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STATE OF CONNECTICUT *v.* EUGENE L. WALKER
(SC 20101)

Robinson, C. J., and Palmer, McDonald,
D'Auria, Mullins and Ecker, Js.

Syllabus

Convicted of the crimes of felony murder, manslaughter in the first degree with a firearm, attempt to commit robbery in the first degree, and criminal possession of a pistol or revolver in connection with the shooting death of the victim, the defendant appealed to the Appellate Court, claiming that his federal constitutional right to confront the witnesses against him had been violated by the admission of certain evidence connecting him to the shooting. At trial, a supervisory forensic analyst employed by the state, D, testified that the defendant was a major contributor to the DNA on a bandana that had been found at the crime scene and that allegedly had been worn by the person who shot the victim. In conjunction with D's testimony, the state also introduced into evidence a written report signed by D containing specific numerical DNA profiles from the bandana and a postarrest buccal swab of the defendant's mouth that had previously been conducted pursuant to a court order. D testified that, although she analyzed the DNA on the bandana and conducted the ultimate comparison, the numerical DNA profile from the defendant's buccal swab had been generated by another forensic analyst or analysts. Although D had neither participated in nor observed the analysis of the defendant's buccal swab, D testified that she had received paperwork showing that standard laboratory procedures had been followed and explicitly swore to the accuracy of the resulting numerical DNA profile. On appeal to the Appellate Court, the defendant claimed that the evidence regarding the numerical DNA profile that had been presented through D contained testimonial hearsay and that he had been deprived of his right to confrontation because the state had failed to call a witness with personal knowledge of the testing of the buccal swab. The Appellate Court rejected that claim, concluding that, because D had conducted the ultimate analysis and made the resulting findings that connected the defendant's DNA to the bandana, and because D testified and was subjected to cross-examination at trial, the defendant's right to confrontation had not been violated. Although the Appellate Court vacated the defendant's manslaughter conviction on a separate ground, it affirmed the trial court's judgment in all other respects. On the granting of certification, the defendant appealed to this court, claiming that the introduction of evidence concerning his numerical DNA profile through D's testimony violated his right to confrontation. *Held* that the Appellate Court incorrectly concluded that the admission of D's testimony concerning the numerical DNA profile from the defendant's buccal swab did not violate the defendant's right to confrontation, and, because the state did not advance a claim of harmless error, the defendant was entitled to a new trial: D's testimony, which did not consist merely of her own independent opinion, introduced to the jury the other analyst's or analysts' out-of-court statements about the defendant's numerical DNA profile, as D had explicitly referred to, relied on, and vouched for the accuracy of work by the other analyst or analysts that she did not perform or otherwise observe, and such evidence constituted hearsay in light of the state's concession that it was offered to prove the truth of the matter asserted; moreover, the evidence relating to the defendant's numerical DNA profile was testimonial in nature because it was created for the primary purpose of establishing the defendant's guilt at trial, as the buccal swab was performed after the defendant had been arrested and charged with various crimes, was obtained by court order for comparison with any DNA found on the bandana discovered at the crime scene, and was processed in such a way that the evidentiary purpose of the buccal swab analysis would have been readily apparent to the analyst or analysts who conducted it; furthermore, although all analysts who participate in the process of generating a DNA profile need not testify, the state must call as a

witness an analyst with personal knowledge concerning the accuracy of a numerical DNA profile, and, because D simply relayed to the jury the DNA profile that had been provided to her by the analyst or analysts and did not possess such knowledge with respect to the processing of the defendant's buccal swab, D was not a sufficient substitute witness for purposes of the right to confrontation.

Argued January 23—officially released August 13, 2019

Procedural History

Substitute information charging the defendant with the crimes of felony murder, manslaughter in the first degree with a firearm, attempt to commit robbery in the first degree, conspiracy to commit robbery in the first degree, and criminal possession of a pistol or revolver, brought to the Superior Court in the judicial district of Ansonia-Milford and tried to the jury before *Markle, J.*; verdict and judgment of guilty of felony murder, manslaughter in the first degree with a firearm, attempt to commit robbery in the first degree, and criminal possession of a pistol or revolver, from which the defendant appealed to the Appellate Court, *Alvord, Kahn and Bear, Js.*, which affirmed in part and reversed in part the judgment of the trial court and remanded the case for resentencing, and the defendant, on the granting of certification, appealed to this court. *Reversed in part; new trial.*

John L. Cordani, Jr., assigned counsel, for the appellant (defendant).

Timothy J. Sugrue, assistant state's attorney, with whom, on the brief, were *Margaret E. Kelley*, state's attorney, *Cornelius Kelly*, senior assistant state's attorney, and *Rocco A. Chiarenza*, assistant state's attorney, for the appellee (state).

Opinion

MULLINS, J. The sole issue in this certified appeal is whether the Appellate Court correctly concluded that the defendant, Eugene L. Walker, failed to establish a violation of his right under the sixth amendment to the United States constitution to confront witnesses against him. Specifically, the defendant asserts that the state violated his right to confrontation by introducing evidence at trial that his DNA profile, which had been generated from a postarrest buccal swab, matched the DNA found on evidence from the crime scene without calling as a witness the analyst who processed the buccal swab and generated the DNA profile used in that comparison.

The defendant's DNA profile was created after his arrest in aid of an ongoing criminal investigation and under circumstances objectively indicating that it was created for the primary purpose of being used as evidence in the defendant's criminal case. In addition, the sole analyst who testified about the DNA evidence at trial neither performed nor observed the analysis of the buccal swab that produced the DNA profile and, therefore, was not a sufficient substitute witness to satisfy the defendant's right to confrontation. We conclude that, under the specific circumstances of this case, the defendant has established a violation of his right to confrontation. As a result, we reverse in part the judgment of the Appellate Court.

The Appellate Court's decision sets forth the following relevant facts, which the jury reasonably could have found. "On the night of October 28, 2012, Anthony Adams, the codefendant in this consolidated trial, telephoned Alexis Morrison to ask if she knew 'somebody that could sell him some weed.' Morrison called Neville Malacai Registe, the victim, to arrange for him to meet with Adams in the parking lot of her West Haven residence. When the victim received Morrison's telephone call, he was with his friend, Stephon Green, at his mother's home in New Haven. After some time, the victim and Green left in the victim's Acura. As they approached the designated parking lot, the victim called Morrison. Morrison then telephoned Adams to tell him that the victim 'was there.' Adams replied that he had already left because the victim 'took too long . . . and that Day-Day and GZ [were] going to get the weed.' 'Day-Day' and 'GZ' were nicknames for Daquane Adams, who is Anthony Adams' cousin, and the defendant, respectively, both of whom Morrison knew.

"When the victim and Green arrived in the parking lot, the victim backed his car into a parking space. Green, who was rolling a marijuana joint in the front passenger seat, looked up and noticed two men approaching the Acura. He returned his attention to his task, and the victim opened the driver's door to talk to

one of the men. [That] man, who was wearing a black bandana and who was later identified as the defendant, held a revolver inside the car and said, ‘run it,’ meaning, ‘give me it. It’s a robbery’ A physical altercation ensued. The second man, later identified as Daquane Adams, stepped away from the Acura and placed a cell phone call to someone. A Toyota arrived, and a third man exited that car and asked the defendant for the gun.¹ The struggle over the gun continued inside the victim’s Acura, and someone knocked Green into the backseat. Daquane Adams and the third man pulled the defendant out of the [Acura] and, as Green was climbing back into the front passenger seat, a shot was fired. Green heard the victim say, ‘oh, shit,’ and then heard a second shot.

“The defendant, Daquane Adams, and the third man got in the Toyota and drove toward the parking lot exit. With the victim slumped over in the driver’s seat, Green pursued the Toyota. He caught up to it at the end of the street and rammed the Acura into the back of the Toyota. The victim’s Acura was disabled, but the Toyota was able to be driven away. The victim died of a gunshot wound to his head.” (Footnote in original.) *State v. Walker*, 180 Conn. App. 291, 296–97, 183 A.3d 1 (2018).

The record reveals the following additional relevant facts and procedural history. In December, 2012, the defendant was arrested and charged with felony murder in violation of General Statutes (Rev. to 2013) § 53a-54c, conspiracy to commit robbery in the first degree in violation of General Statutes §§ 53a-48 (a) and 53a-134, and attempt to commit robbery in the first degree in violation of General Statutes §§ 53a-49 (a) (2) and 53a-134 (a) (2). Anthony Adams and Daquane Adams also were arrested in December, 2012, and were subsequently charged with various offenses.

