REPORTED

IN THE COURT OF SPECIAL APPEALS

OF MARYLAND

No. 456

September Term, 2013

RICHMOND D. PHILLIPS,

v.

STATE OF MARYLAND

Leahy,
Friedman,
Raker, Irma S.
(Retired, Specially Assigned),

JJ.

Opinion by Friedman, J.

Filed: October 27, 2015

This case requires us to decide what to do with a statute that appears to be obsolete regarding the admissibility of DNA evidence.

Following a jury trial in the Circuit Court for Prince George's County, appellant Richmond Phillips ("Phillips") was convicted of two counts of murder in the first degree, one count of use of a handgun in a crime of violence, and one count of child abuse in the first degree. He was sentenced to two consecutive terms of life imprisonment without the possibility of parole. On appeal, Phillips challenges the DNA evidence the State used against him. The State argues that the DNA evidence was automatically admissible under § 10-915 of the Courts and Judicial Proceedings ("CJP") Article of the Maryland Code. Section 10-915, however, requires that, to be admissible, a DNA profile must include certification that the analysis was performed according to standards promulgated by two entities that no longer exist. Phillips asserts that the DNA evidence failed to comply with this factually obsolete statute and, therefore, that the trial court was correct in conducting a *Frye-Reed* hearing to determine whether to admit the DNA evidence. Phillips alleges, however, that the trial court erred in concluding that the DNA evidence was admissible under *Frye-Reed*.

For the following reasons, we will affirm the judgments of the circuit court.

FACTUAL AND PROCEDURAL HISTORY

Phillips was charged and convicted of the murders of his ex-girlfriend, Wynetta Wright, and their 11-month-old child, Jaylin Wright. Wynetta's body was found in a park near the Hillcrest Heights Community Center. Wynetta died of a gunshot wound to the

head. Jaylin was found dead in Wynetta's car in a nearby parking lot. Jaylin died of hyperthermia as a result of being left in a hot vehicle for an extended period of time. Phillips admitted to meeting with Wynetta during the early morning hours of May 31, 2011, but denied any part in her or their child's death.

The police obtained DNA samples,[1] which were tested in June 2011 by forensic chemist Jessica Charak of the Prince George's County DNA laboratory. Two of the DNA samples are relevant to this appeal: one was from the steering wheel of Wynetta's car, and the other was from Phillips' buccal swab.[2] Based on DNA analysis of the two samples, it was Charak's opinion that the steering wheel sample contained material that was consistent with Phillips' DNA and, therefore, Phillips could not be excluded as a contributor. The steering wheel sample also contained genetic material from Wynetta, Jaylin, and two other unknown contributors. In her report, Charak calculated that "[t]he chances of selecting an unrelated individual from the random population who would be included as a possible contributor to the mixed DNA profile obtained from the evidence sample at the remaining tested loci are approximately … 1 in 2.93 million individuals in the African American

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[1] A forensic DNA sample "is a biological sample originating from and associated with a crime scene." FBI, *Quality Assurance Standards for Forensic DNA Testing Laboratories*, *available at* http://perma.cc/M84U-FYMP. A DNA profile refers to the data generated from analyzing a specific DNA sample. *United States v. Davis*, 602 F. Supp. 2d 658, 664 (D. Md. 2009).

[2] A buccal swab is "obtained by swabbing the cheek area inside of a person's mouth." *Derr v. State*, 434 Md. 88, 99 n.6 (2013) (internal quotation omitted).

population." Additionally, Charak's report included the following statement that figures prominently in this appeal: "The DNA profiles reported below were determined by procedures which have been validated according to the Federal Bureau of Investigation's Quality Assurance Standards for Forensic DNA Testing Laboratories."

Prior to trial, Phillips filed a motion *in limine* to exclude any expert testimony pertaining to the State's DNA evidence, asserting that the Prince George's County DNA laboratory's interpretation of complex, low copy number DNA samples[3] was not based on generally accepted scientific standards and was thus inadmissible under the *Frye-Reed* standard.[4] The State countered that the DNA evidence at issue is automatically admissible under CJP § 10-915 (the "DNA Admissibility Statute").

The trial court undertook a two-step process to determine the admissibility of expert testimony pertaining to the disputed DNA analysis. *First*, the trial court held a hearing to determine whether the Prince George's County DNA laboratory was in compliance with the DNA Admissibility Statute, and whether the resulting DNA evidence was therefore

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[3] A "complex" DNA sample refers to a DNA sample that includes genetic material from three or more individuals. Charlotte Word, *NIJ Conference, 2012: Complex Mixtures*, *available at* http://perma.cc/DY85-VGBK. "Low copy number" DNA analysis "involves testing minuscule amounts of DNA that fall below the (somewhat amorphous) stochastic threshold—around 100 picograms or less." *Davis*, 602 F. Supp. 2d at 669.

