

STATE OF MARYLAND * IN THE
v. * CIRCUIT COURT
TYRONE HARVIN * FOR
Defendant * BALTIMORE CITY
* CASE NO. 118261014

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**MEMORANDUM IN SUPPORT OF COURT'S ORDER DENYING CHILD
DEFENDANT'S MOTION IN LIMINE TO EXCLUDE RESULTS OF
TRUEALLELE PROBABILISTIC GENOTYPING AS VIOLATIVE OF
PROVISIONS OF THE UNITED STATES CONSTITUTION AND THE
MARYLAND DECLARATION OF RIGHTS AND REQUEST FOR HEARING**

Through his Motion in Limine to Exclude Results of TrueAllele Probabilistic Genotyping as Violative of Provisions of the United States Constitution and the Maryland Declaration of Rights and Request for Hearing, Defendant requests this court to exclude, the results of DNA testing predicated in part, upon the use of TrueAllele probabilistic genotyping. As grounds for his motion, Defendant asserts probabilistic genotyping violates the Maryland Declaration of Rights and the United States Constitution because it shifts the burden of proof because likelihood ratios prompt juries to convict "without proof beyond a reasonable doubt," thereby altering the State's burden of proof.¹

¹ The court recognizes that immediately prior to this court's hearing, Defendant was granted the right to obtain the TrueAllele source code. This court declined Defendant's request that the court hold this matter open in the event access to the source code leads Defendant to discovery of other issues. In his motion, Defendant makes reference to the need to be able to defend against "the prospect of dishonest coding." But this court also notes the court file reflects there was a process for obtaining the course code Defendant could have used

Specifically, Defendant contends the likelihood ratio generated by the probabilistic genotyping presumes guilt by assuming Defendant is included in the mixture the program considers. Additionally, Defendant asserts allowing an analyst who is unable to explain to a jury the innerworkings of the TrueAllele program presents a Sixth Amendment confrontation issue.

Through his Supplemental Motion in Limine to Exclude Results of DNA Analysis as Unreliable under *Rochkind v. Stevenson*, 471 Md. 1 (2020), Defendant asserts the analyst used an improperly calibrated electrophoresis machine, rendering results of her efforts unreliable. Additionally, Defendant asserts there may be indication of bacterial DNA in at least two of the samples at issue in this case. Next, Defendant contends the analyst used “new and controversial” TrueAllele improperly by using incorrect assumptions in the runs and that the program generated a likelihood ratio concerning Defendant by assuming the sample was a single source sample. Moreover, Defendant contends the analyst dismissed a true allele as pullup and the program generated a profile even though, in Defendant’s judgment, at least once loci in the profile was inconsistent with his profile. Finally, Defendant contends

long before he received the discovery court’s ruling on the source code. Thus, this court advised Defendant that should his foray into the source code reveal a basis for challenge, he can file the challenge at the appropriate time. This is especially appropriate given Defendant’s inability to state when he would resume argument on his motions beyond the fact that he would likely need until 2022 to resolve the issue.

TrueAllele was not validated for use on an uncalibrated machine. Thus, he suggests the results obtained through use of TrueAllele are unreliable.

Defendant requests this court, viewing this case through the lens of *Daubert*, to rule the results of TrueAllele inadmissible because (1) “results from an out-of-calibration machine are unreliable and inadmissible”; (2) the “TrueAllele results are unreliable in this case and inadmissible.”

In support of his motion, Defendant cites to Maryland Rules 5-702 and 5-403, the 6th and 14th amendments to the United States Constitution, and Articles 16, 21, 23, 24 and 25 of the Maryland Declaration of Rights.

Daubert

This court finds the mandate in *Rochkind v. Stevenson*, 471 Md. 1 (2020), requires the court make a determination under *Daubert* as to whether the analysis performed in this case is sufficiently reliable to allow a jury to consider the analyst’s opinions.

In *Rochkind*, the Court of Appeals determined that the Frye-Reed² standard, traditionally applied to determine admissibility under Md. Rule 5-702, would yield to the mandates of *Daubert*. In determining the DNA evidence is admissible in this case, this court considered the factors outlined in *Rochkind*, 471 Md. 1, 35-36, to the extent parties offered evidence allowing the court to

² See *Reed v. State*, 283 Md. 374 (1978) and *Frye v. United States*, 293 F.1013 (D.C. Circ. 1923).

consider the factors; this court will address the evidence the parties offered on *Rochkind* factors seriatim.

I. WHETHER TRUE ALLELE HAS BEEN OR CAN BE TESTED

In paragraph 37 of his motion, Defendant does not assert TrueAllele has not been tested; rather, he asserts it has never been tested or validated for use with samples derived from an uncalibrated electrophoresis machine. This court finds the issue of whether the electrophoresis machine was calibrated is an issue of fact for the jury to resolve. The issue raised in Defendant's assertion is a classic case of two experts who disagree on an issue of fact. This court, as gatekeeper, is not called upon to make a factual determination in this case. Whether the electrophoresis machine was properly calibrated, a question flowing from yet another disagreement between the experts over whether a true allele was mistakenly identified as pullup and the number of pullups appearing in the results, is classic fodder for vigorous cross-examination, and does not serve a basis for excluding TrueAllele results in this case. If excluding DNA evidence on this basis, the court would necessarily be called upon to adopt the opinions offered by Defendant's expert, Mr. Reich. Making this type of factual finding is not what the court is called to do in making the threshold determination of whether evidence is sufficiently reliable for a jury to consider.