After the defendant’s arrest, the state continued its investigation into the respective roles played by the defendant, Anthony Adams, and Daquane Adams in the shooting. During their initial investigation, the police recovered from the Acura the black bandana that Green identified as having been worn by the man who shot the victim. The police sent the bandana to a laboratory run by the Division of Scientific Services of the Department of Emergency Services and Public Protection to be analyzed for DNA. In June, 2013, the state filed a motion in the present case requesting that the defendant submit to a buccal swab of his mouth² “for purposes of obtaining a DNA sample.” The state argued that the DNA “will be of material aid in determining whether the defendant committed the crime of felony murder.” The court granted the state’s motion, and Tammy Murray, a detective in the West Haven Police Department, took the defendant’s buccal swab on June 19, 2013. Murray also took buccal swabs from Anthony Adams and Daquane Adams.³ Those three buccal swabs, as

well as a sample of the victim's blood, were then sent to the laboratory to be analyzed.

At the laboratory, Heather Degnan, a supervisory forensic analyst, received the three buccal swabs and the victim's blood sample and sent them to the "known processing group"—a group within the laboratory that processes all known DNA samples to be used in comparisons—to be analyzed. The known processing group generated a DNA profile from each sample and provided the profiles to Degnan. Degnan generated DNA profiles from the bandana, which she then compared with the known profiles that had been provided to her. As a result of that comparison, Degnan determined that the defendant was a major contributor to the DNA on the bandana. The victim, Anthony Adams, and Daquane Adams were eliminated as potential contributors. Degnan memorialized her findings in a "DNA Report" dated August 28, 2013 (report).

After Degnan issued her report linking the defendant to the bandana believed to have been worn by the shooter, the state filed an amended substitute information charging the defendant with the additional crimes of manslaughter in the first degree with a firearm in violation of General Statutes §§ 53a-55 (a) (1) and 53a-55a (a), and criminal possession of a pistol or revolver in violation of General Statutes (Rev. to 2013) § 53a-217c (a) (1).

The envelope containing the defendant's buccal swab that Murray submitted to the laboratory was admitted into evidence. A review of that exhibit reveals that the envelope is labeled with the defendant's name, his right thumbprint, and the words "DNA Buccal Swab Kit." The envelope lists "West Haven P.D." as the submitting agency and displays a notation reading "Incident: Homicide." The envelope identifies the defendant's address as the MacDougall-Walker Correctional Institution.

Following Murray's testimony, the state called Degnan to testify. She began by explaining the standard DNA typing techniques used by the laboratory in generating DNA profiles. She testified that the process involves four steps: (1) extracting DNA from the sample and purifying it of contaminants; (2) quantitating the DNA, i.e., determining the amount of DNA that has been extracted; (3) amplifying the DNA using a thermal cycler machine, i.e., creating many copies of different regions of the DNA; and (4) interpreting the data generated from these steps and constructing the numerical DNA profile, which consists of a series of numbers to designate the "alleles."⁴

Degnan further testified about her analysis and findings. Degnan testified that she personally analyzed the bandana using standard DNA typing techniques. She isolated DNA from both sides of the bandana and generated DNA profiles of at least two contributors, a major

contributor and a minor contributor. With respect to the buccal swabs and the victim's blood sample, however, Degnan testified that she did not generate those DNA profiles herself. Degnan explained that the swabs and blood sample were sent to the known processing group, which generated DNA profiles from the samples and then "provided" those profiles to her for comparison with the DNA from the bandana.

Before Degnan testified as to the results of her comparison, defense counsel objected to the admission of this evidence on the ground that Degnan had not been qualified as an expert. During voir dire examinations conducted in the jury's presence, Degnan admitted that she neither participated in the known processing group's analysis of the defendant's buccal swab nor observed the analysis being conducted.

Nonetheless, when asked whether she was "swearing to the accuracy" of the DNA profile provided to her, Degnan responded by saying "[y]es." Degnan further testified that, in addition to the profile itself, the known processing group provided her with "paperwork" indicating that "all of the checkboxes were check[ed]"—that is, that the analyst or analysts who processed the known samples "did it properly, followed standard operating procedures." Degnan confirmed, however, that she "wasn't there" when the known processing group analyzed the defendant's buccal swab.

Ultimately, the trial court overruled the objection and permitted Degnan to testify to the results of her analysis. Degnan testified that, based on her analysis and DNA comparison, the defendant was a major contributor to the DNA found on both sides of the bandana. Degnan's report was admitted into evidence.⁵ In the report, Degnan explained that the buccal swab was analyzed in accordance with standard laboratory procedures. The report also contains a table setting forth the numerical profiles generated from the defendant's buccal swab, the bandana, and the victim's blood sample. On the basis of a comparison of these profiles, Degnan concluded that the defendant "is included as a contributor to the DNA profiles" obtained from the bandana. The report was signed by Degnan and Dahong Sun, a "technical reviewer" who reviewed Degnan's work and confirmed the accuracy of her conclusions. The final page of the report, just above Degnan's and Sun's signatures, provides: "This report reflects the test results, conclusions, interpretations, and/or the findings of the analyst as indicated by their signature below."⁶ No one from the known processing group testified at trial.

The jury found the defendant guilty of felony murder, manslaughter in the first degree with a firearm, attempt to commit robbery in the first degree, and criminal possession of a pistol or revolver.⁷ *State v. Walker*, supra, 180 Conn. App. 297. The court imposed a total effective sentence of forty-five years incarceration to be followed

by ten years of special parole. *Id.*

The defendant then appealed to the Appellate Court, claiming, *inter alia*, that he was deprived of his sixth amendment right to confront witnesses against him because the trial court admitted the evidence of Degnan's comparison without requiring an analyst from the known processing group who generated the known DNA profile used in that comparison to testify. *Id.*, 297–98. The Appellate Court first concluded that, despite the defendant's failure to raise the confrontation clause as an objection at trial, the claim was reviewable under *State v. Golding*, 213 Conn. 233, 239–40, 567 A.2d 823 (1989). *State v. Walker*, *supra*, 180 Conn. App. 301–302.

The Appellate Court further concluded, however, that the defendant's claim failed under *Golding* because the admission of the DNA evidence did not violate his constitutional right to confrontation. *Id.*, 302. The Appellate Court reasoned principally that Degnan, the analyst who “conducted the critical analysis and made the resulting findings” that connected the defendant to the bandana from the crime scene, testified and was available for cross-examination at trial regarding her analysis and findings. *Id.*⁸

Upon our grant of certification to appeal, the defendant claims that the Appellate Court incorrectly concluded that the introduction of the evidence concerning his DNA profile did not violate his confrontation rights.⁹ Because the defendant failed to raise a confrontation clause objection in the trial court, we review this claim pursuant to *Golding*. See, e.g., *State v. Smith*, 289 Conn. 598, 620–21, 960 A.2d 993 (2008). Under *Golding*, “a defendant can prevail on a claim of constitutional error not preserved at trial only if *all* of the following conditions are met: (1) the record is adequate to review the alleged claim of error; (2) the claim is of constitutional magnitude alleging the violation of a fundamental right; (3) the alleged constitutional violation . . . exists and . . . deprived the defendant of a fair trial; and (4) if subject to harmless error analysis, the state has failed to demonstrate harmlessness of the alleged constitutional violation beyond a reasonable doubt.” (Emphasis in original; internal quotation marks omitted.) *State v. Newton*, 330 Conn. 344, 353, 194 A.3d 272 (2018); see also *In re Yasiel R.*, 317 Conn. 773, 781, 120 A.3d 1188 (2015) (modifying third prong of *Golding*).

The first two prongs of *Golding* are satisfied here. The record is adequate for review, and the defendant's claim is of constitutional magnitude because it implicates his sixth amendment right to confrontation. Furthermore, the state does not attempt to meet its burden of establishing that the error was harmless beyond a reasonable doubt. Accordingly, the sole issue in this appeal concerns the third prong of *Golding*—namely, whether the defendant has established a violation of

his sixth amendment confrontation rights.

The defendant claims that his right to confrontation was violated because the DNA profile generated from his postarrest buccal swab and provided to Degnan for use in a comparison was testimonial hearsay, and the analyst who generated the profile was not made available for cross-examination at trial. As support for this claim, the defendant contends that the evidence of his DNA profile was offered for its truth and was generated for the primary purpose of providing evidence against him in his criminal case. In response, the state contends that the evidence admitted concerning Degnan's DNA comparison was neither hearsay nor testimonial in nature. Alternatively, the state contends that, even if the DNA profile were testimonial hearsay, the defendant's right to confrontation was satisfied because he had the opportunity to cross-examine Degnan, who personally processed the bandana and made the comparison, and who was familiar with the laboratory's standard procedures for conducting DNA analyses. We agree with the defendant that, under the circumstances of this case, the admission of the evidence concerning his DNA profile violated his sixth amendment right to confrontation.