[4] Under Maryland's *Frye-Reed* standard, "before a scientific opinion will be received as evidence at trial, the basis of that opinion must be shown to be generally accepted as reliable within the expert's particular scientific field." *Reed v. State*, 283 Md. 374, 381 (1978) (citing *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923)).

automatically admissible without a *Frye-Reed* hearing. The trial court determined that the Prince George's County DNA laboratory was not following the standards referred to by the DNA Admissibility Statute, and, therefore, that the DNA evidence was not automatically admissible pursuant to the statute. *Second*, the trial court conducted a *Frye-Reed* hearing. The trial court determined that the underlying scientific methods used by the Prince George's County DNA laboratory were generally accepted in the relevant scientific community and, therefore, the DNA analysis would be admissible at trial.

The case proceeded to trial on January 14, 2013, and resulted in Phillips' conviction. On March 22, 2013, the trial court sentenced Phillips to two consecutive terms of life imprisonment without the possibility of parole. This appeal followed.

DISCUSSION

I. Compliance with the DNA Admissibility Statute

Maryland's DNA Admissibility Statute provides:

> (a) (1) *Definitions.* — In this section the following words have the meanings indicated.
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> (2) "Deoxyribonucleic acid (DNA)" means the molecules in all cellular forms that contain genetic information in a chemical structure of each individual.
>
> (3) "DNA profile" means an analysis of genetic loci that have been validated according to standards established by:
>
> (i) The Technical Working Group on DNA Analysis Methods (TWGDAM); or
>
> (ii) The DNA Advisory Board of the Federal Bureau of Investigation.

(b) *In general*. — A statement from the testing laboratory setting forth that the analysis of genetic loci has been validated by standards established by TWGDAM or the DNA Advisory Board is sufficient to admit a DNA profile under this section.

(c) *Purposes.* — In any criminal proceeding, the evidence of a DNA profile is admissible to prove or disprove the identity of any person, if the party seeking to introduce the evidence of a DNA profile:

(1) Notifies in writing the other party or parties by mail at least 45 days before any criminal proceeding; and

(2) Provides, if applicable and requested in writing, the other party or parties at least 30 days before any criminal proceeding with:

(i) First generation film copy or suitable reproductions of autoradiographs, dot blots, slot blots, silver stained gels, test strips, control strips, and any other results generated in the course of the analysis;

(ii) Copies of laboratory notes generated in connection with the analysis, including chain of custody documents, sizing and hybridization information, statistical calculations, and worksheets;

(iii) Laboratory protocols and procedures utilized in the analysis;

(iv) The identification of each genetic locus analyzed; and

(v) A statement setting forth the genotype data and the profile frequencies for the databases utilized.

(d) *Prerequisites.* — If a party is unable to provide the information required under subsection (c) of this section at least 30 days prior to the criminal proceedings, the court may grant a continuance to permit such timely disclosures.

> (e) *Discovery.* — Except as to the issue of admissibility under this section, subsection (c) of this section does not preclude discovery under the Maryland Rules relating to discovery, upon a showing of scientific relevance to a material issue regarding the DNA profile.

CJP § 10-915. The import of the statute is clear: so long as the sponsoring party complies with the notice provisions of subsection (c), a DNA profile will be automatically admissible to prove or disprove identity if it is accompanied by a statement from the testing laboratory that it was "validated by standards established by TWGDAM or the DNA Advisory Board." CJP § 10-915(b). In Phillips' case, however, the DNA profile was accompanied by a certification stating, "[t]he DNA profiles reported below were determined by procedures which have been validated according to the Federal Bureau of Investigation's Quality Assurance Standards."

Thus, the threshold question is whether compliance with the FBI's Quality Assurance Standards is sufficient for automatic admissibility or whether we must insist on compliance with standards issued by TWGDAM or the DNA Advisory Board. If compliance with the FBI Quality Assurance Standards is sufficient, then the steering wheel DNA sample is automatically admissible because the Prince George's County DNA laboratory complied with those standards. If, on the other hand, the DNA analysis needed a statement that it complied with standards from either TWGDAM or the DNA Advisory Board (which it did not have), then the steering wheel sample is not automatically admissible. If not automatically admissible for this reason, the DNA analysis must satisfy the *Frye-Reed* standard of general acceptance in the scientific community before it may be admitted.

The issue is made more complicated because neither TWGDAM nor the DNA Advisory Board remain in existence. SWGDAM, *About Us*, http://perma.cc/VHA5-5FXX. Accordingly, compliance is impossible today.

1. *The Problem of Obsolete Statutes*

Statutes, from time to time, become obsolete. Statutes can become *legally* obsolete when they are completely superseded by a subsequent legislative enactment (but, for whatever reason, not deleted) or are declared unconstitutional by the United States Supreme Court or by the appellate courts of this State. Thus, for example, adoption of Article 46 of the Maryland Declaration of Rights (Maryland's Equal Rights Amendment) rendered the "necessities statute," (then Md. Code. Ann. Art. 45, § 21), whereby a husband was legally responsible for his wife's expenses, legally obsolete. *Condore v. Prince George's County*, 289 Md. 516, 530 (1981). There are many other examples. The code revision process is the principal but not the only means for removing legally obsolete provisions from the Maryland Code.[5]

