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IN THE TWELFTH JUDICIAL CIRCUIT COURT
IN AND FOR MANATEE COUNTY, FLORIDA

STATE OF FLORIDA
Plaintiff,

v. Case No. 2016-CF-239

DWAYNE CUMMINGS,
Defendant.

ORDER DENYING DEFENDANT'S MOTION TO EXCLUDE IMPROPER EVIDENCE PURSUANT TO DAUBERT AND §90.702, FLA. STAT.

BEFORE THE COURT is Defendant's Motion to Exclude Improper Evidence Pursuant to Daubert and §90.702, Fla. Stat., filed January 20, 2017. Through his motion, Defendant seeks to exclude any evidence derived from probabilistic genotyping methods that only suggest a probability that DNA could potentially come from a particular individual. The Court conducted an evidentiary hearing and heard argument from the parties. At the hearing, it became clear that Defendant also is challenging the STRmix software used in this case.

There are two main issues presented by the parties. First, what standard will the Court apply to the challenged evidence? Second, in applying that standard, has the State satisfied its burden?

In Part 1 to this Order, the Court addresses the question of whether Florida is a Frye or Daubert state. The Court lays out the multitude of reasons why Florida is now a Daubert state. In Part 2, the Court applies the Daubert standard to the

proposed expert testimony. Ultimately, the Court reaches the conclusion that the State has met its burden in demonstrating the reliability of probabilistic genotyping, including the use of the STRmix software, and otherwise complied with section 90.702, Florida Statutes. Accordingly, the Court denies the Defendant's motion.

THE CASE AND MOTION

The Grand Jury returned a four count indictment against Defendant charging him with two counts of first degree murder for the deaths of Karl Tuxford and Jordan Finlon, one count of armed kidnapping, and one count of possession of a firearm by a convicted felon. Defendant entered a not guilty plea.

Defendant seeks to exclude "any and all evidence that purports to be evidence of a DNA comparison for purposes of inclusion or exclusion of a suspect, witness, or victim, when probabilistic genotyping is only a suggested probability that DNA could possibility come from a particular individual." Defendant in his motion affirmatively contends that this evidence does not meet the Daubert test for admissibility.

The Florida Legislature in 2013 amended section 90.702, Florida Statutes. See Ch. 2013-107, Laws of Fla. The Legislature's express purpose of amending that statute was "to adopt the standards for expert testimony in the courts of this state as provided in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579

(1993), . . . and Kumho Tire Co. v. Carmichael, 526 U.S. 127 (1999), and to no longer apply the standard in Frye v. United States, 293 F.2d 1013 (D.C. Cir. 1923)[.]" Ch. 2013-107, Laws of Fla., preamble. The Legislature also "intended to prohibit the use in the Florida courts of pure opinion testimony[.]" R.C. v. State, 192 So. 3d 606, 609 (Fla. 2d DCA 2016).

Complicating this motion is the Florida Supreme Court's release of its decision in In re: Amendments to the Florida Evidence Code, 210 So. 3d 1231 (Fla. Feb. 16, 2017). In that decision, the Florida Supreme Court declined to adopt the Legislature's 2013 amendments "to the extent they are procedural," citing unspecific "grave constitutional concerns." Id. at 1241. Defendant filed his motion before the release of In re: Amendments but it was argued after its release. Both the State and Defendant during the hearing suggested, in part, that Frye should apply.

As the Court discussed during the evidentiary hearing, since the Florida Supreme Court's decision in In re: Amendments, the Court has had multiple opportunities to weigh in on the Daubert versus Frye morass. The Court consistently has ruled, orally, that the 2013 legislative amendments were substantive in nature; thus, the Court would continue to apply the evidence code as amended by the Legislature. As the Daubert/Frye matter continues to be pecked at in many cases, the Court is taking the time to put its thoughts in writing. The

Court is cognizant of the uncertainty practitioners and their clients face in the light of this apparent disagreement. The Court, though, is not in a position to resolve this matter statewide; instead, the Court seeks to provide consistency and predictability as to what the proverbial rules of the road are with expert testimony before the Court.

PART I
DAUBERT v. *FRYE*—WHY THE FUSS?

The core of this dispute involves a separation of powers disagreement between the Legislature and the Florida Supreme Court, leaving a wake of uncertainty for the users of the judicial system. Article III, section 1, Florida Constitution, vests the Legislature with "[t]he legislative power of the state[.]" Article V, section 2(a), Florida Constitution, vests the Florida Supreme Court with the exclusive authority to "adopt rules for the practice and procedure in all courts[.]" Concisely stated: "Generally, the Legislature has the power to enact substantive law, while the Court has the power to enact procedural law." Allen v. Butterworth, 756 So. 2d 52, 59 (Fla. 2000). While easy in concept to understand, the application of that rule of law in practice is anything but. Only those entities will be able to definitively resolve this disagreement. Until then, the Court can only provide temporary guidance as to what rules the Court applies.

The Court's holding that the 2013 legislative amendments are substantive, not procedural, is informed by at least six issues. First, the Court is bound to

follow Daubert, notwithstanding In re: Amendments. Second, the adoption of Frye was not premised on the Florida Supreme Court's rule-making authority but instead on the normal progression of the common law. Third, Frye always was inconsistent with Florida's evidence code. Fourth, pure opinion, like the Frye standard, was an evolution of the common law and not based on rule-making authority. Fifth, the Legislature—using its legislative powers for the state—has the authority to alter Florida's common law. Sixth, the alleged "grave constitutional concerns" are not a reason for the Court to not apply the 2013 legislative amendments as statutes are presumed constitutional.

