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STATE OF CONNECTICUT *v.*
LUIS M. RODRIGUEZ
(SC 20372)

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

Syllabus

Convicted, after a jury trial, of sexual assault in the first degree and criminal attempt to commit sexual assault in the first degree, the defendant appealed. The defendant's conviction stemmed from an incident in which two Hispanic men pulled a woman, who was walking on a street in New Britain, into the backseat of their car and sexually assaulted her. Approximately ten years after the incident, the defendant became a person of interest based on a match between the DNA sample that had been extracted from the victim's sexual assault evidence kit and a sample of the defendant's DNA that had been placed into a database at some point after the victim's assault. The police interviewed the defendant, and he denied that the incident in question occurred but consented to the taking of a buccal swab, which the police submitted to the state forensic laboratory for analysis. The laboratory subsequently reported a match between the DNA from the defendant's buccal swab and that taken from the victim's sexual assault evidence kit, and the police interviewed the defendant again. During the second interview, the defendant admitted that he did have a threesome after he picked up a man and a woman near an automobile parts store. At trial, three laboratory reports analyzing the DNA samples were introduced into evidence through the testimony of P, a forensic science examiner with the state forensic laboratory. The first of the three reports was produced in 2007 and described the results of the victim's sexual assault evidence kit. The second and third reports were produced in 2016 and were based on comparisons of the DNA samples from the sexual assault evidence kit and the defendant's buccal swab. P testified regarding the procedures used to test the DNA evidence and the results contained in the three reports. The third and final report analyzed the sperm-rich and epithelial-rich fractions of the vaginal, oral and genital swabs, including a 2016 reworking of the sperm-rich fraction of the vaginal swabs, and the defendant's buccal swab. That report concluded that the defendant was a potential contributor to the DNA profile from the sperm-rich fraction of the vaginal swabs and that the expected frequency of individuals who could be a contributor to that DNA profile was approximately 1 in 230,000 in the Hispanic population. On appeal from the judgment of conviction, the defendant claimed, inter alia, that the trial court had violated his right to confrontation by allowing P to testify about the results of the DNA identification analysis without requiring testimony from the individual who generated the DNA profiles. *Held:*

1. The defendant's unpreserved claim that the trial court violated his right to confrontation failed under *State v. Golding* (213 Conn. 233) because it was unclear whether the 2016 retesting of the vaginal swab was performed by someone other than P, and, therefore, the record was inadequate to establish whether a violation of the defendant's right to confrontation occurred.
2. The defendant could not prevail on his unpreserved claim that his due process right was violated by the introduction of DNA identification evidence that was unreliable: the defendant failed to establish a constitutional violation under *Golding* because the jury was presented with evidence that there was a genetic profile match and the statistical rarity of the match, P explained the statistical method she used to determine the rarity of the match, and defense counsel had the opportunity to cross-examine P, present his own statistical evidence, or request a jury instruction; moreover, this court declined the defendant's invitation to exercise its supervisory authority to require trial courts to instruct juries on the meaning of random match probability when DNA evidence is the only evidence identifying the defendant as the perpetrator.
3. There was no merit to the defendant's claim that a random match probabil-

ity of 1 in 230,000 in the Hispanic population, by itself, was insufficient to prove that he was guilty beyond a reasonable doubt; the evidence establishing the identity of the defendant was not based on DNA evidence alone, as the video recordings of the defendant's two interviews with the police, which were played for the jury and which included inconsistent statements that indicated the defendant's consciousness of guilt, provided additional evidence to establish the defendant's guilt beyond a reasonable doubt.

(One justice concurring separately)

Argued December 19, 2019—officially released September 24, 2020**

Procedural History

Substitute information charging the defendant with two counts of the crime of sexual assault in the first degree and one count of criminal attempt to commit sexual assault in the first degree, brought to the Superior Court in the judicial district of New Britain and tried to the jury before *Dewey, J.*; verdict and judgment of guilty, from which the defendant appealed. *Affirmed.*

Mark Rademacher, assistant public defender, for the appellant (defendant).

Timothy J. Sugrue, assistant state's attorney, with whom, on the brief, were *Brian W. Preleski*, state's attorney, and *Brett J. Salafia*, senior assistant state's attorney, for the appellee (state).

Opinion

McDONALD, J. The defendant, Luis M. Rodriguez, appeals from the judgment of conviction, rendered after a jury trial, of two counts of sexual assault in the first degree and one count of criminal attempt to commit sexual assault in the first degree. The defendant claims that (1) the trial court violated his right to confrontation, as articulated in *Crawford v. Washington*, 541 U.S. 36, 124 S. Ct. 1354, 158 L. Ed. 2d 177 (2004), by allowing a laboratory analyst to testify about the results of a DNA identification analysis without requiring testimony from the individual who generated the DNA profiles, (2) his due process right was violated by the introduction of DNA identification evidence that was unreliable under *Manson v. Brathwaite*, 432 U.S. 98, 97 S. Ct. 2243, 53 L. Ed. 2d 140 (1977), because of the danger that the jury would not understand the meaning of random match probability, and (3) the evidence is insufficient to sustain his conviction. We disagree and, accordingly, affirm the judgment of the trial court.

The record reveals the following facts, which the jury reasonably could have found, and procedural history. In the early morning, the victim¹ was walking from her residence on Martin Luther King Drive in New Britain to a nearby convenience store. Near Lafayette and Beaver Streets, a gold, four door sedan with two male occupants stopped and asked the victim if she knew where they could buy cocaine. The victim told the men that she did not know, and they drove away. Less than five minutes later, the men returned, and one of them pulled the victim into the backseat with him. After driving for between ten and fifteen minutes, the vehicle stopped at an abandoned housing complex. The driver got into the backseat, and the victim sat between the two men. The victim testified that both men were Hispanic, one man “was kind of thin and the other one was kind of heavy,” and both spoke Spanish to each other during the attack.