The sixth amendment to the United States constitution, applicable to the states through the fourteenth amendment,¹⁰ provides in relevant part: "In all criminal prosecutions, the accused shall enjoy the right . . . to be confronted with the witnesses against him" U.S. Const., amend. VI. "In *Crawford v. Washington*, [541 U.S. 36, 124 S. Ct. 1354, 158 L. Ed. 2d 177 (2004)], the [United States] Supreme Court substantially revised its approach to confrontation clause claims. Under *Crawford*, testimonial hearsay is admissible against a criminal defendant at trial only if the defendant had a prior opportunity for cross-examination and the witness is unavailable to testify at trial. . . . In adopting this 'categorical' approach, the court overturned existing precedent that had applied an 'open-ended balancing [test]' . . . conditioning the admissibility of out-of-court statements on a court's determination of whether the proffered statements bore 'adequate indicia of reliability.' . . . Although *Crawford's* revision of the court's confrontation clause jurisprudence is significant, its rules govern the admissibility only of certain classes of statements, namely, testimonial hearsay." (Citations omitted.) *State v. Buckland*, 313 Conn. 205, 212–13, 96 A.3d 1163 (2014), cert. denied, U.S. , 135 S. Ct. 992, 190 L. Ed. 2d 837 (2015). Accordingly, the threshold inquiries in a confrontation clause analysis "are whether the statement was hearsay, and if so, whether the statement was testimonial in nature" *State v. Smith*, supra, 289 Conn. 618–19. These are questions of law over which our review is plenary. *Id.*, 619.

With these principles in mind, we address the three components of the defendant's confrontation clause

claim: (1) whether the evidence was hearsay, (2) whether the evidence was testimonial, and (3) whether the defendant's cross-examination of Degnan was sufficient to satisfy the confrontation clause.

I

The defendant first contends that the evidence of his known DNA profile, which Degnan testified she utilized in making her comparison to the DNA on the bandana, was hearsay. The defendant notes that Degnan neither participated in nor observed the analysis of his buccal swab that yielded the profile but, instead, relied upon the profile provided to her by the known processing group in conducting her comparison. Therefore, the defendant maintains, Degnan's testimony necessarily introduced the known processing group's hearsay statements about the numerical profile.

In response, the state concedes that the evidence of the defendant's DNA profile was offered for its truth but nonetheless contends that the evidence was not hearsay because Degnan, an expert witness, testified in court to her own independent opinion that the DNA profile was accurate. In other words, the state contends that Degnan's testimony did not introduce any *out-of-court* statements concerning the profile because Degnan adopted any such statements as her own and was cross-examined about them at trial. We agree with the defendant that the evidence of his DNA profile was hearsay.

"Hearsay" is "a statement, *other than one made by the declarant while testifying at the proceeding*, offered in evidence to establish the truth of the matter asserted." (Emphasis added.) Conn. Code Evid. § 8-1 (3). The confrontation clause "does not bar admission of a statement so long as the declarant is present at trial to defend or explain it." *Crawford v. Washington*, *supra*, 541 U.S. 60 n.9.

Because the state concedes that the evidence of the numerical DNA profile generated from the defendant's buccal swab was offered for its truth, the sole issue in our hearsay analysis is whether Degnan's testimony introduced into evidence the known processing group's out-of-court statements about the profile, as the defendant contends, or merely presented her own, independent opinion that the profile provided to her was accurate.

As a general matter, we acknowledge that expert witnesses such as Degnan may base their testimony on information provided to them by other sources without their testimony necessarily being regarded as introducing hearsay. Indeed, § 7-4 (b) of the Connecticut Code of Evidence provides in relevant part: "The facts in the particular case upon which an expert bases an opinion may be those perceived by or made known to the expert at or before the proceeding. The facts need not be

admissible in evidence if of a type customarily relied on by experts in the particular field in forming opinions on the subject. . . .” The “[i]nadmissible facts upon which experts customarily rely in forming opinions can be derived from sources such as conversations, informal opinions, written reports and data compilations.” (Internal quotation marks omitted.) *Milliun v. New Milford Hospital*, 310 Conn. 711, 726, 80 A.3d 887 (2013), quoting Conn. Code Evid. (2009) § 7-4 (b), commentary. Accordingly, “[w]hen the expert witness has consulted numerous sources, and uses that information, together with his own professional knowledge and experience, to arrive at his opinion, *that opinion is regarded as evidence in its own right and not as hearsay in disguise.*” (Emphasis added; internal quotation marks omitted.) *Milliun v. New Milford Hospital*, supra, 726–27.

Nonetheless, the underlying information upon which the expert’s opinion is based may not itself be admitted into evidence for its truth. Indeed, § 7-4 (b) of the Connecticut Code of Evidence further provides in relevant part: “The facts relied on [by the expert] pursuant to this subsection are not substantive evidence, unless otherwise admissible as such evidence.” This language “expressly forbids the facts upon which the expert based his or her opinion *to be admitted for their truth* unless otherwise substantively admissible under other provisions of the Code. Thus, [§ 7-4] (b) does not constitute an exception to the hearsay rule or any other exclusionary provision of the Code.” (Emphasis in original; internal quotation marks omitted.) *Milliun v. New Milford Hospital*, supra, 310 Conn. 726, quoting Conn. Code Evid. (2009) § 7-4 (b), commentary. Accordingly, the testimony of an expert witness improperly introduces hearsay when the out-of-court statements upon which it is based are themselves admitted into evidence to prove the truth of what they assert. See, e.g., *id.*, 728 (observing that physician’s report offered for substantive purposes would be barred if it “include[d] hearsay statements”); *Farrell v. Bass*, 90 Conn. App. 804, 817–19, 879 A.2d 516 (2005) (concluding that trial court properly precluded expert witness from testifying about hearsay contents of article that supported his opinion where article itself was not admitted into evidence).

In criminal cases, the admission of expert testimony that is based upon an out-of-court statement may implicate the confrontation clause if the underlying statement itself is testimonial. Acknowledging these concerns, courts have held that expert witnesses may base their opinions on the testimonial findings of other experts without violating the confrontation clause if those underlying findings are not themselves put before the jury. See *Williams v. Illinois*, 567 U.S. 50, 71, 132 S. Ct. 2221, 183 L. Ed. 2d 89 (2012) (plurality opinion) (no confrontation clause violation where testifying expert “made no . . . reference to the [nontestifying

analyst's] report, which was not admitted into evidence and was not seen by the trier of fact," and did not testify to "anything that was done at the [nontestifying expert's] lab [or] vouch for the quality of [the] work"); *Bullcoming v. New Mexico*, 564 U.S. 647, 673, 131 S. Ct. 2705, 180 L. Ed. 2d 610 (2011) (Sotomayor, J., concurring in part) (concluding that admission of testimonial report violated confrontation clause but noting that "[w]e would face a different question if asked to determine the constitutionality of allowing an expert witness to discuss others' testimonial statements if the testimonial statements were not themselves admitted as evidence"); *United States v. Locascio*, 6 F.3d 924, 937–38 (2d Cir. 1993) (expert's opinion that was based upon information gleaned from "countless nameless informers and countless tapes *not in evidence*" did not violate hearsay bar or confrontation clause [emphasis added; internal quotation marks omitted]), cert. denied, 511 U.S. 1070, 114 S. Ct. 1645, 128 L. Ed. 2d 365 (1994); *State v. Griep*, 361 Wis. 2d 657, 682–83, 863 N.W.2d 567 (2015) (no confrontation clause violation where nontestifying analyst's "testimonial statements do not come into evidence, i.e., where the testimonial forensic report is not admitted and the expert witness who testifies at trial gives his or her independent opinion after review of laboratory data"), cert. denied, U.S. , 136 S. Ct. 793, 193 L. Ed. 2d 709 (2016); *Paredes v. State*, 439 S.W.3d 522, 526 (Tex. App. 2014) ("a testifying expert may rely on unadmitted data generated by a [nontestifying] analyst . . . without violating the [c]onfrontation [c]lause"), aff'd, 462 S.W.3d 510 (Tex.), cert. denied, U.S. , 136 S. Ct. 483, 193 L. Ed. 2d 354 (2015).

On the other hand, where the testifying expert explicitly refers to, relies on, or vouches for the accuracy of the other expert's findings, the testifying expert has introduced out-of-court statements that, if offered for their truth and are testimonial in nature, are subject to the confrontation clause. As the District of Columbia Court of Appeals explained in *Young v. United States*, 63 A.3d 1033 (D.C. 2013), a testifying expert "relayed hearsay" when she testified "that she matched a DNA profile derived from [the defendant's] buccal swab with male DNA profiles derived from [the victim's] vaginal swabs and her discarded tissue. Because [the testifying expert] was not personally involved in the process that generated the [DNA] profiles, she had no personal knowledge of how or from what sources the profiles were produced. She was relaying, for their truth, the substance of out-of-court assertions by absent lab technicians that, employing certain procedures, they derived the profiles from the evidence furnished by [the victim] or [the defendant]. Those assertions were hearsay." *Id.*, 1045; see also *United States v. Pablo*, 696 F.3d 1280, 1288 (10th Cir. 2012) ("[i]f an expert simply parrots another individual's out-of-court statement,

rather than conveying an independent judgment that only incidentally discloses the statement to assist the jury in evaluating the expert's opinion, then the expert is, in effect, disclosing that out-of-court statement for its substantive truth; the expert thereby becomes little more than a backdoor conduit for an otherwise inadmissible statement"); *United States v. Dukagjini*, 326 F.3d 45, 59 (2d Cir. 2003) (expert's opinion about interpretation of coded language in recorded conversations violated hearsay bar and confrontation clause because testimony explicitly referred to conversations between expert and informants as bases for expert's opinion), cert. denied sub nom. *Griffin v. United States*, 541 U.S. 1092, 124 S. Ct. 2832, 159 L. Ed. 2d 259 (2004); *Commonwealth v. Barbosa*, 457 Mass. 773, 783–86, 933 N.E.2d 93 (2010) (confrontation rights were violated by analyst's testimony that other analyst agreed with testifying analyst's opinion regarding DNA testing, and by admission into evidence of table showing nontestifying analyst's findings), cert. denied, 563 U.S. 990, 131 S. Ct. 2441, 179 L. Ed. 2d 1214 (2011).