1. The Court is bound to apply the 2013 legislative amendments.

As the Fourth District reminded late last year, "statutes are presumed to be constitutional and are to be given effect until declared otherwise." Crane Co. v. DeLisle, 206 So. 3d 94, 100, n.7 (Fla. 4th DCA 2016). In Crane Co., the Fourth District applied the 2013 legislative amendments and specifically rejected the contention that the Florida Supreme Court had to approve those changes before they became effective.

The Florida Supreme Court in In re: Amendments declined to adopt the 2013 legislative changes to the extent they were procedural, but that decision did ***not*** hold that the 2013 legislative changes were either procedural or that they were constitutionally invalid. Because of that holding—or more precisely, the non-

holding—the Court believes it is bound by the Fourth District's decision in Crane Co. to continue to apply the Daubert trilogy as adopted in Florida by the 2013 amendments to section 90.702. Pardo v. State, 596 So. 2d 665, 666 (Fla. 1992) ("in the absence of interdistrict conflict, district court decisions bind all Florida trial courts.").

Even if the Court were not bound by Crane Co., the Court would still apply the 2013 legislative amendments for the reasons that follow.

2. Frye was not adopted in Florida under the Florida Supreme Court's rule-making authority.

Florida's modern evidentiary code traces its origins to the late 1970s. See In re: Florida Evidence Code, 372 So. 2d 1369 (Fla. 1979). In that decision, the Florida Supreme Court adopted the revised evidence code propounded by the Legislature in the 1970s, to the extent it was procedural. As both the Legislature and the Florida Supreme Court adopted the same code, there was no moment to identify any particular provision as being either substantive or procedural. In recent years, the trend of uniformity has at times been rejected.

There does not appear to be any dispute that the adoption of Frye was based on the evolution of the common law, not the Florida Supreme Court's rule-making authority. To be sure, the use of Frye is of recent vintage in Florida. The Florida Supreme Court—prior to the adoption of both the current evidence code and that court receiving its constitutional rule making authority in 1956—cited Frye only

one time. That citation was in Kaminski v. State, 63 So. 2d 669 (Fla. 1953) (opinion on rehearing), in reversing a conviction obtained through the use of a lie detector test.[1] It would be more than 31 years before that court would again cite Frye, this time in Bundy v. State, 455 So. 2d 330 (Fla. 1984) (Bundy I). It was then another five years before that Court adopted Frye as the standard for admission of novel scientific evidence. Stokes v. State, 548 So. 2d 188 (Fla. 1989). As excellently explained in Brown v. State, 426 So. 2d 76 (Fla. 1st DCA 1983), and repeatedly confirmed by the Florida Supreme Court in at least Bundy I, 455 So. 2d at 341, Bundy v. State, 471 So. 2d 9, 13-18, 20 (Fla. 1985) (Bundy II), Stokes, 548 So. 2d at 195, Hadden v. State, 690 So. 2d 573, 577 (Fla. 1997), and Marsh v. Valyou, 977 So. 2d 543, 546 (Fla. 2007), ***Florida courts had not adopted Frye until the 1989 decision in Stokes***.

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[1] At the time the Florida Supreme Court decided Kaminski, the 1885 Constitution did ***not*** provide the Florida Supreme Court with rule-making authority. The rule-making authority was adopted by the people in November 1956 election when they ratified article V, section 3, to the 1885 Florida Constitution. Kinsey v. State, 179 So. 2d 108, 111 (Fla. 1st DCA 1965); see Aronson v. Congregation Temple De Hirsch of Seattle, Washington, 123 So. 2d 408, 411-12 (Fla. 3d DCA 1960) (Carroll, J., concurring specially) ("The judiciary article of the Florida Constitution as amended as the general election of November 6, 1956, effective July 1, 1957, by §3, of Art. V, F.S.A., gave broad rulemaking powers to the Supreme Court of Florida[.]"). Prior to that time, the Florida Supreme Court adopted rules under statutory authority and inherent authority. See Strong v. Clay, 54 So. 2d 193, 194 (Fla. 1951); Petition of Florida State Bar Ass'n for Additional of Rules of Practice and Procedure, 21 So. 2d 605 (Fla. 1945) (discussing inherent rule making authority as well as legislative directives on court rules); and Wilhelm v. South Indian River Co., 124 So. 729, 732 (Fla. 1929).

That none of the decisions by the Florida Supreme Court discussing the adoption of Frye ever cited to, or ground any analysis in, that court's rule making authority is beyond dispute—none of them do. Quite simply, Frye had nothing to do with the Court's rule-making authority. Perhaps Justice Wells said it best for the Florida Supreme Court: "Our specific adoption of that test after the enactment of the evidence code manifests our intent to use the Frye test as the proper standard for admitting novel scientific evidence in Florida, even though the Frye test is not set forth in the evidence code." Hadden, 690 So. 2d at 578.

