interpretation.

The Cybergeneics DNA analyst also testified that she co-authored two peer-reviewed publications regarding the TrueAllele method of analyzing DNA and had participated in twelve additional studies involving validating computer programs or reviewing different aspects of the computer interpretation. She had testified in nine other cases prior to the instant case and each time her testimony concerned DNA interpretation and TrueAllele. She also stated there have been thirty-five validation studies regarding TrueAllele, and TrueAllele analysts from Cybergeneics have testified seventy-six times in court. She said that seven validation peer-

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<sup>1</sup> A copy of *People v. Hillary*, Decision & Order on DNA Analysis Admissibility, Indictment No. 2015-15 (N.Y. St. Lawrence Cty. Ct. Aug. 26, 2016) was attached to Appellant’s motion.

reviewed papers on the TrueAllele case work system established that “the error rates, the sensitivities, specificity and reproducibility of the system as well as its accuracy,” reflected that the results it was getting made sense. She testified that there have been sixteen times in multiple states that TrueAllele was challenged under *Daubert* or *Frye*, and in each case, the results were ruled admissible.

The Cybergenetics DNA analyst further testified that in 2014, she co-authored a “validation study,” which she explained refers to a test done on any new method or system or computer method to determine that it is working as expected, so that it can be tested on a wide variety of data. She explained there are two types of validation studies: *developmental* and *internal*, which are done to ensure that the system is reliable and establish any limits or error rates. Developmental validation refers to tests done by the manufacturer of any method or system to ensure scientific accuracy. Internal validation, as it relates to forensic science, refers to validation performed by labs to follow the FBI quality assurance standards for access to the Combined DNA Index System (“CODIS”). Notably, the Cybergenetics DNA analyst testified that in eight of the admissibility challenges against TrueAllele in prior cases where the TrueAllele evidence was ruled admissible, there was never any internal validation done on the lab from which the data came nor was the lack of internal validation on a specific lab’s data an issue for the reliability of the evidence. She noted that a challenge similar to that raised by the defense in this case to the internal validation was never raised in any of the prior legal cases of which she was aware. She moreover testified she was not aware of any studies or papers reflecting that, without an internal validation, the TrueAllele results are not scientific.

Concerning *People v. Hillary*, the Cybergenetics DNA analyst testified that when using STRmix, internal validation might be necessary, but the same is not true for TrueAllele:

A: Right, we do not use STRmix, we use TrueAllele.

Q: All right, and so you don’t – do you have to have internal validation like this Dr. Buckleton was doing where he was picking and choosing himself the parameters?

A. No, with TrueAllele you just put in – we put in all of the data. *The computer can learn from that data, figure out the different parameters that he had to input. There is no calibration that needs to be done with TrueAllele. It can learn it all from the data. The mathematical model is sophisticated*

*enough that you can put in all the data above the baseline, it can solve for all those different parameters. You do tell it a few things, like how many contributors or how long to run for but not too much more than that.*

(emphasis added). In contrast to STRmix, the Cybergenetics DNA analyst explained:

[W]ith *Hillary*, the reason why the internal validation would be important is because they do need those calibration settings to be able to properly run the [STRmix] program on data from a specific lab because it's dependent on knowing information about that data ahead of time, whereas TrueAllele is not.

The Cybergenetics DNA analyst reiterated that TrueAllele's sophisticated scientific model does not require calibration in order to be scientifically reliable and that this concept had been scientifically tested many times and is accepted within the community as scientifically reliable.