Therefore, as courts consistently have recognized, expert witnesses cannot be used as conduits for the admission into evidence of the testimonial statements of others. This would permit testifying experts to simply relay the findings of other experts while immunizing those underlying findings from scrutiny on cross-examination. The state cannot "rely on [the testifying witness'] status as an expert to circumvent the [c]onfrontation [c]ause's requirements." *Williams v. Illinois*, supra, 567 U.S. 126 (Kagan, J., dissenting); see *United States v. Johnson*, 587 F.3d 625, 635 (4th Cir. 2009) ("[a]llowing a witness simply to parrot out-of-court testimonial statements of cooperating witnesses and confidential informants directly to the jury in the guise of expert opinion would provide an end run around *Crawford*" [internal quotation marks omitted]); *Commonwealth v. Barbosa*, supra, 457 Mass. 784 (admission of second expert's opinion through testifying expert would violate confrontation clause "because the opinion of the second expert would not be subject to cross-examination"); *People v. John*, 27 N.Y.3d 294, 309, 52 N.E.3d 1114, 33 N.Y.S.3d 88 (2016) ("[T]hese critical analysts who engaged in an independent and qualitative analysis of the data during the DNA typing tests—none of whom was claimed to be unavailable—were effectively insulated from cross-examination. [The testifying analyst], instead, was permitted to parrot the recorded findings that were derived from the critical witnesses' subjective analyses."); see also *United States v. Meises*, 645 F.3d 5, 22 (1st Cir. 2011) (prosecutors "cannot be permitted to circumvent the [c]onfrontation [c]ause by introducing the same substantive testimony in a different form" [internal quotation marks omitted]).

In the present case, Degnan testified at trial to her opinion that the defendant was a contributor to the

DNA on the bandana recovered from the crime scene. She based this testimony on her comparison of the DNA profiles she derived from the bandana to the DNA profile generated by the known processing group from the defendant's buccal swab. Degnan performed the analysis of the bandana and conducted the ultimate comparison herself. She was not, however, involved in the analysis of the buccal swab, which was an essential component of the comparison making her opinion possible. There was no comparison without the buccal swab analysis. Rather, the known processing group conducted this analysis and provided the resulting DNA profile to Degnan for her to use in her comparison. Degnan neither participated in nor observed this analysis. There is also no evidence contained within the record indicating that the known processing group provided Degnan with the raw machine data generated from the preliminary stages of the analysis such that Degnan could independently verify that the DNA profile had accurately been constructed.¹¹ Despite having been uninvolved in the analysis, Degnan relied on that known profile in order to complete her analysis and testified that she was "swearing to the accuracy" of the DNA profile that the known processing group had provided to her.

We agree with the defendant that Degnan's testimony at trial necessarily introduced the out-of-court statements of the known processing group and did not consist merely of her own independent opinion. To be clear, Degnan's testimony about the DNA profiles she generated from the bandana was not hearsay because she conducted these analyses herself. Rather, Degnan explicitly referred to, relied on, and vouched for the quality of work that she did not perform and, in so doing, relayed to the jury the known processing group's out-of-court statements about the defendant's numerical DNA profile. See *People v. Austin*, 30 N.Y.3d 98, 105, 86 N.E.3d 542, 64 N.Y.S.3d 650 (2017) ("Although the criminalist [who testified at trial] may have had some level of involvement in [the laboratory's] handling of some of the . . . crime scene swabs, he had no role whatsoever in the testing of [the] defendant's post-accusatory buccal swab. His testimony was, therefore, merely a conduit for the conclusions of others" [Citation omitted; internal quotation marks omitted.]). These assertions were hearsay.

Moreover, Degnan introduced the known processing group's out-of-court statements by including in her report, which was admitted into evidence without limitation, the allele numbers comprising the defendant's DNA profile that the known processing group had provided to her. See *Commonwealth v. McCowen*, 458 Mass. 461, 482–83, 939 N.E.2d 735 (2010) (concluding that testifying analyst introduced hearsay by admitting chart into evidence that compared alleles from DNA taken from victim, which analyst generated herself, and

alleles from defendant's known sample, which were generated by another analyst). The report provides that the DNA was extracted from the defendant's buccal swab and analyzed according to standard laboratory procedure. The report then states that "[t]he following results were obtained on the amplified items" and lists the alleles generated by the known processing group. The report further contains Degnan's conclusion that, based on the comparison of the alleles from the buccal swab and the profiles she generated from the bandana, the defendant was a contributor to the DNA on the bandana. Finally, just above Degnan's signature, the report contains the following language: "This report reflects the test results, conclusions, interpretations, and/or the findings of the analyst as indicated by their signature below," with no disclaimer that Degnan was not involved in generating the known profile.

We therefore do not agree with the state's contention that Degnan's testimony did not introduce any out-of-court statements. In order for Degnan to reach her conclusion that the defendant was a match to the DNA found on the bandana, she had to rely on and incorporate the known processing group's findings into her own. Moreover, the underlying findings of the known processing group upon which she relied were themselves admitted into evidence in multiple forms. Because the state concedes that this evidence was offered for its truth—a concession we think unavoidable—it is hearsay and, if testimonial in nature; see part II of this opinion; implicates the defendant's confrontation rights. Concluding otherwise merely because Degnan is an expert witness would immunize from cross-examination the analyst or analysts of the known processing group who made the critical findings upon which Degnan's comparison was based.

Finally, we note that the Appellate Court concluded that the evidence of the defendant's DNA profile was not offered for its truth but, rather, to explain the assumptions upon which Degnan based her opinion that the defendant's DNA profile matched the DNA found on the bandana. *State v. Walker*, supra, 180 Conn. App. 307. As support for this conclusion, the Appellate Court cited the plurality opinion in *Williams v. Illinois*, supra, 567 U.S. 50, and, specifically, the plurality's observation that "[o]ut-of-court statements that are related by the expert solely for the purpose of explaining the assumptions on which that opinion rests are not offered for their truth and thus fall outside the scope of the [c]onfrontation [c]lause." *Id.*, 58. We have recognized this evidentiary principle in other contexts. See *State v. Copas*, 252 Conn. 318, 328, 746 A.2d 761 (2000) ("[a]lthough some of the facts considered by the experts . . . may not [be] substantively admissible . . . the parties [are] not precluded from examining the experts about those facts insofar as they related to the basis for the experts' opinions" [citations omitted]).

As previously noted, however, on appeal to this court the state has conceded, and we agree, that the evidence of the defendant's known DNA profile *was* offered for its truth. The present case therefore does not involve a situation in which the evidence was offered "solely" for the purposes of explaining an expert's assumptions, as the plurality believed to be the case in *Williams*. We note, moreover, that five justices in *Williams* rejected the plurality's hearsay analysis and instead concluded that the evidence of the DNA profile used as part of a comparison was offered for its truth because it lacked any relevance to the case apart from its truth. See *Williams v. Illinois*, *supra*, 567 U.S. 106 (Thomas, J., concurring in judgment); *id.*, 126–27 (Kagan, J., dissenting); see also *United States v. James*, 712 F.3d 79, 95 (2d Cir. 2013) ("[t]he *Williams* plurality's first rationale—that the laboratory report there was offered as basis evidence, and not for its truth—was roundly rejected by five [j]ustices"), cert. denied, 572 U.S. 1134, 134 S. Ct. 2660, 189 L. Ed. 2d 208 (2014); *Young v. United States*, *supra*, 63 A.3d 1045 (evidence of known DNA profiles necessarily were offered for their truth because, without nontestifying analysts' assertions regarding accuracy of profiles, "what would have been left of [the testifying analyst's] testimony—that she matched two DNA profiles she could not herself identify—would have been meaningless"). Because the evidence was offered for its truth, we need not address the question of whether such DNA evidence could, in other circumstances, be admitted for a nonhearsay purpose.

II

The defendant next contends that the evidence of his numerical DNA profile was testimonial because it was created for the primary purpose of establishing his guilt at trial. We agree with the defendant that, under the circumstances of this case, the known DNA profile was testimonial.

