APPENDIX A

227 A.3d 1079
Supreme Court of Delaware

Dakai CHAVIS, Defendant Below, Appellant,
V.
STATE of Delaware, Plaintiff Below, Appellee.

No. 520, 2018
|
Submitted: January 15, 2020
|
Decided: April 7, 2020

Attorneys and Law Firms

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Before SEITZ, Chief Justice; VALIHURA, VAUGHN, TRAYNOR, and MONTGOMERY-REEVES, Justices.

Opinion

TRAYNOR, Justice.

In this case, we address the scope of a criminal defendant's Confrontation Clause rights when the prosecution offers forensic-testing results produced by an analytical process involving multiple analysts.

A New Castle County grand jury indicted Dakai Chavis on four counts of trespassing with the intent to peer or peep, four counts of burglary in the second degree, three counts of burglary in the second degree, and one count of theft of a firearm. A Superior Court jury acquitted Chavis on all but one of the charges, finding him guilty of the second degree burglary of an apartment at 61 Fairway Road in Newark, Delaware. At that address, unlike the other residences identified in the indictment, the police had obtained a DNA sample from a bedroom window. The police sent that sample to an out-of-state laboratory for analysis, and when they later arrested Chavis and swabbed his mouth for DNA, they sent that sample to the same lab. According to one of the lab's analysts, the evidentiary sample taken from the bedroom window at the burglary scene matched the reference sample taken from Chavis.

It is undisputed that several analysts from the lab handled and performed steps in the analytical process on both samples. Even so, before the trial, the State moved *in limine* for an order declaring that the out-of-state laboratory's DNA findings would be "admissible via the testimony of [the lead analyst], and that no one else from [the laboratory] needs to appear for trial."[1] Chavis opposed the motion, citing the Sixth Amendment's Confrontation Clause and 10 *Del. C.* § 4331 in support of his claim that all the analysts "who physically manipulated the [DNA] sample . . . [should] be required to appear at trial if those samples [were] to be

[1] App. to Opening Br. at A38.

in any way referenced at trial."[2] The Superior Court agreed with the State and granted its motion.

At the end of the State's presentation of the evidence at trial, Chavis made a motion for judgment of acquittal, which the Superior Court denied. As mentioned, the jury convicted Chavis of one count of second-degree burglary and acquitted him of the remaining counts. The Superior Court sentenced Chavis to four years of non-suspended Level V imprisonment, and Chavis appealed.

Chavis raises three arguments on appeal. First, he argues that the introduction of the DNA evidence violated his Confrontation Clause rights because the State did not present all of the analysts who conducted the DNA analysis. Second, Chavis contends that several Delaware statutes that pertain to DNA evidence in other contexts compel the conclusion that the DNA evidence was not admissible under D.R.E. 901 because the evidence had not been properly authenticated. Third, Chavis makes an insufficiency-of-the-evidence claim based on our holding in *Monroe v. State.*[3]

The practice of testing forensic evidence at out-of-state laboratories whose analysts are, as a practical matter, beyond the reach of a Delaware subpoena[4]

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[2] *Id.* at A59.

[3] 652 A.2d 560 (Del. 1995).

[4] The Court is mindful that Delaware's version of the Uniform Law to Secure the Attendance of Witnesses from Without a State in Criminal Proceedings, 11 *Del. C.* §§ 3521 *et seq.*, envisions a procedure by which the appearance of a material out-of-

implicates important constitutional and evidentiary considerations. In this case, for instance, the testifying analyst's report and testimony relied upon her conclusion—not based on personal knowledge, but on her review of the nontestifying analysts' recorded entries in the lab's case files—that the nontestifying analysts performed their work properly. But even though there was no showing that the nontestifying analysts were unavailable or that practical considerations precluded their appearance, the Superior Court excused their absence, and Chavis was unable to test the testifying analyst's conclusion regarding the quality of the other analysts' work. Nevertheless, we cannot conclude on the record before us, which does not include the lab's case files, that the out-of-court statements by witnesses who did not appear at trial were "testimonial" within the meaning of controlling United States Supreme Court precedent. Therefore, we reject Chavis's claim that his Confrontation Clause rights were violated. And because Chavis's claim that the DNA evidence was not properly authenticated and his argument based on *Monroe* lack merit, we affirm.

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state witness in a prosecution pending in the State might be compelled. But that process is significantly more cumbersome and costly—oftentimes prohibitively so—than the issuance and service of a subpoena for an in-state witness.

I. BACKGROUND

A. The Burglary Complaints and Resulting Investigation

In the fall of 2016, a spate of night-time burglary and peeping-tom complaints from the residents of two apartment complexes—Hunter's Crossing and Harbor Club—prompted the New Castle County Police Department ("NCCPD") to install motion-sensitive surveillance cameras in the affected areas. When the cameras detected motion, they would take one photograph per second for the next ten seconds. This generated approximately 40,000 images, which were painstakingly reviewed by the chief investigating officer, Detective Kevin Mackie. Among the myriad images, Detective Mackie noticed a black male with facial hair, wearing camouflage pants, and a "pilot-style"[5] jacket. The frequent appearance of this individual in surveillance photos taken at or near the times when police had received the residents' complaints, "always late at night . . . [and] never . . . during the daytime hours,"[6] piqued the detective's suspicion that this bearded man was the culprit.

Of the nearly twenty incidents under investigation, one is of particular relevance in this appeal. On the evening of November 11-12, 2016, a ground-floor apartment at 61 Fairway Road in the Hunter's Crossing apartment complex was burgled. During the investigation, the police concluded that the burglar entered

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[5] App. to Answering Br. at B7-8.

[6] *Id.*

through one of the bedroom windows. Nothing was stolen, however, and the evidence-detection specialist called to the scene was unable to recover any usable fingerprints from the point of entry. But the specialist also swabbed the exterior of the window for DNA evidence and, in due course, the swabs were sent to Bode Cellmark Forensics, a private laboratory in Lorton, Virginia that specializes in forensic DNA testing.[7] The testing of this DNA sample and the manner in which the testing results were presented at Chavis's trial are at the heart of this appeal and will be discussed in detail below.

Through a chance encounter on November 20, 2016 between two NCCPD officers and Chavis in the vicinity of the Harbor Club Apartments, Chavis was developed as a suspect in the burglaries and peeping-tom cases. Armed with the identification provided by the two officers, both of whom were virtually certain that the person they spoke with on November 20—identified as Dakai Chavis—was the same person in

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[7] Sergeant Thomas Orzechowski, a supervisor of NCCPD's evidence-detection unit, explained that the department "started a project many years ago . . . specifically geared toward DNA related to property crimes," under which it secured "a contract with a private lab, Bode Forensics, [which] processes the majority of [the department's] property crimes and thefts." *Id.* at B35. The record does not disclose why NCCPD does not use the State's Division of Forensic Sciences, which has a DNA Unit that conducts forensic "DNA testing of biological materials associated with official investigations[,] including . . . [investigations of] property crimes." DNA Unit, Delaware Division of Forensic Science, https://forensics.delaware.gov/contentFolder/section-index.shtml?dc=DNAUnit (last visited Mar. 17, 2020).

the photographs generated by the surveillance cameras from Harbor Club Apartments, Detective Mackie secured search warrants for Chavis's residence and automobile, and to secure a sample of his DNA.[8]

When Mackie executed the warrants on January 4, 2016, he located numerous pieces of clothing, including a "pilot-style" jacket, camouflage pants, and Nike sneakers, all of which were similar to what the suspect wore in many of the surveillance-camera photographs. Mackie also seized a cellphone from the master bedroom at Chavis's residence and later secured another search warrant so that he could search the cellphone's contents. That search disclosed that someone had used the phone to watch YouTube videos about AR15 rifles on the same day that an AR15 rifle had been stolen in one of the Hunter's Crossing burglaries. Cell tower data also revealed that the phone taken from Chavis's residence was in close proximity to Hunter's Crossing during the early morning hours when burglaries were reported there.

