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STATE OF CONNECTICUT v. MICHAEL SHARPE
(SC 20815)

Mullins, C. J., and McDonald, D'Auria, Ecker,
Alexander and Dannehy, Js.

Syllabus

Convicted of multiple counts of kidnapping in the first degree in connection with four separate incidents that occurred in 1984, the defendant appealed to this court. During each incident, an unknown assailant robbed and sexually assaulted a woman in her home. The cases remained unresolved until 2020, when law enforcement received information tending to implicate the defendant. Thereafter, the police lawfully collected the defendant's trash from in front of his residence, which included a belt. The police then, acting without a search warrant, submitted the belt to the state forensic laboratory for testing. Analysts used DNA extracted from the belt to conduct a short tandem repeat analysis and determined that that DNA was a contributor to an unknown DNA profile that had been generated from certain items recovered from the four crime scenes. The police then obtained a search warrant to collect a confirmatory sample of the defendant's DNA, which established that the defendant was the likely source of the crime scene DNA. After the presentation of evidence at the defendant's trial, the court instructed the jury on the elements of the kidnapping charges in accordance with this court's decision in *State v. Salamon* (287 Conn. 509), including the six factors that the jury should consider in determining whether the defendant had intended to restrain the victims beyond the degree necessary to commit the underlying crimes. The following day, the court provided the jury with a flowchart outlining the elements of the kidnapping charges as a visual guide to its previous instructions, but the flowchart omitted any reference to the *Salamon* factors. On appeal, the defendant claimed that the warrantless extraction and testing of the DNA from his discarded belt constituted an unreasonable search and seizure in violation of his rights under the fourth amendment to the United States constitution and article first, § 7, of the Connecticut constitution, and that the omission of the *Salamon* factors from the flowchart misled the jury. *Held:*

The defendant could not prevail on his claim that either the warrantless collection or the warrantless analysis of his DNA from the discarded belt violated his rights under the fourth amendment.

The warrantless collection of the defendant's DNA from the discarded belt did not constitute a search under the fourth amendment because, even if the defendant had a subjective expectation of privacy in the biological materials that he inadvertently or involuntarily shed onto the belt, society would not recognize that expectation as reasonable.

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It was undisputed that the defendant lacked a reasonable expectation of privacy in the belt itself because he had discarded it into the trash, and, because it is well known that humans cannot completely prevent the shedding of biological materials containing DNA, it is no secret that, when an individual discards an article of clothing or a clothing accessory, DNA may be present on that article or accessory, and may be available for collection.

Moreover, the warrantless analysis of the DNA extracted from the defendant's discarded belt, for identification purposes only, did not constitute a search under the fourth amendment.

Even if this court assumed that the defendant had a subjective expectation of privacy in the identifying characteristics encoded in his DNA, the analysis of DNA extracted from a discarded object that is in the lawful possession of the police, for identification purposes only, does not constitute a search for purposes of the fourth amendment because a defendant does not maintain an objectively reasonable expectation of privacy in the identifying characteristics encoded therein under those circumstances.

In the present case, the defendant did not claim that the state tested his DNA for any purpose other than for identification, and the short tandem repeat analysis employed by the state forensic laboratory was not capable of revealing anything more than the defendant's identity.

After considering the relevant factors set forth in *State v. Geisler* (222 Conn. 672) for construing the parameters of the Connecticut constitution, this court concluded that, under the circumstances of this case, article first, § 7, of the Connecticut constitution did not afford greater protection than the fourth amendment and that the warrantless extraction and testing of the defendant's DNA from the discarded belt for identification purposes only did not violate the defendant's rights under the state constitution.

The trial court did not mislead the jury by providing it with a flowchart that outlined the elements of kidnapping in the first degree but that omitted any reference to the *Salamon* factors.

The defendant conceded that the trial court provided a full description of the *Salamon* factors in its instructions, and it was of no consequence that the court submitted the flowchart to the jury one day after it read its instructions.

Moreover, when the court gave the jury the flowchart, it clearly and expressly instructed that the flowchart was to be used only as a guide to its prior instructions and that the flowchart did not replace those prior instructions, and, because the defendant failed to establish that the jury did not follow the court's instruction regarding the purpose of the flowchart, this court presumed that the jury heeded that instruction and was not misled by the flowchart's omission of the *Salamon* factors.

*(Two justices concurring in part and dissenting
in part in one opinion)*

Argued January 30—officially released October 7, 2025

Procedural History

Substitute information charging the defendant with eight counts of the crime of kidnapping in the first degree, brought to the Superior Court in the judicial district of Hartford and tried to the jury before *D'Adabbo, J.*; verdict and judgment of guilty, from which the defendant appealed to this court. *Affirmed.*

Hope J. Estrella, deputy assistant public defender, for the appellant (defendant).

Denise B. Smoker, senior assistant state's attorney, with whom, on the brief, were *Sharmese Walcott*, state's attorney, and *John Fahey*, supervisory assistant state's attorney, for the appellee (state).

Abigail H. Mason and *Vishal Garg* filed a brief for the Connecticut Criminal Defense Lawyers Association as amicus curiae.

Opinion

MCDONALD, J. This appeal requires us to determine, among other things, whether the police may, without a warrant, collect DNA found on lawfully obtained items and analyze the DNA for identification purposes. The defendant, Michael Sharpe, appeals from the judgment of conviction, rendered after a jury trial, of eight counts of kidnapping in the first degree. He claims that the extraction and testing of his DNA from a belt the police lawfully retrieved from his trash constituted an unreasonable search and seizure that violated his right to privacy under the fourth amendment to the United States constitution and article first, § 7, of the Connecticut constitution. He further claims that the trial court's use of a flowchart as a guide to its lengthy instructions misled the jury because it omitted the factors this court articulated in *State v. Salamon*, 287 Conn. 509, 548, 949 A.2d 1092 (2008). We disagree and affirm the trial court's judgment of conviction.

The facts presented to the jury demonstrate that, in June, 1984, Jane Doe 1¹ was awakened in her Bloomfield apartment sometime after midnight to a man sitting on her bed. Because it was dark, Jane Doe 1 could see only the silhouette of a person whose face was covered with what appeared to be a stocking. The man told her that he had a gun and was hiding from the police because he had shot someone. He then blindfolded her and left the room for approximately ten to fifteen minutes. After returning, the man tied Jane Doe 1's hands, put a gun to her head, and sexually assaulted her. The man told her not to leave her room for thirty minutes or to call the police. He took a few items and left. Jane Doe 1 called the police to report the sexual assault. After investigating the crime scene, the police seized a bedsheet from Jane Doe 1's apartment and submitted it to the Connecticut State Police Forensic Science Laboratory (forensic science laboratory) for testing.

Over the next two months, the police received additional reports from three women who lived in Middletown, Windsor, and Rocky Hill, respectively. Each woman recounted a similar sequence of events: a man had awakened her during the night, told her that he was fleeing the police because he had shot someone or had committed a crime, threatened her with a gun, blindfolded her, and restrained her. The man then searched for money or other valuable items in each woman's apartment sometime before or after sexually assaulting her. The man asked two of the women whether they had any food and appeared to help himself to a meal in their kitchens before leaving. Because the assaults occurred during the night, the women could not provide identifying characteristics beyond the

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

man's hair texture, the tone of his voice, and what felt like scars on the man's stomach and near his shoulder. Police detectives also collected items from the women's apartments and delivered them to the state forensic laboratory.

The state forensic laboratory later analyzed the items collected from each crime scene. The results revealed the presence of semen on Jane Doe 1's bedsheet, Jane Doe 2's bath towel, Jane Doe 3's washcloth, and Jane Doe 4's bedsheet. The test also detected amylase, an enzyme found in human saliva, on a mask recovered from Jane Doe 3's apartment. Because DNA testing was not fully developed or widespread in 1984, the state forensic laboratory was unable to conduct such testing on any of the items at that time.