After the men removed, or had the victim remove, her clothing, “[t]hey started putting their fingers . . . [i]nto [her] vagina” against her will. The thin man engaged in forcible penile-vaginal intercourse with the victim, made her perform oral sex on him, and “was pretty much done with [her] within probably about five minutes” The heavier man could not maintain an erection, and he forced the victim to perform oral sex and forcibly digitally penetrated her vagina. Thereafter, the heavier man pulled the victim out of the car by her hair and ejaculated while “rubbing his penis up against the inside of [the victim’s] thigh.”

After the assault, the two men drove away, and the victim “walked quite a ways” and came upon a house. The occupant of the house, Juanita Isaacs, testified that the victim banged on her door and asked Isaacs for

help, telling her that she had been raped. Isaacs called the police, Officer Alan Vincent Raynis, Jr., of the New Britain Police Department responded, and the victim told him what happened. Raynis took the victim back to the scene of the crime, where he took several photographs and seized a pair of jeans, a sports brassiere, and panties.

The victim was transported to New Britain General Hospital, where she was examined, and a sexual assault evidence kit was processed. The examining nurse swabbed the victim's vaginal and oral cavities, the exterior surface of her genitalia, and her inner thigh to collect any biological material that could be used to identify the perpetrators. Raynis collected the kit and submitted it to the state forensic laboratory for analysis. Thereafter, the victim provided the police with a sworn, written statement regarding the incident.

The laboratory staff found sperm in the vaginal smear and genital swabs. The staff did not find sperm on the oral sample, but other tests revealed the presence of human seminal fluid protein. The laboratory staff extracted DNA from the evidentiary materials and searched it against DNA contained in the Combined DNA Index System (CODIS).² No matching profiles were found.

Approximately ten years later, the defendant became a person of interest in the sexual assault based on a CODIS match between the evidentiary DNA sample that had been extracted from the victim's sexual assault evidence kit and a sample of the defendant's DNA that had been placed into CODIS at some point after the victim's assault. In August, 2016, a detective from the New Britain Police Department interviewed the defendant. The detective informed the defendant that he was a suspect in a sexual assault involving two men and a woman. The defendant denied having had sex in a threesome, which he described as disgusting, and said he did not allow women in his car. The defendant also described to the police vehicles that he previously owned, which did not include a gold, four door sedan, and informed the police that he currently did not have any car registered in his name. The defendant then consented to the taking of a buccal swab, which the police submitted to the laboratory for analysis.

Several months later, the laboratory reported a match between the DNA from the defendant's buccal swab and that taken from the victim's sexual assault evidence kit. In December, 2016, the police again spoke with the defendant. The detective informed the defendant that his DNA was found in the vaginal sample from the victim. Contrary to his previous statement to the police, the defendant admitted that he did have a threesome on two occasions in hotels in Plainville and on the Berlin Turnpike. He stated that one incident involved a "skinny, Puerto Rican" girl and occurred when he

picked up a man and a woman near an AutoZone store and dropped them off at a store on Broad Street in New Britain. The detective also informed the defendant that, in addition to the assault, the victim complained of being robbed of several hundred dollars, and the defendant replied with words to the effect of: "That's not me. It's the other guy."

The defendant was arrested and charged in the operative information with two counts of sexual assault in the first degree and one count of criminal attempt to commit sexual assault in the first degree. The trial commenced in March, 2018. At trial, three laboratory reports analyzing the DNA samples were introduced into evidence through the testimony of Angela Przech, a forensic science examiner with the laboratory, whose testimony and related evidence are the subject of the defendant's confrontation and due process claims. First, the state introduced a laboratory report dated November 26, 2007, that describes the results of the sexual assault evidence kit. The report indicates that the laboratory tested the vaginal, oral, and genital swabs, and it states that the material on the swabs was divided into sperm-rich and epithelial-rich fractions, all of which yielded DNA.³ The report further states that item number 1E, the oral swabs, and item number 1I, the genital swabs, "were consumed in testing," and that the balance of item number 1C, the vaginal swabs, "was retained in the laboratory." The report notes that the extracted DNA profiles of item numbers 1I and 1C were entered into CODIS for comparison and no matches were reported at the time the report was issued. The report was signed by Przech and Melanie G. Ktorides, a forensic science examiner.

Second, over the state's relevance objection, the defendant introduced into evidence an unofficial laboratory report dated September 12, 2016, which was marked "DNR" for "do not report" and was never officially released. It indicates that the laboratory tested the sperm-rich and epithelial-rich fractions of the vaginal, oral and genital swabs, as well as the defendant's 2016 buccal swab. The unofficial report concluded that the defendant "is included as a potential contributor to the DNA profile" from the sperm-rich fraction of the vaginal swabs. It states that the "expected frequency of individuals who could be a contributor to the DNA profile . . . from [the sperm-rich fraction of the vaginal swabs] is . . . approximately 1 in 4.9 in the Hispanic population."⁴ The report was signed by Przech, as the analyst, and a technical reviewer.

Finally, the state introduced a laboratory report dated December 16, 2016. Similar to the September, 2016 report, the December report analyzed the sperm-rich and epithelial-rich fractions of the vaginal, oral and genital swabs, as well as the defendant's 2016 buccal swab. It also added three new items of evidence to the

list, including “[item number] 1C [v]aginal [s]wabs,” and noted that this item had been separated into sperm-rich and epithelial-rich fractions. The report concluded that the sperm-rich fraction of the vaginal swabs was a mixture, and the defendant “is included as a potential contributor to the DNA profile” Unlike the September, 2016 report, however, the December, 2016 report concluded that the “expected frequency of individuals who could be a contributor to the DNA profile . . . from [the sperm-rich fraction of the vaginal swabs] is . . . approximately 1 in 230,000 in the Hispanic population.”⁵ The report was again signed by Przech, as the analyst, and a technical reviewer.