During the search of Chavis's residence, Detective Mackie also obtained a DNA sample from Chavis, using a collection method known as buccal swabbing, by scraping the inside of Chavis's cheeks with a Q-tip-like swab to collect skin cells. That sample—like the swabs from the November 11-12 Hunter's Crossing crime

[8] The search warrants were not made part of the Superior Court record so we rely on the State's undisputed representations and Detective Mackie's testimony that the NCCPD secured multiple warrants under one of which Detective Mackie obtained the reference DNA sample from Chavis.

scene—were sent to Bode Cellmark Forensics. At trial, an analyst from Bode, Sarah Siddons, testified that Chavis's DNA sample matched the crime-scene sample. Because that testimony gives rise to Chavis's principal complaint on appeal, we now fix our attention on the manner in which Bode tested the samples, how Siddons reached her ultimate conclusions, and how this critical evidence was presented to the jury.

B. The DNA Testing

The manner in which the investigating officers collected the crime-scene DNA sample and Chavis's reference sample and delivered those samples to Bode is not at issue here. It is sufficient for our purposes to note that an evidence-detection specialist used a DNA collection kit supplied by Bode to process the suspected point of entry (a window) at the crime scene, wiping the area of interest with both wet and dry swabs. This process generated the crime-scene sample. And as mentioned, Detective Mackie collected the reference sample from Chavis with a buccal swab, scraping the inside of Chavis's cheeks with a Q-tip-like swab to collect skin cells. In both instances, the samples[9] were placed in sealed envelopes and—so far as we know—delivered to Bode without incident.

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[9] Reference samples are also (perhaps more helpfully) referred to as "known person samples," but because the witnesses and briefing in this case uses the admittedly more customary designation, we refer to the sample taken from Chavis as the reference sample.

i. The crime-scene (or "evidence") sample

The swabs collected at 61 Fairway Road were delivered to Bode and received by an employee named Alyssa Morris via Federal Express on November 22, 2016. The record of the swabs' movement after that within Bode's facilities is a bit murky,[10] but it appears to show that they were delivered to Rachel Aponte, a Bode technician, for the purpose of "analysis" [11] on December 6, 2016. Aponte returned the swabs to Joseph Hufnagel, who was responsible for storage, one week later but not before conducting a step that Bode's testifying witness, Sarah Siddons, describes as "evidence examination." During this examination, after retrieving the sample from Bode's evidence room, Aponte examined the evidence for biological materials, "cut [] the swabs lengthwise . . . then place[d] the swab pieces into tubes and place[d] the tubes into a secure evidence room inside the lab."[12] Siddons, the testifying analyst,

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[10] Other than the affidavit Siddons submitted in support of the state's motion in limine, the only documents from Bode in the record are Siddons' three-page "supplemental forensic case report" (State's Ex. 26), two one-page documents entitled inventory (one of which appears to be the 43rd page of a 53-page document), and two one-page chain-of-custody documents (one of which appears to be page "1 of 3." App. to Opening Br. at A62-69; App. to Answering Br. at B1-3.

[11] App. to Opening Br. at A67.

[12] Affidavit of Sarah Siddons, App. to Answering Br. at A41, 46. The astute observer will notice that the DNA-testing process described in Siddons' affidavit tracks the "summary of lab process" appended to Justice Breyer's concurring opinion in *Williams v. Illinois*, 567 U.S. 50, 100 (2012). Indeed, Siddons confirms that Justice Breyer's summary "describes the process used at Bode." App. to Opening Br. at A41. We note that Justice Breyer's

did not participate in or witness Aponte's examination and cutting of the swabs.

The next step in the process is designed to release the DNA—if any is present—from the swab and is appropriately called "extraction." This critical step was performed by another Bode analyst named Kelsey Powell. According to Siddons, who, again, did not observe or supervise Powell's actions:

> Powell retrieve[d] the sample from the secure evidence room and add[ed] chemicals to the test tubes which release the DNA from the swab. The tubes which now have chemicals in them are then incubated for one (1) hour, and next Powell place[d] a tray of tubes onto a centrifuge. The centrifuge separates the liquid, which now contains DNA if the original sample in fact contained DNA, from the cotton swab. The cotton swabs are discarded once the separation is complete. Now, the tubes only have liquid in them, the liquid consists of everything that was on the swab plus reagents. Finally, Powell place[d] the tubes into a refrigerator onside the lab.[13]

Another technician, Douglas Ryan, retrieved the samples from the refrigerator and placed the tubes in a robot that added chemical reagents to the samples, "separate[ing] the DNA from everything else that was

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summary implies that a different technician will perform each separate step in the process. There is no evidence in this case that multi-analyst testing is a practical necessity or even a desirable model.

[13] *Id.* at A41-42.

in the tube."[14] Ryan then sealed the tray and placed it into a freezer, completing the extraction process. Again, Siddons did not assist or watch Ryan as he performed this step.

We pause here to note that this account of the evidence-examination and extraction steps is not taken from the testimony of any of the analysts who performed the steps because they did not appear at trial. Instead, it has been gleaned from the Siddons' affidavit submitted in support of the State's motion *in limine*—more of which later. But, as noted, Siddons neither participated in or witnessed any of the activity described above—her knowledge of what occurred would have been gleaned from reviewing the case files generated by the other analysts.

In any event, after the DNA extraction was complete, three more steps—quantification, amplification, and electrophoresis—were required before a report of the analysis could be generated. Sarah Siddons performed each of those last three steps. First, in the quantification step, Siddons added chemicals to the DNA samples that Powell and Ryan had extracted and placed the tray holding the sample onto a machine that measures the amount of DNA in each sample. Of the two crime-scene samples, only one contained enough DNA to allow for testing, and it required "concentration," which was accomplished by running it through a filter.

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[14] *Id.* at A42.

Siddons next turned to the step in the process known as "amplification." In this step, the technician adds another chemical mix that facilitates a process called a polymerase chain reaction ("PCR"). PCR is a largely automated process during which the DNA sample is placed into a high-precision oven that repeatedly cycles through a series of temperatures. The chemicals react to the temperature cycle and produce exponentially rising copies of what are called "short tandem repeats" ("STRs") in the DNA so that there is a readable signal from even a tiny amount of DNA.[15]

After amplifying the DNA, Siddons "placed it into a tray which was then placed onto the Genetic Analyzer, the machine which actually creates the DNA profiles."[16] This mostly automated step involves a process known as electrophoresis, which generates a graph called on electropheragram.[17] Siddons had little to say about her reading of the electropheragram, other than that she "pulled up the profile and confirmed that the profile passed, or was satisfactorily readable."[18]

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[15] STRs are repetitive sequences in DNA that have a variable number of repetitions from person to person. App. to Answering Br. at B43. For example, one particular STR might be repeated five times in one person's DNA and six times in another person's DNA. By evaluating enough STRs and finding sufficient matches, a forensic investigator can conclude that two DNA samples are statistically highly likely to be from the same person.

[16] App. to Opening Br. at A43.

[17] The electropherogram "is a visual depiction of the genetic material resembling a line graph with peaks showing the lengths of DNA strands at specified loci." *Id.*

[18] *Id.* at A43.