By 2003, the state forensic laboratory had begun to conduct DNA testing. As a result of this development, the laboratory extracted and tested DNA from the items that investigators had collected from the women's apartments years earlier. After creating a DNA profile for each sample, the laboratory uploaded the DNA profiles to the Combined DNA Index System (CODIS).² Based on its CODIS search and subsequent analysis, the laboratory concluded that all four of the DNA samples likely came from the same male source.³

In 2020, a private forensic investigation company provided the cold case unit of the Office of the Chief State's

² CODIS is a searchable statewide index, linked to a federal index, that "contains DNA profiles from unsolved crimes and compares them to known samples from convicted felons that are periodically added to the database." *State v. Rodriguez*, 337 Conn. 175, 180 n.2, 252 A.3d 811 (2020).

³ Based on this information, the police obtained a John Doe arrest warrant in 2003 in connection with the four sexual assaults that occurred in 1984. The warrant was vacated in 2004, when the twenty year statute of limitations for sexual assault crimes had expired. Later that year, the police obtained another John Doe arrest warrant for kidnapping, for which there is no statute of limitations. See General Statutes § 54-193 (a) (1) (A). The warrant for the kidnapping charges remained in effect until 2021.

Attorney two “investigative leads” based on the DNA profiles the state forensic laboratory had developed in 2003.⁴ Specifically, the company recommended that the cold case unit obtain DNA samples from two brothers who were identified as possible matches to the DNA from the crime scenes. In order to obtain a DNA sample from the first lead, the cold case unit supervisory inspector, Michael Sheldon, instructed an investigative team to knock on the first lead’s door and request that he sign a fictitious petition with a sterilized pen. To obtain the second lead’s DNA, Sheldon’s team retrieved a cigarette that the second lead discarded while driving. The state forensic laboratory tested the DNA it had extracted from the pen and cigarette. Based on the results, the laboratory eliminated the first two leads as contributors to the DNA profiles that were generated from the items that were found at the four crime scenes.

The company subsequently provided two additional leads to the cold case unit, the defendant and his brother. Sheldon’s team first obtained a DNA sample from the defendant’s brother by having him sign a fictitious form. The state forensic laboratory’s DNA testing eliminated him as a suspect. To obtain a DNA sample from the defendant, Sheldon contacted the local trash collection company that serviced the defendant’s house, where the defendant’s daughter and son-in-law also lived. After picking up trash from the defendant’s trash

⁴ The cold case unit of the Office of the Chief State’s Attorney sent the DNA profile created in 2003 to Bode Technology, a private forensic investigative company. Bode Technology utilized single nucleotide polymorphism (SNP) testing to create a DNA profile, which was entered into GEDmatch, a commercial genealogical database. With the use of GEDmatch, Bode Technology was able to create a family tree that identified the investigative leads that it provided to the state in 2020. Prior to trial, the state and the defendant agreed that the state would not identify Bode Technology or present witnesses from Bode Technology to testify about the forensic methods it had used to identify the leads or the results of its findings. The defendant does not argue that the state’s act of contracting with a third party to conduct SNP testing violated the fourth amendment.

cans in front of his house, the trash company delivered it to the police barracks. Detectives inventoried items from the trash, including two belts, a fork, a medical auto-injector pen, and a catheter, believing they belonged to the defendant. The state forensic laboratory then extracted DNA from one of the belts, conducted short tandem repeat (STR) analysis on the DNA, and compared the genetic markers sequenced from the DNA extracted from the belt to the genetic profiles that were generated from the items that were retrieved from the crime scenes.⁵ The state forensic laboratory determined that the DNA extracted from the belt was included as a contributor to one of the unknown profiles. For each lead the police investigated, including the defendant, they acted without a search warrant.

Based on the test results, Sheldon obtained a search warrant and collected a confirmatory sample of the defendant's DNA. The state forensic laboratory compared the confirmatory DNA sample to the DNA profiles created from the four crime scene items. It determined that the DNA profiles that were generated from the items collected from the Middletown, Windsor, and Rocky Hill crime scenes were consistent with the defendant being the source of the DNA and concluded that "[t]he expected frequency of individuals who could be the source of the DNA profile[s] from those three forensic items is less than one in seven billion in the general

⁵ A forensic science examiner testified that the state forensic laboratory used combined testing kits called "Profiler Plus and COfiler" to analyze the DNA extracted from the belt. She further testified that these testing kits were capable of analyzing thirteen STR loci. After testing and sequencing a DNA sample, analysts can determine the frequency of genetic sequences unique to an individual. Based on the profile analysts develop, they can compare it to different DNA samples to identify the likelihood that the DNA profile from one DNA sample matches another DNA sample. In this case, the state forensic laboratory compared the DNA profile from the belt to one of the unknown DNA profiles that was generated from one of the four crime scene items to determine that the defendant's DNA was consistent with being the source of the DNA from that crime scene item.

population.” For the Bloomfield DNA profile, the state forensic laboratory could not eliminate the defendant as a contributor and concluded that “the expected frequency of individuals who cannot be eliminated as a contributor to the DNA profile was approximately . . . one in 7.3 million in the general population.” The police arrested the defendant that day.

The state charged the defendant with eight counts of kidnapping in the first degree: four counts in violation of General Statutes § 53a-92 (a) (2) (A) for “abduct[ing] another person and . . . restrain[ing] the person abducted with intent to . . . violate or abuse [her] sexually,” and four counts in violation of § 53a-92 (a) (2) (B) for “abduct[ing] another person and . . . restrain[ing] the person abducted with intent to . . . accomplish or advance the commission of a felony” After approximately one week of trial, the trial court provided lengthy instructions to the jury. To aid the jury, the court created a one page flowchart that outlined the elements of the kidnapping charges. The flowchart did not refer to or include the factors from *State v. Salamon*, supra, 287 Conn. 548, that jurors should consider in a kidnapping case when determining whether “the movement or confinement of the victim is merely incidental to and necessary for another crime” Id., 547. Over defense counsel’s objection, the court provided the flowchart to the jury. The court reasoned that the flowchart would not mislead the jury because the *Salamon* factors were included in the jury instructions, and it would inform the jury that the flowchart was not a substitute for its instructions. The jury found the defendant guilty on all charges. The defendant was sentenced to a total effective sentence of seventy-two years of incarceration. Additional facts and procedural history will be set forth as necessary.

On appeal, the defendant contends that the warrantless collection and analysis of DNA from his dis-

carded belt violated his right to privacy under the federal and state constitutions. He also argues that the trial court's use of the flowchart misled the jury on the kidnapping charges. We disagree and affirm the judgment of conviction.

I

We first consider the defendant's unpreserved claim that the warrantless collection and analysis of DNA from his discarded belt violated his fourth amendment right to privacy.⁶ Two distinct issues are presented: (1) whether the defendant had a reasonable expectation of privacy in the biological material containing DNA that was shed onto his discarded belt, such that the police needed to obtain a warrant before they could collect such material; and (2) whether the defendant had a reasonable expectation of privacy in the identifying characteristics encoded within his DNA, such that the police needed to obtain a warrant before the DNA was analyzed solely for identification purposes. We address the defendant's federal constitutional claim prior to his state constitutional claim because "we can predict to a reasonable degree of certainty how the

⁶ The defendant concedes that he did not preserve this constitutional claim 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). The state agrees with the defendant that the first two prongs of *Golding* are satisfied and that this court may proceed to the merits of the defendant's claim. We agree. Accordingly, we review this claim pursuant to *Golding*, under which "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. Holley*, 327 Conn. 576, 590 n.8, 175 A.3d 514 (2018); see *State v. Golding*, *supra*, 239–40; see also *In re Yasiel R.*, *supra*, 781 (modifying third prong of *Golding*).