She further testified that the Scientific Working Group on DNA Analysis Methods ("SWGDM") issues *guidelines* and *recommendations*, rather than *mandates*, which are then passed on to the FBI to update their quality assurance guidelines for public crime labs. The Cybergenetics DNA analyst testified that the latest SWGDAM recommendation, issued in 2015, is applicable to validation of probabilistic genotyping systems, like TrueAllele. However, she explained that public crime labs utilizing such systems themselves are required to follow those quality assurance standards, part of which is the internal validation, in order to access CODIS, but those standards do not apply to private laboratories, like Cybergenetics, which do not have access to CODIS. In other words, the SWGDAM guidance for internal validation is for public labs running their own tests to be able to maintain CODIS access and verify their handling of raw specimens. The Cybergenetics DNA analyst further testified:

[V]alidation is important for any scientific method. There are thirty-five TrueAllele validation studies. Seven of them have been published in peer reviewed papers. *And they test all kinds of data, including the types of data that were produced in this case, the same kits, the same sequencers.*

(emphasis added). In this regard, the Cybergenetics DNA analyst explained that internal validation of the in-house data from PBSO was not required before being used on case work tested at the PBSO lab where such has been done on the same types of data and where there is no

special setting that Cybergenetics would have to input for any kind of data. The Cybergenetics DNA analyst also added that the SWGDAM guidelines concerning probabilistic genotyping systems were issued in June 2015 *after* all of Cybergenetics's analysis in this case, and the SWGDAM guidelines state that they are not to be applied retroactively.

On cross examination, the Cybergenetics DNA analyst clarified and reiterated that Cybergenetics does not produce actual DNA data profiles, but rather, only interprets them. She further reiterated that Cybergenetics does comply with the SWGDAM as to all of the applicable guidelines, noting that it has done developmental validations and that she herself has done internal validations on TrueAllele on different kinds of data. The Cybergenetics DNA analyst confirmed that the TrueAllele operator reviews the data to determine how many contributors there might be, and if there is a question, for example, as to whether there are three or four contributors, the operator can have TrueAllele solve for both scenarios and provide the information for both scenarios. She also confirmed that the operator can adjust the degradation option, but stated that changing the input for either factor does not materially affect the result.

The defense called the forensic quality assurance manager for the PBSO crime lab as a witness at the motion hearing. She testified that because the PBSO lab is accredited by the FBI, it must follow the FBI's standards, which require internal validation of all DNA methods used. She testified that PBSO now uses STRmix in their lab, for which PBSO conducted an internal validation. However, she testified that PBSO does not follow every SWGDAM guideline if it determines it does not apply to the system it is using or mixtures it is interpreting. The PBSO forensic manager testified that the data in this case was generated at PBSO using equipment and kits PBSO routinely uses and had been internally validated prior to use. She testified that labs using the same testing kits can use different settings such as the number of analysis cycles they run which can have differences in the data generated.

On cross examination, the PBSO forensic manager testified she has not been trained on either the STRmix or the TrueAllele systems. She testified that: "One of the things that the STRmix does in our system is it uses our thresholds, it uses our validation, everything that we have goes into the system so that it takes all of that into account." However, she contrasted this with TrueAllele, stating that her understanding of

how TrueAllele works is that you don't need any of those types of data, that it's self – the program self-teaches when it looks at the data. It doesn't use stochastic thresholds and things of

that nature, that it takes longer to run and it analyzes and self-teaches with the data.

The defense also called an adjunct professor who teaches forensic science and who had previously been the quality assurance manager for a small unrelated private lab. She testified that SWGDAM guidelines are regarded as the best practices in the field. She explained that validation is a scientific principle and that for probabilistic genotyping software, internal validation is “ground truth testing,” where the operator creates a mixed sample from known individuals and tests the software to see if it makes the proper inclusions and exclusions. Using in-house data (in this case, data derived at PBSO) to create the known mixture is important because the data fluctuations can affect the analysis. She testified that part of internal validation at the lab generating the data is determining what is good data and when results are reliable, so as to learn the system and know its limitations with the individual crime lab’s data. She testified that things like baseline and instrumentation can impact the data and that the limitations of the software program need to be defined for the data at the laboratory that is developing it. She opined that a Cybergenetics analyst making subjective adjustments in the number of cycle times the program performs an analysis and other parameters can impact what is reported and that a Cybergenetics analyst is not in the best position to know what is the best representation of that data since he or she has not studied the generating laboratory or the data that is being produced at that lab. She testified that based on documents she reviewed, there was no internal validation done using known test sample data created by PBSO in connection with the TrueAllele system. Finally, she opined that this internal validation requirement should be imposed as to TrueAllele just as it is on STRmix, citing to the *Hillary* case.