We begin with the general principles governing our analysis. "[T]he confrontation clause applies only to statements that are testimonial in nature. . . . As a general matter, a testimonial statement is typically [a] solemn declaration or affirmation made for the purpose of establishing or proving some fact. . . . Although the United States Supreme Court did not provide a comprehensive definition of what constitutes a testimonial statement in *Crawford*, the court did describe three core classes of testimonial statements: [1] ex parte in-court testimony or its functional equivalent—that is, material such as affidavits, custodial examinations, prior testimony that the defendant was unable to cross-examine, or similar pretrial statements that declarants would reasonably expect to be used prosecutorially . . . [2] extrajudicial statements . . . contained in formalized testimonial materials, such as affidavits, depo-

sitions, prior testimony, or confessions [and] . . . [3] statements that were made under circumstances which would lead an objective witness reasonably to believe that the statement would be available for use at a later trial” (Citations omitted; internal quotation marks omitted.) *State v. Smith*, supra, 289 Conn. 622–23. The present case concerns only this third category form of testimonial statements.

“[I]n *Davis v. Washington*, [547 U.S. 813, 822, 126 S. Ct. 2266, 165 L. Ed. 2d 224 (2006)], the United States Supreme Court elaborated on the third category and applied a ‘primary purpose’ test to distinguish testimonial from nontestimonial statements given to police officials, holding: ‘Statements are nontestimonial when made in the course of police interrogation under circumstances objectively indicating that the primary purpose of the interrogation is to enable police assistance to meet an ongoing emergency. They are testimonial when the circumstances objectively indicate that there is no such ongoing emergency, and that the primary purpose of the interrogation is to establish or prove past events potentially relevant to later criminal prosecution.’ . . .

“In *State v. Slater*, [285 Conn. 162, 172 n.8, 939 A.2d 1105, cert. denied, 553 U.S. 1085, 128 S. Ct. 2885, 171 L. Ed. 2d 822 (2008)], we reconciled *Crawford* and *Davis*, noting: ‘We view the primary purpose gloss articulated in *Davis* as entirely consistent with *Crawford*’s focus on the reasonable expectation of the declarant. . . . [I]n focusing on the primary purpose of the communication, *Davis* provides a practical way to resolve what *Crawford* had identified as the crucial issue in determining whether out-of-court statements are testimonial, namely, whether the circumstances would lead an objective witness reasonably to believe that the statements would later be used in a prosecution.’ ” (Citations omitted.) *State v. Smith*, supra, 289 Conn. 623–24.

With these background principles in mind, our analysis of the testimonial nature of the DNA evidence at issue in the present case requires a review of the trilogy of United States Supreme Court cases applying these principles in the context of forensic evidence—*Melendez-Diaz v. Massachusetts*, 557 U.S. 305, 129 S. Ct. 2527, 174 L. Ed. 2d 314 (2009), *Bullcoming v. New Mexico*, supra, 564 U.S. 647, and *Williams v. Illinois*, supra, 567 U.S. 50.

In *Melendez-Diaz*, during the defendant’s trial on narcotics violations, the prosecution introduced into evidence three laboratory “‘certificates of analysis’” stating that the substance seized from the defendant was cocaine. *Melendez-Diaz v. Massachusetts*, supra, 557 U.S. 308. The United States Supreme Court held that the certificates were within the “core class of testimonial statements” because they were “made under circumstances which would lead an objective witness

reasonably to believe that the statement would be available for use at a later trial.” (Internal quotation marks omitted.) *Id.*, 310. The court explained that the analysts’ reports were “quite plainly” affidavits, that is, “declaration[s] of facts written down and sworn to by the declarant before an officer authorized to administer oaths,” and were “functionally identical to live, in-court testimony.” (Internal quotation marks omitted.) *Id.*, 310–11. The court also noted that, under Massachusetts law, the “sole purpose” of the affidavits was to establish the composition, quality and weight of the substance believed to be cocaine and that it could be “safely assume[d]” that the analysts “were aware of the affidavits’ evidentiary purpose, since that purpose . . . was reprinted on the affidavits themselves.” *Id.*, 311.

In *Bullcoming v. New Mexico*, *supra*, 564 U.S. 663, the court held that the admission at trial of a lab report certifying that the defendant’s blood alcohol content exceeded the threshold for the offense of aggravated driving while intoxicated violated the confrontation clause. Emphasizing that “[a] document created solely for an ‘evidentiary purpose’ . . . made in aid of a police investigation, ranks as testimonial,” the court concluded that the report, although not sworn or notarized, closely resembled the reports at issue in *Melendez-Diaz*. *Id.*, 664. That is, law enforcement had provided seized evidence to a state laboratory for testing, an analyst tested the evidence and prepared a certificate concerning the results, and the certificate was formalized in a signed document entitled “‘report,’” which contained a reference to local rules concerning the admission of certified blood alcohol test results. *Id.*, 665. These circumstances, the court concluded, were “more than adequate” to qualify the analyst’s report as testimonial. *Id.* Furthermore, the court held that the testimony of a surrogate witness, who was familiar with the device used in the test and the laboratory’s testing procedures but who did not conduct or observe this particular test, was insufficient to satisfy the confrontation clause. *Id.*, 661–62.

Finally, in *Williams v. Illinois*, *supra*, 567 U.S. 59, an outside laboratory provided the police with a DNA profile generated from semen found on a vaginal swab of the victim of a rape. The police entered the profile into its DNA database and received notification of a cold hit with the defendant’s DNA profile, which had been entered into the database due to an unrelated arrest. *Id.* The defendant was arrested and charged with the victim’s rape. *Id.*, 59–60. At trial, the prosecution called the analyst who prepared the defendant’s DNA profile in connection with the unrelated arrest, as well as the analyst who compared that profile to the DNA generated by the outside laboratory from the victim’s vaginal swab. *Id.*, 60–62. No one from the outside laboratory who generated the profile from the vaginal swab, however, testified at trial. *Id.*, 62.

Five justices agreed that the profile from the vaginal swabs relied upon by the analyst to make her comparison was not testimonial but the fifth justice rejected the plurality's "flawed analysis"; *id.*, 104 (Thomas, J., concurring in judgment); as did the four dissenting justices. *Id.*, 135–38 (Kagan, J., dissenting). The plurality opinion, written by Justice Alito, concluded that the evidence was not testimonial because "the primary purpose of the [outside laboratory's] report, viewed objectively, was not to accuse [the defendant] or to create evidence for use at trial. When the [police] sent the sample to [the outside laboratory], its primary purpose was to catch a dangerous rapist who was still at large, not to obtain evidence for use against [the defendant], who was neither in custody nor under suspicion at that time." *Id.*, 84. The plurality reasoned that, because no one from the outside laboratory could have known the profile would inculcate the defendant—or anyone else whose DNA profile was in the police database—"there was no prospect of fabrication and no incentive to produce anything other than a scientifically sound and reliable profile."¹² (Internal quotation marks omitted.) *Id.*, 84–85.

Justice Thomas authored a separate opinion concurring in the judgment reiterating his view that the confrontation clause covers only "formalized testimonial materials, such as depositions, affidavits, and prior testimony, or statements resulting from formalized dialogue, such as custodial interrogation." (Internal quotation marks omitted.) *Id.*, 111. He reasoned that the primary purpose test, as articulated in *Davis*, was a necessary but insufficient criterion to render a statement testimonial because statements often serve more than one purpose. *Id.*, 114. He concluded that the report at issue was not sufficiently formal to be testimonial because it was not sworn or certified. *Id.*, 111. Justice Thomas and the four dissenting justices, however, rejected the plurality's view that a statement must have the primary purpose of accusing a targeted individual of criminal conduct in order to be testimonial. *Id.*, 114. (Thomas, J., concurring in judgment); *id.*, 135 (Kagan, J., dissenting).

Justice Kagan, writing for the four dissenting justices, concluded that the court's prior decisions in *Melendez-Diaz* and *Bullcoming* compelled the conclusion that the DNA profile in the outside laboratory's report was testimonial because it was "a statement [that] was made for the primary purpose of establishing past events potentially relevant to later criminal prosecution—in other words, for the purpose of providing evidence." (Internal quotation marks omitted.) *Id.*, 135. The dissenting justices rejected Justice Thomas' view that the statements were not testimonial because they were not sworn or certified, arguing that, similar to the reports deemed testimonial in the court's prior cases, the report

was “an official and signed record of laboratory test results, meant to establish a certain set of facts in legal proceedings.” *Id.*, 139 (Kagan, J., dissenting).