United States Supreme Court would resolve the issue”; *State v. Purcell*, 331 Conn. 318, 334 n.11, 203 A.3d 542 (2019); and it is more efficient to address the defendant’s claim under the federal constitution first. See, e.g., *State v. Taupier*, 330 Conn. 149, 166 n.14, 193 A.3d 1 (2018) (concluding that it was more efficient to address federal claim first because review of federal precedent would be necessary under state constitutional framework set forth in *State v. Geisler*, 222 Conn. 672, 684–85, 610 A.2d 1225 (1992)), cert. denied, 586 U.S. 1148, 139 S. Ct. 1188, 203 L. Ed. 2d 202 (2019). We conclude that the collection of the defendant’s DNA from his discarded belt, which was in the police’s lawful possession, and the subsequent analysis of that DNA solely for identification purposes did not constitute searches under the fourth amendment.⁷

We begin with the guiding legal principles applicable to both issues. The fourth amendment to the United States constitution provides that “[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated” U.S. Const., amend. IV. A fourth amendment search occurs either when the government “engage[s] in [a] physical intrusion of a constitutionally protected area”; (internal quotation marks omitted) *United States v. Jones*, 565 U.S. 400, 407, 132 S. Ct. 945, 181 L. Ed. 2d 911 (2012); or “when an expectation of privacy that society is prepared to consider reasonable is infringed.” *United States v. Jacobsen*, 466 U.S. 109, 113, 104 S. Ct. 1652, 80 L. Ed. 2d 85 (1984); see also, e.g., *Katz v. United States*, 389 U.S. 347, 361, 88 S. Ct. 507, 19 L. Ed. 2d 576 (1967) (Harlan, J., concurring).

⁷ The term “collection” refers to the forensic process of physically retrieving samples of biological material from the item or location under investigation. “Analysis” refers to the subsequent forensic processes used to generate a DNA profile from the sample collected. See generally J. Butler, *Fundamentals of Forensic DNA Typing* (Academic Press 2010).

To determine whether a defendant's expectation of privacy was reasonable in nontrespassory contexts, federal courts ordinarily follow the test that Justice John Marshall Harlan articulated in his concurring opinion in *Katz v. United States*, *supra*, 389 U.S. 361 (Harlan, J., concurring). See, e.g., *United States v. Harry*, 130 F.4th 342, 347 (2d Cir. 2025). "The *Katz* test has both a subjective and an objective prong: (1) whether the [person contesting the search] manifested a subjective expectation of privacy with respect to [the subject of the search]; and (2) whether that expectation [is] one that society would consider reasonable. . . . This determination is made on a case-by-case basis. . . . The burden of proving the existence of a reasonable expectation of privacy rests [with] the defendant." (Internal quotation marks omitted.) *State v. Jacques*, 332 Conn. 271, 279, 210 A.3d 533 (2019); see, e.g., *California v. Ciraolo*, 476 U.S. 207, 211–12, 106 S. Ct. 1809, 90 L. Ed. 2d 210 (1986).

A

Collection of the Defendant's DNA from the
Discarded Belt

The defendant first claims that, even though the police may have been in lawful possession of his discarded belt, he maintained a reasonable expectation of privacy in the DNA on the belt, and the collection of his DNA from the belt constituted a search under the fourth amendment. The defendant argues that the first prong of the *Katz* test is inapt when applied to DNA collection under these circumstances. He contends that the record suggests that his DNA transferred to his belt simply because he touched it, and, because people routinely shed material containing DNA without conscious awareness, we should not force our analysis of the defendant's subjective expectation regarding his DNA into the *Katz* framework or conclude that he aban-

doned his reasonable expectation of privacy in his DNA. See, e.g., *State v. Dawson*, 340 Conn. 136, 153, 263 A.3d 779 (2021) (“DNA . . . can be left behind through primary transfer, secondary transfer, or aerosolization . . . [and] ‘touch’ transfer occurs, for example, when you directly touch or pick up an object”). The state argues that, once the defendant had disposed of his belt, with his DNA on it, and had left it on the curb, he abandoned any expectation of privacy in the belt and the DNA on it. Therefore, the subsequent warrantless collection of that DNA, the state argues, did not violate the defendant’s fourth amendment rights. We conclude that the collection of the defendant’s DNA from his discarded belt, separate and apart from the analysis of his DNA, did not constitute a fourth amendment search.

We begin with the legal principles that are relevant to this issue. “The [f]ourth [a]mendment proscribes all unreasonable searches and seizures, and it is a cardinal principle that searches conducted outside the judicial process, without prior approval by [a] judge or magistrate, are per se unreasonable under the [f]ourth [a]mendment—subject only to a few specifically established and [well delineated] exceptions.” (Internal quotation marks omitted.) *Mincey v. Arizona*, 437 U.S. 385, 390, 98 S. Ct. 2408, 57 L. Ed. 2d 290 (1978). Relevant to the present case, the proper inquiry is whether, pursuant to the *Katz* framework, “the person claiming the protection of the [f]ourth [a]mendment has a legitimate expectation of privacy in the invaded place.” (Internal quotation marks omitted.) *State v. Mooney*, 218 Conn. 85, 107, 588 A.2d 145, cert. denied, 502 U.S. 919, 112 S. Ct. 330, 116 L. Ed. 2d 270 (1991). This point is critical to our analysis because the defendant raises two separate and distinct arguments on appeal, which are that he maintained a reasonable expectation of privacy in (1) his DNA, as a physical substance, on his discarded belt, such that a warrant was required to collect the

DNA, and (2) the information encoded within the physical DNA that was collected. We analyze each issue separately because, even if the defendant had relinquished a reasonable expectation of privacy in the physical collection of his DNA, as we conclude, that does not necessarily mean that he had relinquished a reasonable expectation of privacy with respect to all the information encoded therein.

In the present case, it is undisputed that the defendant did not have a reasonable expectation of privacy in his belt because he had discarded it in the trash. See, e.g., *California v. Greenwood*, 486 U.S. 35, 40–42, 108 S. Ct. 1625, 100 L. Ed. 2d 30 (1988) (concluding that individual did not have objectively reasonable expectation of privacy in trash placed on curb). Once the defendant relinquished a reasonable expectation of privacy in the belt, and it came into the lawful possession of the police, however, it was swabbed to collect DNA. The threshold question, therefore, is whether the collection of the defendant’s DNA from the discarded belt, which was in the lawful possession of the police, constituted a fourth amendment search. We utilize the *Katz* framework to answer this question.

Under *Katz*, we must first determine whether the defendant had a subjective expectation of privacy in the DNA on the discarded belt and whether that is an expectation society would recognize as reasonable. See, e.g., *State v. Jacques*, supra, 332 Conn. 279. Even if we assume that the defendant had a subjective expectation of privacy in the material he involuntarily or inadvertently shed onto the belt, we conclude that society would not recognize such an expectation as reasonable. See, e.g., *State v. DeFusco*, 224 Conn. 627, 633 n.9, 620 A.2d 746 (1993) (determination of “whether the defendant possessed a subjective expectation of privacy . . . [was] unnecessary to the resolution of [the] case in light of [this court’s] conclusion that the defendant ha[d]

not satisfied the second part of the *Katz* test”). First, the object that is being swabbed is the discarded belt, in which the defendant has no expectation of privacy. Second, although we agree with the defendant that people can do very little—if anything at all—to completely prevent certain materials that contain DNA from shedding; see, e.g., *State v. Dawson*, supra, 340 Conn. 153 (“DNA . . . can be left behind through primary transfer, secondary transfer, or aerosolization . . . [and] ‘touch’ transfer occurs, for example, when you directly touch or pick up an object”); it is equally true that this fact is commonly known amongst the public. As some courts and scholars have recognized, society is generally aware that people shed biological materials that the police may later use for the purpose of identifying a suspect, whether fingerprints or other materials that contain DNA. See, e.g., *People v. Gallego*, 190 Cal. App. 4th 388, 396–97, 117 Cal. Rptr. 3d 907 (2010), review denied, California Supreme Court, Docket No. S189452 (March 16, 2011); *Raynor v. State*, 440 Md. 71, 94 n.12, 99 A.3d 753 (2014), cert. denied, 574 U.S. 1192, 135 S. Ct. 1509, 191 L. Ed. 2d 433 (2015); L. Matejik, “DNA Sampling: Privacy and Police Investigation in a Suspect Society,” 61 Ark. L. Rev. 53, 78 (2008).

