SUPERIOR COURT OF WASHINGTON FOR KING COUNTY

STATE OF WASHINGTON, Plaintiff, vs. EMANUEL FAIR, Defendant.	No. 10-1-09274-5 SEA STATE'S RESPONSE TO DEFENSE MOTION TO COMPEL TRUEALLELE SOURCE CODE

I. INTRODUCTION

The issue before this Court is whether Dr. Mark Perlin and his company, Cybergenetics, must turn over the source code for his product, TrueAllele Casework, under the rules governing discovery in criminal cases. The short answer is no. The source code for TrueAllele is 170,000 lines of computer text that is unreadable to most individuals, including the defense experts (they would need additional experts to read and understand the code). But more importantly, the reliability of TrueAllele is established and can be evaluated through validation testing without any reference to the underlying source code. Other than the defendant's paid experts, independent scientists working in the field agree that review of the source code is unnecessary.

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Defense attorneys across the country have made identical arguments for disclosure of TrueAllele's source code, and courts have repeatedly denied those motions. To date, Dr. Perlin's source code has not been disclosed, including to the State. Because the defendant's motion fails to establish that the defendant is legally entitled to the source code, this Court should deny the motion.

II. RELEVANT FACTS

A. Basic Facts About The Crime

The defense devotes significant sections of their brief discussing facts that have nothing to do with whether the State's expert, Dr. Mark Perlin, should disclose the source code for TrueAllele. Rather, their brief appears intended to sway this Court into considering various facts surrounding an additional suspect, Cameron Johnson. Rather than recount the history of the complex investigation, the many circumstantial leads, and the various evidentiary steps that led to charging the defendant with this crime, the State briefly discusses the facts of this case and then addresses the forensic evidence relevant to the motion for the source code.

Arpana Jinaga was viciously murdered by Emanuel Fair. The killing occurred after a Halloween party at Ms. Jinaga's apartment complex. Ms. Jinaga's friends last saw her around 3:00 AM as she headed alone back up to her apartment unit. Around that same time, the defendant was at the apartment complex, spending time with Cameron Johnson, who lived next to Ms. Jinaga. According to both men, they spent time together in Johnson's apartment and in Johnson's car.

The evidence will show sometime later that night the defendant entered Ms. Jinaga's apartment and attacked her. Using a roll of duct tape, he gagged Ms. Jinaga. He then raped her,

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beat her, strangled her, and left her body nude on her bedroom floor. The defendant spent extensive time after the murder cleaning the scene, attempting to burn sheets, covering areas with bleach, and coating Ms. Jinaga's body in motor oil. These extensive cleanup efforts were consistent with the behavior of a man who had past experience where DNA evidence had incriminated him and who knew that the police already had a sample of his DNA.[1]

Several days later, on the day Ms. Jinaga's body was discovered, the defendant was still at the apartment complex. He hid from the police, had a friend lie about his whereabouts and left that night. (There was an outstanding arrest warrant for him in a Failure to Register as A Sex Offender case). When the police finally learned of the defendant's identity and tracked him down for an interview, he gave a false account of his activity on the night of the murder.

B. The DNA Evidence

This case was solved by forensic evidence. However, some of the forensic evidence was complicated by mixtures, and by degradation of the forensic evidence caused by the efforts made by the defendant to leave no trace behind.

There were two locations where evidence was collected, and then subsequently forensically tested, which were critical to this case: Ms. Jinaga's apartment, and the dumpster in the parking lot adjacent to the Ms. Jinaga's apartment. In the dumpster, the police found a plastic bag that contained, among other things Ms. Jinaga's bathrobe with her blood on it, and an empty oil can.

[1] In 2004, the police investigated Fair for the rape of a 15-year-old girl. When they interviewed Fair, he initially denied having sexual intercourse with the victim. After detectives explained DNA evidence to him and told him that DNA evidence was being collected from the victim, he admitted that he had sex with her. A DNA sample was then obtained from Fair and his DNA profile was consistent with a mixed profile detected on a swab taken from the victim. Fair later pled guilty to two counts of third-degree rape of a child.

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The State requested forensic analysis of evidentiary items from the Washington State Patrol Crime Lab, as well as Bode Cellmark Forensics and Sorenson Forensics. The defendant's DNA was found on the following items:

Front neck swab of Jinaga	Sorenson Forensics: Partial Y-STR profile. Fair included (1 in 3,803).
Tissue from side of bed	WSPCL: Single source male match to Fair (1 in 550 trillion).
Red robe of Jinaga (Robe 4)	WSPCL: Mixed profile. 120 times more likely to be Jinaga and Fair than Jinaga and an unknown individual.[2] Cybergenetics: Match between robe and Fair is 3.89 billion times more probable than a coincidental match to an unrelated African American male.
Red robe of Jinaga (Robe 6)	WSPCL: Mixed profile. 1,000 times more likely to be Jinaga and Fair than Jinaga and an unrelated individual. Bode:Y-STR tests obtained a complete profile. Fair cannot be excluded (1 in 4004). Cybergenetics: Match between robe and Fair is 56.8 million times more probable than a coincidental match to an unrelated African American male
Roll of black duct tape	WSPCL: End of tape is mixed profile. It is 320 billion times more likely that the DNA profile is a mixture of Jinaga and Fair than Jinaga and an unknown unrelated individual. Bode: Partial Y-STR profile and Fair cannot be excluded (total combined populations of 181 in 4004) Cybergenetics: Match between tape end and Fair is 45.7 trillion times more probable than a coincidental match to an unrelated African American male.

Other items within the crime scene were tested and determined to have been touched by others besides the defendant. Most notably, Cameron Johnson's DNA was found on a motor oil

[2] After the results were obtained for this case in 2009, the Washington State Patrol Crime lab updated their population statistics for mixed profiles from a statistical method of Random Match Probability to a statistical method of Likelihood Ratios.