II. WHETHER TRUEALLELE HAS BEEN SUBJECTED TO PEER REVIEW AND PUBLICATION

This court finds based on testimony from Ms. Hurley ("Hurley") that she personally knew of seven peer reviewed validation studies. Mr. Reich ("Reich")

testified TrueAllele, while subject to more than 34 validation studies, is not peer-reviewed. Reich does not believe the peer reviewed validation studies are "independent." Based upon the specificity concerning the number of peer reviewed validation studies, this court finds there exist peer reviewed validation studies.

III. WHETHER TRUEALLELE HAS A KNOWN OR POTENTIAL RATE OF ERROR

The parties agree TrueAllele has no known error rate. Importantly, Reich testified that traditional DNA testing also lacks a known error rate.

IV. THE EXISTENCE AND MAINTENANCE OF STANDARDS AND CONTROLS

The Baltimore Police Department obtained TrueAllele in 2013 and completed validation for the program for 2015. In addition to the FBI quality assurance standards and the ISO for laboratories. Through her testimony, Hurley testified to the quality control mechanisms in place, including, but not limited to testing reagents, using blank runs, positive and negative amplification controls, Hurley also spoke to the technical review that follows her work.

V. WHETHER TRUEALLELE IS GENERALLY ACCEPTED

True to nearly all issues in this case, the experts are not in agreement with whether TrueAllele is generally accepted. Hurley testified TA is generally accepted in various courts; Reich testified that fewer than 51% of labs use TrueAllele. This court is aware several courts have found TrueAllele admissible. For purposes of the Daubert challenge, Defendant focuses less on the program

itself and more on the program's reliability in light of the claim that the electrophoresis machine was uncalibrated.

VI. WHETHER THE EXPERT'S TESTIMONY FLOWS NATURALLY AND DIRECTLY FROM RESEARCH HE CONDUCTED INDEPENDENT OF THE LITIGATION OR WHETHER THE OPINIONS ARE DEVELOPED EXPRESSLY FOR PURPOSES OF TESTIFYING

Ms. Hurley's testimony flows naturally from her employment with the Baltimore Police Department. This court cannot conclude her opinions are expressly developed for purposes of testifying; however, her employment must contemplate she will testify when cases in which she is involved are called to trial.

VII. WHETHER THE EXPERT UNJUSTLY EXTRAPOLATED FROM AN ACCEPTED PREMISE TO AN UNFOUNDED CONCLUSION

The evidence presented at the time of the hearing does not demonstrate Hurley extrapolated from an accepted premise to an unfounded conclusion. Whether or not the assumptions and parameters Hurley used to engage TrueAllele are fodder for cross-examination, not a basis for excluding TrueAllele.

VIII. WHETHER THE EXPERT ADEQUATELY ACCOUNTED FOR OBVIOUS ALTERNATIVE EXPLANATIONS

This court finds Hurley explained the basis of the assumptions she used in engaging TrueAllele. Although there will be vigorous debate at trial, the assumptions she used and the electrophoresis machine at issue in this case are not a basis for excluding the TrueAllele evidence.

IX. WHETHER THE EXPERT IS BEING AS CAREFUL AS HE WOULD BE IN HIS REGULAR PROFESSION OUTSIDE HIS PAID LITIGATION CONSULTING

Hurley is not a paid consultant; rather, she reached her conclusions in the course of his employment.

X. WHETHER THE FIELD OF EXPERTISE THE EXPERT CLAIMS IS KNOWN TO REACH RELIABLE RESULTS FOR THE TYPE OF OPINION THE EXPERTS WOULD GIVE

As was noted herein, in various cases, TrueAllele has withstood *Daubert's* scrutiny. Although there is no known error rate, TrueAllele has been subjected to validation studies.

The evidence shows that the experts are at odds over the manner in which the analysis was performed, whether the electrophoresis machine was calibrated, and whether there were TrueAllele's unaccounted for or whether there was indeed pullup in the samples.

Md. Rule 5-702 permits an expert to testify where, as here, her opinion may assist the trier of fact in determining a fact at issue. Hurley did not use an unknown, untested procedure in conducting her analysis. In accordance with the BPD's validation studies, she analyzed samples, made a decision on which samples to run through TrueAllele as well as the number of runs, reached her conclusions, and had those conclusions subjected to technical and administrative review. Defendant formed an opinion, based upon his review of the electrophoresis graph, that the machine was out of the calibration. Thus, he concludes, the results reached by TrueAllele are unreliable. This court finds the

types of issues raised by Defendant's Daubert challenge go to weight, rather than admissibility of the evidence. As gatekeeper, this court finds Hurley's analysis is based on sufficiently reliable principles and methods to pass *Rochkind's* and *Daubert's* muster. Additionally, this court finds Hurley, who has sufficient knowledge, training, skill and experience, properly applied principles and methods required by the BPD's lab, such that the jury may be permitted to hear his testimony opinions.