It is no secret, therefore, that, when an individual discards a clothing accessory, DNA may be on that accessory and be available for collection. Indeed, many courts have concluded that, once an individual discards an item, he or she no longer maintains a reasonable expectation of privacy in the item or the DNA available for collection from that item.⁸ See, e.g., *United States*

⁸ We recognize that some of these cases suggest that, once an individual no longer maintains a reasonable expectation of privacy in the discarded item, that person no longer has a reasonable expectation of privacy in his or her DNA and *all* of the information encoded therein. These cases, however, did not consider whether, aside from identifying characteristics encoded in DNA, an individual may maintain a reasonable expectation of privacy in all of the other genetic information encoded therein. Cf. *State v. Carbo*, 6 N.W.3d 114, 131 (Minn. 2024) (Procaccini, J., concurring) (explaining that

v. *Hicks*, Docket No. 2:18-cr-20406-JTF-7, 2020 WL 7311607, *2 (W.D. Tenn. December 11, 2020) (concluding that defendant “surrendered any expectation of privacy he had in the DNA profile that could be extracted” from cigarette butt he had discarded); *United States v. Scott*, Docket No. 10-00027-01-CR-W-ODS, 2011 WL 5387601, *6 (W.D. Mo. October 3, 2011) (explaining that DNA obtained from defendant’s cup should not be suppressed because analysis of abandoned property is not fourth amendment search); *State v. Burns*, 988 N.W.2d 352, 361–64 (Iowa) (explaining that, when defendant had left straw at restaurant, he no longer had reasonable expectation of privacy in straw or DNA on straw), cert. denied, U.S. , 144 S. Ct. 288, 217 L. Ed. 2d 132 (2023); *McCurley v. State*, 653 S.W.3d 477, 490–91 (Tex. App. 2022, pet. ref’d) (concluding that defendant had abandoned his trash, so he had no standing to contest subsequent analysis of DNA found therein); *State v. Vannieuwenhoven*, 412 Wis. 2d 33, 54, 8 N.W.3d 63 (App.) (concluding that defendant did not have reasonable expectation of privacy in DNA profile after voluntarily giving envelope and its contents, including saliva, to law enforcement), review denied, 15 N.W.3d 27 (Wis. 2024); see also, e.g., *Raynor v. State*, supra, 440 Md. 74, 81–82 (explaining that defense counsel had conceded that warrantless swabbing of involuntarily shed biological material was lawful); *State v. Westrom*, 6 N.W.3d 145, 153–54 (Minn.) (operating on assumption, although not explicitly, that collection of biological material from discarded napkin was lawful), cert. denied, U.S. , 145 S. Ct. 418, 220 L. Ed. 2d 172 (2024).

individual’s abandonment of physical evidence does not necessarily mean that that individual abandoned expectation of privacy in deeply sensitive and personal information found in that physical evidence). For this reason, we rely on these cases only to the extent that they support the proposition that law enforcement can lawfully *collect* biological material from discarded items without a warrant. Our conclusion is not inconsistent with these cases but, rather, is simply narrower.

Accordingly, we conclude that the collection of DNA from the defendant's discarded belt was not a search under the fourth amendment.⁹

B

Analysis of the Lawfully Collected DNA

The defendant alternatively claims that, even if the police lawfully collected his DNA from the belt, the subsequent warrantless analysis of his DNA, even if solely for identification purposes, constituted a search under the fourth amendment. We disagree. For the reasons that follow, we conclude that, when the police analyze a person's DNA that was collected from a discarded item that is in the lawful possession of the police, that person does not have a reasonable expectation of privacy in the identifying information encoded in his or her DNA. Because the police in the present case analyzed the defendant's DNA only for identification purposes and used technology that was capable of testing only for that purpose, such analysis did not constitute a search under the fourth amendment.

We utilize the *Katz* framework to determine whether the analysis of the defendant's DNA only for identification purposes constituted a search. As we previously explained in this opinion, under the *Katz* framework, we must ask "whether the [person contesting the search] manifested a subjective expectation of privacy with respect to [the subject of the search]" and "whether that expectation [is] one that society would consider

⁹ If an individual had a reasonable expectation of privacy in the biological materials involuntarily or inadvertently shed on items discarded, then the police would need to obtain a warrant before they could lift or collect such materials at a crime scene, or at a public location, to comply with the fourth amendment. The United States Supreme Court has never indicated that such practice is required by the United States constitution. See, e.g., *Raynor v. State*, supra, 440 Md. 85, 87 (testing of fingerprints left unknowingly on surfaces in public places does not implicate protections of fourth amendment).

reasonable.” (Internal quotation marks omitted.) *State v. Jacques*, supra, 332 Conn. 279; see, e.g., *California v. Ciraolo*, supra, 476 U.S. 211–12. Even if we assume that the defendant had a subjective expectation of privacy in the identifying characteristics encoded in his DNA; see, e.g., *State v. DeFusco*, supra, 224 Conn. 633 n.9; we can predict with a reasonable degree of certainty that the United States Supreme Court would conclude that the testing of the defendant’s DNA, collected from a discarded item in the police’s lawful possession, for identification purposes only, did not constitute a fourth amendment search because the defendant did not maintain an objectively reasonable expectation of privacy in his identifying characteristics encoded therein.

The United States Supreme Court’s reasoning in *Maryland v. King*, 569 U.S. 435, 133 S. Ct. 1958, 186 L. Ed. 2d 1 (2013), gives us “a reasonable degree of certainty how [it] would resolve the issue” *State v. Purcell*, supra, 331 Conn. 334 n.11. In *King*, the court considered whether taking a buccal swab from the defendant and testing his DNA, without a warrant, as part of routine police booking procedures pursuant to the Maryland DNA Collection Act, violated the fourth amendment.¹⁰ See *Maryland v. King*, supra, 440–41. Although the court determined that swabbing the interior of the defendant’s cheek to collect DNA was a search, it also concluded that the search was reasonable under the fourth amendment. See *id.*, 446, 465–66. The court separately noted that the STR analysis used to test the defendant’s DNA “did not amount to a significant invasion of privacy that would render the DNA identification impermissible under the [f]ourth [a]mendment.”

¹⁰ The United States Supreme Court explained that this “[a]ct authorizes Maryland law enforcement authorities to collect DNA samples from ‘an individual who is charged with . . . a crime of violence or an attempt to commit a crime of violence; or . . . burglary or an attempt to commit burglary.’” *Maryland v. King*, supra, 569 U.S. 443.

Id., 465. This conclusion, and other aspects of the court's analysis revealing its attitude toward STR testing, allows us to predict that it would conclude that STR testing of an individual's DNA that was collected from a discarded item in the police's lawful possession, for identification purposes only, does not constitute a fourth amendment search.