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bottle that, along with Ms. Jinaga's red robe, was in a plastic bag found in the outside dumpster. The defendant was excluded from this sample, and it was determined to be 120 million times more likely that the DNA on the bottle was a mixture of Jinaga and Johnson, than Jinaga and an unknown unrelated individual. Further, the tape sides from the roll of duct tape were examined using Y-STR analysis. Neither Fair nor Johnson could be excluded (total combined populations of 181 in 4004)[3] from that sample. Cameron Johnson continues to be a person of interest in this case.

C. Probabilistic Genotyping and Cybergenetics

In November 2015, the WSP Crime Lab advised that the mixed DNA profiles in this case were appropriate for the probability genotyping analysis done by Cybergenetics and their computer program TrueAllele Casework. Cybergenetics, founded by Dr. Mark Perlin, is a Pennsylvania corporation and the owner of TrueAllele.[4] Declaration of Mark Perlin ("Perlin decl."), attached as Appendix A, at ¶ 4.[5] TrueAllele is a probabilistic genotyping computer system that interprets DNA evidence using a statistical model. Id. at ¶ 6. The TrueAllele computer objectively infers genotypes from evidence data, accounting for allele pair uncertainty using probability, and subsequently matches genotypes, comparing evidence with a suspect relative to a population, to express the strength of association using probability. Id. at ¶ 13-14. Probabilistic genotyping is generally accepted in the scientific community as evidenced by the

[3] Interestingly, the Y-STR tests gave results at only 3 loci (DYS438, DYS393 and DYS385a/b). Fair and Johnson share the same alleles at those locations and thus they are both included as possible donors.

[4] Dr. Perlin's CV is attached as Appendix C.

[5] There are two declarations from Dr. Perlin. The first declaration, attached as Appendix A, provides background about Cybergenetics, probabilistic genotyping and the discovery and work in this case. The second declaration, Attached as Appendix B, responds to specific assertions and arguments made by the defense and their experts.

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June 15, 2015 SWGDAM Guidelines for Validation of Probabilistic Genotyping Systems.[6] See Appendix E.

Cybergenetics began developing TrueAllele twenty-two years ago, adding a mixture module seventeen years ago. Id. at ¶ 17. The casework system underwent many rounds of testing and model refinement over ten years before it was used in criminal casework, with the current version released in 2009. Id. at ¶ 18. The Innocence Project has used TrueAllele in determining match statistics in their case reviews. Id. at ¶ 28.

TrueAllele has been used in over 500 criminal cases, and accepted in courts in California, Louisiana, Maryland, New York, Ohio, Pennsylvania, South Carolina, Virginia, the United States Eastern District of Virginia, United States Marine Corps, Northern Ireland, and Australia. Id. at ¶¶ 24-25. Over ten crime laboratories have purchased the TrueAllele system for their own in-house use, and 7 labs are on-line with their validated systems. Id. at ¶ 26. Over thirty validation studies have been conducted by Cybergenetics and other groups to establish the reliability of the TrueAllele method and software. Id. at ¶ 35. Seven of these studies have been published in peer-reviewed scientific journals, for both laboratory-generated and casework DNA samples. Id.; see studies attached as Appendices J through P. Source code was not needed or used in any of these studies. Id.

The WSP Crime Lab sent data relating to several mixed profiles to Cybergenetics in November 2015. Cybergenetics issued a final report in December 2015. See Appendix D. After receiving these reports, the defense repeatedly indicated that they were considering asking

[6] SWGDAM is the Scientific Working Group on DNA Analysis Methods that consists of approximately 50 scientists representing Federal, State, and Local forensic DNA laboratories in the United State and Canada. This group meets twice a year to discuss topics of interest and develop documents to provide direction to the forensic community.

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the State to send data relating to additional evidence to Cybergenetics for probabilistic genotyping analysis. Ultimately, the defense never made such a request.

Instead, over the past several months, the defense has made multiple demands for additional discovery from Cybergenetics, including a demand for TrueAllele's source code. The State has forwarded these demands to Cybergenetics. In response, Cybergenetics has provided the State and the defense with over 1,500 pages of materials to include the following:

Page Number	Description of Discovery Provided to Defense from Cybergenetics and Related to TrueAllele
18052-18228	Cybergenetics Case Packet
18229-18244	TrueAllele – Workflow Introduction
18245-18297	TrueAllele - Getting Started
18298-18330	TrueAllele – Analyze Module
18331-18359	TrueAllele – Data Module
18360-18398	TrueAllele – Request Module
18399-18430	TrueAllele – Review Module
18431-18498	TrueAllele – Report Module
18499-18532	TrueAllele – Tools Module
18533-18589	TrueAllele – Tutorial
18590-18632	TrueAllele – Database Application Note
18633-18661	TrueAllele – Specificity Application Note
18662-18674	TrueAllele – Likelihood Ratio Calculation Application Note
18675-18694	TrueAllele - Casework Separates DNA Mixtures that Share Alleles
18695-18718	Australia TrueAllele Validation Report September 2011
18718-18774	Baltimore Police Department TrueAllele Validation August 4, 2015
18775	TrueAllele Volume Crime Validation Study 25 February 2010
18776-18778	Validation Papers and Reports Citations (list of 30) papers and reports of validation studies
18779-18842	NY State TrueAllele Casework Developmental Validation 2010
18843-18863	NYSP TrueAllele Validation May 2011
18864-18919	Development of Kinship Mixtures and Subsequent Analysis Using TrueAllele Casework 2014
18920-18921	TrueAllele System 2 and Genotyper/Genescan Peak Heights and Orchid UK Data – Orchid 2007
18922-18940	TrueAllele Validation on Identifiler Plus Mixture Data 2014
18941-18947	Scientific Validation of Mixture Interpretation Methods 2006
18975-18992	Journal of Forensic Science - Validating TrueAllele DNA Mixture Interpretation 2011

