

IN THE CIRCUIT COURT OF THE FIFTEENTH
JUDICIAL CIRCUIT, CRIMINAL DIVISION
IN AND FOR PALM BEACH COUNTY, FLORIDA

CASE NO. 2015CF009320AMB DIVISION: "X"

STATE OF FLORIDA

vs.

LAJAYVIAN D. DANIELS,

Defendant.

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ORDER

THIS CAUSE having come before the Court upon the Defendant's Motion to Exclude the Interpretation of DNA Mixtures by the TrueAllele Software Due to the Failure to Perform the Required Internal Validation.

The defendant in this case, Lajayvian Daniels is charged with First Degree Murder with a Firearm and Robbery with a Firearm. The State of Florida intends to introduce the results of DNA evidence that was analyzed by Cybergenetics utilizing TrueAllele, a probabilistic genotyping computer system that interprets DAN evidence using a statistical model. The defendant alleges that the results of the TrueAllele analysis is not admissible because the evidentiary requirements under Frye have not been met. Specifically, the defendant argues that the TrueAllele interpretation process lacks an internal validation mechanism as "required" under generally accepted national standards. This Court held a lengthy two day hearing regarding the admissibility of said DNA evidence during which expert witness testimony, relevant case law, scientific authorities and DNA industry recommended guidelines were received.

TrueAllele in DNA Analysis

TrueAllele is a probabilistic genotyping computer system that interprets DNA evidence using a statistical model. TrueAllele is used to analyze DNA evidence, particularly in cases where human review might be less reliable or not possible. A definite genotype can be readily determined when abundant DNA from one person produces unambiguous genetic data.

However, when data signals are less definitive, or when two or more people contribute to the evidence, uncertainty arises. This uncertainty is expressed in the derived contributor genotype, which may describe different genetic identity possibilities. Such genotype uncertainty may translate into reduced identification information when a comparison is made with a suspect. The DNA identification task can thus be understood as a two-step process:

- 1.) Objectively inferring genotypes from evidence data, accounting for allele pair uncertainty using probability, and
- 2.) Subsequently matching genotypes, comparing evidence with a suspect relative to a population, to express the strength of association using probability.

The match strength is reported as a single number, the likelihood ratio (LR), which quantifies the change in identification information produced by having examined the DNA evidence. The TrueAllele[®] Casework system is Cybergentics computer implementation of this two-step DNA identification inference approach. Cybergentics began developing TrueAllele 22 years ago, adding a mixture module 17 years ago. The casework system underwent many rounds of testing and model refinement over 10 years before it was used in criminal casework, with the current version 25 released in 2009. The TrueAllele computer objectively infers genotypes from DNA data through statistical modeling, without reference to a known comparison genotype. To preserve the identification information present in the data, the system represents genotype

uncertainty using probability. These probabilistic genotypes are stored on a relational database. Subsequent comparison with suspects or other individuals provides identification information that can be used as evidence.

TrueAllele's Widespread Acceptance

TrueAllele has been used in over 500 criminal cases, with expert witness testimony given in over 50 trials. TrueAllele results have been reported in 42 of the 50 states. Courts accepting TrueAllele evidence include California, Indiana, Louisiana, Maryland, Massachusetts, Michigan, New Hampshire, New York, Ohio, Pennsylvania, South Carolina, Texas, Virginia, Washington, United States (Eastern District of Virginia), United States Marine Corps, Northern Ireland, and Australia. Over 10 crime laboratories have purchased the TrueAllele system for their own in-house use, and 8 labs are on-line with their validated systems.

TrueAllele was used to identify human remains in the World Trade Center disaster, comparing 18,000 victim remains with 2,700 missing people. Both prosecutors and defenders use TrueAllele for determining DNA match statistics. TrueAllele is also used by innocence projects and for post-conviction relief (*Connecticut v. Ralph Birch*, *Idaho v. Christopher Tapp*, *Indiana v. Roosevelt Glenn*, *Indiana v. Darryl Pinkins*, *Maryland v. William Jamison*, *Washington v. Raymond Ben*). TrueAllele's reliability has been confirmed in appellate precedent in Pennsylvania. *See Commonwealth v. Foley*, 47 A.3d 882 (Pa. Super. 2012). The TrueAllele calculation is entirely objective: when it determines the genotypes for the contributors to the mixture evidence, the computer has no knowledge of the comparison genotypes. Genotype comparison and match statistic determination are only done *after*

genotypes have been computed. In this way, TrueAllele computing avoids human examination bias, and provides a fair match statistic.