Continuing, Justice Wells explained the Florida Supreme Court adopted Frye to ensure that only ***reliable*** scientific evidence was presented to juries. In his very next paragraph, Justice Wells used the word "reliable" or "reliability" seven times:

> The reasons for our adherence to the Frye test announced in Stokes continue today. Moreover, we firmly hold to the principle that it is the function of the court to not permit cases to be resolved on the basis of evidence for which a predicate of **reliability** has not been established. **Reliability** is fundamental to issues involved in the admissibility of evidence. It is this fundamental concept which similarly forms the rules dealing with the admissibility of hearsay evidence. As a rule, hearsay evidence is considered not sufficiently **reliable** to be admissible, and its admission is predicated on a showing of **reliability** by reason of something other than the hearsay itself. See § 90.802, Fla. Stat. (1995) ("Except as provided by statute, hearsay evidence is inadmissible."). This same premise underlies why novel scientific evidence is to be Frye tested. Novel scientific evidence must also be shown to be **reliable** on some basis other than simply that it is the opinion of the witness who seeks to offer the opinion. In sum, we will not permit factual issues to be resolved on

> the basis of opinions which have yet to achieve general acceptance in the relevant scientific community; to do otherwise would permit resolutions based upon evidence which has not been demonstrated to be sufficiently **reliable** and would thereby cast doubt on the **reliability** of the factual resolutions.

Hadden, 690 So. 2d at 578 (emphasis added). Thus, the Florida Supreme Court's adoption had nothing to do with its rule-making authority but instead was a then-logical expansion of the common law to assure reliability.

3. Frye always was inconsistent with Florida's evidence code, both before and after the 2013 amendments.

Prior to the 2013 amendments to section 90.702, that statute had uniformly provided since the adoption of the modern evidence code in the late 1970s:

> **Testimony by experts.**—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; however, the opinion is admissible only if it can be applied to evidence at trial.

§ 90.702, Fla. Stat. (2012). After the 2013 amendments, that statute now provides:

> **Testimony by experts.**—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:
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> (1) The testimony is based upon sufficient facts or data;
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> (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. (2016).

As noted above, the Florida Supreme Court previously taught us in Hadden that the adoption of the Frye test in Florida had nothing to do with the evidence code. 690 So. 2d at 598. In an interesting concurring opinion joined by Justice Pariente, Justice Anstead laid out the inconsistences between Frye and the modern evidence code:

> I concur in the majority's holding that the expert opinion evidence in question was admissible. However, I do so not only for the reasons set out in the majority opinion, **but also on my belief the Frye standard did not survive the adoption of Florida's Evidence Code**.
>
> While this Court has continued to apply Frye in determining the admissibility of scientific expert opinion testimony after the adoption of the Florida Rules of Evidence, it has done so without confronting the fact that those rules do *not* mention Frye or the test set out in Frye. Hence, unlike the United States Supreme Court, we have never explained how Frye has survived the adoption of the rules of evidence. Because, like the United States Supreme Court, I find no basis for concluding that Frye has survived Florida's adoption of an evidence code similar to the federal code, I would recede from our cases continuing to apply Frye and hold that the rules of evidence do not include a Frye test for determining the admission of expert testimony.

Marsh v. Valyou, 977 So. 2d 543, 551 (Fla. 2007) (Anstead, J., concurring) (italicized emphasis in original; bolded emphasis added). Going into greater detail, Justice Anstead explained:

> Of course, Florida's Evidence Code is patterned substantially upon the Federal Rules of Evidence. Section 90.702 of Florida's code is essentially identical to Federal Rule 702. And, to paraphrase the United States Supreme Court's opinion in Daubert, nothing in section 90.702 or elsewhere in Florida's Evidence Code establishes "general acceptance" as a prerequisite to the admissibility of expert opinion evidence. . . .
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> Daubert was decided in 1993, years after the adoption of both the federal rules and the Florida Evidence Code. However, following the adoption of Florida's Evidence Code a number of Florida appellate decisions came to the same conclusion as the Supreme Court in Daubert, years before Daubert was decided. And, while this Court has clung to its reliance upon Frye, no opinion of the Court has ever confronted or explained how Frye is consistent with the provisions of Florida's Evidence Code. The plain fact is, as fully and cogently explained by the United States Supreme Court in Daubert, Frye is *not* consistent with Florida's code.
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> While this Court has never directly confronted the issue, the district courts have discussed the tension between Frye and the terms of the Evidence Code, and reached the same conclusion the United States Supreme Court later reached in Daubert. See, e.g., Brown v. State, 426 So. 2d 76 (Fla. 1st DCA 1983). . . .
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> . . .
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> [omission of substantial analysis of district court cases]
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> . . .
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> Despite the numerous district court decisions finding Frye superseded by the Evidence Code, this Court subsequently announced in summary fashion its continued reliance on Frye, while not directly confronting the impact of the application of the Evidence Code to the issue.

Marsh, 977 So. 2d at 554-558 (Anstead, J., concurring) (footnotes, analysis of district court cases, and certain citations omitted).[2]

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[2] Justice Anstead also advocated for a relevancy standard for the admission of expert opinion testimony. In the light of the 2013 amendments, the Court omitted that portion of Justice Anstead's analysis.

The same reasons explained by Justice Anstead as to why Frye was inconsistent with the pre-2013 version of section 90.702 apply with even greater force to the post-2013 version of section 90.702. Frye simply is inconsistent with Florida's evidence code.

4. "Pure opinion" expert testimony, an outgrowth of Frye, also was an extension of the common law.

The Legislature could not have been clearer: "[B]y amending s. 90.702, Florida Statutes, the Florida Legislature intends to prohibit in the courts of this state pure opinion testimony as provided in Marsh[.]" Ch. 2013-107, last whereas clause, Laws of Fla.