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18993-19001	Journal of Forensic Science – New York State TrueAllele Casework Validation Study 2013
19002-19013	Journal of Forensic Science - TrueAllele Genotype Identification on DNA Mixtures Containing up to Five Unknown Contributors
19014-19027	Journal of Forensic Science - Establishing the Limits of TrueAllele Casework – a validation study
19028-19116	Phase I – Internal Validation of TrueAllele Genetic Calculator as an Expert Assistant for Reads and Review of Data from Reported Sexual Assault Evidence
19117-19126	TrueAllele Validation on Minifiler Mixture Data 2014
19127-19166	NIST Exploring the Capabilities of Mixture Interpretation Using TA Software 2011
19167-19269	NSW Phase I Evaluation Report of of Cybergenetics TrueAllele Expert System 2011
19270-19291	NY State TrueAllele Validation on DNA Mixtures of Known Composition 2013
19292-19299	Journal of Forensic Science - Validation of TrueAllele Automated Data Review System 2004
19300-19361	NY State Police Crime Laboratory System TrueAllele Casework Validation Addendum 2013
19362-19442	NY State Police Crime Lab TrueAllele Casework Validation Addendum 2013
19443-19458	An Information Gap in DNA Evidence Interpretation 2009
19459-19473	TrueAllele Casework in Virginia DNA Mixture Evidence: Computer and Manual Interpretation in 72 reported Criminal Cases 2014
19474-19483	TrueAllele Validation on PowerPlex 16 HS Mixture Data 2014
19484-19506	TrueAllele Casework Validation on PowerPlex 21 Mixture Data 2014
19507	Further Exploration of TrueAllele Casework
19508-19519	Richmond County Sheriff's Department of Forensic Science Validation Outline
19520-19531	DNA Mixture Genotyping by probabilistic computer interpretation of binomially-sampled laser captured cell populations: Combining quantitative data for greater identification information
19532	Highly Informative DNA Mixture Evidence is often misreported as inconclusive when interpreted using threshold methods
19533-19535	TrueAllele Validation Reports and Papers (30)
19536-19537	Cybergenetics Analyze Updates
19538-19576	Cybergenetics VUIer Updates
19577-19589	Dr. Mark Perlin Curriculum Vitae
19590-19594	Jennifer Hornyak Curriculum Vitae
19595-19596	WSPCL Memo on Outsourcing casework to Cybergenetics
19597-19605	WSPCL contract with Cybergenetics

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19739	TrueAllele Discovery Disc dated 2.24.16
19740	Description of discovery materials on Discovery disc
19741-19742	Cybergenetics TrueAllele additional data and discovery of the Discovery disc materials
19743-19745	Cybergenetics Pretrial Admissibility Package (providing all documents to be used at trial for admissibility of TrueAllele)
19746-19749	TrueAllele Validation Reports and Papers List
19750	Cybergenetics TrueAllele Casework Procedure and Organization
19751	Cybergenetics TrueAllele Outline of Tutorials and recommended order to watch Tutorials
19752	Cybergenetics TrueAllele Casework Vuier Outline
19753-19754	Cybergenetics TrueAllele Casework Case Files Outline
19755-19765	TrueAllele Methods: Statistical Model with the Mathematical formula for TrueAllele
19921-19923	Three Licenses for free access to TrueAllele active for 96 days from the date of generation (March 18, 2016)

Cybergenetics also provided a DVD that, as defense acknowledged at a recent hearing, contains an enormous amount of material about TrueAllele. Perlin decl. at ¶ 93. Of note from the above list, Dr. Perlin has disclosed all the documents that would be useful for pretrial hearings on the admissibility of TrueAllele evidence: numerus validation studies, five articles on TrueAllele published in the Journal of Forensic Science, all of the manuals describing the TrueAllele system, and the mathematical formula behind the TrueAllele program. The volume of material that Dr. Perlin has willingly provided to the State and the defense is exceedingly useful in completely understanding the tests that TrueAllele has undergone in validation.

Dr. Perlin has indicated to the State that he will not disclose the source code because it is a trade secret. The State, in turn, informed the defense of this position.

The issue raised by the defense motion for source code is not new to Cybergenetics. It has been raised in multiple courts throughout the country. The same defense experts have been used by other defendants as part of a motion to demand the source code. To date, Cybergenetics

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has not been required to disclose the source code. See Opinion and orders, attached as Appendices G, H and I; Perlin decl. at ¶ 98.

III. ARGUMENT

A. The Relevant Law Governing The Defendant's Discovery Demand.

The defendant seeks to compel the State and Dr. Mark Perlin to produce the TrueAllele Casework source code. This source code is not in the State's possession.[7] When a defendant seeks discovery beyond which the prosecutor is specifically required to disclose under the discovery rules, the defendant's request must meet the requirements of CrR 4.7(e)(1). State v. Norby, 122 Wn.2d 258, 266, 858 P.2d 210 (1993). That rule provides:

> Upon a showing of materiality to the preparation of the defense, and if the request is reasonable, the court in its discretion may require disclosure to the defendant of the relevant material and information not covered by sections (a), (c) and (d).

CrR 4.7(e)(1).

A defendant's discovery request under this rule must meet two threshold requirements before the court may exercise its discretion in granting the request: (1) the information sought must be material, and (2) the discovery request must be reasonable. Norby, 122 Wn.2d at 266. If these two requirements are met, the trial court has the discretion to condition or deny the disclosure request if it finds the disclosure's usefulness is outweighed by a substantial risk of harm or unnecessary annoyance to any person. CrR 4.7(e)(2).