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[5] Alan M. Wilner, *Blame It All On Nero: Code Creation and Revision in Maryland* (Feb. 14, 1994), *available at* http://perma.cc/884L-QTZ5 (describing code revision process); Department of Legislative Services, *Legislative Drafting Manual* 2015, 173 (September 2014), *available at* http://perma.cc/7KQP-M5DJ (identifying code revision's goal as "eliminat[ing] obsolete laws…if this can be done without substantive change"). To ensure that no law with continuing viability is deleted due to a premature declaration of obsolescence, all laws thought to be obsolete during the code revision process are referred to the Attorney General of Maryland for determination. *See, e.g.*, 98 *Op. Att'y Gen.* 98 (Oct. 31, 2013), *available at* http://perma.cc/LQ9K-D5HF (determining statutory

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Statutes may also become *factually* obsolete. Conditions change. Laws drafted for the horse and buggy don't make sense for automobiles; some current automobile laws may not make sense for driverless cars. Unfortunately, unlike code revision, there is no regularized mechanism for eliminating factually obsolete statutes. While a legislature may delete a factually obsolete statute when it is noticed, combing the Code for factually obsolete statutes is generally not a high legislative priority. Judge Guido Calabresi and others have referred to this concept as legislative inertia—the recognition that it is easier to leave obsolete statutes than it is to remove or revise them. Guido Calabresi, *A Common Law for the Age of Statutes* 2 (1982) [hereinafter Calabresi]; Archibald Cox, *Book Review, A Common Law for the Age of Statutes; by Guido Calabresi*, 70 Cal. L. Rev. 1463, 1464 (1982) ("the obsolete law remains…because of inertia"). The result is that many factually obsolete statutes remain on the books.[6]

Courts have generally taken three different approaches when dealing with factually obsolete statutes: (1) enforce the statute "as is"; (2) invent a new interpretation, unimagined

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provisions to be obsolete and subject to repeal without effecting substantive change in the law). In 2014, the General Assembly changed the duties of the Department of Legislative Services from "carry[ing] on continuous full time formal revision of statutory law" to "complet[ing] the formal revision of statutory law" thereby signaling the end for code revision. S.B. 172 (2014) (codified at Md. Code Ann., State Gov't § 2-1238(7)).

[6] This spawns an entire genre of "humor" making fun of factually obsolete laws, including the canard that it is illegal to take a lion to the theatre in Maryland. The Dumb Network, *Dumb Laws*, http://perma.cc/W49M-B85W.

by the legislative drafters, that saves the statute from obsolescence; or (3) declare the obsolete statute unconstitutional. Calabresi at 6. As Judge Calabresi puts it:

> Faced with [the problem of an obsolete statute], it is little wonder that the least willful judges have responded to their task with open aversion, but have enforced time-worn interpretations of even more time-worn laws. Other judges have acted far more aggressively and used the Constitution or far-fetched interpretations to make obsolete laws functional.

Id. All of these approaches are unsatisfactory. Applying a factually obsolete statute "as is" can result in serious injustice. *See, e.g., id.* at 6 n.26 (citing *Behrns v. Burke*, 229 N.W. 2d 86 (S.D. 1975) (stating that a statute was "unreasonable...In fact, unreasonable may be too kind an expression," yet upholding the statute)). Inventing a far-fetched interpretation to save an obsolete statute makes the court appear willful and undermines its important role in conscientious and careful modes of ordinary statutory interpretation. *See id.* at ch. IV (discussing the problems that arise from judges using "stretched" interpretations of obsolete statutes). Perhaps worst of all is the choice to declare an obsolete statute unconstitutional. "Calabresi … cites scores of cases in which the courts have declared obsolete statutes unconstitutional when such a conclusion could not be justified by any cogent constitutional analysis… ." Richard Neely, *Obsolete Statutes, Structural Due Process, and the Power of Courts to Demand a Second Legislative Look*, 131 U. Pa. L. Rev. 271, 277 (1982) [hereinafter Neely] ("The problem has traditionally been that due process and equal protection are the only constitutional theories available to unimaginative

courts."). Stretching constitutional doctrines to judicially revise or eliminate obsolete statutes weakens the doctrines:

> Few things will destroy judicial review, and weaken those rights we want to have protected by the Constitution, more effectively than its use to overcome legislative inertia in areas involving bad law, perhaps, but no real constitutional issue. Even correct results in cases of this sort, where the Constitution is used to invalidate a law that was only held in place by inertia and was inconsistent with other prevailing legal principles, will tend to spawn highly vulnerable constitutional doctrines and hence may weaken the "core" rights that need to be protected by our constitutions.

Calabresi at 11-12. Of course, a judicial determination that a particular statute is obsolete exacerbates the problem of legislative inertia by foreclosing the possibility of a legislative revision:

> Once the courts have modified or invalidated a statute on constitutional grounds, they have done much more than act in an area of legislative inertia. If the courts' aim is only to update in an area of inertia and if they are wrong in their judgment that a statute which does not fit the legal fabric no longer has majoritarian support, their use of constitutional adjudication makes legislative correction of their mistake impossible. The consequence of a wrong guess is not merely legislative revision, as in common law adjudication; a wrong guess will entail either a constitutional amendment or the dominance of judge-made law.