On cross examination, the professor admitted she had not prepared any type of report of her analysis or opinions in this case. Significantly, she also admitted she had never been associated with TrueAllele or trained on how it works. She further admitted she had not published any scientific journals or conducted research on whether TrueAllele was reliable without internal validation. Moreover, she explained the basis for her opinion on TrueAllele was her own “self-study” from what was provided by the public defender and in videos. She also testified she did not perform a validation to say whether there was a problem with the data.

At the conclusion of the hearing, defense counsel agreed that the SWGDAM guidelines were not mandated, but argued they were generally accepted guidelines and best practices which include internal validation, which was not done in this case by PBSO.

The State maintained that TrueAllele was not a lab running forensic DNA analysis, but was rather a machine calculating mathematical problems. It pointed to the published TrueAllele validation papers, asserting that the scientific community has validated TrueAllele and has embraced its procedures. The State argued that both the *Daubert* and *Frye* standards were met by the evidence it submitted.

After the hearing, the trial court ruled that the TrueAllele expert testimony was admissible, finding that the TrueAllele analysis results in this case met the requirements of *Frye*.

### *Appellate Analysis*

A trial court's ruling regarding the admissibility of expert testimony is reviewed on appeal for abuse of discretion. *Kemp v. State*, 280 So. 3d 81, 88 (Fla. 4th DCA 2019). "However, 'that discretion is limited by the rules of evidence.'" *Vitiello v. State*, 281 So. 3d 554, 559 (Fla. 5th DCA 2019) (quoting *Michael v. State*, 884 So. 2d 83, 84 (Fla. 2d DCA 2004)).

When Appellant filed his motion to exclude the DNA interpretations by the TrueAllele software program, the law was unclear as to whether the Florida Legislature's adoption of the *Daubert* standard for the admission of expert evidence was constitutional. Hence, Appellant's motion sought exclusion of the evidence under both *Frye* and *Daubert*. Approximately a month before the trial court ruled on the motion, our supreme court issued its opinion in *DeLisle v. Crane Co.*, 258 So. 3d 1219 (Fla. 2018) declaring the legislative amendment to the Evidence Code unconstitutional. *Id.* at 1229. Hence, the trial court issued its ruling applying the *Frye* standard. Two months after this appeal was filed, however, the supreme court adopted the legislature's amendments to the Evidence Code as rules of procedure, thus changing the evidentiary standard in Florida from *Frye* to *Daubert*. See *In re Amendments to Fla. Evidence Code*, 278 So. 3d 551, 551–52 (Fla. 2019). Similar to the situation we confronted in *Larocca v. State*, 289 So. 3d 492 (Fla. 4th DCA 2020), we apply *Daubert* to the resolution of this case because the amendment to the Evidence Code implementing *Daubert* is procedural, making its application binding for our decision. See *In re Amendments to Fla. Evidence Code*, 278 So. 3d at 552; *Larocca*, 289 So. 3d at 493 (explaining that "[u]nder Florida's 'pipeline rule,' the 'disposition of a case on appeal should be made in accord with the law in effect at the time of the appellate court's decision rather than the law in effect at the time the judgment appealed was rendered'" (alteration in original) (quoting *Kemp*, 280 So. 3d at 88)).



The *Daubert* standard is codified under section 90.702, Florida Statutes, which provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact in understanding the evidence or in determining a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify about it in the form of an opinion or otherwise, if:

- (1) The testimony is based upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case.

§ 90.702, Fla. Stat. (2018).