The reality is Frye rarely was utilized because it did not apply in the vast majority of cases.[3] Frye ***only*** applied in Florida to novel scientific evidence; it did

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[3] Local civil litigator Amanda Kison recently authored an article discussing practical ramifications of the Daubert/Frye schism. Ms. Kison keenly observed there were little to no Frye challenges because Frye generally was inapplicable:

> Ask a seasoned litigator how many Frye hearings they have conducted in the 30-plus years since Frye was adopted, and I image the answer will be few to none. That's because opinion testimony derived from an expert's training and experience is not subject to Frye unless the opinion is based on new or novel scientific techniques. U.S. Sugar Corp. v. Henson, 823 So. 2d 104, 109 (Fla. 2002). As a result, Frye was historically inapplicable in the vast majority of cases.

"Brain Frye'd: Where do we go from here?" The Docket, April 2017, p. 16, http://c.ymcdn.com/sites/www.sarasotabar.com/resource/resmgr/docket_pdfs/The_Docket_2017-04.pdf (last visited 5/12/2017).

not apply to pure opinion testimony. Marsh, 977 So. 2d at 547; Hadden v. State, 690 So. 2d 573, 578, 579-80 (Fla. 1997). As the Florida Supreme Court explained:

> "By definition, the Frye standard *only applies* when an expert attempts to render an opinion that is based upon *new or novel scientific techniques.*" U.S. Sugar Corp. v. Henson, 823 So.2d 104, 109 (Fla. 2002) (emphasis added). Therefore, we have recognized that Frye is inapplicable in the "vast majority" of cases. Id.; see also Rickgauer v. Sarkar, 804 So. 2d 502, 504 (Fla. 5th DCA 2001) ("Most expert testimony is not subject to the Frye test.").

Marsh, 977 So. 2d at 547 (emphasis in original). Less than three months ago, the Florida Supreme Court reconfirmed Frye's limited applicability in Florida. In re: Amendments, 210 So. 3d at 1237.

Conspicuously absent from In re: Amendments is ***any mention*** to pure opinion testimony. That is surprising given that Frye has a limited applicability, and at least one justice in the four justice majority in In re: Amendments previously signaled that Frye was inconsistent with the now former section 90.710. Marsh, 977 So. 2d at 554-558 (Anstead, J., concurring). It would seem, then, that the significant change occasioned by the 2013 amendments is to pure opinion. As directed by the Legislature, all expert testimony must be reliable, not just expert testimony involving novel scientific matters. The Legislature's directive that all expert testimony be reliable, not just novel scientific opinion, on its surface seems to be an innocuous change to ensure reliability of opinions provided to a fact-finder. It has, however, set off a firestorm throughout Florida.

Pure opinion testimony—as it relates to the admission of expert testimony and not defamation—appears to have first been referenced in Judge Ervin's concurring and dissenting opinion in Flanagan v. State, 586 So. 2d 1085, 1110-1121 (Fla. 1st DC 1991), approved in part, 625 So. 2d 827 (Fla. 1993), disapproved of by State v. Jones, 625 So. 2d 821 (Fla. 1993), (Ervin, J., concurring in part and dissenting in part). Judge Ervin discussed that the California courts in adopting the Frye test soon coalesced around the concept of pure opinion testimony, which did not need to meet the Frye standard.

On review, the Florida Supreme Court embraced Judge Ervin's pure opinion thesis. Flanagan, 625 So. 2d at 828. The Florida Supreme Court explained that pure opinion testimony could be evaluated by the jury like any other witness's testimony. Id. From Flanagan through Marsh, the Florida Supreme Court consistently held that it was error for pure opinion testimony to be excluded from trial. 977 So. 2d at 549-49.

As with Frye, the courts never explained the basis for an expert's pure opinion testimony. But one thing is clear, the Florida Supreme Court never stated that pure opinion expert testimony was allowed by virtue of a procedural rule. If pure opinion testimony were authorized by a procedural rule, one would expect a court decision adopting a rule and telling the bench and bar that was the basis. In the absence of anything suggesting a procedural rule permitted pure opinion

testimony, the only remaining conclusion is that pure opinion testimony is a continuation of the growth of the common law.

5. The Legislature may alter the common law.

The Legislature has the authority to alter Florida's common law. E.g., State v. Egan, 287 So. 2d 1, 3 (Fla. 1973); § 2.01, Fla. Stat.[4] Here, the Legislature could not be clearer in prohibiting pure opinion testimony and changing Frye to Daubert. As explained above, neither Frye nor pure opinion testimony was ever adopted by the Florida Supreme Court under its rule-making authority; instead, those holdings were the evolution of the common law. Thus, the Legislature would have the power to alter the common law as it did with the 2013 amendments.

The Florida Supreme Court in Caple v. Tuttle's Design-Build, Inc., 753 So. 2d 49, 53 (Fla. 2000), described the general difference between substantive and procedural law.[5] Under that test, there are rational arguments suggesting that the

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[4] There are certain instances where the Legislature is without power to amend the common law such as relating to the abolishment of rights of actions predating the adoption of the 1968 constitution. Kluger v. White, 281 So. 2d 1, 4 (Fla. 1973). That rule of law is inapplicable here for at least two reasons. First, the Legislature did not abolish any right of action with its amendments to section 90.702. Second, both the evidence code and the Frye test were adopted ***after*** the adoption of the 1968 constitution.