At trial, Przech testified regarding the procedures used to test the DNA evidence and the results contained in her three reports. Specifically, she testified that, in 2007, the laboratory used a DNA testing kit called Identifier to develop the DNA profiles from the sexual assault evidence kit and produced the November, 2007 report. She explained that the laboratory had successfully separated sperm cells from epithelial cells in the various evidentiary samples.

Przech further testified that, in 2016, the New Britain Police Department submitted a known buccal swab of a suspect in the case to the laboratory for comparison with the evidentiary DNA that had been extracted in 2007. She explained that, rather than having an analyst physically process the defendant’s buccal swab, the laboratory processed it via “an automated procedure” in which “a robot” extracts and processes DNA from the known buccal sample. Przech compared the defendant’s DNA profile to the profiles that had been extracted from the evidentiary swabs in 2007 and concluded that the defendant was a “potential contributor” to the DNA mixture that had been extracted from the sperm-rich fraction of the vaginal swabs.

Przech testified that the December, 2016 report set forth her conclusions regarding the comparison of the defendant’s buccal swab and the DNA taken from the sexual assault evidence kit. She explained that, prior to the creation of the December, 2016 report, her technical leader requested that “additional work be done with the sample in order to make sure that there was a fully developed profile, and it was to the standard that was required in 2016 and not the standard that was required in [2007].” Przech clarified that the unofficial report from September, 2016, “is not an official report generated. [These are] case notes within [her] case jacket that are clearly marked DNR, which is do not report. . . . No, [this is not an official report]; this is not a report at all. It never went out. It never went to the . . . [New Britain Police Department]. So, it’s considered case notes within [her] case jacket.”

On redirect examination, Przech further explained that the sperm-rich fraction of the vaginal swabs was

“rework[ed]” in 2016 to comply with contemporary interpretations of the rules relating to statistical analyses. Przech explained that she “chose not to issue [the unofficial, September, 2016] report because the information that was there was not complete according to our rules for 2016 statistic[al] [data] generation,” which required taking into account “many different parts of the profile that we didn’t have to consider in 2007.” Because there was not a complete profile, the unofficial, September, 2016 report did not give “the whole story,” and Przech’s technical leader requested that the sperm-rich vaginal swab be “amplified more and [Przech] can develop a different profile and get better results. [The] sample that [Przech] had in 2007 wasn’t complete.” Przech reworked the sample using a new kit, called Identifiler Plus, which was more sensitive than the earlier kit to degraded DNA and also to inhibitors, such as bacteria, that could be found in a sample. Finally, she explained that “the [September, 2016] report that was DNR, that never went out, that sample for [item number] 1CB [the sperm-rich fraction of the vaginal swabs] was a different profile than the one that was issued [i]n [the December, 2016 report] So, they are two different profiles.”

Following the trial, the jury found the defendant guilty on all counts. The defendant was sentenced to a total effective sentence of thirty years incarceration. He appealed from the judgment of conviction to the Appellate Court, and the appeal was transferred to this court. Additional facts will be set forth as necessary.

I

We first consider the defendant’s claim that the trial court violated his right to confrontation, as articulated in *Crawford v. Washington*, supra, 541 U.S. 36, by allowing Przech to testify about the results of the DNA identification analysis without requiring testimony from the individual who generated the DNA profiles. Specifically, the defendant contends that, during questioning about the disparate statistical results presented in the two 2016 reports, Przech testified that she did not conduct the testing underlying those reports. Rather, the defendant argues, Przech used the unnamed analyst’s data to deduce the characteristics and sources of the DNA profiles. The defendant concedes that he did not preserve this claim properly at trial and seeks review under *State v. Golding*, 213 Conn. 233, 239–40, 567 A.2d 823 (1989), as modified by *In re Yasiel R.*, 317 Conn. 773, 781, 120 A.3d 1188 (2015).⁶ The state contends that the record is inadequate to establish factually whether a confrontation right violation occurred. We agree with the state.⁷

At the outset, we note that the defendant’s claim is not based on any of the 2007 testing because, as the defendant acknowledges, “Przech did not use the testing in 2007 of the . . . vaginal sample to identify the defendant

as the assailant.” It also is not based on the admission of the evidence of the DNA profile generated from the defendant’s buccal swab in 2016, which was extracted in the automated process that Przech described.⁸ Finally, the defendant makes no claim that his confrontation right was violated by his own admission of the unofficial, September, 2016 report into evidence. Rather, the defendant asserts that it is the admission of the DNA identification evidence contained in the December, 2016 report and Przech’s corresponding testimony that violated his confrontation right because someone other than Przech performed the 2016 retesting of the vaginal sample.

Because the defendant seeks *Golding* review of this unpreserved claim, we begin by determining whether this claim is reviewable. “The first two [prongs of *Golding*] involve a determination of whether the claim is reviewable” (Internal quotation marks omitted.) *State v. Peeler*, 271 Conn. 338, 360, 857 A.2d 808 (2004), cert. denied, 546 U.S. 845, 126 S. Ct. 94, 163 L. Ed. 2d 110 (2005). Under the first prong of *Golding*, for the record to be adequate for review, the record must contain sufficient facts to establish that a violation of constitutional magnitude has occurred. See, e.g., *State v. Brunetti*, 279 Conn. 39, 55–56, 901 A.2d 1 (2006), cert. denied, 549 U.S. 1212, 127 S. Ct. 1328, 167 L. Ed. 2d 85 (2007). “[W]e will not attempt to supplement or reconstruct the record, or to make factual determinations, in order to decide the defendant’s claim.” *State v. Golding*, supra, 213 Conn. 240. As a result, “we will not address an unpreserved constitutional claim [i]f the facts revealed by the record are insufficient, unclear or ambiguous as to whether a constitutional violation has occurred” (Internal quotation marks omitted.) *State v. Canales*, 281 Conn. 572, 581, 916 A.2d 767 (2007).