Siddons then entered the profile into a local database but did not generate a report.

ii. The reference (or "known person" sample)

The buccal swabs from Chavis's mouth were delivered to Bode via Federal Express on January 16, 2017. The same analytical steps that were taken to analyze the crime-scene samples were employed in the analysis of this reference sample except that Feng Chen performed the evidence examination and Vanessa Suffrin performed the extraction. Once again, Sarah Siddons, who did not participate in or witness any of Chen's or Suffrin's work, performed the quantification and amplification steps and placed the sample into the Genetic Analyzer so that it could, through electrophoresis, produce a DNA profile. And, as with the profile produced for the crime-scene sample, Siddons confirmed that the profile was satisfactorily readable and entered into a local database. This time "[t]he database reported a 'hit' or 'match.' "[19]

iii. Siddons's Report

When Siddons learned that the database reported a "hit," she reviewed both profiles and "confirmed the computer's reported match."[20] Her affidavit notes that she confirmed that "[t]he evidence profile and

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[19] *Id.*

[20] *Id.*

reference profile . . . matched at all fifteen (15) loci analyzed at Bode."[21] But one more step was required before Siddons could write her report. Because Siddons had not performed or witnessed the first two steps in the analysis, she "reviewed the case files for both the evidence sample and the reference sample . . . and confirmed that Standard Operating Procedures were followed."[22] Satisfied that Aponte, Powell, Ryan, Chen, and Suffrin had performed the earlier steps competently and in accordance with Bode's standard operating procedures, Siddons authored the report, which contained the expert opinion that was offered at Chavis's trial.

C. The State's Motion in *Limine*

Before trial, the State moved the Superior Court to allow the introduction into evidence of Bode's DNA-testing results through Siddons's testimony and without requiring the State to produce the other Bode analysts for cross-examination by Chavis. In its motion, the State downplayed the importance of the steps taken by the analysts other than Siddons. According to the State's motion:

> Siddons [was] the only person at Bode who performed testing and analysis on the samples. Other Bode employees (also referred to as "analysts") only prepared the samples for Siddons' eventual testing by cutting swabs,

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[21] *Id.*

[22] *Id.*

> adding reagents to test tubes, and placing samples onto machines. The actions taken by the other Bode analysts were preparatory in nature and did not yield any data or result, and no report was generated.[23]

The State also argued that Siddons was a qualified expert and that, as such, under D.R.E. 703, she was permitted to rely on facts and data provided by the other analysts in rendering her opinion.

Chavis responded that Siddons's assurances that Aponte, Chen, "and anyone else who might have performed similar 'analysis' "[24] did so competently were inadequate to satisfy his "right to confront and cross-examine those people at trial."[25] Chavis also claimed that, under 10 *Del. C.* § 4331—a statute that Chavis described as "Delaware's chain of custody statute"—"[all] technicians who physically manipulated [the] DNA samples for the stated purpose of 'analysis' should be required to appear at trial in order for the State to establish a proper chain of custody."[26] Chavis did not, however, challenge Siddons's qualifications as an expert or object to Siddons's report and testimony on the grounds that they incorporated factual assertions that were beyond her personal knowledge.

The Superior Court held a hearing on the State's motion at which it considered Siddons' affidavit,

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[23] App. to Opening Br. at A21.

[24] *Id.* at A54.

[25] *Id.*

[26] *Id.* at 56.

Siddons' final report, and a handful of chain-of-custody documents that Chavis had appended to his response to the State's motion. Neither Siddons nor anyone else from Bode testified about the qualifications of the non-testifying analysts or their adherence to Bode's standard operating procedures in this case. After hearing the argument of counsel, the Superior Court granted the State's motion, ruling that the only testimonial statements encompassed in Bode's DNA-testing results were those made by Siddons and that, therefore, her appearance at trial would satisfy Chavis's confrontation rights. Accordingly, at Chavis's trial, the only witness to testify in support of Bode's DNA testing results and conclusions was Sarah Siddons.

D. Siddons's Trial Testimony

At trial, after Siddons described her training as a DNA analyst, her employment at Bode, and her experience in DNA-typing technology, the State proffered her as an expert in DNA analysis. Chavis's counsel stated for the record that he had "no objection" to Siddons's expert-witness status.[27] Siddons then described the DNA testing process in much the same manner as she did in the affidavit she submitted in support of the State's motion *in limine.* As she testified in detail about the testing steps conducted by Aponte, Chen, Ryan, Powell, and Suffrin, Chavis did not object on hearsay or other evidentiary grounds, apparently content to limit his challenge to his confrontation-clause and

[27] App. to Answering Br. at B42.

chain-of-custody objections. At no point during Siddons's direct examination did she recount any statement made or conclusions reached by any of the nontestifying analysts. She did explain, however, that she was able to generate one DNA profile from the two evidence samples and a profile from the reference sample. And, according to Siddons, "the male profile obtained from the evidence sample was a match to the male profile from [Chavis's] reference sample,"[28] matching at all fifteen loci. Siddons's written report, which was admitted into evidence, noted that "[t]he probability of randomly selecting an unrelated individual with this DNA profile at 15 of 15 loci tested is approximately . . . 1 in 26 quintillion in the U.S. African American population."[29]

II. ANALYSIS

In his briefs, Chavis states his claim as two-fold. Under his first claim, Chavis asserts that permitting the State to introduce the DNA-testing results without the testimony of all the analysts who touched the DNA samples violated his Confrontation Clause rights and "Delaware's chain of custody law" found, according to Chavis, in 10 *Del. C.*§ 4331. In his second argument, Chavis challenges the sufficiency of the evidence supporting his burglary conviction. We see Chavis's first claim as presenting two analytically distinct issues, which are also subject to different standards of review,

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[28] *Id.* at B45.

[29] *Id.* at B1.

and treat them as such in this opinion. We will begin our discussion, therefore, with Chavis's Confrontation Clause claim, followed by his chain-of-custody argument, and conclude with his challenge to the sufficiency of the evidence.

A. Standard of Review

We review *de novo* whether the Superior Court's decision to grant the State's motion *in limine* violated Chavis's confrontation rights under the Sixth Amendment of the United States Constitution.[30] We review the Court's evidentiary ruling on Chavis's chain-of-custody argument for abuse of discretion.[31] And finally, we review *de novo* Chavis's sufficiency-of-the-evidence claim by asking whether any rational trier of fact, viewing the evidence in the light most favorable to the State, could find Chavis guilty beyond a reasonable doubt of burglary in the second degree.[32]

B. Chavis has not identified an out-of-court statement by an absent witness that was offered as a substitute for in-court testimony against him.

Chavis and the State reach different answers to the question that is at the heart of Chavis's Confrontation Clause claim: whether the nontestifying analysts'

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[30] *Warren v. State*, 774 A.2d 246, 251 (Del. 2001).

[31] *McNally v. State*, 980 A.2d 364, 370-71 (Del. 2009).

[32] *Davis v. State*, 706 S.2d 523, 525 (Del. 1998).

entries in the case files about their work, which Siddons relied upon to generate her report and related testimony, were testimonial. Chavis argues that the nontestifying analysts (Aponte, Powell, Ryan, Chen, Suffrin) made "implicit and explicit out-of-court testimonial statements . . . [that Siddons] relied upon and relayed to the jury . . . "[33] and that he therefore had the right to confront those analysts. The State counters that the work done by the nontestifying was not testimonial for a host of reasons. Among these reasons are that the nontestifying analysts "did not produce data on which Siddons relied,"[34] that many of the "processes for generating DNA profiles are automated,"[35] that the DNA profiles are self-verifying because "[t]he DNA profiles [themselves] would have reflected any errors committed during the DNA testing's preliminary stages,"[36] and that the implicit statements of the nontestifying analysts, which Siddons relied upon in her testimonial affidavit, were insufficiently formal to themselves qualify as testimonial statements. The State also posits that Siddons was allowed to rely on the nontestifying analysts' entries in the case files because those entries were "facts or data . . . of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject" and therefore "need not be admissible in evidence

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[33] Supp. Opening Br. at 5.

[34] Answering Br. at 27.