[5] In quoting earlier decisions, the Florida Supreme Court has explained "guidance" on the substantive vis a vis procedural matter:

> Substantive law has been defined as that part of the law which creates, defines, and regulates rights, or that part of the law which

2013 amendments could be procedural as well as substantive. And certainly, the Florida Supreme Court will be final arbiter of whether the 2013 amendments are substantive or procedural.

But, at least to the Court, the fundamental purpose of the 2013 amendments was to ensure the reliability of all expert testimony, not just that testimony touching on novel scientific matters. This is a substantive—and fundamental—change in the admissibility of all expert testimony. The Legislature simply made a policy choice. All expert opinion testimony must be reliable. As there was no invasion of the Florida Supreme Court's rule-making authority, courts must respect this legislative policy change.

6. Claims of "grave constitutional concerns" is not a basis to not apply the 2013 legislative amendments.

Having concluded that the 2013 legislative amendments were substantive in nature, it naturally follows that the Court is required to apply them as they are

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> courts are established to administer. *It includes those rules and principles which fix and declare the primary rights of individuals with respect towards their persons and property.* On the other hand, practice and procedure encompass the course, form, manner, means, method, mode, order, process or steps by which a party enforces substantive rights or obtains redress for their invasion. Practice and procedure may be described as the machinery of the judicial process as opposed to the product thereof. It is the method of conducting litigation involving rights and corresponding defenses.

Caple v. Tuttle's Design-Build, Inc., 753 So. 2d 49, 54 (Fla. 2000) (internal quotations and citations omitted; emphasis in original).

presumed constitutional. E.g., Jackson, 191 So. 3d at 426. The Court is unaware of any case finding the current version of section 90.702 constitutionally invalid.

Despite having an opportunity, the Second District has ***not*** held that trial courts are to ignore legislative commands that ***may*** interfere with the Florida Supreme Court's constitutional rule-making authority. State v. Veilleux, 859 So. 2d 1224 (Fla. 2d DCA 2003). In his dissent in that case, then Chief Judge Altenbernd maintained that neither the district courts nor the trial courts in Florida should follow a statute that is procedural even where there has been no declaration of constitutional invalidity. Id., at 1232 (Altenbernd, CJ, dissenting) ("I do not believe that a trial court is bound to obey this statute as a procedural rule of evidence until such time as the supreme court adopts it."). The Second District side-stepped that argument, resolving the case based on the trial court being bound by another district's precedent.

The Florida Supreme Court briefly discussed alleged "grave constitutional concerns" by some of the many commenters in the rule case. In re Amendments, 210 So. 3d at 1239.[6] "Those concerns include undermining the right to a jury trial

[6] Those concerns presumably are state constitutional concerns. As the dissent rhetorically questioned without response from the majority, "Has the entire federal court system for the last 23 years as well as 36 states denied parties' rights to a jury trial and access to courts? Do only Florida and a few other states have a constitutionally sound standard for the admissibility of expert testimony? Of course not." Id. at 1242 (Polston, J., concurring in part and dissenting in part).

and denying access to the courts." Id. As neither party has lodged a constitutional challenge against the 2013 legislative amendments here, there is no moment for the Court to consider any such challenge.

The Court is aware of the generalized complaint that the 2013 legislative change may increase costs for litigants and increase the consumption of finite judicial resources. Even if true, though, that would be beside the point. The Legislature had the authority to adopt the changes; the judiciary is obligated to apply them unless and until they are show to be constitutionally invalid. That has not occurred. Florida is a Daubert state.

7. Parting thoughts.

Consistent with its prior rulings on this subject, the Court holds that it will apply the 2013 legislative changes unless the Court is later bound to follow Frye under Florida's hierarchical appellate structure, see Pardo, 596 So. 2d at 666, new scholarship emerges demonstrating a legal error with Daubert, see Puryear v. State, 810 So. 2d 901, 904-905 (Fla. 2002), or there is a change in the law. ***In other words, the Court will apply Daubert.***

PART 2
PROBABILISTIC GENOTYPING AND THE STRmix SOFTWARE ARE RELIABLE

Defendant's motion, as filed, attacks probabilistic genotyping. According to Defendant, allowing opinions based on probabilistic genotyping would

impermissibly introduce a "probability" standard to the jury, which, also according to the Defendant, would be misleading, vague, and unreliable.

Despite the written motion's indication as to its specific challenge, it became clear to the Court during the hearing that Defendant also is challenging the STRmix software used by the laboratory in this case. The State did not object to the Defendant's inclusion of a challenge to the STRmix software, and thus the Court will consider the challenge. Regardless, the State demonstrated the reliability of both probabilistic genotyping and the STRmix software used in this case. The Court denies Defendant's motion and will allow Rachel Oefelein to testify before the jury.

The Legal Standards

As the proponent of the proposed evidence in this case, the State bears the burden of proof to the preponderance of the evidence standard. Booker v. Sumter County Sheriff's Office/North American Risk Services, 166 So. 3d 189, 193 (Fla. 1st DCA 2015). To proceed with a Daubert hearing, the opponent to the opinion testimony must provide sufficient notice of the specific defect or challenge. Id.