Due to the fractured nature of the *Williams* decision, courts have struggled to determine the effect of *Williams*, if any, on the legal principles governing confrontation clause claims. See *United States v. James*, *supra*, 712 F.3d 95–96 (applying previous case law because *Williams* yielded no single, useful holding); see also *Williams v. Illinois*, *supra*, 567 U.S. 141 (Kagan, J., dissenting) (“[t]he five [j]ustices who control the outcome of today’s case agree on very little” and “have left significant confusion in their wake”). In ascertaining the effect of *Williams*, we note that, “[w]hen a fragmented Court decides a case and no single rationale explaining the result enjoys the assent of five [j]ustices, the holding of the [c]ourt may be viewed as that position taken by those [m]embers who concurred in the judgments on the narrowest grounds.” (Internal quotation marks omitted.) *Marks v. United States*, 430 U.S. 188, 193, 97 S. Ct. 990, 51 L. Ed. 2d 260 (1977). As we recently observed, the court in *Williams* “made it impossible to identify the narrowest ground because the analyses of the various opinions are irreconcilable.” *State v. Sinclair*, 332 Conn. 204, 225, A.3d (2019). Consequently, we explained in *Sinclair* that “we must rely on Supreme Court precedent before *Williams* to the effect that a statement triggers the protections of the [c]onfrontation [c]lause when it is made with the primary purpose of creating a record for use at a later criminal trial.” (Internal quotation marks omitted.) *State v. Sinclair*, *supra*, 225, quoting *United States v. James*, *supra*, 712 F.3d 95–96; see also *United States v. Duron-Caldera*, 737 F.3d 988, 994 and n.4 (5th Cir. 2013).

The issue in the present case does not concern the testimonial nature of Degnan’s report or DNA comparison. Degnan made the comparison herself and was cross-examined about it at trial. Instead, we must determine whether the defendant’s known DNA profile, which was obtained from a postarrest buccal swab and provided to Degnan for her to use in making a comparison to DNA found on crime scene evidence, ranks as testimonial.

As to this specific question, we find persuasive a series of decisions from the New York Court of Appeals. In *People v. John*, *supra*, 27 N.Y.3d 297–98, the defendant was charged with illegal possession of a firearm arising from an incident in which he allegedly pointed a gun at another individual. The police swabbed the firearm found in the basement of the defendant’s apartment building and submitted the swabs to the crime laboratory to be analyzed for DNA. Along with the swabs, the police sent an evidence request listing the defendant as the arrestee and providing, as the reason for the

request, “ ‘PERP HANDLED THE FIREARM.’ ” *Id.*, 298. Following his indictment, the defendant submitted to a court-ordered buccal swab. *Id.*, 299. The laboratory generated a report listing the numerical DNA profiles from the firearm and the buccal swab in a comparison table, showing an identical match. *Id.*

The New York Court of Appeals concluded: “[T]he laboratory reports as to the DNA profile generated from the evidence submitted to the laboratory by the police in a pending criminal case were testimonial. The DNA profiles were generated in aid of a police investigation of a particular defendant charged by an accusatory instrument and created for the purpose of substantively proving the guilt of a defendant in his pending criminal action.” *Id.*, 308. In addition, the court observed that “the primary purpose of the laboratory examination on the gun swabs could not have been lost on the . . . analysts” in light of the accompanying evidence request indicating that the basis for the request was that the firearm had been handled by the defendant. *Id.*

The New York Court of Appeals’ subsequent decision in *People v. Austin*, *supra*, 30 N.Y.3d 98, is squarely analogous to the present case. In that case, the crime laboratory generated DNA profiles from blood recovered from the scene of multiple burglaries. *Id.*, 100. The police uploaded one of the profiles into their database and returned a “match” for the defendant. *Id.*, 100–101. The defendant was subsequently charged with the burglaries. *Id.*, 101. At trial, the prosecutor opted not to call as a witness the analyst who prepared the profile from the database. Instead, the prosecutor had the defendant submit to a buccal swab, which yielded a DNA profile determined to match the DNA from the crime scene evidence. *Id.* At trial, the prosecution’s sole forensic witness was a criminalist who testified that he reviewed the DNA profiles prepared by the analysts and determined that they matched. *Id.* The analysts who generated the DNA profiles from the buccal swab and the crime scene evidence did not testify. *Id.*

The New York Court of Appeals held that the admission of the criminalist’s testimony concerning the DNA profile generated from the defendant’s postarrest buccal swab “easily satisfies the primary purpose test.” *Id.*, 104. The court reasoned that, in establishing that the defendant’s DNA matched the DNA from the crime scene, the prosecution relied “solely on the evidence of the DNA profile generated from [the] buccal swab, which was developed during the course of a pending criminal action and was created in order to prove [the defendant’s] guilt at trial. . . .” (Citation omitted.) *Id.* Therefore, the court explained, “the buccal swab was obtained and the resulting profile was compared with the DNA profile generated from the . . . burglaries, with the primary (truly, the sole) purpose of proving a particular fact in a criminal proceeding—that [the]

defendant . . . committed the crime [with] which he was charged” (Citation omitted; internal quotation marks omitted.) Id.

We also find instructive the decision of the Supreme Judicial Court of Massachusetts in *Commonwealth v. McCowen*, supra, 458 Mass. 461, which involves facts nearly identical to those of the present case. In *McCowen*, the defendant, who was a suspect in a rape and murder investigation, submitted to a buccal swab, which yielded a DNA profile that the police later determined matched the DNA derived from swabs taken from the victim. Id., 465. At trial, the sole analyst called to testify had developed the DNA profiles from the samples taken from the victim and conducted the comparative analysis but had not been involved in the generation of the profile from the defendant’s buccal swab. Id., 482–83. The analyst testified to her opinion that the defendant was a contributor to the DNA found on the victim, and illustrated her analysis with a chart that made a side-by-side comparison of the allele numbers generated from the victim and those from the defendant’s buccal swab. Id., 483.

The Supreme Judicial Court concluded that “the allele numbers derived from the testing of the known samples by another analyst that were included in [the testifying analyst’s] chart were testimonial hearsay, because these were factual findings made by a nontestifying witness for the purpose of investigating the murder.” Id., 483; see also *Young v. United States*, supra, 63 A.3d 1047–48 (The court held that a DNA profile generated from the defendant’s buccal swab, which was taken after the defendant was identified as a suspect, was “generated for the primary purpose of establishing or proving a past fact relevant to later criminal prosecution, namely the identity of [the victim’s] assailant. Under the basic ‘evidentiary purpose’ test, that is enough to render the test results testimonial.”).¹³

In light of the foregoing case law, we conclude that the DNA profile was generated from the defendant’s buccal swab for “the primary purpose of creating a record for use at a later criminal trial.” (Internal quotation marks omitted.) *State v. Sinclair*, supra, 332 Conn. 225. The police took the buccal swab after the defendant was arrested and charged with various crimes in connection with his participation in the murder. The state obtained court authorization to conduct the buccal swab by filing a motion in the defendant’s criminal case representing that the buccal swab and resulting DNA profile “will be of material aid in determining whether the defendant committed the crime of felony murder.”

The purpose of obtaining the defendant’s known DNA profile was to compare it with DNA from the bandana found at the crime scene, which Green indicated had been worn by the person who shot and killed the victim. The defendant’s DNA profile was, therefore, generated

in aid of an ongoing police investigation for the primary—indeed, the sole—purpose of proving a fact in his criminal trial, namely, that his DNA was found on the bandana worn by the shooter. Indeed, after Degnan received the defendant’s DNA profile from the known processing group and determined that it matched the DNA from the bandana, thereby implicating the defendant as the shooter, the state charged the defendant with the additional crimes of manslaughter in the first degree with a firearm and criminal possession of a pistol or revolver.

We further conclude that the analyst or analysts of the known processing group who processed the defendant’s buccal swab reasonably could have expected that the resulting DNA profile would later be used for prosecutorial purposes. See *Ohio v. Clark*, U.S. , 135 S. Ct. 2173, 2181–82, 192 L. Ed. 2d 306 (2015) (analyzing primary purpose of individuals who elicited statements, as well as primary purpose of declarant, in determining whether statements were testimonial); *State v. Slater*, supra, 285 Conn. 172 (analysis of testimonial nature of statement “focuse[s] on the reasonable expectation of the declarant that, under the circumstances, his or her words later could be used for prosecutorial purposes”). The known processing group is a component of the Division of Scientific Services, which is required by statute to assist law enforcement in ongoing investigations. General Statutes § 29-7b; see also *Bullcoming v. New Mexico*, supra, 564 U.S. 665 (relying on laboratory’s legal obligation to assist law enforcement in concluding that its report was testimonial). More directly, the envelope containing the buccal swab that Murray submitted to the laboratory was labeled with the defendant’s name and fingerprint; listed “West Haven P.D.” as the submitting agency, listed the MacDougall Walker Correctional Institution as the defendant’s address, and displayed a notation reading “Incident: Homicide.” The investigatory and, thus, evidentiary purpose of the buccal swab analysis would therefore have been readily apparent to the analyst who conducted it.

Additionally, Degnan testified that the known processing group generates DNA profiles for all known samples submitted to the laboratory and then provides those profiles to other analysts who then make the comparisons. In light of this standard practice, it is safe to assume that the analyst who processed the defendant’s buccal swab was aware of the likelihood that the resulting DNA profile would be used as part of a comparison with other evidence and, therefore, potentially utilized in a criminal proceeding. Put simply, the police sought the DNA profile as part of an ongoing criminal investigation, and we do not believe that that fact would have been lost on the known processing group.