We begin with the court's discussion in *King* on the limited nature of STR testing. The court explained that STRs are the "repeated DNA sequences scattered throughout the human genome" (Internal quotation marks omitted.) Id., 443. "The alternative possibilities for the size and frequency of these STRs at any given point along a strand of DNA are known as 'alleles' . . . and multiple alleles are analyzed in order to ensure that a DNA profile matches only one individual." (Citation omitted.) Id. This method of testing, the court noted, has become nationally standardized though the creation of the CODIS database. See id., 444–45. The profiles in this database are "based on [thirteen] loci at which the STR alleles are noted and compared." Id., 445. These loci come from the nonprotein coding regions of DNA that do "not show more far-reaching and complex characteristics like genetic traits" and that are useful only for identification purposes. Id., 442–43.

After providing this general background on STR testing, the court in *King* turned to the central issue in that case: whether the use of a warrantless buccal swab to take a DNA sample pursuant to the Maryland DNA Collection Act was impermissible under the fourth amendment. See id., 446. Although the buccal swab collection constituted a search; id.; the court did not apply the *Katz* reasonable expectation of privacy framework. Instead, it analyzed the constitutionality of the search by balancing the individual's privacy interests against the legitimate interests of law enforcement. See id., 448.

Throughout its analysis, the court compared DNA identification to fingerprinting and photographic identification. See *id.*, 451–52, 456–61. It observed that “the only difference between DNA analysis and the accepted use of fingerprint databases is the unparalleled accuracy DNA provides.” *Id.*, 451. It further explained that, “[l]ike a fingerprint, the [thirteen] CODIS loci are not themselves evidence of any particular crime A DNA profile is useful to the police because it gives them a form of identification to search the records already in their valid possession. In this respect the use of DNA for identification is no different [from] matching an arrestee’s face to a wanted poster of a previously unidentified suspect . . . or matching the arrestee’s fingerprints to those recovered from a crime scene.” *Id.* With respect to STR testing and privacy interests, the court emphasized that “[t]he additional intrusion [on an] arrestee’s privacy beyond that associated with fingerprinting *is not significant*”; (emphasis added) *id.*, 459; and observed that the use of STR testing “is no more than an extension of methods of identification long used in dealing with persons under arrest.” (Internal quotation marks omitted.) *Id.*, 461. The court ultimately concluded that the use of a buccal swab was not an unreasonable search. See *id.*, 461–64.

After reaching this conclusion, the court separately addressed whether “the processing of [the defendant’s] DNA sample’s [thirteen] CODIS loci” intruded on his “privacy in a way that would make his DNA identification unconstitutional.” *Id.*, 464. The court acknowledged that the inquiry may change as science progresses but observed that the “alleles at the CODIS loci are not at present revealing information beyond identification.” (Internal quotation marks omitted.) *Id.* It further observed that, even if those alleles could reveal more information, it is notable that “they are not in fact tested for that end.” *Id.* Importantly, the court noted that, “[i]f

in the future [the] police analyze samples to determine, for instance, an arrestee’s predisposition for a particular disease or other hereditary factors not relevant to identity, that case would present additional privacy concerns not present here.” Id., 464–65. The court then considered certain aspects of the Maryland DNA Collection Act that further limited any privacy concerns, namely, that no testing purpose other than identification was permissible under the act. See id., 465. It concluded that, “[i]n light of the scientific and statutory safeguards, once [the defendant’s] DNA was lawfully collected the STR analysis of [the defendant’s] DNA pursuant to CODIS procedures did not amount to a significant invasion of privacy that would render the DNA identification impermissible under the [f]ourth [a]mendment.”¹¹ Id.

Taken together, we glean that STR analysis of DNA that has been collected from a discarded item in the police’s lawful possession, for identification purposes only, does not constitute a fourth amendment search. See, e.g., *Raynor v. State*, supra, 440 Md. 81–82, 96 (concluding that, when DNA sample is in police’s lawful possession, testing of thirteen identifying loci is not search for fourth amendment purposes); *State v. Wes-*

¹¹ Although we interpret this statement to support the conclusion that STR testing of DNA for identification purposes only does not constitute a search under the fourth amendment, we recognize that there is an alternative interpretation of this statement. Compare *State v. Westrom*, supra, 6 N.W.3d 153–55 (concluding that analysis of DNA is not search), with *People v. Moreaux*, 76 Misc. 3d 976, 993, 174 N.Y.S.3d 237 (2022) (concluding that analysis of DNA is not unreasonable search). The court in *King* could have meant that STR analysis of an arrestee’s DNA does constitute a fourth amendment search, albeit a reasonable one. We decline to adopt the latter interpretation. We think that the fourth amendment reasonableness test employed in *King* likely applies only in the custodial context and to the question of whether the bodily intrusion (the swabbing) to collect the DNA was reasonable, not to whether STR testing is a search under the fourth amendment. See *United States v. Hasbajrami*, Docket No. 1:11-cr-623 (LDH), 2025 WL 447498, *6 (E.D.N.Y. February 10, 2025), appeal filed (2d Cir. March 10, 2025) (No. 25-542).

trom, supra, 6 N.W.3d 153–55 (concluding that STR test of DNA sample in lawful possession of police, for identification purposes only, was not search); see also, e.g., *Commonwealth v. Arzola*, 470 Mass. 809, 820, 26 N.E.3d 185 (2015) (explaining that, when lawfully obtained DNA sample is analyzed for identification purposes only, that analysis is not search in constitutional sense), cert. denied, 577 U.S. 1061, 136 S. Ct. 792, 193 L. Ed. 2d 709 (2016). Although we acknowledge that certain aspects of the *King* analysis are specific to the custodial status of the defendant in that case, the United States Supreme Court’s discussion of STR testing and its limited nature, as well as the minimal privacy interest in the information encoded within the thirteen CODIS loci, was not unique to that context. Our conclusion is also consistent with Supreme Court jurisprudence that has held that individuals do not have an objectively reasonable expectation of privacy in certain identifying characteristics. See, e.g., *United States v. Dionisio*, 410 U.S. 1, 14–15, 93 S. Ct. 764, 35 L. Ed. 2d 67 (1973) (concluding that directive to provide voice exemplar was not search and recognizing that individuals do not maintain reasonable expectation of privacy in certain physical characteristics associated with identity, including facial features and fingerprints, due to constant exposure to public); see also, e.g., *Maryland v. King*, supra, 569 U.S. 477 (Scalia, J., dissenting) (suggesting that individuals do not have reasonable expectation of privacy in facial or other bodily features captured in photograph).¹²

¹² For this reason, we are not persuaded by the defendant’s argument regarding *United States v. Davis*, 690 F.3d 226 (4th Cir. 2012), cert. denied, 571 U.S. 829, 134 S. Ct. 52, 187 L. Ed. 2d 47 (2013), in which the court held that police testing of a reported crime victim’s DNA collected from lawfully seized clothing violates that victim’s reasonable expectation of privacy in his or her DNA. See *id.*, 246. The defendant’s argument in the present case rests on the assumption that “‘free person[s]’” have a reasonable expectation of privacy in the identifying characteristics that are encoded in their DNA. *Id.*, 244–45. But we conclude that that assumption is incorrect with regard to DNA testing for identification purposes.