Due Process

Defendant contends allowing the State's witness to offer testimony concerning TrueAllele would violate his right to due process under the United States Constitution and the Maryland Declaration of Rights. Specifically, Defendant challenges, on due process grounds, the assumptions used by the analyst who used the TrueAllele software, the manner in which the analyst conducted the analysis, and the analyst's use of an electrophoresis machine Defendant contends was uncalibrated and therefore produced unreliable results.

Hurley testified to the protocol and steps taken in the use of the TrueAllele software. According to Hurley, TrueAllele was validated by the BPD in 2015. She also testified TrueAllele is approved by the National Institute of Standards and Technology (NIST).³ The BPD is subject to biennial audits to ensure the lab complies with FBI standards. Further, the software is tested internally biannually

³ NIST is a non-regulatory agency of the United States Department of Commerce that promotes innovation in physical sciences.

and all TrueAllele reports that are generated are subject to technical and administrative review.

Defendant's expert, Mr. Reich (Reich) testified concerning specific problems he observed with Hurley's testing. In Reich's judgment, Hurley's opinions resulted from and are fraught with inaccuracies and flaws in terms of how the test was generated and in terms of the results produced. Reich takes issue with the results because, in his judgment, the studies done for the validation of TrueAllele was not validated against the number of "artifacts" he believes to exist in this case. Moreover, Reich contends assumptions Hurley used in generating the True Allele results, including the number of contributors, led to an inaccurate result. Additionally, Reich takes issue with Hurley's determination of what was artifact versus a true peak and makes other observations this court finds are fodder for the jury through cross-examination, rather than indicative of a due process issue.

"A part of the due process guarantee is that an individual not suffer punitive action as a result of an inaccurate scientific procedure." *Armstead v. State*, 342 Md. 38, 84 (1996) (quoting *Higgs v. Wilson*, 616 F. Supp. 226, 230 (W.D. Ky. 1985)). Scientific tests need not be infallible to be considered reliable for due process considerations. *Id.* (citing *Dowling v. United States*, 493 U.S. 342, 352-53 (1990)). Only evidence that is "so extremely unfair that its admission violates fundamental conceptions of justice[]" will be barred. *Id.* (citations omitted). Maryland Courts construe this test narrowly, as they did in

Crawford v. State, 285 Md. 431 (1979), and charge to Defendant the burden to show the evidence is so unfair that its admission would violate fundamental conceptions of justice to succeed on his due process challenge.

Maryland's courts have validated use of DNA matches for identification purposes since 1989. *Cobey v. State*, 80 Md. App. 31 (1989). However, the introduction of probabilistic genotyping, and specifically the TrueAllele test, is at the cutting edge of DNA identification. The TrueAllele methodology, first examined in *Morten v. State*, "is, by definition, a less reliable DNA test, but one necessary to resort to by the police when the circumstances do not permit a more reliable test." *Morten v. State*, 242 Md. App. 537, 561 (2019)⁴. TrueAllele is used when the DNA sample to be tested is "problematically small or has been contaminated or where there are multiple donors of the DNA in question." *Id.*

As does Defendant, defendant *Morten* raised due process concerns, citing unreliability of TrueAllele evidence. *Id.* at 566, and 568. Ultimately, the Court of Special Appeals determined any alleged flaws and weaknesses in the TrueAllele methodology are for the jury's consideration. *Id.* at 569.

Defendant did not demonstrate permitting the use of TrueAllele evidence at trial will violate the "fundamental conceptions of justice." *See Armstead, supra*. Like Mr. Morten, Mr. Harvin presents a challenge that is almost identical to

⁴ The discussion in the *Morten* opinion regarding automatic admissibility is inapplicable in Mr. Harvin's case because automatic admissibility under Maryland Code, Courts and Judicial Proceedings Article §10-915 was not pursued by the State.

Mr. Morten's challenge, wherein both sides elicited substantial testimony from an expert. In each case, the admissibility of TrueAllele evidence is essentially a "battle of the experts."

The parties' disagreement concerning the reliability of the evidence, as applied in this case, as well as any perceived flaws and weaknesses in TrueAllele, are issues to be tested through trial. For this court, the issues presented go to the weight of the evidence, rather than admissibility of the evidence. Although this court recognizes there TrueAllele is relatively new and "cutting edge" DNA technology, Defendant failed to demonstrate admission of the evidence would his right to due process. Indeed, the *Morten* court determined the use of the TrueAllele methodology, based on evidence offered in the *Morten* case, did not offend due process of law. 242 Md. App. at 569.

Based on the foregoing, this court finds admission of the TrueAllele analysis and the conclusions generated through use of TrueAllele will not run afoul of Md. Rule 5-702, Md. Rule 5-403, the United States Constitution, or the Maryland Declaration of Rights.

Judge Yvette M. Bryant

Signature Appears on Original

Marilyn Bentley

Judge Yvette M. Bryant

MARILYN BENTLEY, CLERK



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