Id. at 11.[7]

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[7] Calabresi proposes a controversial solution to address statutory obsolescence—"structural due process," which assumes that "constitutions imply a right to periodic, intelligent review of obsolete laws." Neely at 278. "Thus, when a law is entirely at odds with the prevailing legal landscape, a right arises in the citizen to be free from institutional (Continued…)

Cognizant of the challenges presented by obsolete statutes, and mindful of the pitfalls of the three approaches courts have taken, it is our view that the best way to proceed with an obsolete statute is not to take any of the three, but to rely on the traditional tools of statutory interpretation to effectuate the legislature's intent, as we have previously done when dealing with outdated statutes. *See, e.g.*, *Sieglein v. Schmidt*, 224 Md. App. 222, 242 (2015) (interpreting "artificial insemination" in parentage statute to encompass in vitro fertilization—a newer reproductive technology that didn't exist at the time of the statute's enactment—because the legislature intended to "acknowledge the role of medically assisted, non-traditional conception of a child in establishing a parent's rights and obligations"). Therefore, we will attempt to discern the legislature's intent in passing the DNA Admissibility Statute. Our principal aim in this undertaking is to determine if and how the legislature would have intended for us to enforce this now-obsolete statute.

Thus, we hold that the proper way to deal with a statute that is obsolete on its face is to look to the legislature's intent and work to effectuate that intent in the present legal and factual landscape. We note that it will not always be the case that the legislature will

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inertia." *Id*. Structural due process would permit courts to send an obsolete statute "back to the legislature for a second look." *Id*. No court has adopted Calabresi's theory. The West Virginia Supreme Court of Appeals came close, mentioning in dicta a version of Calabresi's theory (without remand to the legislature). *W. Va. ex. rel. S.M.B. v. D.A.P.*, 284 S.E.2d 912, 915 (W. Va. 1981). The criticism of structural due process is a fear that "power-hungry judges" will use the doctrine in an unprincipled way that would threaten the separation of powers between the judiciary and the legislature. *Id*. at 281.

tell us what to do if a statute becomes obsolete. In this instance, however, we conclude that it did.

2. Discerning Legislative Intent

The DNA Admissibility Statute's legislative history is instructive. Our review strongly suggests that the 1997 statute was enacted to address a perceived drafting flaw in a previous version. The 1991 version of the DNA Admissibility Statute allowed automatic admissibility of DNA that was analyzed with the restriction fragment length polymorphism method ("RFLP"), which it specified by name. CJP § 10-915 (1991) (amended 1997). By 1997, however, the RFLP method for DNA analysis had been superseded by a new technique, the polymerase chain reaction method ("PCR"). Jud. Proc. Comm., *Bill Analysis: H.B. 414* (1997). Laboratories were using PCR but, because the 1991 DNA Admissibility Statute specified only RFLP by name, PCR was not automatically admissible. *Id.* In effect, the 1991 statute had become obsolete. As a result, state's attorneys throughout Maryland were forced to justify their use of PCR in every case at expensive *Frye-Reed* hearings. State of Maryland Department of State Police, *Position on Proposed Legislation HB 414* (Feb. 11, 1997) ("An enormous amount of time and money has been spent defending PCR methods at [*Frye-Reed*] Hearings in various Circuit Court[s] in the State.").

In drafting the 1997 DNA Admissibility Statute, the General Assembly wanted to eliminate the need for *Frye-Reed* hearings for PCR analysis. *See* Jud. Proc. Comm., *Bill Analysis: H.B. 414* (1997). ("This statute obviates the need for a Frye-Reed hearing on the

admissibility of [PCR] evidence. This will save the State and the counties money and will keep law enforcement personnel out of court.") Furthermore, we gather that the legislature did not want to repeat the drafting weakness of the 1991 statute and identify the PCR method by name—such that when scientific advances inevitably replace PCR, the 1997 statute would become obsolete too. Rather, the legislature cleverly delegated the power to approve new DNA analysis techniques to two national standards-setting entities on the cutting edge of DNA science, TWGDAM and the DNA Advisory Board. *Id.* ("This bill expands the definition of "DNA profile" to include an analysis of genetic loci that has been validated according to standards established by either the Technical Working Group on DNA Analysis Methods (TWGDAM) or the FBI DNA Advisory Board.") In that way, we see that the 1997 DNA Admissibility Statute was designed to be obsolescence-proof. If a new technique was good enough for TWGDAM and the DNA Advisory Board, it would be good enough for automatic admissibility in Maryland courts. *Id.* Those standards-setting entities soon became defunct, however, in effect, rendering the obsolescence-proof statute, ironically, obsolete. SWGDAM, *About Us,* http://perma.cc/VHA5-5FXX. Nevertheless, we discern that the legislature intended to create a statute that would track cutting-edge DNA science and ensure automatic admissibility only if the DNA techniques complied with the standards promulgated by the most rigorous standards-setting body available.