With respect to the materiality requirement, "[t]he mere *possibility* that an item of undisclosed evidence *might* have helped the defense... does not establish 'materiality' in the

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[7] Should the Court intend to grant the defendant's motion, the proper procedure, given that the source code is not in the State's possession, is to issue a subpoena duces tecum directed to Cybergenetics. Blackwell, 120 Wn.2d at 827-28. Because Cybergenetics is an out-of-state corporation, the defendant would need to seek enforcement of any out-of-state subpoena through the appropriate statutes and rules.

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constitutional sense." State v. Blackwell, 120 Wn.2d 822, 828, 845 P.2d 1017 (1993), citing State v. Mak, 105 Wn.2d 692, 704, 718 P.2d 407, *cert. denied,* 479 U.S. 995, 107 S.Ct. 599, 93 L.Ed.2d 599 (1986). In Blackwell, the trial court dismissed the case after the State failed to produce personnel records of police officers involved in his case. The Washington Supreme Court reversed the dismissal and held that the defendant was not entitled to the records.

> Defense counsel... argued that the service records/personnel files are material because they *could* lead to exculpatory evidence of improper police conduct and/or arrests based on race and excessive force that might rebut the officers' claim of proper police conduct. This reasoning was persuasive to the trial court, which apparently relied on the broad discovery language of CR 26(b) as a basis for its order. We reject this rationale. See State v. Gonzalez, 110 Wash.2d 738, 744-45, 757 P.2d 925 (1988) (CR 26 is inapplicable to criminal cases).
>
> Defense counsels' broad, unsupported claim that the police officers' personnel files *may* lead to material information does not justify automatic disclosure of the documents. [Citations Omitted.]
>
> A defendant must advance some factual predicate which makes it reasonably likely the requested file will bear information material to his or her defense. A bare assertion that a document "might" bear such fruit is insufficient. Our review of the record indicates that no such showing of materiality was made in this case.

120 Wn.2d at 828-830.

In this case, the defendant has failed to show that his discovery request seeks material information, that it is reasonable, and that the usefulness of the information outweighs the harm that disclosure may cause.

B. The Defendant Has Failed to Show That He Is Entitled to the Source Code.

1. Relevant Caselaw on Discovery Of Source Code Does Not Support The Defendant's Demand.

The defendant asserts that there is little Washington law on the issue of disclosure of source code, claims that "such disputes occur almost exclusively in federal court," and suggests

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that the practice in civil patent law is relevant to the issue. Motion to Compel at 36. He provides a declaration from a patent lawyer for the proposition that source code is commonly produced in discovery in patent cases. He then argues it would be absurd to not allow the discovery in a criminal case when it would be allowed in a civil lawsuit.

There are several flaws in this argument. First, this is not a civil patent case, and the broad rules of civil discovery do not apply. The Supreme Court has repeatedly recognized that the criminal discovery rules are not as broad as the civil discovery rules. State v. Gonzalez, 110 Wn.2d 738, 743-44, 757 P.2d 925 (1988). The civil "rule allows civil litigants to engage in broad discovery; that is, they can probe for weaknesses in their opponents' positions without knowing that weaknesses actually exist." Id. Indeed, had Blackwell and Gonzalez been civil cases, those defendants may have been entitled to the discovery they sought. The fact that a computer's source code is produced, subject to stringent protective orders, in civil cases is of little bearing to the criminal discovery issue presented by the defendant's motion.

Second, there is caselaw on the production of source code in criminal cases. Nationwide, the issue has arisen in drunk driving cases where defendants have sought discovery of the breathalyzer's source code. The defendant selectively cites to a few of these cases, but the majority of courts have declined to order the production of the machine's source code.[8]

More directly on point are cases involving TrueAllele. The issue has repeatedly been raised with respect to the TrueAllele source code. The trial and appellate courts have uniformly rejected motions to disclose the TrueAllele source code. See Opinion and orders, attached as Appendices G, H and I; Perlin decl. at ¶ 98. In a recent unpublished opinion, the California

[8] State v. Bastos, 985 So.2d 37 (Fla.Dist.Ct.App.2008); Commonwealth v. House, 295 S.W.3d 825 (Ky. 2009); People v. Robinson, 860 N.Y.S.2d 159 (N.Y.App.Div. 2008); State v. Marino, 229 N.C. App. 130 (N.C. Ct. App. 2013); City of Fargo v. Levine, 747 N.W.2d 130 (N.D. 2008); Moe v. State, 944 So.2d 1096 (Fla.Dist.Ct.App. 2006). But see State v. Smiley, 689 S.E.2d 94 (Ga.Ct.App. 2009); State v. Underdahl, 767 N.W.2d 677 (Minn. 2009).

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Court of Appeals overturned the order of the superior court compelling the disclosure of the TrueAllele source code. See People v. Superior Court (Chubbs), No. B258569, 2015 WL 139069 (Cal. Ct. App. Jan. 9, 2015), attached as Appendix I.