Here, the record is inadequate to establish that the defendant’s confrontation right was violated because it is unclear whether the 2016 retesting of the vaginal swab was performed by someone other than Przech.⁹ The following testimony suggests that Przech performed the testing herself. On cross-examination, defense counsel twice asked Przech whether “*you* conducted” additional testing of the vaginal sample in 2016. (Emphasis added.) Przech responded “[y]es” both times.¹⁰ On redirect examination, after Przech testified about “rework[ing] the sample” in 2016, the prosecutor asked: “[I]s that what *you did* in this case?” (Emphasis added.) Przech replied: “Yes, [item number] 1CB [vaginal sample].” Thereafter, Przech testified that, following the unofficial, September, 2016 report, her technical leader told her that the vaginal sample “can be amplified more and [that she could] develop a different profile and get better results.” The prosecutor then asked: “[W]ere *you* able to amplify the sample?” (Emphasis added.) Przech responded: “*I was able to redo the sample* using a new kit that we used.” (Emphasis added.)

Przech further testified that the December, 2016 report was based on this “redo” of the sample, which resulted in a different DNA profile than the one on which the unofficial, September, 2016 report was based. Defense counsel did not conduct a recross-examination of Przech.

But Przech also testified on cross-examination, without referencing a specific test, that “I was the analyst who analyzed the data. I didn’t develop the profiles or do the lab work.” In light of this inconsistent testimony, it is, at best, unclear whether someone other than Przech retested the vaginal samples in 2016, and any conclusion we could attempt to draw as to who retested the vaginal samples would be purely speculative. As we have explained, “[i]t is incumbent upon the [defendant] to take the necessary steps to sustain [his] burden of providing an adequate record for appellate review. . . . Our role is not to guess at possibilities . . . but to review claims based on a complete factual record developed by a trial court. . . . Without the necessary factual and legal conclusions furnished by the trial court . . . any decision made by us respecting [the defendant’s claims] would be entirely speculative.” (Internal quotation marks omitted.) *State v. Brunetti*, supra, 279 Conn. 63. Because it is the function of the trial court, not this court, to make factual findings; see, e.g., *State v. Satchwell*, 244 Conn. 547, 562, 710 A.2d 1348 (1998); the defendant was required to clarify the record as to whether someone other than Przech conducted the retesting in 2016. Because the facts revealed by the record are inadequate to establish whether the alleged constitutional violation did, in fact, occur, we conclude that the defendant’s claim fails under the first prong of *Golding*, and, thus, we decline to review it.

II

We next turn to the defendant’s contention that his due process right was violated by the introduction of DNA identification evidence that was unreliable under *Manson v. Brathwaite*, supra, 432 U.S. 98, because of the danger that the jury would assume that a random match probability is the likelihood that the defendant is not the source of the DNA in the vaginal sample.¹¹ The defendant again seeks review of this unpreserved claim under *State v. Golding*, supra, 213 Conn. 239–40.¹² See footnote 6 of this opinion. We conclude that the defendant’s claim fails under the third prong of *Golding* because he has not established a constitutional violation.

To understand the defendant’s claim, we begin with background principles of DNA evidence. DNA evidence consists of two elements: (1) a determination that the defendant’s genetic profile matches a genetic profile present in the evidentiary sample, and (2) a statistical calculation of the rarity of that match. See, e.g., *State v. Sivri*, 231 Conn. 115, 155, 646 A.2d 169 (1994)

(explaining that calculation of rarity of match “generates a ratio which accompanies a match in order to express the statistical likelihood that an unrelated individual chosen at random from a particular population could have the same DNA profile as the suspect” (internal quotation marks omitted)). This is because a match means little without statistical evidence that will allow the fact finder to determine the strength of the match and, thus, the strength of the inferential fact that the defendant is the person whose DNA is present in the actual evidentiary sample. See *id.*, 155–56. Three types of statistical methods, relevant to the defendant’s claim, are used to express the rarity of the match: random match probability, combined probability of inclusion, and source probability. Each method describes the rarity of the match in a different way. The random match probability is the probability that the defendant’s DNA profile would match the DNA profile of an unrelated member of the general population who is chosen at random. See *id.*, 155; see also *State v. Small*, 180 Conn. App. 674, 685, 184 A.3d 816, cert. denied, 328 Conn. 938, 184 A.3d 268 (2018). The combined probability of inclusion is employed when there is a mixed DNA profile, which indicates the presence of genetic material from two or more contributors. See *Roberts v. United States*, 916 A.2d 922, 927 (D.C. 2007). This method “takes all of the observed data and considers all possible profiles that could produce that data. Then, it generates a statistic, which expresses the probability that a random person would have any of those generated profiles.” B. Stiffelman, “No Longer the Gold Standard: Probabilistic Genotyping Is Changing the Nature of DNA Evidence in Criminal Trials,” 24 *Berkeley J. Crim. L.* 110, 128 (2019). “Source probability is the probability that someone other than the defendant is the source of the DNA found at the crime scene.” (Internal quotation marks omitted.) *State v. Small*, *supra*, 685. Neither the random match probability nor the combined probability of inclusion is a statement of source probability. To conflate either type with source probability is to ascribe a greater degree of certainty that the evidentiary sample contains the defendant’s DNA than is warranted based on a proper understanding of the random match probability or the combined probability of inclusion.¹³

Here, the defendant contends that, unless the prosecutor properly explained the DNA evidence to the jury, the jury “would likely believe that a random match probability of 1 in 230,000 is the likelihood that the defendant is not the source of the DNA in the vaginal sample.” (Emphasis omitted.) The defendant notes that the prosecutor asked Przech only one question about the statistical probability of the match, and, on cross-examination, Przech only briefly discussed her probability statement. The defendant contends that, because random match probability was never explained to the jury, and given the likelihood that jurors would misun-

derstand the DNA identification evidence, the evidence was unreliable and introduced in violation of the due process clause under *Manson v. Brathwaite*, supra, 432 U.S. 98. In short, the defendant contends that the jurors likely would have misunderstood Przech's testimony regarding the combined probability of inclusion as indicating source probability rather than random match probability.