[35] *Id.*

[36] *Id.* at 30.

in order for the opinion or inference to be admitted."[37] After consideration of precedent from the United States Supreme Court and other jurisdictions, we conclude that the nontestifying analysts' entries in the case files were not testimonial because those entries did not take the form of statements designed to serve as a substitute for in-court testimony against Chavis.

i. The Relevant United States Supreme Court Precedent

In its seminal decision in *Crawford v. Washington*, the United States Supreme Court held that the Sixth Amendment's Confrontation Clause bars the prosecution from introducing the testimonial statements of witnesses absent from trial unless the witness is unavailable and the defendant has had a prior opportunity to cross-examine him.[38] In the next decade and a half, the Supreme Court has applied its holding in *Crawford* in an oft-discussed —and frequently lamented[39]—trilogy of forensic-analyst cases, starting in 2009 with *Melendez-Diaz v. Massachusetts,*[40] followed by *Bullcoming v. New Mexico*[41] in 2011 and *Williams v.*

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[37] App. to Opening Brief at A31; Supp. Answering Br. at 27.

[38] 541 U.S. 36, 59 (2004).

[39] *See*, *e.g.*, Justice Gorsuch's dissent from the denial of the petition for writ of certiorari in *Stuart v. Alabama*, ___ U.S. ___, 139 S.Ct. 36, 202 L Ed. 2d 414 (Mem.) (2018) (noting that the Court's "various opinions have sown confusion in courts across the country").

[40] 557 U.S. 305 (2009).

[41] 564 U.S. 647 (2011).

Illinois[42] in 2012. Despite the uncertainty that surrounds certain aspects of those cases, it appears to be well-settled that forensic evidence, including DNA analysis like the one conducted in this case, is subject to the Supreme Court's holding in *Crawford.* The question remains, however, *what* exactly is testimonial and thus subject to the *Crawford* holding.

That question was first answered in *Melendez-Diaz.* In that case, the Court held by a 5-4 majority that three "certificates of analysis" that reported the *results* of the forensic testing of a substance—to determine its weight and whether it was cocaine—were testimonial statements subject to the requirements of the Confrontation Clause. That meant that the defendant was entitled to confront the analysts who prepared the certificates at trial. Justice Scalia emphasized that the certificates were "affidavits" and "functionally identical to live, in-court testimony, doing 'precisely what a witness does on direct examination.' "[43] The sole purpose of the affidavits was to provide prima facie evidence of the composition, quality and weight of the analyzed substance, i.e., to prove an element of the offense. As such, "the analysts' affidavits were testimonial statements, and the analysts were 'witnesses' for purposes of the Sixth Amendment."[44]

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[42] 567 U.S. 50 (2012).

[43] 557 A.2d at 310-11 (quoting *Davis v. Washington*, 547 U.S. 813, 830 (2006)).

[44] *Id.* at 311.

Two years later, in *Bullcoming,*[45] the Supreme Court addressed the adequacy under the Confrontation Clause of a surrogate expert's testimony concerning a forensic laboratory report that contained a testimonial certification of Bullcoming's blood-alcohol concentration in a driving-while-intoxicated trial. The surrogate had not signed the certification or personally performed—or observed the performance of—the test reported in the certification. The New Mexico Supreme Court was satisfied that the testimony of the surrogate, because it was live testimony by an analyst who was qualified to operate the relevant testing equipment,[46] could serve as a substitute for the absent analyst who actually performed the test. But, like the certificates in *Melendez-Diaz*, the blood alcohol report in *Bullcoming* was used to prove that the defendant's BAC exceeded the legal limit, again, proving an element of the offense. Justice Ginsburg, writing for a 5-4 majority, thus found that the blood alcohol report was testimonial and the analyst who prepared the report needed to testify, reversing the New Mexico Supreme Court. Justice Sotomayor, in her concurrence, emphasized the importance of the evidence's purpose as a factor in determining whether it was testimonial: "To determine if a statement is testimonial, we must decide whether it has 'a primary purpose of creating an out-of-court substitute for trial testimony.' "[47]

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[45] 564 U.S. 647.

[46] *Id.* at 652.

[47] *Id.* at 669 (quoting *Michigan v. Bryant*, 562 U.S. 344, 358 (2011)).

Rounding out the trilogy of the Supreme Court's opinions that address the Confrontation Clause in the forensic testing context is *Williams v. Illinois*, "[t]he precise holding of [which]," we have noted is "less than clear."[48] In that case, an expert testified that two DNA profiles matched even though she was only involved in producing one of the profiles. The other profile—the one produced from a swab of the victim—had been produced by an outside laboratory, and no one from that lab testified. A four-justice plurality held that the defendant's Confrontation Clause rights were not violated because the expert's references to the DNA profile were not offered to prove the truth of the matter asserted and were thus not testimonial.[49] Specifically, the plurality said that there was no Confrontation Clause violation because the expert's testimony did not assert that the DNA profile generated by the outside laboratory was in fact an authentic profile made from the victim; rather, when the expert testified, she did so under the hypothetical that the profile was authentic, and it is permissible for experts to testify as to hypotheticals.[50]

Justice Thomas, who concurred only in the judgment, rejected the plurality's conclusion that the expert's references to the outside laboratory's profile were not offered to prove that profile's authenticity. Rather, Justice Thomas believed that the DNA profiles

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[48] *Martin v. State*, 60 A.3d 1100, 1104 (Del. 2013).

[49] *Williams*, 567 U.S. at 57-58.

[50] *Id.* at 67-71.

themselves were nontestimonial because the "statements lacked the requisite formality and solemnity to be considered testimonial for purposes of the Confrontation Clause."[51] But no other justices joined in that reasoning.

Justice Breyer, who joined the plurality opinion, wrote separately to point out an important question—in fact, the very question that is before us here—that he "believe[d] neither the plurality nor the dissent answers adequately:"[52] if more than one laboratory technician was involved in the analysis – as was the case in Chavis's DNA analysis —"[w]ho should the prosecution have had to call to testify?"[53] Justice Breyer did not himself answer that question and would have asked for reargument. In the absence of reargument, he considered the DNA profile nontestimonial because it "embodie[d] technical or professional data, observations, and judgments,"[54] and, thus, it did not fall within the scope of the Confrontation Clause.

We pause here to note that none of the cases in the aforementioned trilogy squarely addresses the issue in front of us. Here, an expert, Siddons, testified to the results of a forensic analysis, but in doing so, relied upon information that experts in her field typically rely upon—case files by other testing analysts who manipulate the DNA samples in order to prepare them for

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[51] *Id.* at 103-04 (THOMAS, J., concurring).

[52] *Id.* at 86, 90 (BREYER, J., concurring).

[53] *Id.* at 90 (BREYER, J., concurring).

[54] *Id.* at 93 (BREYER, J., concurring).

the expert, but who do not themselves analyze the result. Because these other analysts are not testifying as to the *final result* of the forensic analysis, it is not clear whether their work is testimonial under *Melendez-Diaz*, which dealt with certificates attesting to the *results* of the forensic testing. Nor is Siddons a surrogate expert as in *Bullcoming*—she was herself involved in the preparation and analysis of the two DNA samples. And there is no testimony as to a hypothetical here—Siddons worked on both DNA samples and testified as to the results of both.

Melendez-Dias and *Bullcoming* do, however, point to an indicator for when a statement is testimonial: the purpose of the statement in proving an essential element of the crime. Regrettably, the case files produced by the nontestifying analysts, which Siddons relied upon and which Chavis seems to claim contain the nontestifying analysts' out-of-court-statements, are absent from the record.[55] But assuming that we could conjure up those statements despite their absence, we could not go so far as to presume that they include assertions of fact tending to prove an essential element of the crimes. Even Chavis only posits that the nontestifying analysts' statements relate to their adherence to testing protocols and the absence of irregularities (following standard operating procedures and not seeing any evidence of taint or contamination)—he

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[55] *See* note 10, *supra.* It is noteworthy that Chavis does not identify any particular statement in the few Bode documents in the record as an out-of-court statement that gives rise to his confrontation right.

does not argue that those statements in and of themselves were used to prove his identity or any other element of the crimes he was charged with.

ii. Delaware Precedent: *Martin v. State*

In deciding whether the nontestifying analysts' results are testimonial, we also turn to our own precedent. In *Martin v. State*, a case involving a conviction for driving while under the influence or with a prohibited drug content, we attempted to detangle the United States Supreme Court's holdings in *Melendez-Dias, Bullcoming*, and *Williams*. In the proceedings below, the Superior Court had admitted a toxicology report showing that the defendant's blood tested positive for phencyclidine (PCP or "angel dust"). The State entered the report into evidence through the live testimony of Jessica Smith, the Chief Forensic Toxicologist of the Office of the Chief Medical Examiner (OCME). Unlike Siddons in this case, Smith did not conduct the tests that produced the report, but rather had only prepared the report and certified it after reviewing the results of the analysis, which was actually conducted by Heather Wert, an OCME chemist.