In several published decisions, courts have rejected claims that the testimony about TrueAllele should have been excluded because the source code had not been disclosed to the defense. In State v. Wakefield, 47 Misc. 3d 850, 854-55, 9 N.Y.S.3d 540, 543-44 (N.Y. Sup. Ct. 2015), the court held:

> The Defendant argues that without that code, no outside scientist can replicate or validate Dr. Perlin's methodology and, therefore, Cybergenetics TrueAllele Casework evidence should not be admissible in this case. **However, scientists can, and have, validated the reliability of Cybergenetics TrueAllele Casework even though the source code underlying the process is not available to the public.** Cybergenetics TrueAllele Casework has undergone 20 unpublished validating studies and 6 published validation studies (People's Exhibits 3, 4, 5, 6, 7, 27) to confirm that the laboratory is producing the same type of reliable results or determining the extent of reliability for the method or technology that's already been developmentally validated. Four of these were independent validation studies-Massachusetts, Virginia, and 2 by the New York State Police as addendums to People's Exhibit 5 (People's Exhibits 30 and 31). Without exception, each of these validation studies found Cybergenetics TrueAllele Casework to be sensitive (the extent to which interpretation identifies the correct person) and specific (the extent to which the interpretation does not misidentify the wrong person). And Cybergenetics TrueAllele Casework was shown to have provided objectivity, achieved greater genotype accuracy, and proved reproducible (the extent to which the interpretation gives the same answer to the same question).

9 N.Y.S.3d at 543-44 (emphasis added).

The Pennsylvania Superior Court came to the same conclusion and rejected the argument that the source code had to be disclosed to allow the evidence:

> Foley's third reason for exclusion is misleading because scientists can validate the reliability of a computerized process even if the "source code" underlying that process is not available to the public. TrueAllele is proprietary software; it would not be possible to market TrueAllele if it were available for free. See N.T., Hearing, February 18, 2009, at 54. Nevertheless, TrueAllele has been tested and validated in peer-reviewed studies. One study used laboratory-generated DNA

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> samples and found that quantitative analysis performed by TrueAllele was much more sensitive than qualitative analysis such as that performed by the FBI. See Perlin & Sinelnikov, An Information Gap in DNA Evidence Interpretation, 4 PLoS ONE e8327, at 10 (2009), available at http://dx.doi.org/10.1371/journal.pone.0008327. A recent paper entitled "Validating TrueAllele® DNA Mixture Interpretation" used DNA samples from actual cases and reached similar results. See Perlin et al., Validating TrueAllele® DNA Mixture Interpretation, 56 Journal of Forensic Sciences 1430 (2011). The study "validated the TrueAllele genetic calculator for DNA mixture interpretation" and found that "[w]hen a victim reference was available, the computer was four and a half orders of magnitude more efficacious than human review." Id., at 1444. Both of these papers were published in peer-reviewed journals; thus, their contents were reviewed by other scholars in the field.

Commonwealth v. Foley, 38 A.3d 882, 889-90 (Pa. Super. Ct. 2012).

The cases cited by the defendant are easily distinguishable. In United States v. Budziak, 697 F.3d 1105 (9th Cir. 2012), the Ninth Circuit held that the trial court erred by denying the defendant's motions seeking discovery on the specifications of the FBI's EP2P software or a copy of the program. However, as explained in a subsequent opinion, Budziak expressly did not seek the source code. United States v. Budziak, 612 F. App'x 882, 884 (9th Cir. 2015).

State v. Grenning, 169 Wn.2d 47, 234 P.3d 169 (2010), simply stands for the proposition that a defendant, charged with possession of child pornography, is entitled to a mirror image of his own computer's hard drives. The defendant's computer in Grenning was the critical evidence. Like Grenning, defendant Fair has been given access to all the evidence he wishes to review. The TrueAllele program is not evidence, but a forensic program used to analyze evidence.

The relevant caselaw does not support the defendant's motion to compel.

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2. The Source Code Is Not Material.

Like the defendant in Blackwell, the defendant speculates that the source code may contain information material to his defense. He claims that his retained experts have identified "*potential* errors exist in the software" and that "(w)ithout the source code, Dr. Chakraborty, or any expert will be unable to verify the DNA interpretation that TrueAllele claims to conduct." Defense Motion to Compel at 5, 36 (emphasis added). The defense's two paid experts have unsuccessfully made these same claims in prior cases, and, to date, the courts have not found them persuasive. See Order in State v. Shaw, attached as Appendix H; Second Declaration of Mark Perlin ("Second Perlin decl."), attached as Appendix B, at ¶¶ 49, 77.

More recently, under direct and repeated questioning of a trial judge, even one of the defense experts, Dr. Chakraborty, ultimately acknowledged that he could validate TrueAllele without the source code if he was given the program and could input his own data. See Transcript at 128-132, Commonwealth v Robinson, No. CC 2013-0777 (October 9, 2015), attached as Appendix F.[9] Dr. Chakraborty's concession is consistent with the opinion of numerous independent scientists, not retained by either party, who opine that the source code is unnecessary to evaluate TrueAllele. The State has obtained declarations from a variety of DNA scientists who are familiar with TrueAllele and who all agree that the source code is not required to determine its validity and reliability.

[9] A review of the transcript reveals that this admission by Dr. Chakraborty was made reluctantly after extensive questioning by the prosecutor and the trial judge. See Transcript at 117-132, attached as Appendix F. He indicated a preference for reviewing the source code over conducting a validation test. He testified that it would take 2 to 3 months for him to use the software and run the tests, that he would have to "resign" from his school obligations and that he did not have time to do it. Id. at 134-141. In contrast, he represented that he could have a computer expert review the source code in one month. Id. Later, during re-direct examination by defense counsel, Dr. Chakraborty attempted to retract his earlier testimony and confusingly stated that if he did his own validation study, he would still want "knowledge of at least partially of the source code." Id. at 164-65.

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Dr. Michael Gorin, Professor of Ophthalmology and Human Genetics at UCLA, has used TrueAllele to deconvolve microsatellite genotyping data for molecular genetic studies of age-related macular degeneration. Declaration of Dr. Michael Gorin, attached as Appendix R, at ¶ 5. He opines that:

> I do not believe an examination of the source code is necessary to make such a determination [of reliability] based upon my use of genotyping and molecular genotyping analysis software for complex genetic disorders. This experience reflects a 30 year research program that has included the development and software implementation of numerous analytical tools for complex and large-scale genetic datasets. In no instance, has a new method or software been assessed by scientific experts based on direct comparison or investigation of the source code.