Under *Daubert*, a trial judge is to function as a gatekeeper to “ensure that any and all scientific testimony or evidence admitted is not only relevant, but *reliable*.” 509 U.S. at 589 (emphasis added). The gatekeeping function is “to ensure that speculative, unreliable expert testimony does not reach the jury’ under the mantle of reliability that accompanies the appellation ‘expert testimony.’” *Kemp*, 280 So. 3d at 88 (quoting *Rink v. Cheminova, Inc.*, 400 F.3d 1286, 1291 (11th Cir. 2005)). Although there is no definitive list of factors for the court to consider in making this determination, the *Daubert* court laid out several observations it deemed appropriate for consideration of the reliability inquiry, including: (1) “whether [the] theory or technique . . . can be (and has been) tested”; (2) “whether the theory or technique has been subjected to peer review and publication”; (3) “in the case of a particular scientific technique, the court ordinarily should consider the known or potential rate of error”; and (4) “general acceptance.” *Daubert*, 509 U.S. at 593–94.

The crux of Appellant’s argument on appeal is that the failure to internally validate the TrueAllele software using a test sample of PBSO-generated DNA data prior to using the program for case work rendered the TrueAllele analysis results *unreliable* under *Daubert*, and therefore, the trial court abused its discretion in permitting such evidence. Appellant supports his position by contending that there was no dispute that the SWGDAM guidelines (which require internal validation) are the *best practices*, and that failure to use the acknowledged best practices means the results obtained from the TrueAllele software would not be generally

accepted in the DNA scientific community and, therefore, the TrueAllele analysis in this case was unreliable. Additionally, Appellant asserts that the internal validation study done with regard to one lab does not relieve the best practice of performing internal validations of other labs. Thus, Appellant asserts that Cybergenetics's internal validation studies on DNA samples for other labs does not alleviate the failure to perform an internal validation study as to the PBSO lab.

Appellant acknowledges there are no appellate cases from this state or any other jurisdictions determining that the failure of a lab to perform an internal validation study renders the results of a TrueAllele analysis inadmissible. Instead, Appellant relies on the unpublished New York county court ruling regarding the inadmissibility of an analysis using the STRmix software because the law enforcement agency did not internally validate the software. In seeking reversal, Appellant argues that while the Cybergenetics DNA analyst testified TrueAllele did not require calibration like STRmix, the operator still has to decide how many different people contributed to the DNA mixture and whether to turn off the degradation feature, such that these subjective factors inputted by the operator are the reason internal validation is necessary. However, we conclude that Appellant's argument fails to establish the trial court abused its discretion in permitting the evidence.

Upon review of the transcript of the hearing on the motion to exclude and, in particular, the pertinent background facts identified above, we are satisfied that the trial court properly assessed and concluded that the DNA statistical interpretation performed by the TrueAllele software program was reliable after considering: (1) the theory or technique has been tested; (2) the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error for the program; and (4) the general acceptance of the program. *See Daubert*, 509 U.S. at 593–94. We are also satisfied that the trial court gave specific consideration to Appellant's argument regarding the lack of internal validation but concluded the argument and evidence did not merit excluding the TrueAllele evidence. Although the trial court applied the *Frye* standard, we conclude the trial court's analysis and conclusions would have been the same under the *Daubert* standard.<sup>2</sup> In terms of assessing reliability

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<sup>2</sup> The *Frye* standard is that “expert testimony should be deduced from generally accepted scientific principles.” *DeLisle*, 258 So. 3d at 1225. As discussed above, one of the indicia of reliability under *Daubert* is “general acceptance” in the scientific community. We note that in denying the motion to exclude, the trial

under either standard, the focal point of Appellant’s argument in the trial court and on appeal has been the reliability factor of “general acceptance.” It is particularly significant that Appellant has cited no appellate decision in Florida or elsewhere to support his argument. It is also particularly significant that the defense expert in this case was not sufficiently familiar with the TrueAllele software to effectively opine as to how the failure to internally validate the software using PBSO-generated test data compromised the reliability of the analysis of the DNA samples collected from clothing during the criminal investigation of this case. The trial court did not abuse its discretion or violate any evidentiary rule by determining it was not convinced that the lack of internal validation in this case made the results unreliable. We therefore affirm on this issue, as well as the other issues raised on appeal.

*Affirmed.*

WARNER and FORST, JJ., concur.

\* \* \*

***Not final until disposition of timely filed motion for rehearing.***

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court references and discusses evidence regarding all of the *Daubert* reliability factors.