Finally, a word about formality. We observed in *State v. Sinclair*, supra, 332 Conn. 225, that “[t]he one thread of *Williams* that is consistent with . . . earlier precedent is that . . . the formality attendant to the making of the statement must be considered.” In the present case, the precise level of formality surrounding the known processing group’s submission of the profile to Degnan is not entirely clear from the record. Under the circumstances, however, we do not believe that this consideration compels a different result. We note that the formality attending a particular statement, although relevant in the primary purpose analysis, is not dispositive. See *Bullcoming v. New Mexico*, supra, 564 U.S. 671 (Sotomayor, J., concurring in part) (“[a]lthough [f]ormality is not the sole touchstone of our primary purpose inquiry, a statement’s formality or informality can shed light on whether a particular statement has a primary purpose of use at trial” [internal quotation marks omitted]); *Michigan v. Bryant*, 562 U.S. 344, 366, 131 S. Ct. 1143, 179 L. Ed. 2d 93 (2011) (“although formality suggests the absence of an emergency and therefore an increased likelihood that the purpose of the interrogation is to establish or prove past events potentially relevant to later criminal prosecution . . . informality does not necessarily indicate the presence of an emergency or the lack of testimonial intent” [citation omitted; internal quotation marks omitted]).

Indeed, strict adherence to formality requirements may be especially problematic in the context of scientific evidence, as this requirement “can be easily subverted by . . . simple omission in the format of the documents, with a design to facilitate their use as evidence in a criminal trial.” *People v. John*, supra, 27 N.Y.3d 312; see also *Davis v. Washington*, supra, 547 U.S. 826 (confrontation clause cannot “readily be evaded” by parties’ keeping written product of interrogation informal “instead of having the declarant sign a deposition”). At any rate, the buccal swab and DNA profile were obtained pursuant to a postarrest court order. The known processing group provided the DNA profile to Degnan along with “paperwork” indicating that the sample was analyzed according to accepted laboratory procedures. These facts are suggestive of a certain level of formality that, together with the circumstances set forth previously in this opinion, are sufficient to render the statement testimonial.

The state, relying on the plurality opinion in *Williams*, contends that the defendant’s known DNA profile was not testimonial because it did not directly accuse the defendant of any criminal conduct but became accusatory only when compared with the DNA found on the bandana. In *Williams*, the plurality concluded that the DNA profile generated from vaginal swabs of the victim was not to accuse the defendant or create evidence at trial because “no one at [the laboratory] could have

possibly known that the profile that it produced would turn out to inculcate [the defendant]—or for that matter, anyone else whose DNA profile was in a law enforcement database.” *Williams v. Illinois*, supra, 567 U.S. 84–85.

We disagree. This line of reasoning was foreclosed by *Melendez-Diaz*, which, as previously explained, remains controlling in the present case due to the lack of any definitive holding in *Williams*. See *State v. Sinclair*, supra, 332 Conn. 225. In *Melendez-Diaz*, the state asserted that the certificates of analysis stating that the seized substances were narcotics were not subject to confrontation because the analysts who prepared them were not “‘accusatory’” witnesses. *Melendez-Diaz v. Massachusetts*, supra, 557 U.S. 313. The state argued that the certificates did not “directly accuse [the defendant] of wrongdoing” but were “inculpatory only when taken together with other evidence” *Id.* The United States Supreme Court rejected this argument, reasoning that the analysts “certainly provided testimony *against* [the defendant], proving one fact necessary for his conviction—that the substance he possessed was cocaine.” (Emphasis in original.) *Id.* The court explained that the text of the confrontation clause “contemplates two classes of witnesses—those against the defendant and those in his favor. The prosecution *must* produce the former; the defendant *may* call the latter. [T]here is not a third category of witnesses, helpful to the prosecution, but somehow immune from confrontation.” (Emphasis in original; footnote omitted.) *Id.*, 313–14.

Indeed, citing this portion of *Melendez-Diaz*, five justices in *Williams* rejected the plurality’s rationale and concluded that DNA analyses may be testimonial regardless of whether they are inherently inculpatory. *Williams v. Illinois*, supra, 567 U.S. 116 (Thomas, J., concurring); *id.*, 135–36 and n.5 (Kagan, J., dissenting); see also *Washington v. Griffin*, 876 F.3d 395, 407 n.10 (2d Cir. 2017) (“[The lower court] erred insofar as it held that DNA profiles, as a categorical matter, are [nontestimonial] because standing alone, [they] shed no light on the issue of the defendant’s guilt. As previously noted . . . five [j]ustices in *Williams* . . . agreed that the introduction of DNA profiles could, under proper circumstances, run afoul of the [c]onfrontation [c]lause.” [Citation omitted; internal quotation marks omitted.]), cert. denied, U.S. , 138 S. Ct. 2578, 201 L. Ed. 2d 299 (2018); *United States v. Duron-Caldera*, supra, 737 F.3d 994–95 (declining to adopt inherently inculpatory rationale because it was rejected by five justices as well as *Melendez-Diaz*). Accordingly, statements are not rendered nontestimonial merely because the content of the statements does not directly accuse the defendant of criminal wrongdoing.

The state further contends, again relying on the plu-

rality opinion in *Williams*, that the DNA profile is not testimonial because “numerous technicians” worked on the defendant’s known DNA profile and that, “[w]hen the work of a lab is divided up in such a way, it is likely that the sole purpose of each technician is simply to perform his or her task in accordance with accepted procedures.” *Williams v. Illinois*, supra, 567 U.S. 85. The plurality opinion in *Williams* observed that, under such circumstances, there is no “prospect of fabrication and no incentive to produce anything other than a scientifically sound and reliable profile.” (Internal quotation marks omitted.) *Id.*, 85.

We are not persuaded. As a factual matter, nothing in the record indicates whether multiple analysts from the known processing group analyzed the buccal swab, as opposed to a single analyst. This aspect of *Williams* is, therefore, not implicated in the present case. Moreover, as a matter of law, not only are we not bound by the result in *Williams*; see *State v. Sinclair*, supra, 332 Conn. 225; we disagree with the underlying proposition that the right to confrontation categorically does not apply to forensic evidence whenever there is no incentive to fabricate or falsify evidence.

To be sure, “[c]onfrontation is designed to weed out not only the fraudulent analyst, but the incompetent one as well.” *Melendez-Diaz v. Massachusetts*, supra, 557 U.S. 319. “[C]onfrontation protects against a wide range of witness reliability concerns beyond personal bias, such as perception, memory, narration, and sincerity.” *United States v. Duron-Caldera*, supra, 737 F.3d 996; see *Melendez-Diaz v. Massachusetts*, supra, 320 (“an analyst’s lack of proper training or deficiency in judgment may be disclosed in cross-examination”); see also *Williams v. Illinois*, supra, 567 U.S. 135–36 (Kagan, J., dissenting) (“[S]urely the typical problem with laboratory analyses—and the typical focus of cross-examination—has to do with careless or incompetent work, rather than with personal vendettas. And as to that predominant concern, it makes not a whit of difference whether, at the time of the laboratory test, the police already have a suspect.”). The absence of an incentive to fabricate does not foreclose the potential for honest mistakes, which is independently sufficient to trigger the right to confrontation.

Accordingly, we conclude that the evidence of the DNA profile generated by the known processing group from the defendant’s postarrest buccal swab was testimonial hearsay.

III

Finally, the state contends that the defendant’s right to confrontation was satisfied in this case because Degan, the laboratory supervisor who was familiar with the standard DNA testing procedures, testified and was subject to cross-examination. We disagree.

The state's argument that Degnan was a sufficient substitute witness is incompatible with *Bullcoming v. New Mexico*, supra, 564 U.S. 647. In that case, the analyst who conducted the defendant's blood test and prepared the lab report certifying to his blood alcohol content did not testify at trial. Instead, the prosecution called a different analyst who did not conduct or observe the test but " 'qualified as an expert witness' " with respect to the device used in the test and the laboratory's testing procedures. *Id.*, 661. Concluding that such surrogate testimony was insufficient to satisfy the confrontation clause, the court reasoned that, despite the analyst's qualifications, "surrogate testimony of the kind [the analyst] was equipped to give could not convey what [the nontestifying analyst] knew or observed about the events his certification concerned, i.e., the particular test and testing process he employed. Nor could such surrogate testimony expose any lapses or lies on the certifying analyst's part." (Footnote omitted.) *Id.*, 661–62. The court emphasized that the confrontation clause "does not tolerate dispensing with confrontation simply because the court believes that questioning one witness about another's testimonial statements provides a fair enough opportunity for cross-examination." *Id.*, 662.