We noted that the situation presented by *Martin* fell somewhere between *Bullcoming* and *Williams*. And because Wert's testing yielded results, we held that those results were testimonial[56] and were admitted for the truth of the matter asserted.[57] Although

[56] *Martin*, 60 A.3d. at 1106, 1108.

[57] *Id.* at 1107.

Smith, unlike the expert in *Bullcoming*, was the certifying analyst, she neither observed nor participated in Wert's testing. That lack of participation rendered her unqualified to testify as to testing itself, the results of which were testimonial and admitted for the truth of the matter asserted. And because there was no evidence that Wert was unavailable or that the defendant had the opportunity to cross examine her prior to trial, the trial judge erred by admitting the toxicology evidence. Finally, because the toxicology report was "the principal factor" in Martin's convictions,[58] we reversed the judgment of the Superior Court.

This case, like *Martin*, also falls somewhere between *Bullcoming* and *Williams*—we have a certifying analyst testifying to testing results where multiple analysts were involved in the testing or certification. But unlike *Martin, Bullcoming*, or *Williams*, this case involves a testifying analyst who was also involved in the testing of *both* DNA samples and who certified the results. The question is thus whether the other analysts' statements about their work—the entries in the case files—are testimonial, even though those analysts only performed preliminary steps that enabled Siddons to generate the final DNA profile. As mentioned, we find that those statements are not testimonial because they fail the United States Supreme Court's test—they did not serve as a substitute for in-court testimony tending to prove an essential element of the crime. In so

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[58] *Id.* at 1109.

concluding, we are in agreement with many of our sister states, who have decided this issue in a similar fashion.

iii. Caselaw from other states

The State has cited several cases from other jurisdictions that we find instructive.[59] For example, in *State v. Lopez*,[60] a forensic analyst testified about DNA profiles produced in the laboratory where he worked. That analyst "directed specific analysts to perform each stage of the DNA testing on each of . . . seven samples."[61] After the DNA profiles were created from the samples, the analyst "reviewed the entire case file and confirmed that all protocols were followed properly by examining the other analysts' [who manipulated the DNA samples to create the profiles] notes, their affirmations that protocols were followed, as well as their conclusions."[62] The testifying analyst, however, "never physically touched the evidence in [the] case" and "did not personally observe the analysts who conducted the cutting, extraction, or quantification."[63]

The Supreme Court of Rhode Island nevertheless found that the analyst's testimony did not violate the Confrontation Clause because he "testified to . . . his own independent, scientific opinions" that were based

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[59] Answering Br. at 25 n.48, 29 n.65.

[60] *State v. Lopez*, 45 A.3d 1 (R.I. 2012)

[61] *Id.* at 13.

[62] *Id.*

[63] *Id.* at 10.

on raw data produced by laboratory analysts who manipulated the DNA samples.[64] In other words, the Supreme Court of Rhode Island found that any statements made by the other analysts about their manipulation of the DNA samples were not testimonial, and that only the analyst's conclusions as to what the DNA profile meant was testimonial. Those opinions were formulated by "independently analyz[ing] all the raw data [produced from the technicians' manipulation of the DNA samples], formulat[ing] the allele table, and then articulat[ing] his own final conclusions concerning the DNA profiles and their corresponding matches."[65] Here, Siddons's participation was more extensive than the analyst in *Lopez*—she was personally involved in creating the DNA profile from the DNA sample, albeit only in the later stages.[66]

Other states have reached the same conclusion that analysts who only manipulate the DNA sample and who state that they have followed standard operating procedures in doing so are not making testimonial statements.[67] And we tend to agree for the same reasons.

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[64] *Id.* at 13 (R.I. 2012).

[65] *Id.*

[66] Because Siddons's participation was more extensive, we need not address the question of whether we would have reached the same result given the facts in *Lopez*.

[67] *Parades v. State*, 462 S.W.3d 510, 513 (Tx. Ct. Crim. App. 2015) (finding that an analyst who did not manipulate the sample to create the DNA profile or supervise the manipulation of the sample was nevertheless permitted to testify because "she was

Here, it cannot be said that any of the nontestifying analysts' manipulation of the samples generated any results or that their entries in the case files were testimonial. That the primary purpose of the analysts' entries in the case files was decidedly not to provide evidence against Chavis or to act as a substitute for trial testimony is shown by the fact that, unlike the statements at issue in *Melendez-Diaz, Bullcoming, Williams*, and *Martin*, they were never offered as evidence at trial. Indeed, from the record we have before us, we cannot even be sure what the statements were. We can only infer that the nontestifying analysts' statements concerned whether they followed standard operating procedures. Such statements—i.e., that they examined and manipulated the DNA swabs in a particular manner—did not provide testimony *against* Chavis. And under the Confrontation Clause, it should be remembered, the accused enjoys the right "to be confronted with the witnesses *against* him."[68]

Nor would the entries have been offered to show that Chavis committed an act that was an element of the crimes with which Chavis was charged. Although the DNA profile that was the end result of all the analysts' combined work was offered to prove the identity of the burglar at 61 Fairway Road, the intermediary

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responsible for compiling the data generated by the various instruments and reaching the ultimate conclusion); *State v. Med. Eagle*, 835 N.W.2d 886, 899 (S.D. 2013) (allowing testimony from an analyst because she "independently reviewed, analyzed, and compared the data obtained during the . . . testing").

[68] U.S. Const. amend. VI (emphasis added).

steps taken do not themselves prove—or aim to prove—anything. In short, we are unable to identify a statement made by any of the nontestifying analysts that can fairly be characterized as testimonial. Therefore, Chavis's Confrontation Clause claim fails.

This is not to say that the statements of the nontestifying analysts were irrelevant to the Siddons's opinion. To the contrary, Siddons acknowledged that the other analysts' adherence to standard operating procedures and their entries in the case files to that effect were essential to her conclusion. But just because a declarant makes an out-of-court statement that may have some relevance to a fact at issue in a criminal trial does not make that declarant a "witness[] against" the defendant within the meaning of the Sixth Amendment. In this regard, Chavis might have challenged Siddons's opinion or testimony on the grounds that they lacked an adequate foundation because of her lack of personal involvement in the early stages of the testing process or that Siddons's reliance on information by the nontestifying analysts was improper under D.R.E. 703.[69] In that case, the trial court would have been free to assess the impact and fairness of allowing Siddons to offer her report and opinion in the absence of testimony from the other analysts. But Chavis chose not to challenge Siddons's report or

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[69] *See* D.R.E. 602 ("A witness may testify to a matter only if evidence is introduced sufficient to support a finding that the witness has personal knowledge of the matter.").

testimony on these evidentiary grounds, and therefore we need not address them.