3. Effectuating Legislative Intent

Having determined that the legislative intent in adopting the DNA Admissibility Statute was to permit automatic admissibility for cutting-edge DNA analysis if that analysis

complied with the standards promulgated by the most rigorous standards-setting body, we must now determine if the Prince George's County DNA laboratory's DNA analysis—performed in compliance with the FBI's Quality Assurance Standards—satisfies that test. We find it useful, as the trial court did, to contrast the FBI's Quality Assurance Standards to those set by the Scientific Working Group on DNA Analysis Methods ("SWGDAM").

First, we recognize that SWGDAM is both the successor entity and the successor "in spirit" to both TWGDAM and the DNA Advisory Board. SWGDAM succeeded both of those organizations as the entity responsible for developing rigorous DNA analysis standards and recommending revisions to the FBI Quality Assurance Standards. SWGDAM, *About Us*, *supra*. TWGDAM developed the original guidelines for DNA analysis, beginning in 1989. *Id.* The forensic DNA community followed TWGDAM's guidelines when implementing their programs, making the guidelines the *de facto* standards, "recognized by courts as minimum requirements for a quality DNA forensic analysis program." *Id.* Like TWGDAM, the DNA Advisory Board, established by the DNA Identification Act of 1994, produced comprehensive standards for the forensic DNA community. John M. Butler, *Forensic DNA Typing* 593 (2d ed. 2005) [hereinafter Butler]. The DNA Advisory Board was responsible for recommending standards and revisions to the FBI for inclusion in the FBI Quality Assurance Standards. SWGDAM, *About Us*, *supra*.

TWGDAM and the DNA Advisory Board no longer exist, and their responsibility for recommending rigorous standards for cutting-edge DNA technology has been

transferred to SWGDAM. *Id.* In 1998, TWGDAM was renamed the "Scientific Working Group on DNA Analysis Methods" or SWGDAM. Butler at 394. In 2000, the DNA Advisory Board expired at the end of its statutory term and "transferred responsibility for recommending revisions of [the FBI] Quality Assurance Standards to the Scientific Working Group on DNA Analysis Methods (SWGDAM)." FBI, *CODIS – Quality Assurance*, http://perma.cc/7HHX-2X7E. SWGDAM succeeded TWGDAM and the DNA Advisory Board as the entity charged with recommending revisions for DNA analysis standards to the FBI. SWGDAM, *About Us*, *supra*. We have no doubt, as the trial court concluded, that a DNA analysis would be automatically admissible, pursuant to the DNA Admissibility Statute, if it bore a statement that it had been conducted pursuant to standards promulgated by SWGDAM.

By contrast, the FBI Quality Assurance Standards fulfill a different purpose. Unlike SWGDAM's recommendations, which are based on cutting-edge DNA science, the FBI Quality Assurance Standards are the minimum requirements that must be followed by forensic DNA laboratories. FBI, *CODIS – Quality Assurance*, *supra*; SWGDAM, *Frequently Asked Questions*, http://perma.cc/H8LL-Q7EK ("[SWGDAM guidelines] are intended to provide additional guidance to the DNA community… and should not be treated as requirements or minimum standards for forensic DNA laboratories") As such, SWGDAM's recommendations are forwarded to the FBI for consideration, but the FBI is not required to incorporate every revision that SWGDAM recommends for the FBI Quality Assurance Standards. SWGDAM, *About Us*, *supra*. Furthermore, when the FBI does adopt

a SWGDAM recommendation, the revised standard often does not apply retroactively. SWGDAM, *Frequently Asked Questions*, *supra*; *see* FBI, *SWGDAM Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Testing Laboratories*, *available at* http://perma.cc/7D4J-D8J3 ("The revised guidelines are not intended to be applied retroactively."). Accordingly, although SWGDAM provides recommendations based on cutting-edge DNA techniques and research, older protocols that are "good enough" remain in force because either the FBI chooses not to follow SWGDAM's recommendation or does not retroactively implement the recommendation. SWGDAM, *Frequently Asked Questions*, *supra* (stating that there is an underlying assumption that "work (validation, training, analysis, interpretation) performed prior to the issuance of the revisions was appropriate and scientifically valid"). Therefore, we conclude that, unlike SWGDAM recommendations, the FBI Quality Assurance Standards do not reflect the most recent advances in DNA analysis. Thus, we hold that while a DNA analysis conducted pursuant to the FBI Quality Assurance Standards may be admissible, it is not automatically admissible under the DNA Admissibility Statute. Therefore, the trial court was correct in finding that the steering wheel DNA sample was not automatically admissible under the DNA Admissibility Statute.

II. *Frye-Reed* Analysis

Having determined that the analysis of the steering wheel DNA sample is not automatically admissible under the DNA Admissibility Statute, we now turn to whether the trial court properly applied the *Frye-Reed* standard in concluding that the Prince

George's County DNA laboratory used generally accepted scientific methodology to analyze the sample.