The state claims that the defendant is not entitled to *Golding* review of this unpreserved claim because it is evidentiary given that (1) the statistical "evidence, on its face, is neither fundamentally unfair nor materially misleading," (2) "the record offers no suggestion that the jurors were potentially confused about the evidence," and (3) "the defendant makes no claim that the prosecutor mischaracterized or misused the . . . evidence in his closing remarks to the jury." Alternatively, the state claims that the defendant's claim fails the third prong of *Golding* because nothing in the record improperly described random match probability.

Assuming the defendant's claim asserts a constitutional violation and not merely an evidentiary issue, we conclude that the defendant has failed to establish a constitutional violation, and, accordingly, his claim fails under the third prong of *Golding*. Contrary to the defendant's assertions, the December, 2016 report and Przech's corresponding testimony were not unreliable because the jury was presented with evidence that there was a match and the statistical rarity of the match. See *State v. Sivri*, supra, 231 Conn. 156 ("because a match between two DNA bands means little without data on probabilities, the calculation of statistical probabilities is an integral part of the process [of DNA matching]" (internal quotation marks omitted)). Przech also explained that she used the combined probability of inclusion to determine the rarity of the match between the defendant's buccal swab and the evidentiary sample, and nothing in the record improperly equates random match probability with source probability.

On direct examination, the prosecutor asked Przech to explain the significance of the frequency numbers contained in her December, 2016 report. Przech testified that she employed the combined probability of inclusion. She properly explained that the combined probability of inclusion is a mathematical calculation representing "the statistical frequency *for anyone that would be included in that profile . . .*" (Emphasis added.) She emphasized that the statistical frequency was "not just for [the defendant], but for someone else [who] could have a different combination of numbers that could also be included in that profile."

Przech further noted that the DNA that had been extracted from the sperm-rich fraction of the vaginal swabs was a mixture containing DNA of three or more persons. She explained that the laboratory cannot deter-

mine when or how recovered DNA is deposited in the place that it is found, and the laboratory does not make DNA derived “identity statements” regarding samples. Rather, forensic science examiners compare “the known profile of whoever it is to the sample” and “come up with a conclusion, and then have a statistic that is driven by the [evidentiary] sample, and not by the known [sample].” Przech agreed with defense counsel that she could say only “that [the defendant] is a potential contributor and that, as of [December 16, 2016], it was 1 in 230,000 in the Hispanic population as potential contributors.” Przech did not suggest that the combined probability of inclusion is a statement of source probability.

The parties’ closing arguments only indirectly addressed Przech’s probability statistics and could not reasonably be viewed as confusing or misleading the jury as to the meaning of the combined probability of inclusion or random match probability. During the state’s closing argument, the prosecutor emphasized to the jurors that Przech’s testimony regarding the DNA evidence was just one piece of a puzzle and that “[p]utting these puzzle pieces together and deciding whether . . . there’s a picture . . . [is] your job, and the judge is going to instruct you on it.” Defense counsel reminded the jurors that the laboratory does not make identity statements regarding who is or is not guilty of a crime. Defense counsel also drew the jury’s attention to the statistical discrepancies between the September, 2016 and December, 2016 reports.

There is no indication in the record that the jury misunderstood the meaning of the combined probability of inclusion or random match probability. Cf. *State v. Pappas*, 256 Conn. 854, 887, 776 A.2d 1091 (2001) (during jury deliberations, jury sent note asking whether DNA from certain evidence was “a match to the [defendant’s] known DNA sample” (internal quotation marks omitted)). If the defendant nonetheless believed that the DNA evidence was unreliable, misleading or required a more detailed explanation, he had the opportunity to object to the testimony, cross-examine Przech, present his own expert or other contradictory evidence, and request a jury instruction. See, e.g., *id.*, 889 (“a defendant may offer an opposing expert or, as the defendant here did, use cross-examination to critique the analysis and interpretation of mtDNA evidence”); *State v. Haughey*, 124 Conn. App. 58, 75, 3 A.3d 980 (“inconclusive characteristics of the [combined probability of inclusion] method’s results were the proper subject for cross-examination”), cert. denied, 299 Conn. 912, 10 A.3d 529 (2010); *State v. Lindsey*, Docket No. 02C01-9804-CR-00110, 1999 WL 1095679, *12 (Tenn. Crim. App. October 28, 1999) (“the defense ably challenged the state’s DNA proof through intense, probing cross-examination of the state’s expert and presentation of its own expert proof”); cf. *Daubert v. Merrell Dow Pharmaceu-*

ticals, Inc., 509 U.S. 579, 596, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993) (“[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence”). Throughout defense counsel’s extensive cross-examination of Przech, defense counsel never sought to elicit any additional information regarding the combined probability of inclusion; nor did he present his own statistical evidence or request a jury instruction.

The defendant also contends that, without guidance, the jury was likely to overvalue the DNA evidence and ignore the other types of evidence pointing toward or away from his guilt. One way to address that concern is an instruction to the jury on the need to consider all of the evidence in a case. See, e.g., *State v. Pappas*, supra, 256 Conn. 889. Here, despite the fact that the defendant did not request an instruction addressing the DNA evidence, the trial court did instruct the jurors that, “[i]n deciding what the facts are, you must consider all the evidence.” The court also instructed the jurors that expert testimony is presented to assist them but that “[n]o such testimony is binding [on] you, and you may disregard the testimony either in whole or in part. It is for you to consider the testimony with the other circumstances in the case and, using your best judgment, determine whether you will give any weight to it” Finally, the court reminded the jurors that the defendant denies he is the person involved in the assault and instructed them that they “must be satisfied beyond a reasonable doubt of the identity of the defendant as the one who committed the crime” In the absence of evidence to the contrary, we presume that the jury followed the court’s instructions. See, e.g., *State v. O’Neil*, 261 Conn. 49, 82, 801 A.2d 730 (2002).