C. The Superior Court's rejection of Chavis's chain-of-custody argument was not an abuse of discretion.

Chavis also argues that the absence of testimony from all the Bode analysts who participated in the DNA testing left a fatal gap in the chain of custody of the DNA swabs and, for that reason, the DNA evidence was not properly authenticated under D.R.E. 901.[70] In making this argument, Chavis relies heavily upon 10 *Del. C.* 4331 and its application in *Milligan v. State.*[71]

To be sure, 10 *Del. C.* § 4331 is entitled "Chain of physical custody or control" and is found in Chapter 43 of Title 10 of the Delaware Code, a chapter entitled "Evidence and Witnesses." And § 4331 provides that the personal appearance of a person who "actually touche[s] a tested substance and not merely the outer sealed package in which the substance was placed by law enforcement agency,"[72] may be unnecessary to establish chain of custody if that person signs a statement meeting certain requirements. Here, the State offered no such statement and, Chavis claims, its

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[70] Under D.R.E. 901(a), "[t]o satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is."

[71] 116 A.3d 1232 (Del. 2015).

[72] 10 *Del. C.* § 4331(1)(c).

failure to do so warranted exclusion of the DNA evidence. But § 4331 by its explicit terms is applicable "[i]n the context of controlled substances,"[73] not DNA evidence.

Chavis tries to skirt this limitation by noting that, in *Milligan v. State*, "this Court considered § 4331 applicable to a case involving driving under the influence."[74] But Chavis's reliance on *Milligan* is equally misplaced, because the chain-of-custody section of the DUI statute under which Milligan was prosecuted expressly incorporates "the same procedures outlined in § 4331(3) of Title 10."[75]

Chavis also points to our consideration of § 4331 in connection with gunshot residue evidence in *McNally v. State*.[76] Yet nowhere in *McNally* did we even hint that § 4331 had some application beyond the controlled substance context. Rather, we merely remarked that the State did not have the discretion to ignore subpoenas issued under 10 *Del. C.* § 4332—a statute that is not limited to the controlled-substance context. Moreover, we concluded in *McNally* that it was not an abuse of discretion for the Superior Court to have admitted the challenged evidence without the testimony of an employee at the testing laboratory who handled the evidence.

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[73] 10 *Del. C.* § 4331.

[74] Answering Br. at 17.

[75] 21 *Del. C.* § 4177(h)(3).

[76] 980 A.2d 364 (Del. 2009).

"Absent an abuse of discretion, breaks in the chain of custody go to the weight rather than the admissibility of the evidence."[77] Indeed, "[w]e have never interpreted [our chain-of-custody] standard as requiring the State to produce evidence as to every link in the chain of custody. Rather, the State must simply demonstrate an orderly process from which the trier of fact can conclude that it is improbable that the original item has been tampered with or exchanged."[78] Here, the State offered considerable live testimony on the chain of custody within the police department,[79] and Siddons, as mentioned, offered credible testimony about the chain of custody at Bode. Simply because certain testimony is insufficient to vindicate a defendant's rights under the Confrontation Clause does not mean that the State has failed to meet its burden under D.R.E. 901 to show that "there is a reasonable probability that the evidence offered is what its proponent claims it to be."[80] We conclude that the Superior Court did not abuse its discretion by rejecting Chavis's chain-of-custody argument.

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[77] *McNally*, 980 A.2d at 371.

[78] *Demby v. State*, 695 A.2d 1127, 1131 (Del. 1997).

[79] App. to Answering Br. at B28-29, B37, B20.

[80] *McNally*, 980 A.2d at 370.

D. The other evidence linking Chavis to the burglary renders *Monroe* inapposite.

Chavis also claims that the evidence at trial was insufficient to support his burglary conviction, relying on our decision in *Monroe v. State*.[81] In *Monroe*, we analyzed an insufficiency-of-evidence claim where the sole evidence of identity was the defendant's fingerprints on the outside of a business's front door. We held that "the range of abundant, innocent explanations for the presence of Monroe's prints on the plexiglass shards is too vast for any rational trier of fact to have found beyond a reasonable doubt an essential element of both charged offenses—namely, identity."[82] Chavis argues that

> "[t]he State presented no evidence that Chavis ever entered the apartment at 61 Fairway Road [or] . . . that Chavis was even present when the burglary at issue was committed . . . [and] rel[ied] solely on DNA evidence to establish identification as to the alleged burglary."[83]

The evidence presented in this case is readily distinguishable from the facts in *Monroe.* Contrary to the Chavis's assertions, the DNA was *not* "the only evidence linking Chavis to the 61 Fairway Road burglary."[84] Among other things, the State produced

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[81] 652 A.2d 560 (Del. 1995).

[82] *Monroe*, 652 A.2d at 567 (internal quotation marks omitted).

[83] Opening Br. at 20.

[84] *Id.* at 6.

evidence that Chavis owned clothing that appeared to match the clothing of the suspect depicted in the numerous photographs. The suspect was seen peeping into ground-floor apartments on more than one occasion, and the apartment at 61 Fairway Road was on the ground floor. More to the point, several surveillance photographs depicting the burglary suspect who resembled Chavis were introduced into evidence. Therefore, Chavis's argument under *Monroe* fails.

III. CONCLUSION

For the foregoing reasons, we AFFIRM the Superior Court's judgment of conviction.

APPENDIX B

IN THE SUPERIOR COURT OF
THE STATE OF DELAWARE

IN AND FOR NEW CASTLE COUNTY

STATE OF DELAWARE	)	I.D. NO. 1701001697
v.	)	I.D. NO. 1701002608
DAKAI CHAVIS,	)	
Defendant.	)	

BEFORE: HONORABLE CHARLES E. BUTLER, J.

APPEARANCES:

NICHOLE WHETHAM WARNER, ESQ.
KELLY HICKS-SHERIDAN, ESQ.
Deputy Attorneys General
For the State

JOHN KIRK, ESQ.
ROBERT M. GOFF, JR., ESQ.
For the Defendant

MOTION IN LIMINE TRANSCRIPT
APRIL 13, 2018

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[39] THE COURT: So this is the State's motion in limine to admit results of the DNA analysis through the testimony of Sarah Siddons. The Court is

going to grant the State's motion in limine to admit the testimony.

And I'll just make a couple of comments. In my view, on balance, the testimony of Siddons is the testimony that is testimonial in nature. I don't believe that the functions of the functionaries that prepared the sample were testimonial statements, so I don't think that the [40] right of confrontation is abused by their not giving testimony in the case. The defendant's right to confront and cross-examine is safeguarded by the testimony of his accuser, which is Siddons. So I don't find a confrontation clause problem.

And I would postscript, I've read carefully the briefs by both sides. They were both very well prepared. They accurately and adequately exposed and demonstrated the positions of both sides. So to the extent that a Judge does that, I would incorporate the arguments made by the State, which I thought were really superior.

As to the chain of custody, the chain, as we know, does not suffer from the same – I shouldn't say suffer. It does not have to adhere to the same rigidity that a *Crawford* analysis would require. It is enough if the State can establish within a reasonable certainty that the evidence analyzed is connected to the crime scene and the defendant.

From what I've seen, assuming that those officers that first took the evidence testify, the chain is not really a problem here. Again, we didn't get into it too much with the foundational [41] requirements, but the

Court has gone through this in some detail on a number of occasions.

The one that jumps out to me is *Trioche v. State*, but certainly there's *Whitfield v. State* and a number of other cases. The parties, obviously, understand that question, and I do not believe that the testimony of the person who separated the DNA from the swab or otherwise acted inside the lab is essential to the chain, on the assumption that, assuming Siddons testifies pursuant to the proffer made in her affidavit that she is familiar with these processes and procedures, and she can testify and identify who did what. That will satisfy the chain of custody requirement.

So the State's motion is granted. And the Court is in recess. And may I say to both counsel, you didn't have a winning hand here. You did a great job. State, excellent presentation. Thank you.

MS. WARNER: Thank you, Your Honor.

THE COURT: We are in recess.