As the Third District recently has explained:

> Daubert, Joiner, and Kumho Tire, known as the Daubert trilogy, are the three United States Supreme Court cases that together articulate the Daubert standard. In Daubert, the Court referenced five factors courts could use to determine the reliability of expert scientific testimony: (1) whether the expert's theory or technique can be (and has been) tested; (2) whether the theory or technique has been

> subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique's operation; and (5) whether the technique has been generally accepted in the relevant scientific community. In Joiner, the Court held that abuse of discretion is the proper standard by which to review a district court's decision to admit or exclude scientific evidence.
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> And, in Kumho Tire, the Court held the Daubert factors not only apply to scientific knowledge but to technical or other specialized knowledge as well. The Kumho court also explained the Daubert inquiry is a flexible one and the factors do not constitute a definitive checklist or test. See also id. at 158–597 (Scalia, J., concurring) ("I join the opinion of the Court, which makes clear that the discretion it endorses—trial-court discretion in choosing the manner of testing expert reliability—is not discretion to abandon the gatekeeping function. I think it worth adding that it is not discretion to perform the function inadequately. Rather, it is discretion to choose among reasonable means of excluding expertise that is *fausse* and science that is junky.").

L.L. v. State, 189 So. 3d 252, 256 (Fla. 3d DCA 2016).

The Fourth District recently has synthesized the trial court's gatekeeper function in a Daubert hearing thusly:

> Under section 90.702 and Daubert, the trial courts must act as gatekeepers, excluding evidence unless is it reliable and relevant. The trial courts are charged with this gatekeeping function to ensure that speculative, unreliable expert testimony does not reach the jury under the mantle of reliability that accompanies the appellation expert testimony. Whether an expert's testimony is reliable depends on the particular facts and circumstances of the particular case.
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> To properly perform its gatekeeping function, the court must first determine that the expert is qualified on the matter about which he or she intends to testify; second, that the expert is employing reliable methodology; and third, that the expert's testimony can assist the trier of fact through the application of expertise to understand the evidence or fact in issue. In assessing whether an expert's methodology is reliable, the court should consider the following

> factors: (1) whether the theory can be (and has been) tested; (2) whether it has been subjected to peer review and publication; (3) the known or potential rate of error for a particular scientific technique; and (4) whether the theory or technique has been generally accepted by the relevant scientific community.
>
> . . . .
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> In sum, the trial court's gatekeeping role is not a passive role. The court should affirmatively prevent imprecise, untested scientific opinion from being admitted. The expert must explain his or her methodology and how it is applied to the data relevant to the case. Further, when relying on other studies, the expert must identify those studies and explain how they support the application of the methodology used.

Crane Co. v. DeLisle, 206 So. 2d 94, 101-103 (Fla. 4th DCA 2016) (opinion on rehearing) (internal citations and quotations omitted).

Testimony from the Evidentiary Hearing

The only person the State called during the Daubert hearing was Rachel Oefelein, and the Court credits her testimony. Defendant did not call any witnesses. Based on the testimony, the Court sets forth its findings in the remainder of this section.

Ms. Oefelein is the quality assurance manager and senior DNA analyst at DNA Labs International. Ms. Oefelein previously worked for the Armed Forces DNA Identification Laboratory and interned with the Instytut Ekspertyz Sadowych, located in Kraków, Poland. Through her position with DNA Labs International, Ms. Oefelein has worked with the Florida Department of Law

Enforcement and other law enforcement agencies, including the Manatee County Sheriff's Office.

Ms. Oefelein holds a master's of science degree in forensic science from the University of Strathclyde, located in Glasgow, Scotland. She received her bachelor's degree from Loyola University, where she majored in criminal justice and minored in forensic science. In addition to her formal education, she has received extensive training in forensic serology, DNA analysis, and probabilistic genotyping, which includes statistics and biostatistics. She previously participated in the Armed Forces DNA Identification Laboratory Technician Training Program, their Analyst Training Program, the FBI's auditor's training course, and various workshops on mixture and probabilistic genotyping. Ms. Oefelein voluntarily submits to annual proficiency testing in the field of probabilistic genotyping, and she receives satisfactory results. She attends conferences and has written at least once in the field.

Ms. Oefelein has testified as an expert approximately ten times. Five of those times included testimony concerning the STRmix software. This includes testimony before the Circuit Court in Palm Beach, which has accepted the STRmix software. DNA Labs International is headquartered in Broward County, just to the south of Palm Beach County.

At its core, probabilistic genotyping is an analytical method used for DNA analysis, primary mixture analysis. Probabilistic genotyping is useful in calculating the likelihood that an individual contributed to a mixture that contains multiple DNA profiles within the same sample. Looking at one sample at a time, probabilistic genotyping allows for comparison against known standards, deconvoluting one mixture at a time.

From a mathematical standpoint, the foundation of probabilistic genotyping involves an examination of every possible combination of contributors to a mixture to arrive at a statistical likelihood ratio, using a Markov Chain Monte Carlo simulation. To accomplish these complex calculations, special software is used. The software used in compiling the statistical calculations in this case was the STRmix software. The STRmix uses the Amended FBI Allele Frequency database when performing the calculations.

The Scientific Working Group for DNA Analysis Method (SWGDAM) in 2015 released guidelines as to both how probabilistic genotyping should be used as well as how it is to be validated, including both developmental validation as well as internal validation. The President's Council of Advisors on Science and Technology (PCAST) last year issued a report discussing that probabilistic genotyping likely was the way for mixture analysis in the future.