Id. at ¶ 6.

Greg Hampikian is a professor in the department of Biology at Boise State University and the Director of the Idaho Innocence Project. Declaration of Greg Hampikian, attached at Appendix S. His research focuses on DNA analysis, including DNA database and population studies, forensic casework analysis, and forensic DNA technology development. Id. at ¶ 3. He is familiar with TrueAllele mixtures and used it in two cases involving claims of wrongful conviction. Id. at ¶ 7. In his opinion, the source code is not necessary in order to determine TrueAllele's reliability and validity. Id. at ¶¶ 8-9.

Thomas Hebert, the DNA technical leader for the Baltimore City Police, explains:

> In my opinion, I do not believe the source code is necessary for determining the reliability of TrueAllele because source code is not normally used in the validation of software programs for forensic use. The underlying principles are well known and can be understood without the source code. With that understanding, the program can be tested.
>
> A proper validation will test samples with known results. These results can then be compared to results generated by the program. A wide variety of samples should be used and they should be similar to real casework type samples. This will show the limitations of the program which is the goal of the validation.

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> I am not aware of any forensic DNA labs that require source code of computer programs to complete a validation.

Declaration of Thomas Hebert at ¶¶ 7-9, attached as Appendix T.

Joanne Sguelia has been involved in in forensic DNA research and development for 28 years. She is familiar with TrueAllele and opines:

> We put the [TrueAllele] system through rigorous testing and did not find any need to know the source code. We tested many types of mixtures, both known and unknown, and were satisfied with the results. It took many months of testing to gain a level of familiarity and confidence in the system. We were able to understand what evidence was input and got accustomed to the expected output. As data became more uncertain (low level template DNA and stochastic effects) the resulting LR decreased accordingly. Real and mock casework scenarios, along with contrived mixtures, all gave expected results.
>
> I do not think knowledge of the source code was needed as an end user because the data input was supported by the output. Validation of the system for forensic applications can be accomplished by knowledgeable and experienced forensic scientists who are not necessarily mathematicians or statisticians....
>
> In the field of forensics, we evaluate and validate many systems by testing our sample types for our applications without specific expertise in the underlying mechanisms, programming, algorithms, chemistry, etc. (e.g. automation and robotics, sizing software, PCR reagents/primer sequences, capillary electrophoresis/polymer composition).

Declaration of Joanne Sgueglia, attached as Appendix V, at ¶¶ 11-13.

Dr. Kevin Miller, currently the Forensic Scientific Leader at Hamilton Robotics, explains that the Kern Regional Crime Laboratory, under his direction, purchased the TrueAllele software and performed validation studies. Declaration of Dr. Kevin Miller, attached as Appendix U, at ¶ 6. The lab's work was fully vetted thoroughly, accepted by the scientific community, and published in the Journal of Forensic Sciences. Id. Dr. Miller agrees that the source code is not needed to determine whether the program produces reliable and valid results. Id. at ¶ 11.

John Donahue, the DNA Technical Leader at the Beaufort County Sheriff's Office Forensic Services Laboratory, South Carolina, performed a recent validation study of TrueAllele.

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Declaration of John Donahue, attached as Appendix Q. In his declaration, he explains the study in detail and opines that the source code was not necessary to validate the software. Id. at ¶¶ 11-13. See also letter dated April 4, 2016 by Susan Greenspoon, attached as Appendix X (describing how the Virginia Department of Forensic Science validated TrueAllele without need for the source code).

Consistent with these opinions, Dr. Gary Shutler, the DNA Technical Leader for the WSP Crime Lab, has surveyed much of the literature on probabilistic genotyping and has not seen a validation plan that included an analysis of the source code as a requirement. Declaration of Dr. Gary Shutler, attached as Appendix W, at ¶ 8. He further observes that the Guidelines for Validation of Probabilistic Genotyping Systems, approved by SWGDAM "recommend a performance based approach for validating probabilistic software and do not mention anything about looking at the source code of the program." Id. at ¶ 10.

With respect to TrueAllele, there have been 30 validation studies, seven of which have been published in peer-reviewed scientific journals, for both laboratory-generated DNA samples. Perlin decl. at ¶ 35. In none of these studies did the scientist believe they needed access to the source code. Id. As recognized by both Dr. Chakraborty and the above independent scientists, TrueAllele can be validated by testing samples. Cybergenetics allows the defense expert to use TrueAllele Cloud at no charge where they can conduct their own testing. Id. at ¶ 95. Using this procedure, the source code is not needed for assessing TrueAllele reliability, because they can test the executable program on actual data. Id.

Citing Dr. Krane, the defense argues that TrueAllele is a "black box" and that the source code is necessary to establish how the software works. TrueAllele does not operate as a black box. The mathematical concepts upon which TrueAllele is based have been published and have

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been made available for validation. Perlin decl. at ¶ 96. These publications include scientific papers (1995, 2001, 2009, and 2011) and patent specifications (2000 and 2001). Id. This information discloses TrueAllele's genotype modeling mechanism, and enables others to understand or replicate the basic method. Id. Because the basic principles underlying the operation of the TrueAllele system have been published, it is inaccurate to describe TrueAllele as a "black box" system.