Given that Przech properly explained the statistical method she used to determine the rarity of the match, and defense counsel had the opportunity to cross-examine her, present his own statistical evidence, or request a jury instruction on this point, we conclude that the defendant has failed to establish a constitutional violation, and, as such, his claim fails under the third prong of *Golding*.

The defendant also asks us to exercise our supervisory authority to require trial courts to instruct the jury on the meaning of random match probability when DNA evidence is the only evidence identifying the defendant as the perpetrator. In response, the state contends that, “[a]ssuming that this is a claim for relief, as opposed to a suggestion, it is . . . inadequately briefed,” and, alternatively, “this request should be denied because . . . DNA was not the only evidence of guilt in this case.”

“Although [a]ppellate courts possess an inherent supervisory authority over the administration of justice

. . . [that] authority . . . is not a form of free-floating justice, untethered to legal principle. . . . Our supervisory powers are not a last bastion of hope for every untenable appeal. They are an *extraordinary* remedy to be invoked only when circumstances are such that the issue at hand, [although] not rising to the level of a constitutional violation, is nonetheless of utmost seriousness, not only for the integrity of a particular trial but also for the perceived fairness of the judicial system as a whole. . . . Constitutional, statutory and procedural limitations are generally adequate to protect the rights of the defendant and the integrity of the judicial system. Our supervisory powers are invoked only in the rare circumstance [when] these traditional protections are inadequate to ensure the fair and just administration of the courts.” (Emphasis in original; internal quotation marks omitted.) *State v. Wade*, 297 Conn. 262, 296, 998 A.2d 1114 (2010).

We decline the defendant’s invitation to exercise our supervisory powers in the present case. First, the defendant seeks to require an instruction on random match probability, but, in this case, Przech relied on the combined probability of inclusion as her statistical method to determine the rarity of the match. Although the combined probability of inclusion and random match probability produce similar statistical metrics, given that random match probability is employed for single source DNA profiles and the combined probability of inclusion is employed for mixed DNA profiles, a jury instruction on random match probability would not have fully explained the statistical method Przech employed in this case. Second, there is no indication that the jury misunderstood Przech’s description of the statistical method that she used to determine the rarity of the DNA match. Third, as we discuss in part III of this opinion, contrary to the defendant’s suggestion, the DNA evidence in this case is not the only evidence identifying the defendant as the perpetrator. Finally, the defendant also fails to explain why this extraordinary remedy is required and how this issue impacts, not only the integrity of this particular trial, but also the perceived fairness of the judicial system as a whole. See, e.g., *State v. Elson*, 311 Conn. 726, 768, 91 A.3d 862 (2014) (“a defendant seeking review of an unpreserved claim under our supervisory authority must demonstrate that his claim is one that, as a matter of policy, is relevant to the perceived fairness of the judicial system as a whole, most typically in that it lends itself to the adoption of a procedural rule that will guide the lower courts in the administration of justice in all aspects of the criminal process” (internal quotation marks omitted)). Accordingly, we decline to invoke our supervisory authority at this time to require trial courts to instruct the jury on the meaning of random match probability.¹⁴

Finally, we consider the defendant's contention that a random match probability of 1 in 230,000, by itself, is insufficient to prove that he is guilty beyond a reasonable doubt. Specifically, the defendant contends that a random match probability of 1 in 230,000 in the Hispanic population means that there are about ninety Hispanic males over the age of fifteen in the United States who could have contributed a DNA profile to the vaginal sample.¹⁵ The state contends that this "claim is meritless because the evidence establishing the defendant's identity was not based on the DNA evidence alone." Rather, the state contends, "the recordings of the defendant's two interviews with the police provided sufficient additional evidence to establish his guilt beyond a reasonable doubt." We agree with the state.

The defendant concedes that, although he moved for a judgment of acquittal, he did not raise this argument before the trial court. This court, however, "review[s] an unreserved sufficiency of the evidence claim as though it had been preserved." (Internal quotation marks omitted.) *State v. Josephs*, 328 Conn. 21, 35 n.11, 176 A.3d 542 (2018).

In evaluating a claim of evidentiary insufficiency, we "review the evidence and *construe it as favorably as possible with a view toward sustaining the conviction*, and then . . . determine whether, in light of the evidence, the trier of fact could reasonably have reached the conclusion it did reach." (Emphasis in original; internal quotation marks omitted.) *State v. Jordan*, 314 Conn. 354, 385, 102 A.3d 1 (2014). A trier of fact is permitted to make reasonable conclusions by "draw[ing] whatever inferences from the evidence or facts established by the evidence it deems to be reasonable and logical. . . . [These inferences, however] cannot be based on possibilities, surmise or conjecture." (Internal quotation marks omitted.) *Id.*

In the present case, the evidence establishing the identity of the defendant was not based on the DNA evidence alone. In particular, the video recordings of the defendant's two interviews with the police, which were played for the jury, provided additional evidence from which the jury could have concluded that the defendant was one of the perpetrators. The August, 2016 interview established that the defendant was a resident of New Britain at the time of the assault. The video of both the August and December, 2016 interviews also established that, consistent with the victim's description of the perpetrators, the defendant is Hispanic, heavyset, and speaks English.¹⁶

Jurors also reasonably could have concluded that several of the defendant's statements to the police during the interviews were inconsistent or partial truths influenced by his participation in the crime and evidence of his consciousness of guilt. For example, after

denying ever having had a threesome during the first interview, during the second interview, the defendant admitted that he had engaged in threesomes on two occasions. When the detective asked him during the second interview what happened the day the victim reported being assaulted, the defendant abandoned his lack of recollection and offered an account of picking up a man and a woman in his car near an AutoZone in New Britain and engaging in a threesome. The defendant later explained that he could not remember when that occurred or whether it was the same incident the detective was referencing. The defendant's mention of an AutoZone was significant, however, because the jury was presented with evidence that an AutoZone was located in the vicinity of where the victim reported being abducted. Finally, when the detective informed him that, in addition to the assault, the victim stated that she had been robbed of several hundred dollars, the defendant replied with words to the effect of: "That's not me. It's the other guy." The defendant concedes that his inconsistent statements to the police "might be construed as consciousness of guilt evidence"