Here, the defendant does not claim that the state tested his DNA for any purpose other than for identification. He argues, instead, that the state *could* have learned more than his identity, including “the most personal and intricate details of [his] existence.” See, e.g., *United States v. Amerson*, 483 F.3d 73, 85 (2d Cir.) (acknowledging “the vast amount of sensitive information that can be mined from a person’s DNA”), cert. denied, 552 U.S. 1042, 128 S. Ct. 646, 169 L. Ed. 2d 515 (2007). He contends that the distinction between what the police test for and what they could potentially discover is “constitutional[ly] significan[t]” and compels the conclusion that a constitutionally infirm search occurred here. To support this proposition, the defendant primarily cites to cases involving police searches of cell phones. See, e.g., *Carpenter v. United States*, 585 U.S. 296, 302, 311, 138 S. Ct. 2206, 201 L. Ed. 2d 507 (2018) (holding that government’s acquisition of 127 days of cell site location information without warrant was search that violated fourth amendment because it might reveal “familial, political, professional, religious, and sexual associations” (internal quotation marks omitted)); *Riley v. California*, 573 U.S. 373, 379, 396–97, 401, 134 S. Ct. 2473, 189 L. Ed. 2d 430 (2014) (holding that warrantless searches of cell phone that was seized incident to lawful arrest violated fourth amendment in part because cell phones contain “a broad array of [potentially discoverable] private information”); see also, e.g., *Birchfield v. North Dakota*, 579 U.S. 438, 463–64, 136 S. Ct. 2160, 195 L. Ed. 2d 560 (2016) (noting that blood alcohol tests implicate privacy concerns in part because police could store blood samples and extract information beyond blood alcohol concentration).

We are not persuaded that a warrantless search of a cell phone provides an appropriate analogy to DNA testing of a sample collected from a discarded item. It

is true that DNA samples, like cell phones, contain private information. But the analogy ends there. A warrantless search of a cell phone differs in material respects from the warrantless STR analysis of the defendant's DNA in this case. If the police search a defendant's cell phone without a warrant, nothing limits the police from obtaining "a broad array of private information," apart from self-imposed constraints. *Riley v. California*, supra, 573 U.S. 397. That is, in the absence of a warrant, there is no reliable safeguard precluding the police from searching through an individual's private information. In contrast, when the state forensic laboratory tested the defendant's DNA in this case, the same concern of learning private information was not present—the STR analysis *was not capable* of revealing more than the defendant's identity. See, e.g., *Maryland v. King*, supra, 569 U.S. 465 (describing STR analysis as "[a] scientific . . . safeguard"); see also, e.g., *State v. Westrom*, supra, 6 N.W.3d 153–55 (holding that defendant had no reasonable expectation of privacy when state conducted STR DNA analysis capable only of revealing identity). The laboratory used a specific DNA testing kit that allowed state forensic analysts to "know in advance" what type of information would be revealed. *Kyllo v. United States*, 533 U.S. 27, 39, 121 S. Ct. 2038, 150 L. Ed. 2d 94 (2001). The privacy concern raised in *Carpenter* and *Riley* about the police potentially discovering more information than they seek is therefore not present under the facts of this case.

Accordingly, in the present case, we conclude that the testing of the defendant's DNA, which had been collected from a discarded belt in the police's lawful possession, for identification purposes only, did not constitute a search under the fourth amendment. Had the DNA testing kit that the state forensic laboratory used been capable of revealing more than the defendant's identity—or had the test in fact revealed more

information—we would be confronted with additional privacy concerns not implicated here. See *Maryland v. King*, supra, 569 U.S. 464–65. As a result, we need not decide whether a DNA testing kit that tests for information beyond identity would be constitutionally infirm under the fourth amendment.¹³

We are also not persuaded by the defendant’s remaining arguments that raise concerns about the state’s use of technology and the privacy implications that future technological development may pose. Even if we assume that the DNA testing kits the state forensic laboratory used were not widely available to the public, as the defendant contends, that would matter only for fourth amendment purposes if the technology was capable of revealing information in which an individual has a reasonable expectation of privacy. See, e.g., *Kyllo v. United States*, supra, 533 U.S. 34–40. Furthermore, even if future technological advances in DNA testing allow the police to gather information beyond identity from the thirteen DNA loci that have historically been tested as part of an STR analysis, those advances are not implicated in this case. See, e.g., *Maryland v. King*, supra, 569 U.S. 464 (recognizing that technological “progressions may have [f]ourth [a]mendment consequences”). In this case, we decide only whether the defendant has a reasonable expectation of privacy in the identifying characteristics in his DNA that was collected from his discarded belt, which the police had lawfully obtained. We conclude that he does not. Accordingly, the warrantless STR analysis of the defendant’s DNA for identification purposes only did not violate the fourth amendment.

II

We next consider the defendant’s claim that the warrantless testing of his DNA, which was collected from

¹³ During oral argument, however, the prosecutor conceded that DNA testing capable of revealing more than identifying characteristics would require a warrant.

his discarded belt while it was in the police’s lawful possession, for identification purposes only, violated his right to privacy under article first, § 7, of the Connecticut constitution. The defendant argues that the factors set forth in *State v. Geisler*, supra, 222 Conn. 684–85, establish that article first, § 7, affords greater protection under these circumstances than the fourth amendment. We disagree.

To “determin[e] the contours of the protections provided by our state constitution, we employ a multifactor approach that we first adopted in [*Geisler*].” (Internal quotation marks omitted.) *State v. Bemmer*, 339 Conn. 528, 555–56, 262 A.3d 1 (2021). The “six factors are (1) persuasive relevant federal precedents, (2) the text of the operative constitutional provisions, (3) historical insights into the intent of our constitutional forebears, (4) related Connecticut precedents, (5) persuasive precedents of other state courts, and (6) . . . relevant public policies.” *State v. Patel*, 342 Conn. 445, 466, 270 A.3d 627, cert. denied, U.S. , 143 S. Ct. 216, 214 L. Ed. 2d 86 (2022).

As our discussion in part I of this opinion demonstrates, the relevant federal precedents support the state’s position. The defendant argues that the second factor—the constitutional text—supports his position. He correctly points out that this court in *State v. Bemmer*, supra, 339 Conn. 528, has concluded that, as a general matter, “article first, § 7, is more protective of the privacy rights of our citizenry than the fourth amendment.” *Id.*, 557; see, e.g., *State v. Geisler*, supra, 222 Conn. 690 (in contrast to fourth amendment exclusionary rule, “article first, § 7 requires that evidence derived from an unlawful warrantless entry into [a] home be excluded unless the taint of the illegal entry is attenuated by the passage of time or intervening circumstances”); *State v. Marsala*, 216 Conn. 150, 171, 579 A.2d 58 (1990) (unlike fourth amendment exclusionary rule, “a good

faith exception . . . does not exist under [article first, § 7, of the state constitution]”). But the analysis in *Bemer* pertained to the fourth *Geisler* factor—relevant Connecticut precedent—rather than the second factor. Regarding the constitutional text itself, we have concluded that, because “article first, § 7 [of the state constitution] . . . is similar to the text of the fourth amendment [to the federal constitution], that consideration alone provides no reason to depart from the interpretation of the federal constitution by the United States Supreme Court.” *State v. Bemer*, supra, 556. Compare U.S. Const., amend. IV (“[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized”), with Conn. Const., art. I, § 7 (“[t]he people shall be secure in their persons, houses, papers and possessions from unreasonable searches or seizures; and no warrant to search any place, or to seize any person or things, shall issue without describing them as nearly as may be, nor without probable cause supported by oath or affirmation”). Despite the slight linguistic differences between the two constitutional provisions, we continue to agree with our prior case law that the text of article first, § 7, of the Connecticut constitution does not provide a basis to conclude that that provision affords greater protection than the fourth amendment to the federal constitution under these circumstances.

As to the third factor, the defendant argues that a general concern for the “security of our body and limbs” expressed by Connecticut’s founding members indicates that they would not have tolerated warrantless testing of DNA for identification purposes. 1 Z. Swift, *A System of the Laws of the State of Connecticut* (1795)

p. 179; see also *id.*, p. 177 (arguing that Connecticut law recognizes “right of personal security,” which “consists in a man’s having the peaceable enjoyment of life, limbs, body, health, and reputation”). We are not persuaded that testing DNA that was collected from a discarded item implicates the right to the “security of our body and limbs” *Id.*, p. 179. Even if we assume that it does, we do not think that “the historical circumstances surrounding the adoption of article first, § 7,” of the Connecticut constitution are particularly helpful here because “the reasonable expectation of privacy analysis is peculiarly focused on current conditions and requires a factual inquiry into all the relevant circumstances of the search.” *State v. DeFusco*, *supra*, 224 Conn. 635.