APPENDIX C

IN THE SUPERIOR COURT
FOR THE STATE OF DELAWARE

STATE OF DELAWARE,	)	
	)	
v.	)	**ID. Nos.** 1701001697 &
DAKAI CHAVIS	)	1701002608
Defendant.	)	
	)	

AFFIDAVIT

I, Sarah Siddons, do solemnly swear that the information in this Affidavit is true and accurate, and submit the following:

1. I earned my Bachelor's of Science degree in Forensic Science, with a concentration in Biology, from Penn State University. After obtaining that degree, I worked at Penn State University as a Teacher's Assistant, helping to teach a Trace Evidence class. I began working at Bode Cellmark Forensics ("Bode") in 2014. I am currently an Analyst II at Bode. In addition to my degree and experience, I complete eight (8) hours of continuing education per year.

2. Bode Cellmark Forensics laboratory in Lorton, Virginia is proficiency tested every six (6) months. If the analyst were to receive an "unsatisfactory" mark, then the analyst would stop work immediately and undergo mandatory training before a re-test was successfully completed.

3. Bode analyzes evidence and reference samples in an effort to obtain DNA profiles.

4. An "evidence sample" means that the evidence was collected as part of a criminal investigation. The mode of collection in this case was cotton swab.

5. The evidence sample in this case came from New Castle County Police Department and arrived at Bode via FedEx on November 22, 2016.

6. "Reference sample" refers to a sample taken from a known person. The reference sample profile is then compared to the evidence sample profile, if one was obtained.

7. The reference sample in this case came from New Castle County Police Department and arrived at Bode via FedEx on January 16, 2017.

8. I am the analyst who generated and manually confirmed the DNA profiles obtained from both the evidence sample and the reference sample in this case.

9. The additional analysts at Bode who handled the samples did not conduct a test that generated any data or results and each step taken before I began working with the samples was preparatory in nature.

10. If the samples were mishandled or tampered with, the DNA profile could degrade, or additional DNA profiles could have been found.

11. In this case, neither DNA profile showed signs degradation and each sample yielded a single source DNA profile.

12. Bode would not test a sample that showed evidence of tampering and/or which had a broken seal.

13. The attached info-graphic called "A. Profile of Suspect's Sample (Summary of Lab Process)" describes the DNA process used at Bode. Using the language from the info-graphic the following describes what happened to the Evidence Sample in this case (*note that the technician numbers have been removed because the info-graphic did not account for all Bode analysts*):

1. Evidence Examination

11/22/16 Alyssa Morris receives the FedEx package and places the evidence into a secure evidence room.

Joseph Hufnagel transferred the sample to Rachel Aponte.

Rachel Aponte retrieves the samples from the evidence room and takes them into a lab where she cuts the swabs lengthwise. Aponte then places the swab pieces into tubes and places the tubes into a secure evidence room inside the lab.

2. Extraction

Kelsey Powell (Dawson) performs the step called "extraction." Powell retrieves the sample from the secure evidence room and adds chemicals to the test tubes which release the DNA from the swab. The tubes which now have chemicals in them are then incubated for one (1) hour, and next Powell places a tray of

tubes onto a centrifuge. The centrifuge separates the liquid, which now contains DNA if the original sample in fact contained DNA, from the cotton swab. The cotton swabs are discarded once the separation is complete. Now, the tubes only have liquid in them, the liquid consists of everything that was on the swab plus reagents. Finally, Powell places the tubes into a refrigerator onside the lab.

Douglas Ryan retrieves the samples from the refrigerator and places the tubes onto a robot. The robot adds reagents to the samples in order to separate the DNA from everything else that was in the tube. The robot next places the samples into a tray. The tray is then sealed, the wells are checked for fullness, and the tray now goes into a freezer.

3. Quantification

I, Sarah Siddons, then perform the step called "quanting." I add chemicals to the samples in the tray, then place the tray onto a machine which measures the amount of DNA in each sample. In this case, only one (1) of the evidence samples provided by NCCPD had enough DNA to allow for testing.

After quanting, Douglas Ryan placed the tray onto a machine that places the samples back into tubes.

After quanting, some samples require "concentration." In this case, the evidence sample did require concentration and I performed that task. The liquid was run through

a filter which collected the DNA. The now filtered, or concentrated, material was placed into a freezer.

4. Amplification

Once the DNA is concentrated, it is then amplified. This step is done by placing the sample into a machine which changes the temperature of the sample; this causes millions of copies of the DNA to be made. I conducted the "Amplification," for the evidence sample in this case.

5. Electrophoresis

Once the sample was amplified, I placed it into a tray which was then placed onto the Genetic Analyzer, the machine which actually creates the DNA profiles.

6. Report

Once the Genetic Analyzer produced a profile from the evidence sample, I pulled up the profile and confirmed that the profile passed, or was satisfactorily readable. The profile created from the evidence sample passed and I entered it into a local database.

14. The process for the reference sample is similar to that for the evidence sample; however, because of the much higher likelihood of obtaining DNA from a reference sample, some steps are not necessary. The following details what happened to the reference sample at Bode.

1. Evidence Examination

On January 16, 2017, Jesus Aponte received the FedEx delivery at Bode. Jesus Aponte is on the Facilities Team and he delivered it to Alyssa Morris, on the Evidence Team, within minutes. Alyssa Morris then placed the sample into the evidence room.

Feng Chen retrieves the sample from the evidence room and cuts the swabs and places them into a tray. The tray then goes into the evidence room inside the lab. This is different from the evidence sample, which was placed into a test tube.

2. Extraction

Vanessa Sufrin took the sample out of the evidence room. Reagents were added to the tray, and the tray was incubated for one (1) hour. The liquid in the tray was then transferred to a new tray. The new tray was placed onto a machine which separates the DNA from everything else in the liquid. The swab cuttings are discarded and the tray with the DNA is placed into the freezer.

3. Quantification

I performed the quantification (described above).

4. Amplification

I performed amplification (described above)

5. Electrophoresis

After amplification I placed the sample onto a tray which was then placed onto the Genetic Analyzer.

The Genetic Analyzer produced a DNA profile.

6. Report

Once the Genetic Analyzer produced a profile from the reference sample, I pulled up the profile and confirmed that the profile passed, or was satisfactorily readable. The profile created from the reference sample passed and I entered it into a local database.

The database reported a 'hit' or a 'match.'

Once I received the notice of a hit, I reviewed both profiles and confirmed the computer's reported match.

15. The evidence profile and reference profile in this case matched at all fifteen (15) loci analyzed at Bode.

16. Once I confirmed the hit, I reviewed the case files for both the evidence sample and the reference sample. I reviewed each case file and confirmed that Standard Operating Procedures were followed, and they were.

17. Next, I authored my report. My expert opinion contained in my report is that the evidence and the reference DNA profiles match, and the probability of randomly selecting an unrelated individual with this DNA profile at 15 out of 15 loci tested

is approximately: 1 in 430 quintillion in the US Caucasian population; 1 in 26 quintillion in the US African American population, and; 1 in 450 quintillion in the US Hispanic population.

18. My opinion is based on my training and experience and is expressed to a reasonable degree of scientific certainty.

19. At the time the other analysts performed the earlier steps in order to prepare the samples for analysis, they would not know who the sample belonged to.

20. My report was reviewed by two other people before issuing the final report. One person performed technical review on the processes, the data, and my interpretation. A second person performed administrative review on grammar, accuracy, signature, accurate dates, etc.

/s/ Sarah Siddons
Sarah Siddons, DNA Analyst II
Bode Cellmark Forensics

/s/ Karen Hope Bennett
NOTARY PUBLIC

Sworn to or affirmed before me this 12th day of February, 2018. My commission expires 5/31/2019.