We have "repeatedly held that a jury may infer guilt based on consciousness of guilt evidence in conjunction with other evidence" *State v. Davis*, 324 Conn. 782, 797 n.8, 155 A.3d 221 (2017); see also *State v. Morelli*, 293 Conn. 147, 154, 976 A.2d 678 (2009) (evidence of consciousness of guilt, along with other evidence, provided sufficient evidence to prove that defendant was under influence of intoxicating liquor, which is essential element of offense of operating motor vehicle while under influence of intoxicating liquor); *State v. Groomes*, 232 Conn. 455, 473–74, 656 A.2d 646 (1995) (holding that trial court properly instructed jury that it may use defendant's flight as evidence of consciousness of guilt and as independent, circumstantial evidence of defendant's guilt). Here, that other evidence was the DNA evidence.

Construing the evidence as favorably as possible to sustaining the guilty verdict, we conclude that the state's case did not rest on the DNA evidence alone and that the circumstantial evidence, combined with the DNA evidence, was sufficient for the jury to find beyond a reasonable doubt that the defendant was one of the perpetrators of the sexual assault. See, e.g., *State v. Young*, 157 Conn. App. 544, 558–59, 117 A.3d 944 (rejecting defendant's contention that evidence was insufficient to support conviction based only on DNA evidence because state's case did not rest on DNA evidence alone), cert. denied, 317 Conn. 922, 118 A.3d 549 (2015).

The judgment is affirmed.

In this opinion the other justices concurred.

* The listing of justices reflects their seniority status on this court as of

the date of oral argument.

** September 24, 2020, the date that this decision was released as a slip opinion, is the operative date for all substantive and procedural purposes.

¹ In accordance with our policy of protecting the privacy interests of the victims of sexual assault, we decline to identify the victim or others through whom the victim's identity may be ascertained. See General Statutes § 54-86e.

² CODIS contains DNA profiles from unsolved crimes and compares them to known samples from convicted felons that are periodically added to the database. See, e.g., *State v. Webb*, 128 Conn. App. 846, 852–53 n.3, 19 A.3d 678, cert. denied, 303 Conn. 907, 32 A.3d 961 (2011).

³ Because it is preferable to analyze a profile of the semen sample alone, Przech explained that, before the DNA is separated from the samples, the epithelial—or skin—cells are separated from the sperm cells.

⁴ The unofficial report also concludes that the expected frequency of individuals who could be a contributor to the DNA profile from the sperm-rich fraction of the vaginal swabs is “approximately 1 in 4.9 in the [African-American] population” and “approximately 1 in 3.3 in the Caucasian population”

⁵ The December, 2016 report also concludes that the expected frequency of individuals who could be a contributor to the DNA profile from the sperm-rich fraction of the vaginal swabs is “approximately 1 in 2.1 million in the [African-American] population” and “approximately 1 in 120,000 in the Caucasian population”

⁶ *Golding* provides that a defendant may prevail on an unpreserved claim when “(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.” (Footnote omitted.) *State v. Golding*, supra, 213 Conn. 239–40; see *In re Yasiel R.*, supra, 317 Conn. 781 (modifying third prong of *Golding* by eliminating word “clearly” before “exists” and “deprived”).

⁷ We note that the issues raised in the concurring opinion are beyond the scope of this appeal. Accordingly, we express no opinion on the merits of that opinion.

⁸ In his original brief, the defendant concedes that he does not “dispute that the analyst who generated the profile from a single source, known sample, such as a buccal swab from the defendant, may not need to testify.” Nevertheless, in his reply brief and at oral argument, the defendant attempts to raise this issue, claiming that the analyst who tested the known buccal sample from the defendant must testify at trial. We note that Przech's limited testimony on this point indicated that the buccal swab was processed in “an automated procedure,” and, rather than having an analyst physically process the sample, “a robot actually does it.” Moreover, as we have repeatedly explained, “[i]t is axiomatic that a party may not raise an issue for the first time on appeal in [his] reply brief. . . . Our practice requires an appellant to raise claims of error in his original brief, so that the issue as framed by him can be fully responded to by the appellee in its brief, and so that we can have the full benefit of that written argument. Although the function of the appellant's reply brief is to respond to the arguments and authority presented in the appellee's brief, that function does not include raising an entirely new claim of error.” (Citations omitted; internal quotation marks omitted.) *Crawford v. Commissioner of Correction*, 294 Conn. 165, 197, 982 A.2d 620 (2009). We therefore decline to review the defendant's belated claim relating to the testing of the known buccal swab.

⁹ During cross-examination, Przech testified that she did not process the sample or perform the lab work in 2007. This is of no moment because the defendant's claim is not based on the 2007 testing.

¹⁰ “[Defense Counsel]: Okay. Now, we discussed your testing in 200[7]; however, you conducted additional testing and analysis . . . in 2016. Correct?”

“[Przech]: Yes.

“[Defense Counsel]: In 2016, you conducted DNA testing of the vaginal, oral [and] genital swabs and compared the DNA profiles on those items to the known profile of [the defendant], correct?”

“[Przech]: Yes.

* * *

“[Defense Counsel]: Okay. You were given the known sample in August, [2016], or sometime after August 17, and you issued a report in December,

[2016]. You did testing on that sample during that time period. Right?

“[Przech]: Yes.

“[Defense Counsel]: And you documented your results, correct?

“[Przech]: Yes.”