Regarding the fourth factor, the defendant contends that our decision in *State v. Joyce*, 229 Conn. 10, 639 A.2d 1007 (1994), weighs in favor of his position that article first, § 7, provides greater protection than its federal counterpart in this context. We disagree. In *Joyce*, an emergency medical technician had cut off the defendant’s clothing and transported him to the hospital so that he could be treated for severe burns. *Id.*, 12–13. The police lawfully retrieved the defendant’s discarded clothing from the scene pursuant to their community caretaking function. *Id.*, 14. Once the defendant became a suspect for arson, his discarded clothing was delivered to the state forensic laboratory for chemical testing. See *id.* Acting without a warrant, a forensic analyst conducted a gas chromatography analysis, which detected the presence of gasoline. See *id.*, 14–15. But the analyst also testified that the gas chromatography analysis used was capable of revealing—and did reveal—the presence of other “organic material in the defendant’s underwear that was not an accelerant.” *Id.*, 24 n.16. Because the testing method indiscriminately detected this “organic material” and, in doing so, “expos[ed] rather private

facts”; *id.*; this court concluded that the warrantless search violated article first, § 7, of the Connecticut constitution. See *id.*, 24, 27.

In the present case, unlike in *Joyce*, the defendant does not contest that the police lawfully obtained his belt and concedes that he had no reasonable expectation of privacy in it. In addition, the state forensic laboratory used an STR DNA test, which—unlike the gas chromatography analysis in *Joyce*—was capable of revealing only the defendant’s identity. Accordingly, our holding in *Joyce* does not support the conclusion that article first, § 7, affords greater protection than the fourth amendment under these circumstances.

The defendant also argues that, regardless of our holding in *Joyce*, this court has expressed “a strong policy in favor of warrants” (Internal quotation marks omitted.) *State v. Kono*, 324 Conn. 80, 113, 152 A.3d 1 (2016). In *Joyce*, we concluded that, “[u]nder the state constitution, all warrantless searches, [regardless of whether] the police have probable cause to believe that a crime was committed, are per se unreasonable, unless they fall within one of a few specifically established and well delineated exceptions to the warrant requirement.” *State v. Joyce*, *supra*, 229 Conn. 24–25. We continue to agree with the principles articulated in *Joyce* and reiterate this state’s strong policy in favor of a search warrant in situations in which the defendant has a reasonable expectation of privacy in the subject of a search, or in what the police could discover through indiscriminate testing methods. But “[a] search . . . occurs [only] when a reasonable expectation of privacy is infringed.” (Internal quotation marks omitted.) *Bozrah v. Chmurnyński*, 303 Conn. 676, 684, 36 A.3d 210 (2012); see also, e.g., *State v. Houghtaling*, 326 Conn. 330, 341, 163 A.3d 563 (2017), cert. denied, 584 U.S. 949, 138 S. Ct. 1593, 200 L. Ed. 2d 776 (2018). Accordingly, the collection of the defendant’s DNA from his dis-

carded belt, which was within the police's lawful possession, and the subsequent testing of the DNA for identification purposes only did not trigger our policy preference for a warrant.

As to the fifth factor, state courts that have considered the question before us have uniformly concluded that, under the fourth amendment, individuals have no reasonable expectation of privacy in DNA that has been collected from a discarded item in the police's lawful possession, so long as it is tested solely for identification purposes. See, e.g., *People v. Gallego*, supra, 190 Cal. App. 4th 397 (testing of DNA collected from discarded cigarette); *State v. Burns*, supra, 988 N.W.2d 364–65 (testing of DNA collected from discarded straw); *Raynor v. State*, supra, 440 Md. 82, 85 (testing of DNA collected from chair); *State v. Westrom*, supra, 6 N.W.3d 153–55 (testing of DNA collected from discarded napkin); *State v. Athan*, 160 Wn. 2d 354, 373–74, 387, 158 P.3d 27 (2007) (testing of DNA extracted from discarded saliva).¹⁴ Accordingly, we conclude that this factor militates in the state's favor.

Finally, with respect to *Geisler's* sixth factor, the defendant and the amicus, the Connecticut Criminal Defense Lawyers Association, argue that public policy supports affording greater protection under article first, § 7, of the Connecticut constitution. They claim that, if this court concludes that Connecticut residents have no right to privacy in their DNA, the police will have unregulated discretion to test and store DNA for any purpose. The defendant lists a parade of horrible outcomes that could occur, including the possibility that the police would create a “racial genetic map” to “identify race-based genetic variation among sex offenders or

¹⁴ State courts that have considered whether individuals have a reasonable expectation of privacy under their respective state constitutions have concluded that they do not. See, e.g., *State v. Burns*, supra, 988 N.W.2d 365; *State v. Athan*, supra, 160 Wn. 2d 366–67, 372, 387.

violent felons.” E. Joh, Essay, “Reclaiming ‘Abandoned’ DNA: The Fourth Amendment and Genetic Privacy,” 100 Nw. U. L. Rev. 857, 878 (2006). The amicus also contends that, if we do not recognize a right to privacy in one’s DNA, “law enforcement can hold onto an isolated DNA sample for as long as it deems necessary,” and the indefinite retention of someone’s DNA profile would violate the fourth amendment.

We agree with the state that the policy arguments of the defendant and the amicus concern issues that are not present in this case. We reiterate that the defendant has not claimed that the STR analysis revealed anything more than his identity, or that it was capable of doing so. Nor did the defendant assert that the state’s storage of his DNA violated the fourth amendment. The defendant also did not contend that the earlier, single nucleotide polymorphism (SNP) profile developed by Bode Technology, which formed the basis of the state’s investigative leads, violated the fourth amendment. See footnote 4 of this opinion. Nonetheless, we acknowledge the arguments of the defendant and the amicus that DNA testing could implicate significant privacy concerns in other circumstances. Like the United States Court of Appeals for the Second Circuit, “[w]e are mindful of the vast amount of sensitive information that can be mined from a person’s DNA and the very strong privacy interests that all individuals have in this information.” *United States v. Amerson*, supra, 483 F.3d 85. Nevertheless, because the DNA testing in this case did not implicate those interests, we cannot conclude that the defendant’s speculative policy concerns should inform our analysis of whether he had a reasonable expectation of privacy under the facts of this case. Because the weight of the *Geisler* factors does not compel this court to conclude that the state constitution affords greater protection than the federal constitution under these circumstances, we conclude that a search

did not occur under article first, § 7, of the Connecticut constitution. See, e.g., *Maryland v. King*, supra, 569 U.S. 452 (reasoning that identifying characteristics in DNA “function . . . the same” as “a name or fingerprint,” in which people have no reasonable expectation of privacy).

We conclude that article first, § 7, of the Connecticut constitution does not afford greater protection than the fourth amendment to the United States constitution under these circumstances. Accordingly, the testing of the defendant’s DNA from the discarded belt for identification purposes did not violate his state constitutional right because the state used an STR test capable of revealing only his identity.

III

We next consider the defendant’s claim that the trial court misled the jury by providing a flowchart as a guide to its jury instructions because the chart omitted the factors from *State v. Salamon*, supra, 287 Conn. 548. The defendant contends that, as a result of the omission, “the jurors could have found that the defendant [had] confined the [women], without ascertaining if he [had] intended to restrain them in excess of what was necessary to commit the other crimes: sexual assault, burglary, and robbery.” The defendant further contends that the state cannot show that the flowchart’s omission was harmless beyond a reasonable doubt. The state argues that the flowchart did not mislead the jury because the trial court included the *Salamon* factors in its instructions and informed the jury that the flowchart was not a substitute for the instructions. The state further claims that, even if the flowchart itself was misleading, it was harmless beyond a reasonable doubt. We agree with the state that the flowchart did not mislead the jury.