TrueAllele is Reliable

There is no genuine controversy as to the validity and reliability of the TrueAllele method. To the contrary, computer analysis of uncertain data using probability modeling is the scientific norm. Forensic science researchers see this as the best approach. Cybergenetics thoroughly tests its software before it is released. Over thirty validation studies have been conducted by Cybergenetics and other groups to establish the reliability of the TrueAllele method and software. Seven of these studies have been published in peer-reviewed scientific journals, for both laboratory-generated and casework DNA samples.

In the "peer-review" process, scientists describe their research methods, results and conclusions in a scientific paper, which they submit to a journal for publication. An editor at the journal has, at a minimum, two independent and anonymous scientists in the field read the paper, assess its merits, and advise on the suitability of the manuscript for publication. The paper is then accepted, rejected, or sent back to the authors for revision and another round of review. A "laboratory-generated" validation study uses data that has been synthesized in a DNA laboratory, and is of known genotype composition. Four published TrueAllele papers of this type are: Perlin MW, Sinelnikov A. An information gap in DNA evidence interpretation. *PLoS ONE*. 2009;4(12):e8327; Ballantyne J, Hanson EK, Perlin MW. DNA mixture genotyping by probabilistic computer interpretation of binomially-sampled laser captured cell populations: combining quantitative data for greater identification information. *Science & Justice*. 2013;52(2):103-14; Perlin MW, Hornyak J, Sugimoto G, Miller K. TrueAllele®

genotype identification on DNA mixtures containing up to five unknown contributors.

Journal of Forensic Sciences. 2015;60(4):857-868; Greenspoon SA, Schiermeier-Wood L, and Jenkins BC. Establishing the limits of TrueAllele[®] Casework: a validation study. *Journal of Forensic Sciences*. 2015;60(5):1263-1276.

A "casework" validation study uses DNA data exhibiting real-world issues developed by a crime laboratory in the course of their usual casework activity. Three published TrueAllele papers of this type are: Perlin MW, Legler MM, Spencer CE, Smith JL, Allan WP, Belrose JL, Duceman BW. Validating TrueAllele[®] DNA mixture interpretation. *Journal of Forensic Sciences*. 2011;56(6):1430-1447; Perlin MW, Belrose JL, Duceman BW. New York State TrueAllele[®] Casework validation study. *Journal of Forensic Sciences*. 2013;58(6):1458-66; Perlin MW, Dormer K, Hornyak J, Schiermeier-Wood L, and Greenspoon S, "TrueAllele[®] Casework on Virginia DNA mixture evidence: computer and manual interpretation in 72 reported criminal cases. *PLoS ONE*. 2014;9(3):e92837. Conducting such validations is consistent with the FBI's 2010 Scientific Working Group on DNA Analysis Methods (SWGDM) interpretation guidelines. TrueAllele complies with the 2015 SWGDM validation guidelines for probabilistic genotyping systems. Regulatory bodies in New York and Virginia have had independent scientists review validation studies before they granted approval for their state crime laboratories to use TrueAllele for casework. TrueAllele has been admitted into evidence after opposition challenge in eighteen courts, located in California, Indiana, Louisiana, Massachusetts, Nebraska, New York, Ohio, Pennsylvania, South Carolina, Virginia, Washington, Northern Ireland and Australia. Sixteen admissibility decisions in the United States are: *People of California v. Dupree Langston*, Kern County (Kelly-Frye), BF139247B, January 10, 2013; *State of Indiana v. Randal Coalter*, Perry County (Daubers),