Degnan, although familiar with the devices used to process DNA and the laboratory's standard testing procedures, did not conduct the analysis of the defendant's buccal swab or observe the analysis being conducted. Accordingly, although defense counsel cross-examined Degnan about the methods she used when analyzing the bandana and comparing the profiles, he could not cross-examine her about the analysis of the buccal swab or the methods employed by the known processing group in generating that profile. See *People v. Austin*, supra, 30 N.Y.3d 104–105 ("in order to satisfy the [c]onfrontation [c]ause, [the] defendant was entitled to cross-examine the analyst who either performed, witnessed or supervised the generation of the critical numerical DNA profile or who used his or her independent analysis on the raw data to arrive at his or her own conclusions"); see also *Young v. United States*, supra, 63 A.3d 1048 ("without evidence that [the testifying analyst] performed or observed the generation of the DNA profiles . . . herself, her supervisory role and independent evaluation of her subordinates' work product are not enough to satisfy the [c]onfrontation [c]ause because they do not alter the fact that she relayed testimonial hearsay"); D. Kaye et al., *The New Wigmore: A Treatise on Evidence* (Cum. Supp. 2014) § 4.12.4, p. 50 ("Permitting a supervisor [to testify] is a superficially attractive approach, but it is not supported by careful scrutiny unless . . . the supervisor observed the analyst conducting the test. If not, the supervisor has no greater connection to *this specific test* than does any other qualified laboratory employee." [Emphasis in orig-

inal.)).

The state relies on a line of cases from other jurisdictions generally holding that the confrontation clause can be satisfied through the testimony of a supervisory analyst who reviewed the data prepared by the nontestifying analyst and formed his or her own opinion concerning that analyst's conclusions. See, e.g., *Commonwealth v. Yohe*, 621 Pa. 527, 561, 79 A.3d 520 (2013) (testifying expert's analysis "did not simply parrot another analyst . . . rather, he was involved with reviewing all of the raw testing data, evaluating the results, measuring them against lab protocols to determine if the results supported each other, and writing and signing the report" [citation omitted]), cert. denied, 572 U.S. 1135, 134 S. Ct. 2662, 189 L. Ed. 2d 209 (2014); *State v. Michaels*, 219 N.J. 1, 6, 95 A.3d 648 (confrontation clause was satisfied by testimony of supervisory analyst who had "reviewed the [machine generated] data from the testing, had determined that the results demonstrated that [the] defendant had certain drugs present in her system, and had certified the results in a report"), U.S. , 135 S. Ct. 761, 190 L. Ed. 2d 635 (2014); *State v. Griep*, supra, 361 Wis. 2d 683 ("when a [nontestifying] analyst documents the original tests with sufficient detail for another expert to understand, interpret, and evaluate the results, that expert's testimony does not violate the [c]onfrontation [c]lause" [internal quotation marks omitted]).

In the present case, the record provides no basis for the claim that Degnan was provided with the raw data prepared by the known processing group and came to her own conclusion concerning the defendant's DNA profile. Degnan did testify that the known processing group provided "paperwork" to her so that she "could see that all of the checkboxes were check[ed], that they did it properly, followed standard operating procedures." This testimony merely establishes, however, that the known processing group represented to Degnan that they followed proper procedures during testing. As to the numerical profile produced from that testing, there is no evidence Degnan did anything at trial other than simply relay to the jury the profile that had been provided to her. Degnan was, therefore, not a sufficient substitute witness to satisfy the defendant's right to confrontation.

We observe that this opinion does not conclude that all analysts who participate in the process of generating a DNA profile necessarily must testify. We simply conclude that, where the generation of a DNA profile is testimonial, "at least one analyst with the requisite personal knowledge must testify." *People v. John*, supra, 27 N.Y.3d 313. In this regard, we agree with the New York Court of Appeals that "the analysts involved in the preliminary testing stages, specifically, the extraction, quantitation or amplification stages," are not necessary

witnesses. *Id.* Rather, “it is the generated numerical identifiers and the calling of the alleles at the final stage of the DNA typing that effectively accuses [the] defendant of his role in the crime charged.” *Id.* Accordingly, to satisfy the confrontation clause, the state need only call as a witness an analyst with personal knowledge concerning the accuracy of the numerical DNA profile generated from the preliminary stages of testing.

Because the state did not do so in the present case, we conclude that the defendant has established a violation of his sixth amendment right to confront the witnesses against him. As the state has not asserted that this error is harmless beyond a reasonable doubt, the defendant is entitled to a new trial under *Golding*.

The judgment of the Appellate Court is reversed insofar as that court upheld the defendant’s conviction as to the charges of felony murder, attempt to commit robbery in the first degree, and criminal possession of a pistol or revolver, and the case is remanded to that court with direction to reverse the trial court’s judgment with respect to those charges and to remand the case to the trial court for a new trial.

In this opinion the other justices concurred.

¹ “The Toyota was [determined] to belong to Ronja Daniels, Daquane Adams’ girlfriend. Daniels testified that earlier that night, Daquane Adams had dropped her off at work and borrowed her car.” *State v. Walker*, 180 Conn. App. 291, 296 n.1, 183 A.3d 1 (2018).

² A buccal swab involves rubbing a Q-tip like instrument along the inside of the cheek to collect epithelial cells.

³ At trial, Murray testified that she followed the standard procedures when taking the buccal swabs from the defendant, Daquane Adams, and Anthony Adams.

⁴ “An allele is defined as one or two or more alternative forms of a gene.” (Internal quotation marks omitted.) *State v. Pappas*, 256 Conn. 854, 880 n.7, 776 A.2d 1091 (2001).

⁵ References to Anthony Adams and Daquane Adams were redacted from the report.

⁶ Degnan also entered the numerical DNA profile of the major contributor to the DNA found on the bandana into the Connecticut and national DNA databases, which returned a “hit” on the defendant because the defendant’s DNA had previously been entered into the database as a result of a prior felony conviction. Evidence of this match, however, was not offered into evidence at trial.

⁷ The defendant was acquitted of the charge of conspiracy to commit robbery.

⁸ The Appellate Court also concluded that “the defendant’s conviction of felony murder and manslaughter violate[d] his constitutional protections against double jeopardy” and remanded the case with direction to vacate the defendant’s conviction with respect to the latter. *State v. Walker*, supra, 180 Conn. App. 330–31. This aspect of the Appellate Court’s decision, however, is not at issue in the present appeal.

⁹ Specifically, we granted the defendant’s petition for certification to appeal, limited to the following issue: “Did the Appellate Court properly determine that the defendant’s sixth amendment right to confrontation was not violated by testimony from a lab analyst regarding a known DNA profile generated from a swab processed by another analyst who did not testify at trial?” *State v. Walker*, 328 Conn. 934, 183 A.3d 634 (2018).

¹⁰ *Pointer v. Texas*, 380 U.S. 400, 403, 85 S. Ct. 1065, 13 L. Ed. 2d 923 (1965).

¹¹ Although Degnan testified that the known processing group provided her with “paperwork” indicating that the group had “followed standard operating procedures,” there is no evidence that Degnan independently verified the accuracy of the profile beyond simply relying on the group’s representation that they adhered to standard protocol. See part III of this

opinion.

¹² As an independent basis for concluding that the admission of the DNA evidence did not violate the confrontation clause, the plurality reasoned that, to the extent the substance of the outside laboratory's report was admitted into evidence—the report itself was not offered as an exhibit—it was offered not for its truth but, rather, to explain the assumptions upon which the testifying analyst based her expert opinion that the DNA profile from the vaginal swabs matched the defendant's DNA. *Williams v. Illinois*, supra, 567 U.S. 57–58. The plurality concluded that the out-of-court statements were not hearsay and, therefore, that they fell outside the scope of the confrontation clause. *Id.*, 58. Five justices, however, disagreed with this reasoning. *Id.*, 104–109 (Thomas, J., concurring in judgment); *id.*, 125–32 (Kagan, J., dissenting). The state concedes that this aspect of *Williams* is not relevant in the present case because the out-of-court statements made by the known processing group concerning the defendant's known DNA profile were offered for their truth and not merely to explain the basis for Degnan's opinion that the defendant's DNA matched the DNA found on the bandana.

¹³ The state relies on *State v. Ortiz*, 238 Ariz. 329, 360 P.3d 125 (App. 2015), *State v. Lui*, 179 Wn. 2d 457, 315 P.3d 493, cert. denied, 573 U.S. 933, 134 S. Ct. 2842, 189 L. Ed. 2d 810 (2014), and *State v. Deadwiller*, 350 Wis. 2d 138, 834 N.W.2d 362 (2013), in support of its claim that the defendant's DNA profile was not testimonial. In each of those cases, however, the courts decided the testimonial question by applying the three *Williams* rationales to the facts of the case to determine how five justices would have ruled. See *State v. Ortiz*, supra, 341; *State v. Lui*, supra, 478–79; *State v. Deadwiller*, supra, 162–63. As previously explained in this opinion, however, we decline to apply *Williams* in this manner, as that case resulted in no controlling holding. See *State v. Sinclair*, supra, 332 Conn. 225. Instead, we “rely on Supreme Court precedent before *Williams* to the effect that a statement triggers the protections of the [c]onfrontation [c]lause when it is made with the primary purpose of creating a record for use at a later criminal trial.” (Internal quotation marks omitted.) *Id.* Accordingly, given our decision in *Sinclair*, we do not find the cases cited by the state persuasive.