Moreover, Dr. Krane is simply wrong in asserting the correct answer cannot be known. As John Donahue explains in his declaration:

> I have reviewed the Declaration of Dan Krane in which he opines that "software (like TrueAllele) that produces likelihood ratios (LRs) cannot be validated with only black box testing because the correct answer cannot be known (and therefore cannot be compared to the results generated by the program). I disagree with that opinion because we tested all aspects of the TrueAllele program against known samples and known mixtures and found that TrueAllele produced the expected results. In the validation study referenced above we knew the DNA profile of every single contributor to every sample that we produced. We also predicted the approximate mixture weight/ratio of each contributor to every mixture, and on those occasions when TrueAllele calculated a different mixture weight, we re-examined the data and found that TrueAllele's calculation was representative of the data and that our predicted mixture weights were wrong.
>
> In a validation study one can know what the correct contributor genotypes are and one can make an accurate estimate of what the mixture weight should be based upon the data. Our results made us more confident in TrueAllele because not only did the TrueAllele results correlate to most of our predictions, TrueAllele also identified for us those samples where the data showed us that our original predictions were incorrect.

Donahue decl. at ¶¶ 11-12.

Dr. Perlin's notes that "Krane's logic leads us to the wrong idea that match statistics are unknowable, and can never be validated. This flies in the face of over 30 TrueAllele validation studies, and the 2015 SWGDAM guidelines that describe validation requirements." Second Perlin decl. at ¶ 84. Dr. Perlin confirms that TrueAllele has been validated on samples of known

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composition where thee genotypes in these data are known and can be compared to the TrueAllele separated genotypes to see if TrueAllele was giving accurate answers. Id. at ¶ 85.

The defense cites to two studies, which he claims cast doubts about TrueAllele. Nothing in either study justifies the discovery of the source code. In neither study did the authors request or need the source code to evaluate TrueAllele. Second Perlin decl. at ¶¶ 28, 41. With respect to the New South Wales study, the authors ultimately concluded that TrueAllele "provided an enhanced capacity for DNA interpretation" and their crime laboratory purchased the product and continued to use it. See Appendix Q to Defense Motion to Compel at p. 69; Second Perlin decl. at ¶¶ 22-34. The California DOJ material is simply a government agency report, indicating why it choose to purchase a rival product, STRmix rather than TrueAllele. As Dr. Perlin reports, the CalDOJ scientist using the TrueAllele program failed to complete the Cybergentics TrueAllele operator course, crippled the program by changing key parameters and did not consult with Cybergenetics for assistance. Second Perlin decl. at ¶¶ 39-40.[10]

Finally, the defense claims that the Cybergenetics report in this case raises further concerns. Dr. Perlin addresses these "concerns" in his declaration. These "concerns" appear to stem from either a misunderstanding of how TrueAllele works or a misreading of the information in the report. Second Perlin decl. at ¶¶ 17-21. Dr. Perlin can clearly and cogently explain his system, the data, and the conclusions drawn from his program. Others, if they choose to do so, can misinterpret or misconstrue this data in a manner favorable to their desired outcome. In this case, the defense is obfuscating the results to further a false argument. Finally, revealing the source code would do nothing to answer the questions they raise.

[10] Dr. Perlin's second declaration provides additional information about these two studies. Second Perlin decl. at ¶¶ 22-47.

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The actual facts about TrueAllele, the opinion of independent experts, and the relevant criminal caselaw all support the proposition that the source code is not material evidence that must be produced.

3. The Demand To Produce Source Code Is Not Reasonable and the Possible Harm Outweighs Any Usefulness.

Another basis for denying the defendant's motion under CrR4.7(e)(2) is that the discovery requested is not reasonable and that disclosure of the source code is outweighed by a substantial risk of harm or unnecessary annoyance. The request is not reasonable in light of the other methods available to evaluate the program and the enormous amount of material that Cybergenetics has already provided to the defense.

As defense counsel has acknowledged in prior court hearings, Cybergenetics has provided the defense with an enormous amount of material about TrueAllele. In addition, Cybergenetics provides opposing experts the opportunity to review the TrueAllele process, examine results, and ask questions. Perlin decl. at ¶ 90. This review can be done in Cybergenetics's Pittsburgh office, or through an Internet Skype-like meeting.[11] Id. In this case, Cybergenetics has gone further and even provided free licenses to the defense experts to use the program. Moreover, the defense experts are free to use TrueAllele Cloud to conduct their own testing. Id. at ¶ 95.

There is the potential for actual harm if the source code is disclosed. Cybergenetics has invested millions of dollars over two decades to develop the TrueAllele system. Perlin decl. at

[11] Dr. Perlin has made this offer in prior cases, and the defendant's experts have never taken him up on it.

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¶ 68. TrueAllele is a trade secret, and has never been disclosed to the public.[12] Id. at ¶ 69. It is not even distributed to employees of Cybergenetics, and copies are not provided to individuals, businesses or government agencies that use or license the software. Id. Cybergenetics operates in a highly competitive commercial environment, and at least five other groups have developed similar software. Id. at ¶¶ 71-72. Disclosure of the TrueAllele source code would cause irreparable harm to the company, enabling competitors to easily copy the company's proprietary products and services. Id. at ¶ 74.

The defense argues that a protective order would provide sufficient against the disclosure of the source code.[13] As Dr. Perlin notes, protective orders are violated.[14] Perlin decl. at ¶ 83. As a matter of logic, if the defendant in this case is entitled to the TrueAllele source code, then every defendant in cases involving TrueAllele is also entitled to the source code. If the TrueAllele source code is disclosed hundreds of times, the danger that it will be leaked certainly rises. If a leak occurs, it is unlikely that Dr. Perlin would be able to establish who leaked the source code, or recover any damages for any financial loss. The risk of harm outweighs the usefulness of the source code.