62C01-1703-MR-192, August 2, 2017; State of Indiana v. Dugniqio Forest, Vanderburgh County (Daubert), 82D03-1501-F2-566, June 3, 2016; State of Indiana v. Vaylen Glazebrook, Monroe County (Daubert), 53CO2-1411-F1-1066, February 16, 2018; State of Indiana v. Malcolm Wade, Monroe County (Daubers), 53CO2-1411-F3-1042, August 3, 2016; State of Louisiana v. Chattley Chesterfield and Samuel Nicolas, East Baton Rouge Parish (Daubert), 0113-0316 (II), November 6, 2014; State of Louisiana v. Harold Houston, Jefferson Parish (Daubers), 16-3682, May 19, 2017; Commonwealth of Massachusetts v. Heidi Bartlett, Plymouth County (Daubert), PLCR2012-00157, May 25, 2016; State of Nebraska v. Charles Simmer, Douglas County (Daubert), CR16-1634, February 2, 2018; People of New York v. John Wakefield, Schenectady County (Frye), A-812-29, February 11, 2015; State of Ohio v. Maurice Shaw, Cuyahoga County (Daubers), CR-13-575691, October 10, 2014; State of Ohio v. David Mathis, Cuyahoga County (Daubert), CR-16-61 1539-A, April 13, 2018; Commonwealth of Pennsylvania v. Kevin Foley, Indiana County (Frye), 2012 PA Super 31, No. 2039 WDA 2009, Superior Court affirmed February 15, 2012; State of South Carolina v. Jaquard Aiken, Beaufort County (Jones), 20121212-683, October 27, 2015; Commonwealth of Virginia v. Matthew Brady, Colonial Heights County (Spencer-Frye), CR11000494, July 26, 2013; State of Washington v. Emanuel Fair, King County (Frye), 10-109274-5 SEA, January 12, 2017.

Availability to Test the Reliability of the TrueAllele Method

Cybergenetics provides opposing experts the opportunity to review the TrueAllele process, examine results, and ask questions. This review can be done in Cybernetics's

Pittsburgh office, or through an Internet Skype-like meeting. Cybergenetics regularly explains the system, and the results obtained in a case, to both prosecution and defense. This introduction to the TrueAllele method, the case data, and the application of the method to the data, is a logical first step. The TrueAllele method is inherently objective, since the computer determines evidence genotypes without any knowledge of the comparison reference genotypes. Hence, there is no possibility of examination bias when determining genotypes from the DNA data. Match statistics, whether inclusionary or exclusionary, are calculated only afterwards by comparing evidence genotypes with reference genotypes. TrueAllele's reliability was established on the evidence in this case. The report and its supporting case packet admitted by the State of Florida in this case described the system's sensitivity, specificity and reproducibility on the DNA evidence. The case packet gives the data and parameter inputs used in running the program in the case. The packet also includes a case-specific mini-validation study of reported TrueAllele match statistics, measuring match specificity by comparison with non-contributor genotypes. The defense expert in this case Tiffany Roy was afforded this opportunity and declined.

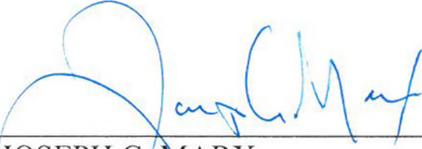
Frye

This Court received guidance from the Florida Supreme Court while this matter was pending in *Delisle v. Crane*, 2018 WL507502. The Court held that the Frye standard should be applied. This Court finds that the TrueAllele DNA test results in this case meet the requirements of Frye. The scientific methodology used will assist the trier of

fact. The methodology has been subjected to peer review and publication, there is a known rate of error and standards controlling the technique's operation, the methodology is generally accepted in the scientific community and the scientific principle being challenged is **not new or novel**. All of the defense arguments in opposition to admission of the TrueAllele results are ripe for cross-examination.

THEREFORE, this Court denies the defendant's Motion to Exclude the TrueAllele DNA test results.

DONE AND ORDERED at West Palm Beach, Palm Beach County, Florida, this the 31st day of October, 2018.



JOSEPH G. MARX
CIRCUIT COURT JUDGE

copies furnished to:

JILL ESTEY RICHSTONE, Assistant State Attorney, 401 N Dixie Hwy, WPB, FL 33401

FELDIVX@SA15.ORG

PUBLIC DEFENDER - DIVISION X, 421 3rd Street, WPB, FL 33401

FELDIVX@PD15.ORG