All steps in the process have been subjected to peer review. For instance, the Monte Carlo calculation, was published in the early 1900s and has been incorporated into simulations involving the stock market, weather forecasting, and building atomic weapons, to name a few. As it relates to probabilistic genotyping in particular, it, too, has been subjected to peer review with over 100 articles devoted to this subject. The SWGDAM guidelines have gone through the peer review process as well as PCAST's report. Further, the database used, the Amended FBI Allele Frequency database, also has been subjected to peer review. According to Ms. Oefelein, probabilistic genotyping has been accepted in the scientific DNA community as a reliable means of obtaining statistically valid results concerning DNA.

The U.S. Army Central Identification Laboratory (USACIL) previously has approved of, and to this date continues to use, probabilistic genotyping in its work. In 2014, the USACIL validated the STRmix software for use in their laboratory for probabilistic genotyping, and USACIL has used it for case work since that time. Prior to that time, USACIL spent years validating the software. Other governmental entities, too, have already validated the STRmix software, including the Federal Bureau of Investigation, the California Department of Justice, and several states. Florida's Department of Law Enforcement recently completed its

validation of the STRmix software and currently is training its analysts to use it for case work.

Ms. Oefelein testified concerning the STRmix software, which has been subjected to significant peer review and been found acceptable. She explained that the STRmix source code has been released and made available to both defense and prosecution bars to review. Additionally the "user manual"—not aptly named, as it really is an explanation of mathematics and principles underlying the STRmix software instead of a standard how-to manual—itself has been subject to extensive peer review.

The STRmix software was developed by the Institute of Environmental Science and Research (ESR) in New Zealand, in coordination with Australia. A laboratory must purchase a license to use the STRmix software from this private business. Each license is controlled, and only the programmers (not the end user) may alter the source code. Prior to being issued a license, the laboratory must undergo a rigorous training program. There also is an internal validation process that must be completed. Additionally, during this phase, results are reviewed by another laboratory to confirm the findings.

The STRmix software has been subjected to extensive peer-review. Further, Ms. Oefelein has attended, and lectured at, symposiums relating to STRmix. On cross-examination, Ms. Oefelein described several examples of available peer

review literature, although none of the peer review articles or reports Ms. Oefelein referenced were introduced into evidence. Notably, defense counsel did not provide any contrary evidence relating to peer review materials suggesting that the STRmix software is unreliable in any fashion. As of 2016, nearly half the forensic laboratories in the United States have purchased licenses for the STRmix software.

As relevant here, the tested blood samples contained a mixture of DNA from four separate individuals. Thus, the two propositions compared against each other in this case results in the probability that known person *x* and three unknown persons contributed to the mixture versus four unknown persons contributing to the mixture.

To illustrate, the State discussed two blood mixture samples taken from a vehicle involved in this case. The lab had known samples from Dwayne Cummings, Ahmad Dunbar, and Jordan Michelle Finlon. Sample AC-12 came from a swab from the back seat center console of the vehicle. It was determined that there were at least four contributors to sample AC-12, at least one of which was a male. The DNA profile obtained from this item was approximately 1.6 trillion times more probable that the sample originated from Mr. Cummings and three unknown persons versus the sample originating from four unknown persons. Ms. Oefelein then opined that this result provided "extremely strong support" that

Mr. Cummings and three unknown persons contributed to this mixed DNA profile versus four unknown persons.

Regarding sample AC-4, a swab from the back passenger inside door handle, it was determined it also contained a mixture of at least four individuals, at least one of which was a male. The DNA profile obtained from this item was approximately 20 billion times more probable that the sample originated from Mr. Cummings and three unknown persons versus four unknown persons. As to this sample, Ms. Oefelein opined that this result provided "extremely strong support" that Mr. Cummings and three unknown persons contributed to this mixed DNA profile versus four unknown persons.

The "extremely strong support" opinion is known as a verbal scale. DNA Labs International uses the same verbal scale that ESR uses, which is in five categories: (1) neutral; (2) weak support; (3) moderate support; (4) strong support; and (5) extremely strong support. While DNA Labs International uses the five-category verbal scale, other labs use different verbal scales. For instance, the FBI protocol calls for the use of an approximate seven-category verbal scale. A laboratory's decision on which verbal scale to use has nothing to do with the probability determination the STRMix software provides; instead, it is a preference decision in how to articulate the opinion derived from the probability output.

Finally, on cross-examination, Defense counsel had Ms. Oefelein concede the probability numbers might be slightly different each time a sample is tested, either within the same lab or at a different lab. That, of course, is not unsurprising, as STRmix uses the Monte Carlo simulation methodology. Ms. Oefelein used an apt analogy to explain this phenomenon: if she were to toss a coin 1,000 times, the result may not be 500 heads and 500 tails, although it will be close. Regardless, Ms. Oefelein testified that while the STRmix output numbers may vary slightly in an insignificant manner, the results can be consistently reproduced in multiple testings, even if another laboratory were to separately test the sample using difference equipment.

Analysis

Applying the criteria of section 90.702, the Court concludes that the State met its burden to demonstrate that probabilistic genotyping and the STRmix software are reliable and may be presented to the jury in this case.