Finally, as a practical matter, defense has not explained who and how they would examine the source code. TrueAllele is written in MATLAB (for MATrix LABoratory), a high

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[12] Under Washington law, "trade secret" is defined as "a formula, pattern, compilation, program, device, method, technique, or process that (a) Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and(b) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy." RCW 19.108.010(4).

[13] The examples of protective orders, attached to by the defendant's patent lawyer's declaration, confirm that the privacy and protections afforded to source code are extraordinary. They are not the comparatively simple protective orders used in King County criminal cases. These civil protective orders limit the opposing party's access to the source code. The source code is placed on a non-networked computer in a locked room. Those having access are limited in what they can bring in (no cameras, computer, USB drives) and are restricted from copying the source code.

[14] For examples of cases where protective orders regarding source code were violated, see Bradford Techs., Inc. v. NCV Software.com, No. C 11-04621 EDL, 2013 WL 75772 (N.D. Cal. Jan. 4, 2013) MobileMedia Ideas LLC v. Apple Inc., No. CA 10-258-SLR/MPT, 2012 WL 5379056, (D. Del. Oct. 31, 2012).

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level mathematical language for programming and visualizing numerical algorithms made by the MathWorks (Natick, MA). Perlin decl. at ¶ 49. TrueAllele has about 170,000 lines of computer source code, written by multiple programmers over two decades. Id. at ¶ 63. The computer code is dense mathematical text, and it can take hours for a person to read through even a few dozen lines of MATLAB to decipher what it does. Id. Accordingly, it could take a very long period of time to read through the source code. Neither defense expert indicates they intend to perform this task. In his declaration, Dr. Chakraborty indicated that he will need to review the source code "with the aid of associates with necessary computer background." Chakraborty decl. at 7. And in his prior testimony, he stated he would hire an unnamed computer expert to review the code. In his declaration, Dr. Krane does not claim to have any experience or expertise in reviewing computer code. Apparently, the defense is anticipating that they would be permitted a "team" of experts to review and examine the TrueAllele source code and all would abide by a protective order for non-disclosure. Such a request has never been granted.

C. The Defendant's Confrontation Rights Are Not Implicated.

The defendant argues that he is entitled to the source code based upon his Sixth Amendment right to confrontation. He reasons that TrueAllele is the witness to be confronted and Dr. Perlin is the mouthpiece. The defendant cites no cases for the notion a defendant is entitled to discovery of computer source code as part of his right to confrontation. Courts in other jurisdictions have rejected similar claims and this Court should do so as well.

The United States Supreme Court has described the class of testimonial statements that are subject to the Confrontation Clause as follows:

> Various formulations of this core class of testimonial statements exist: ex parte in-court testimony or its functional equivalent—that is, material such as affidavits,

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> custodial examinations, prior testimony that the defendant was unable to cross-examine, or similar pretrial statements that declarants would reasonably expect to be used prosecutorially; extrajudicial statements contained in formalized testimonial materials, such as affidavits, depositions, prior testimony, or confessions; statements that were made under circumstances which would lead an objective witness reasonably to believe that the statement would be available for use at a later trial.

Crawford v. Washington, 541 U.S. 36, 51-52, 124 S. Ct. 1354, 1361, 158 L. Ed. 2d 177 (2004) (citations and quotations omitted). All of these examples involve statements made by human beings.

The State has located a number of cases where defendants have made similar arguments as the defendant: that they are entitled to discovery of a computer program under the right of confrontation. These claims have been rejected.

In Taylor v. State, 264 S.W.3d 914 (Tex. App. 2008), the defendant claimed that the trial court violated his right to confrontation when it refused to require production of the computer and computer program for an Intoxilyzer machine. Rejecting this argument, the court held, "neither the computer nor the computer program is a witness that could be called to testify. Therefore, we hold that Appellant's right to confrontation is not implicated by their absence." Id. at 917 (footnote omitted).

Similarly, in City of Fargo v. Levine, 747 N.W.2d 130 (N.D. 2008), the defendant argued that he was entitled to the source code of the Intoxilyzer machine under his Sixth Amendment right to confrontation. The North Dakota Supreme Court rejected this argument, observing that the machine could not be cross-examined directly and that the defendant had a right to cross-examine the State Toxicologist, who had been designated to speak to the accuracy of the test results. Id. at 135.

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Again, in State v. Lindner, 227 Ariz. 69, 72, 252 P.3d 1033, 1036 (Ariz. Ct. App. 2010), the court rejected an argument that the statute governing admissibility of a breath test was unconstitutional because it did not provide the right to discover the Intoxilyzer source code before trial.

In Torres v. State, 109 S.W.3d 602, 606 (Tex. App. 2003), the defendant claimed his right to confrontation was denied because he could not cross-examine the gas chromatograph machine's computer program that was used to analyze his blood. Rejecting this argument, the court held, "[c]ontrary to Appellant's characterization of the computer program as a 'witness,' the program which ran the gas chromatograph machine was not a person and could not be called to testify." Id. at 606.

The defendant's right to confrontation does not entitle him to the source code.

IV. CONCLUSION

Finally, the State believes that a lengthy hearing on this issue is unnecessary at this time. At the last hearing, defense indicated they anticipated a multi-day evidentiary hearing with live testimony. The defense has also clearly stated that they intend to challenge the admissibility of the TrueAllele analysis and work done by the Washington State Patrol Crime Lab in a Frye hearing. Presumably, this would consist of another multi-day hearing with the same experts and the court's ruling on the Frye hearing could be controlling of its decision on whether to order disclosure of the source code. Based on the briefings provided to this court which include, from the defense, hundreds of pages of appendices, the State would propose that this court has ample material to decide the narrow issue of disclosure of source code on the briefing presented by the parties and oral argument.

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For all the foregoing reasons, the Court should deny the motion to compel.

Dated: April 4, 2016

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