Phillips argues that the steering wheel DNA sample was inadmissible because the Prince George's County DNA laboratory's methodologies lacked reliability and general acceptance by the scientific community. Phillips challenges the following: (1) the lack of a stochastic threshold[8] in analyzing the steering wheel sample; (2) the use of "a filtering technique in a way for which the technique was not validated;" and (3) the application of certain statistical computations to a DNA profile comparison, for which the computations are allegedly unfit to apply. While presented as three separate critiques of the Prince George's County DNA laboratory's methodologies, we note that Phillips' second and third challenges to the analysis of the steering wheel sample are, in essence, reiterations of his first critique regarding the lack of a validated stochastic threshold.

We hold that the State sufficiently demonstrated that the Prince George's County DNA laboratory's analysis of the steering wheel sample was admissible under *Frye-Reed*. The laboratory complied with the FBI Quality Assurance Standards, which while insufficient for automatic admissibility under the DNA Admissibility Statute, are, for reasons that we will describe, sufficient to show that the analysis is generally accepted in the relevant scientific community. Moreover, the experts testified that forensic laboratories

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[8] A stochastic threshold is a threshold value applied by a DNA analyst to determine whether all of the DNA information was detected for a given sample. FBI, *SWGDAM Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Testing Laboratories, supra*.

commonly use the same methods employed by the Prince George's County DNA laboratory when analyzing complex, low copy number DNA. Therefore, any attack on the reliability of the DNA analysis properly went to the weight that the trier of fact should accord the evidence, rather than to its admissibility.

Under Maryland's *Frye-Reed* standard, "before a scientific opinion will be received as evidence at trial, the basis of that opinion must be shown to be generally accepted as reliable within the expert's particular scientific field." *Reed v. State*, 283 Md. 374, 381 (1978). Maryland's *Frye-Reed* "jurisprudence engages trial judges in a serious gate-keeping function, to differentiate serious science from 'junk science.'" *Blackwell v. Wyeth*, 408 Md. 575, 591 (2009). The trial judge exercises this gatekeeping function by holding a pre-trial *Frye-Reed* hearing to determine "whether the challenged evidence is actually the product of a novel scientific technique and, if so, whether that technique is generally accepted in the relevant scientific community… ." *Clemons v. State*, 392 Md. 339, 347 n.6 (2006). We review the trial court's determination of whether a scientific opinion is generally accepted *de novo*. *Blackwell*, 408 Md. at 611.

At the *Frye-Reed* hearing in this case,[9] the central issue was whether the Prince George's County DNA laboratory had adequate methodologies to deal with the unique

[9] The State argues that while the trial court called the hearing a *Frye-Reed* hearing, the hearing that took place was actually an admissibility hearing under Md. Rule 5-702. We disagree. It is plain from the transcript that the trial court both called it a *Frye-Reed*
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complications of complex, low copy number DNA. The DNA material in the steering wheel sample is both complex, meaning that there were three or more contributors, and low copy number, meaning that there was very little DNA material present. *United States v. Davis*, 602 F. Supp. 2d 658, 669 (D. Md. 2009) ("[Low copy number] testing involves testing minuscule amounts of DNA that fall below the (somewhat amorphous) stochastic threshold—around 100 picograms or less."). Low copy number DNA is particularly susceptible to stochastic effects—random errors that make accurately analyzing the DNA

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hearing, and conducted it as such:

> THE COURT: [T]he Court finds that I must have a *Frye-Reed* hearing on this issue before we can go any further.

The trial court's ruling on the motion was also consistent with a *Frye-Reed* hearing, namely the trial court's conclusion that the scientific methodology was not novel, and was widely accepted in the relevant scientific community:

> THE COURT: What was disputed among the experts that testified was how this data should be analyzed and reported; namely, whether an analytical threshold would be used or if a stochastic threshold was required. It further becomes abundantly clear that is not a novel discussion. … SWGDAM issued recommendations. The stochastic threshold is several years old, but the FBI has never adopted them, nor have they issued a directive requiring a lab to eliminate the analytical threshold method of analyzing the data. Therefore, this Court finds that the underlying scientific theory is reliable, that the method is accepted as scientific phenomenon and supported by the evidence at the hearing, and that a majority of labs across the country are still employing the analysis threshold… .

more difficult—and increased risks of contamination. *Morgan*, 53 F. Supp. 3d at 736; Butler at 168-69.

Phillips argues that it is generally accepted that to analyze complex, low copy number DNA, forensic labs must adopt a validated stochastic threshold. During the *Frye-Reed* hearing, two experts testified: Jessica Charak testified on behalf of the State and Dr. Charlotte Word testified on behalf of Phillips. In particular, the experts disagreed about the necessity of a validated stochastic threshold when analyzing complex, low copy number DNA. Both experts agreed, however, that (1) the Prince George's County DNA laboratory complied with the FBI Quality Assurance Standards, even though it did not use a stochastic threshold when analyzing the steering wheel sample; and (2) other forensic laboratories interpret complex, low copy number DNA without a validated stochastic threshold.