¹¹ Contrary to the defendant’s assertion, *Manson v. Brathwaite*, supra, 432 U.S. 98, provides little guidance for assessing DNA evidence. In that case, the United States Supreme Court concluded that “reliability is the linchpin in determining the admissibility” of evidence of an eyewitness identification that results from an unnecessarily suggestive procedure. *Id.*, 114. The court also concluded that the factors to be considered in the analysis of whether the identification evidence is admissible are those set forth in *Neil v. Biggers*, 409 U.S. 188, 199–200, 93 S. Ct. 375, 34 L. Ed. 2d 401 (1972). See *Manson v. Brathwaite*, supra, 114. These factors include “the opportunity of the witness to view the criminal at the time of the crime, the witness’ degree of attention, the accuracy of his prior description of the criminal, the level of certainty demonstrated at the confrontation, and the time between the crime and the confrontation. Against these factors is to be weighed the corrupting effect of the suggestive identification itself.” *Id.*

¹² The defendant also appears to contend that we may reverse the judgment on the ground of plain error. The defendant’s claim is not briefed beyond a conclusory assertion in a single footnote. He contends, without any analysis, that “[c]onvicting the defendant solely on misunderstood DNA evidence affects the fairness and integrity of and public confidence in his trial and conviction.” In addition to inadequately briefing his claim; see, e.g., *Estate of Rock v. University of Connecticut*, 323 Conn. 26, 33, 144 A.3d 420 (2016) (“Claims are inadequately briefed when they are merely mentioned and not briefed beyond a bare assertion. . . . Claims are also inadequately briefed when they . . . consist of conclusory assertions . . . with no mention of relevant authority and minimal or no citations from the record” (Internal quotation marks omitted.)); the defendant also failed to demonstrate that the jury did not understand the state’s DNA evidence.

¹³ Conflating the random match probability with source probability is known as the prosecutor’s fallacy. See, e.g., *McDaniel v. Brown*, 558 U.S. 120, 128, 130 S. Ct. 665, 175 L. Ed. 2d 582 (2010) (“The prosecutor’s fallacy is the assumption that the random match probability is the same as the probability that the defendant was not the source of the DNA sample. . . . In other words, if a juror is told [that] the probability a member of the general population would share the same DNA is 1 in 10,000 (random match probability), and he takes that to mean there is only a 1 in 10,000 chance that someone other than the defendant is the source of the DNA found at the crime scene (source probability), then he has succumbed to the prosecutor’s fallacy.” (Citation omitted.)).

¹⁴ Having reached this conclusion, however, we take this opportunity to emphasize that, in appropriate circumstances, and when the defendant requests it, a trial court may instruct the jury on the meaning of the statistical rarity of a match. Our research has not revealed, and the defendant does not contend, that any jurisdiction—state or federal—has adopted a model instruction on the meaning of random match probability. The need for such an instruction, what information such an instruction might contain, and whether it is proper to give such an instruction, however, have been discussed in academic literature and several cases. See, e.g., *State v. Bloom*, 516 N.W.2d 159, 170–71 (Minn. 1994) (Page, J., concurring specially); P. Chaudhuri, “A Right to Rational Juries? How Jury Instructions Create the ‘Bionic Juror’ in Criminal Proceedings Involving DNA Match Evidence,” 105 Cal. L. Rev. 1807, 1850–51 (2017).

Several courts have concluded that the failure to give such an instruction was appropriate because the instruction improperly addressed matters of scientific fact, not legal principles. See, e.g., *State v. Paxton*, Docket No. 2 CA-CR 2007-0062, 2008 WL 4551502, *4 (Ariz. App. January 14, 2008); *Stanley v. State*, 289 Ga. App. 373, 375–76, 657 S.E.2d 305 (2008); *Keen v. Commonwealth*, 24 Va. App. 795, 807–808, 485 S.E.2d 659 (1997).

This court, however, has taken a different view of jury instructions involving scientific facts—specifically, in the context of research disproving common misperceptions about the reliability of eyewitness identification. We determined that, in a given case in which the concerns raised by the scientific evidence were applicable, it would be proper for a trial court to give a cautionary jury instruction on eyewitness identification. See *State v. Harris*, 330 Conn. 91, 134–35, 191 A.3d 119 (2018) (“it may be appropriate for the trial court to craft jury instructions to assist the jury in its consideration of [the reliability of eyewitness testimony]”), citing *State v. Guilbert*, 306 Conn.

218, 257–58, 49 A.3d 705 (2012); see also *State v. Guilbert*, supra, 258 (trial court retains discretion to give “jury instructions on the fallibility of eyewitness identification evidence,” provided that “any such instructions should reflect the findings and conclusions of the relevant scientific literature pertaining to the particular variable or variables at issue in the case”).

Given that there is no consensus on the proper instruction explaining random match probability, or whether such instruction is appropriate, and that we need not decide this issue to resolve the present case, we leave for another day the question of under what circumstances a jury instruction should be provided and the precise phrasing of that instruction.

¹⁵ The defendant reasons that the 2016 census identified 41.5 million Hispanic people in the United States over the age of fifteen. The defendant assumes that one half of those individuals, 20.75 million, are male. He arrives at the pool of ninety by dividing 20.75 million by 230,000.

¹⁶ Evidence that the defendant lived in New Britain and resembled the victim’s description of one of the perpetrators renders the defendant’s argument regarding the number of Hispanic males in the United States unpersuasive because the argument erroneously assumes that the group of people in the population that could have contributed to the profile in the evidentiary sample, in this case ninety, are all equally suspect. This is known as the defense fallacy, and it “understat[es] the tendency of a reported match to strengthen source probability and narrow the group of potential suspects. . . . [T]he real source probability will reflect the relative strength of circumstantial evidence connecting the defendant and other persons with matching DNA to the scene of the crime.” (Emphasis omitted; footnote omitted.) *United States v. Chischilly*, 30 F.3d 1144, 1157 (9th Cir. 1994) (overruled in part on other grounds by *United States v. Preston*, 751 F.3d 1008 (9th Cir. 2014)), cert. denied, 513 U.S. 1132, 115 S. Ct. 946, 130 L. Ed. 2d 890 (1995).