[Notary Stamp]

APPENDIX D

IN THE SUPERIOR COURT OF
THE STATE OF DELAWARE
IN AND FOR NEW CASTLE COUNTY

STATE OF DELAWARE,	:	Cr. ID No.
v.	:	1701001697
DAKAI CHAVIS,	:	
Defendant.	:	

BEFORE: HONORABLE PAUL R. WALLACE, J, and jury

APPEARANCES:

KELLY H. SHERIDAN, ESQ.
NICHOLE T. WHETHAM WARNER, ESQ.
Deputy Attorneys General
for the State

ROBERT M. GOFF, JR., ESQ.
JOHN F. KIRK, IV, ESQ.
Assistant Public Defenders
for the Defendant

TRIAL TRANSCRIPT
June 21, 2018

* * *

[198] A. We received two items, and they were each individually packaged in their own envelope labeled with their specific case number and a unique

identifier. And they each have their description on the outside as well.

Q. Do you recall the description of the unknown sample in this case?

A. We had one sample that was swab No. 1, the handprint, window POE. And then we have swab No. 2, the handprint window POE.

* * *

Q. Do you recall the person that the reference sample with regard to your report came from?

A. Yes. It was from Dakai Chavis.

* * *

[199] Q. How were the samples processed once they got there?

A. A small portion of each sample was cut. The swab in this case was cut and put into a tube. Chemicals were added to that tube which just breaks apart the cell and it's going to release all the DNA. Each sample will have its DNA measured because we would like to know the concentration of that sample. From there we take the DNA extract and make millions of copies. Those copies are going to go into a machine that reads it, and it's going to generate a DNA profile.

* * *

[201] Q. What were your results?

A. For the evidence sample I received, I obtained a full single source male profile. And also for the reference sample a full single source male profile.

Q. And, again, single source means?

A. From one person.

Q. And that was with both the evidence and the reference; correct?

A. Correct.

Q. What were you able to conclude from your results?

A. That the male profile obtained from the evidence sample was a match to the male profile obtained from the reference sample.

* * *

[204] Q. I'm going to show you what has already been marked State's 26. Can you tell me if you recognize it?

A. Yes. This is the report that I wrote.

* * *

[212] Q. Okay. Ms. Siddons, who is Rachel Aponte, last name A-P-O-N-T-E?

A. She was a sampling technician.

Q. And who is Feng Chen, F-E-N-G, last name C-H-E-N?

A. She was also a sampling technician.

Q. At Bode laboratories?

A. Yes. Sorry.

Q. Are they still employed there?

A. Neither of them work there anymore.

Q. Okay. On December 6, 2016, Ms. Aponte noted that she received Bode sample 8144 for the stated purpose of analysis; is that correct?

A. Yes.

Q. And sample 8144 is the designation that you gave the handprint sample; right?

A. Yes. That was handprint, the swab No. 1.

Q. Okay. And then on December 12, 2016, Ms. Aponte had that sample, and she cut a – she cut some of that sample. She cut half of each swab and combined a 50 percent solution; is that right?

[213] A. Yes, that is correct.

Q. Okay. So Ms. Aponte on December 12th, she was physically manipulating that sample; right?

A. Yes. She physically cut the sample to put into a tube.

Q. Okay. And Ms. Chen, it is Ms.; right?

A. Yeah.

Q. Ms. Chen, on January 27th of 2017, she received Bode sample 0383. That was the sample that came back as a profile for Mr. Chavis; is that correct?

A. Yes, that's correct.

Q. You received that sample also for the stated purpose of analysis; correct?

A. Yes.

Q. And on January 31st, 2017, Ms. Chen cut .5 – well, the exact language and science is not my thing, so I'm going to read it precisely so that I get it correct. Ms. Chen, it says, cut 0.5CM two of filter paper and then in parentheses, 15 percent staining, end parentheses; is that right?

A. That is correct.

Q. Is it accurate to think of the whole process kind of like an assembly line, and they're in the middle of the assembly line doing their thing and you're at the end doing – the buck stops with you?

A. Yeah.

Q. Is that accurate?

A. Yes, that's a good way to look at it.

Q. Okay. Now, how is it that we can safeguard, though, that with Ms. Chen and Ms. Aponte's physical manipulation of the DNA that nothing happened there in those processes to create a problem, contaminate

the [215] samples or anything like that when it eventually comes to you?

A. Since we are a very ethical lab, if something were to have happened where they thought contamination could have occurred, they would have reported that event somewhere. They would have put it on that sheet that you're looking at that shows how much they cut. They would have put it in a separate case note. There would be documentation somewhere if they felt there was any sort of contamination.

APPENDIX E

[LOGO] **Bode Cellmark**
FORENSICS
LabCorp Specialty Testing Group
10430 Furnace Road, Suite 107
Lorton, VA 22079
Phone: 703-646-9740

Supplemental Forensic Case Report
July 31, 2017

To: New Castle County Police Department
3601 N Dupont Hwy
New Castle, DE 19720

Bode Cellmark Case #: BHJ1611-8144, -8145, BHJ1701-0383
Agency Case #: 32-16-108025
Cross-Reference Agency Case #: 32-16-115071

Suspect: Dakai D Chavis

List of Evidence Received on November 22, 2016 for possible DNA analysis:

Bode Cellmark Sample #	**BodeHITS #**	**Description**
BHJ1611-8144-E01	2016-15345/1	wet/dry swab # 1 hand print on window POE
BHJ1611-8145-E01	2016-15346/1	wet/dry swab # 2 hand print on window POE

List of Evidence Received on January 16, 2017 for possible DNA analysis:

Bode Cellmark Sample #	BodeHITS #	Description
BHJ1701-0383-R01	2017-00237/1	Dakai D Chavis [Reference Buccal Collector]

STR PROCESSING, RESULTS, CONCLUSIONS, AND STATISTICS:

The evidence was processed for DNA typing using the Applied Biosystems AmpFLSTR® Identifiler® Plus kit.

1. A DNA profile was previously obtained from sample BHJ1701-0383-R01 (Dakai D Chavis).

2. The DNA profile previously obtained from sample BHJ1611-8144-E01 is consistent with a male contributor.

   This DNA profile matches the DNA profile obtained from sample BHJ1701-0383-R01 (Dakai D Chavis).

   The probability of randomly selecting an unrelated individual with this DNA profile at 15 of 15 loci tested is approximately:

   1 in 430 quintillion in the US Caucasian population

   1 in 26 quintillion in the US African American population

1 in 450 quintillion in the US Hispanic population

3. Sample BHJ1611-8145-E01 was previously screened for human DNA. The results were below the limit of detection; therefore, the sample was not processed further.

See **Table 1** for summary of alleles reported for each sample.

Notes:

1. Testing performed for this case is in compliance with accredited procedures under the laboratory's ISO/IEC 17025 accreditation issued by ASCLD/LAB. Refer to certificate and scope of accreditation for certificate number ALI-231-T.
2. Any reference to body fluids in evidence descriptions are based on the written descriptions of the samples by the submitting agency.
3. The DNA extracts and evidence will be returned to the submitting agency.
4. A supplemental report was issued due to a comparison request by the New Castle County Police Department. See original reports dated December 21, 2016 and February 16, 2017.

Report submitted by,

/s/ Sarah Siddons
Sarah Siddons, BS
DNA Analyst II

Table 1. Analysis of Short Tandem Repeat Loci

Locus	BHJ1611-8144-E01a1	BHJ1701-0383-R01a1 (Dakai D Chavis)
D8S1179	12, 14	12, 14
D21S11	28, 30.2	28, 30.2
D7S820	10, 10	10, 10
CSF1PO	11, 11	11, 11
D3S1358	14, 17	14, 17
TH01	6, 7	6, 7
D13S317	11, 12	11, 12
D16S539	11, 11	11, 11
D2S1338	18, 21	18, 21
D19S433	13, 13	13, 13
vWA	16, 20	16, 20
TPOX	8, 9	8,9
D18S51	{15, 18}	15, 18
Amelogenin	X, Y	X, Y
D5S818	12, 13	12, 13
FGA	{19, 22}	19, 22

{} = Imbalanced Alleles