First, Charak, a DNA analyst from the Prince George's County DNA laboratory, testified that the laboratory was fully compliant with the FBI Quality Assurance Standards, even though it did not employ a validated stochastic threshold. The genetic analyzer kit used to amplify the DNA in the steering wheel sample was validated in 2008, under a previous version of the FBI Quality Assurance Standards that did not require a stochastic threshold. While the current FBI Quality Assurance Standards require laboratories to establish a validated stochastic threshold as part of their internal validation procedures, that requirement was specifically not made retroactive, based on an assumption that the work performed prior to the requirement was appropriate and scientifically valid. FBI, *Quality Assurance Standards for Forensic DNA Testing Laboratories*, *available at*

http://perma.cc/M84U-FYMP; SWGDAM, *Frequently Asked Questions*, *supra*. Thus, the Prince George's County DNA laboratory was fully compliant with the relevant FBI Quality Assurance Standards even though the analysis of the steering wheel sample did not include a stochastic threshold.

Second, other forensic laboratories interpret complex, low copy number DNA using the methodology employed by the Prince George's County DNA laboratory. Dr. Word, Phillips' expert witness, testified that validated stochastic thresholds are a best practice, but that not all laboratories use them. In her view, without a validated stochastic threshold, a laboratory cannot reliably determine whether an individual's DNA is actually present in a complex, low copy number DNA sample. Dr. Word was unable, however, to say that laboratories actually employ validated stochastic thresholds:

> [COUNSEL FOR STATE]: And is it generally the practice that forensic laboratories using [the] technique [used by the Prince George's County DNA laboratory] conduct additional valuation studies to determine analytic and stochastic threshold[s]…?
>
> [DR. WORD]: It is essential the correct procedure should be done. I don't know that many labs that have done it, but it should be done.

Regarding typical forensic laboratories, Dr. Word further testified that laboratories would interpret complex, low copy number DNA samples:

> [COUNSEL FOR STATE]: Let me ask you, would other labs interpret [complex, low copy number DNA]?
>
> [DR. WORD]: I think, unfortunately, other labs are, but I think they should not be, because the appropriate valuation studies

> to do the interpretation of these types of samples simply have not been done.
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> [COUNSEL FOR STATE]: And [is it] common that [complex, low copy number DNA samples are] being interpreted?
>
> [DR. WORD]: I believe, unfortunately, that is probably true. I know a handful of labs that are interpreting, though I don't know what everyone is doing, but there are labs that are interpreting them.

Dr. Word explained that laboratories are using outdated, albeit verified, procedures to analyze increasingly complex DNA samples for which the old procedures are ill-equipped. In effect, Dr. Word's testimony was that although all laboratories ought to use validated stochastic thresholds, many do so without those thresholds.

In our gatekeeping function, we do not operate to enforce emerging best practices in a rapidly evolving scientific field. Rather, we keep out "junk science." *Blackwell*, 408 Md. at 591. In this case, while the use of a validated stochastic threshold may be the current best practice, the Prince George's County DNA laboratory's failure to use a stochastic threshold does not make its analysis "junk science." Although, perhaps, not the best, most accurate, or most "cutting-edge" technique,[10] the Prince George's County DNA laboratory

[10] We note that other courts that have dealt with the admissibility of low copy number DNA analysis have reached varying results, none of which are controlling in this case. *See People v. Collins*, 15 N.Y.S.3d 564, 585-86 (N.Y. App. Div. 2015) (discussing three cases where courts held that low copy number DNA is admissible under certain circumstances, while holding that, in that court's view, it was not sufficiently reliable to be admissible under New York's version of the *Frye* standard).

used a generally accepted methodology to analyze the steering wheel DNA sample. The laboratory followed Quality Assurance Standards promulgated by the FBI—the organization charged with setting minimum national standards for forensic laboratories. FBI, *CODIS – Quality Assurance, supra*. Additionally, Charak and Dr. Word both testified that forensic labs commonly use the methods employed by the Prince George's County DNA laboratory when analyzing complex, low copy number DNA. For these reasons, we find that the lack of a validated stochastic threshold does not mean that the analysis performed was "junk science." Any challenges to the Prince George's County DNA laboratory's lack of a set stochastic threshold properly goes, and did go, to weight rather than admissibility.[11]

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[11] While Phillips makes two additional challenges to the methodologies employed by the Prince George's County DNA laboratory, they are essentially finer-parsed arguments stemming from his primary claim that when dealing with complex, low copy number DNA, the only reliable methodology is to employ a validated stochastic threshold. As these arguments are derivative of the primary argument, our holding that the Prince George's County DNA laboratory used generally accepted techniques likewise applies to Phillips' two additional challenges.

First, Phillips argues that the use of a post-amplification filtration system after the steering wheel sample has already undergone PCR amplification is not a generally accepted methodology. This allegation of error, however, is rooted in the Prince George's County DNA laboratory's lack of a validated stochastic threshold. At the hearing, Dr. Word testified that the Prince George's County DNA laboratory should not have used the Microcon filtration system after amplification without first conducting validation studies that addressed what the stochastic effects would be post-amplification. Dr. Word, however, did not challenge the underlying methodology:

(Continued…)

Because the Prince George's County DNA laboratory's methods were generally accepted in the relevant scientific community, we affirm the trial court's admission of the steering wheel DNA evidence. This is not to say that Phillips could not challenge the DNA evidence on the basis of a lack of stochastic threshold. Rather, it is our view that the proper avenue to do so was either to cross-examine Charak or to call a rebuttal expert to attack the weight of the evidence. We find it telling that Phillips chose not to do so.