The Court finds that Ms. Oefelein is qualified by both education and experience to testify about probabilistic genotyping generally and the STRmix software specifically. She has written about and spoken in the field of probabilistic genotyping. She is familiar with current peer review literature, and in fact, has written comments in response to the peer review literature. She maintains proficiency yearly within the field. She also maintains her proficiency in the use of

the STRmix software in performing probabilistic genotyping calculations. Probabilistic genotyping and the calculations required to be performed by the STRmix software certainly are complex. Ms. Oefelein is capable in assisting the jury understanding these complex topics.

Turning to the reliability component of section 90.702/Daubert, the Court examines at least five factors. The Court is aware that there is a debate whether Daubert is more "lenient" than Frye in terms of admitting novel scientific evidence. *Compare* Anderson v. State, SC12-1252 and SC14-881, 2017 WL 930924, at *13 (Fla. Mar. 9, 2017) ("we have previously recognized that the Daubert standard is more lenient in terms of admitting novel scientific evidence than Frye"), *and* Brim, 695 So. 2d at 271–72 (internal citation truncated; footnote omitted) ("Despite the federal adoption of a more lenient standard in Daubert, we have maintained the higher standard of reliability as dictated by Frye."), *with* Marsh, 977 So. 2d at 547 (discussing significant disagreement whether Daubert is more lenient). The Court is of the opinion that Daubert is not more lenient than Frye; instead, it is more rigorous but at the same time more flexible. Regardless of this academic debate, the proposed testimony here satisfies Daubert, and it would also satisfy Frye.

Probabilistic genotyping is testable. As Ms. Oefelein's testimony made clear, testing the same sample can produce replicable results, both in the same

laboratory as well as in other laboratories. Defense contends that because each testing could result in slightly different results, that probabilistic genotyping generally and the applicable of the STRmix software specifically is not reliable. Not true. Probabilistic genotyping employs a Monte Carlo methodology. Just as in flipping a coin 1,000 times may not result in 500 heads and 500 tails, the output will be close. Flipping that coin 1,000 more times again may not result in 500 heads and 500 tails, or the precise number of heads and tails of the previous iteration, but it will be close. So to here. Re-testing the same mixture will result in a slightly different number but it will be minimal. The key here is that the results will be consistent and reproducible.

Probabilistic genotyping and the STRmix software both have been subjected to significant peer review and publication. While none of those publications were presented to the Court, the Defense did not elicit any testimony as to any criticisms of either. Instead, Defense contended that they have not reached "stability" within the relevant scientific community. While the Court would assume there has been and continues to be criticism of probabilistic genotyping and STRmix software, the evidence before the Court more than adequately convinces it that they have been accepted by peer review as well as obtained general acceptance in the relevant community. It is difficult to image that the U.S. Army and the FBI would employ these tools if there had not been acceptance. Perhaps that is why nearly half of all

forensic laboratories in the United States have purchased licenses to use the STRmix software, including the FDLE laboratory.

The State did not present any evidence as to any know error rate. That omission, however, is not fatal, as this is but one of the factors the Court considers. The testimony before the Court established that in addition to the significant validation and testing performed before the STRmix software can be utilized in case work, there are internal diagnostic controls ensuring that the STRmix software is functioning properly. More, Ms. Oefelein independently exercises her own judgment in performing these tests and interpreting the results. As the source code cannot be altered by anyone except the programmers, there is an additional layer of internal controls that govern the STRmix's operation.

Reviewing all of these factors, the Court easily concludes that probabilistic genotyping generally and the STRmix software specifically is reliable. The Court, performing its gatekeeper function, concludes that Ms. Oefelein may testify as an expert before the jury concerning probabilistic genotyping, the STRmix software, and the results of analyzes performed in this case.

CONCLUSION

The 2013 legislative amendments were substantive in nature. Florida is a Daubert state. It is no longer a Frye state. Pure opinion testimony is no longer permitted under section 90.702. As the Court has done consistently since In re:

Amendments was released, the Court will apply the legislative amendments to section 90.702.

Applying section 90.702 to this case, the State met its burden in showing compliance with Daubert regarding probabilistic genotyping and the STRmix software. Even if Florida were still a Frye state, the conclusion would be the same. Ms. Oefelein may testify as an expert in this cause.

IT IS THEREFORE ORDRERED AND ADJUDGED that Defendant's Motion to Exclude Improper Evidence Pursuant to Daubert and §90.702, Fla. Stat. is **DENIED**.

DONE AND ORDERED in Bradenton, Manatee County, Florida, on 5/12/2017.

eSigned by HUNTER CARROLL 05/12/2017 15:54:01 AjBu7SDo

Hunter W. Carroll, Circuit Judge

CERTIFICATE OF SERVICE

The Court certifies that on 5/12/2017 it caused this Order to be electronically submitted to the Florida Courts' eFiling Portal system for filing, which generates and serves an electronic copy of this Order via email to the following attorneys: **Art Brown, Esq.**, the Office of the State Attorney, P.O. Box 1000, Bradenton, Florida 34206, arthur.brown@mymanatee.org, and sao.rounds@mymanatee.org; and **Lily McCarty, Esq.**, McCarty, Gonzalez, Pavlidis & Whidden, 402 E. 7th Avenue, Tampa, Florida, 33602, lily@mgpwlaw.com; and **DeMone Lee, Esq.**, The Lee Firm, LLC, 3355 Lenox Road NE, Ste. 750, Atlanta, Georgia, 30326, d.lee@youcallweanswer.com.

The Court further certifies that on the same date, the Court caused a true copy of this order to be served via upon: **none**.