The following additional facts and procedural history are relevant to our analysis. Prior to closing arguments, the trial court discussed the proposed jury instructions with the parties. The court informed the parties that the discussion of the *Salamon* factors began on page 58 of the proposed jury instructions. Defense counsel did not object to that instruction. After giving the parties one day to review the proposed instructions, the court asked whether the parties “wish[ed] to bring [anything] to the court’s attention.” Defense counsel replied “[n]o, Your Honor.” After closing arguments, the court announced that it planned to provide a flowchart to the jury to outline the elements of the kidnapping charges. Defense counsel objected, arguing that, although nothing in the flowchart was inaccurate, it did not include the *Salamon* factors. The court offered to put them in, but the prosecutor objected on the ground that the jury instructions already included the *Salamon* factors. After considering the parties’ arguments, the court decided not to include the *Salamon* factors in the flowchart. The court reasoned that it would convolute the flowchart, and it planned to inform the jury that it was simply a “visual” guide and not a substitute for the court’s instructions.

The trial court proceeded to read the 143 pages of instructions to the jury. The court provided a full description of the *Salamon* factors in its instruction on the first count.¹⁵ The court incorporated its *Salamon*

¹⁵ The trial court provided the following instructions to the jury: “To establish the defendant’s intent to prevent the liberation of [the complainant], independent from the intent to violate or abuse her sexually, the state must prove that the defendant intended to prevent the complainant’s liberation for a longer time or to a greater degree than that which would be necessary to sexually abuse her. In this regard, the defendant’s intent to prevent the complainant’s liberation may be manifested by confinement or movement that is more than merely incidental to the other intended acts. In other words, if the confinement or movement is so much a part of the other conduct that it could not be accomplished without such restraint, then the requisite intent to prevent the complainant’s liberation has not been established. There is, however, no minimal period of confinement or degree of movement necessary to establish kidnapping.”

instruction by reference for each of the remaining counts. The court later dismissed the jury for the evening. The court realized, however, that it “forgot” to provide the flowchart to the jury. When the jurors returned the next day, the court distributed the flowchart to them. The court informed them that the flowchart was only an “aid” and that it “in no way replaces the instructions.” The court concluded its formal instructions by informing the jurors that they “are to look to the instructions of law that [the court] give[s] [them] in order to make [their] decision.”

We begin with the standard of review and guiding legal principles. In reviewing claims of instructional error, it is well established that “we examine the [trial] court’s entire charge to determine whether it is reasonably possible that the jury could have been misled [I]ndividual jury instructions should not be judged in artificial isolation, but must be viewed in the context of the overall charge. . . . The pertinent test is whether the charge, read in its entirety, fairly presents the case to the jury in such a way that injustice is not done to either party under the established rules of law. . . . Thus, [t]he whole charge must be considered from the standpoint of its effect on the [jurors] in guiding them to the proper verdict” (Citation omitted; internal quotation marks omitted.) *State v. Ward*, 306 Conn. 718, 747, 51 A.3d 970 (2012). We presume that a jury follows the trial court’s instructions unless a

“Whether the movement or confinement of the complainant is merely incidental to other conduct is a question of fact for you to determine. In determining this, you may consider all the relevant facts and circumstances of the case, including, but not limited to, the following factors: the nature and duration of the complainant’s movement or confinement by the defendant, whether that movement or confinement occurred during the commission of other conduct, whether the restraint was inherent in the nature of the other conduct, whether the restraint prevented the complainant from summoning assistance, whether the restraint reduced the defendant’s risk of detection, and whether the restraint created a significant danger or increased the complainant’s risk of harm independent of that posed by the other conduct.”

challenging party can show “that the jury failed or declined” to do so. *State v. Reynolds*, 264 Conn. 1, 131, 836 A.2d 224 (2003), cert. denied, 541 U.S. 908, 124 S. Ct. 1614, 158 L. Ed. 2d 254 (2004); see also, e.g., *Hickey v. Commissioner of Correction*, 329 Conn. 605, 622–23, 188 A.3d 715 (2018).

In *Salamon*, we overruled our long-standing interpretation of this state’s kidnapping statutes, “under which a person who restrains another person with the intent to prevent that person’s liberation may be convicted of kidnapping even though the restraint involved in the kidnapping is merely incidental to the commission of another offense perpetrated against the victim by the accused.” *State v. Salamon*, supra, 287 Conn. 513. We did so to ensure that our case law reflected the legislative intent to replace the older, “broadly worded kidnapping provision with a graduated scheme that distinguishes kidnappings from unlawful restraints by the presence of an intent to prevent a victim’s liberation, intended to exclude from the scope of the more serious crime of kidnapping and its accompanying severe penalties those confinements or movements of a victim that are merely incidental to and necessary for the commission of another crime against that victim. Stated otherwise, to commit a kidnapping in conjunction with another crime, a defendant must intend to prevent the victim’s liberation for a longer period of time or to a greater degree than that which is necessary to commit the other crime.” *Id.*, 542. Consistent with this understanding of the statutory scheme, we identified six factors for juries to consider: “the nature and duration of the victim’s movement or confinement by the defendant, whether that movement or confinement occurred during the commission of the separate offense, whether the restraint was inherent in the nature of the separate offense, whether the restraint prevented the victim from summoning assistance, whether the restraint reduced the

defendant's risk of detection and whether the restraint created a significant danger or increased the victim's risk of harm independent of that posed by the separate offense." *Id.*, 548.

The defendant concedes that the trial court included the *Salamon* factors in its instructions to the jury but argues that the jury was nonetheless misled because it very likely relied on the one page flowchart, rather than the instructions, in reaching its verdict. The defendant contends that, because the trial court forgot to provide the flowchart prior to reading the instructions, the flowchart no longer served its purpose when provided alongside the written instructions.

In support of this claim, the defendant cites *State v. Breton*, 235 Conn. 206, 663 A.2d 1026 (1995). In *Breton*, this court concluded that the trial court's ambiguous special verdict form and instructions to the jury on how to complete the form were clearly flawed because they allowed the court to impose the death penalty on the defendant in accordance with the jury's verdict of guilty of capital felony, even if the jury did not unanimously find that "the defendant failed to prove the existence of each and every mitigating factor by a preponderance of the evidence." *Id.*, 236–38; see also *id.*, 215. The defendant argues that the trial court here similarly created an ambiguity for the jurors about whether they needed to consult the *Salamon* factors at all because the flowchart was not provided to them to consult while the court read the instructions. We are not persuaded. After providing the jurors with the flowchart, the trial court clearly and expressly instructed them that it was an "aid," that it did not replace the instructions, and that they should "look to the instructions of law that [the court gave them] in order to make [their] decision." The defendant's argument that the flowchart was ambiguous assumes that the jury did not heed the court's instructions regarding the *Salamon* factors or

the instructions regarding the purpose of the flowchart. Because the defendant has not proffered evidence demonstrating that the jury had failed to follow the trial court's instructions regarding the *Salamon* factors and the flowchart, we presume that the jury heeded those instructions. See, e.g., *State v. Reynolds*, supra, 264 Conn. 131; see also, e.g., *Hickey v. Commissioner of Correction*, supra, 329 Conn. 622–23. Accordingly, we conclude that there is no reasonable possibility that the jury was misled by the omission of the *Salamon* factors from the flowchart.

The judgment is affirmed.

In this opinion MULLINS, C. J., and ALEXANDER and DANNEHY, Js., concurred.