(…continued)

> [DR. WORD]: So the [pre-amplification] clean up step and that concentrating step … give us enough DNA to proceed. And if I can jump ahead, because you're going to ask it it's the same thing for the post-amplification, that's functioning exactly in the same way, it's a clean-up step, it's a concentration step to then have more product to evaluate. And those have nothing to do with generating stochastic effect[s], the Microcon process. The stochastic effects come because we have too little DNA in the first place.

Dr. Word testified that the underlying issue was the lack of a stochastic threshold, not the use of a post-amplification filtration method—a method that she acknowledges is appropriate. Our holding that the Prince George's County DNA laboratory analyzed the steering wheel sample in a generally accepted manner even in the absence of a validated stochastic threshold applies to this argument as well, and, accordingly, we hold that use of the Microcon filtration system post-amplification is a generally accepted methodology.

Second, Phillips argues that the use of the Combined Probability of Inclusion ("CPI") statistical computation for the steering wheel sample is not a generally accepted method of determining the likelihood of inclusion in a complex, low copy number sample. Phillips' argument to this point is again derivative of his argument that without the stochastic threshold, there is no way to be certain that stochastic effects have not occurred. As we held above, the Prince George's County DNA laboratory used an acceptable methodology to analyze the steering wheel sample. It follows then that the Prince George's County DNA laboratory's derivative conclusion—that the CPI program could be used—necessarily also survives a *Frye-Reed* challenge.

III. Right to a Public Trial

Phillips' final argument on appeal is that the trial court improperly "sealed" a portion of his trial in violation of the Sixth Amendment's guarantee that "[i]n all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial." U.S. Const. amend. VI. Phillips urges us to find that in doing so, the trial court committed reversible error. As the courtroom was never closed to the public, however, there was no error, much less a violation of Phillips' constitutional rights.

Under the United States Constitution as applied in Maryland courts, "criminal trials are to be open to the public as a matter of course, and any closure of the courtroom for even part of the trial and only affecting some of the public must be done with great caution." *Robinson v. State*, 410 Md. 91, 102 (2009). The right to a public trial, however, is not absolute:

> The Sixth Amendment does not require a court to forfeit its legitimate and substantial interest in maintaining security and order in the courtroom. To the contrary, prophylactic measures, including closure, may be warranted under some circumstances, in order to maintain order, to preserve the dignity of the court, and to meet the State's interests in safeguarding witnesses and protecting confidentiality.

Walker v. State, 125 Md. App. 48, 69 (1999).

At Phillips' trial, the trial court closed the courtroom while the jury instructions were read. Prior to issuing the jury instructions, the trial court explained that to prevent the jury

from being distracted, people would be prevented from exiting or entering the courtroom during the reading of the instructions:

> THE COURT: Now, just so everyone knows, once the jury comes in, we're going to be sealing the courtroom for jury instructions. So if you do not want to be in here to hear jury [i]nstructions, you can leave. Once we seal the courtroom, no one will be able to leave the courtroom until we conclude[] the jury instructions. Okay.
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> * * *
>
> [COUNSEL FOR PHILLIPS]: I do object to the sealing of the courtroom during instructions.
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> * * *
>
> THE COURT: Okay, I'm going to seal the courtroom during instructions. … Mr. Bailiff, I will ask you [to] check [] the hallway. If anyone wants to come in the courtroom, let me know. We're going to seal the courtroom until after the jury comes in.
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> * * *
>
> [The jury enters and is seated]
>
> * * *
>
> THE COURT: At this time I'm going [to] ask you Mr. Bobo to seal the courtroom. Mr. Bobo, *please inquire whether or not there is anyone in the hallway that wishes to come in.*
>
> *Or, if there is anyone in the courtroom that wishes to step out during instructions, please do so at this time.* If not, I'm going to ask you remain in your seat until we conclude instructions.

(emphasis added). The trial court made repeated efforts to ensure that anyone who wished to be present was in attendance. The public was not excluded from this portion of the trial.

Therefore, there was no Sixth Amendment violation. Other courts that have considered similar fact situations have reached the same result. *See United States v. Scott*, 564 F.3d 34 (1st Cir. 2009) (holding that there was no closure where spectators were prohibited from entering and exiting during jury instructions); *State v. Brown*, 815 N.W.2d 609 (Minn. 2012) (same). We affirm the sound discretion of the trial court in temporarily closing the courtroom from persons who wished to enter or exit while the jury instructions were read.

JUDGMENTS OF THE CIRCUIT COURT FOR PRINCE GEORGE'S COUNTY AFFIRMED. COSTS TO BE PAID BY APPELLANT.