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CONSTITUTIONAL LAW — FOURTH AMENDMENT — FOURTH  
CIRCUIT DECLARES DNA ANALYSIS UNREASONABLE SEARCH  
BUT ADMITS DNA EVIDENCE UNDER GOOD FAITH EXCEP-  
TION. — *United States v. Davis*, 690 F.3d 226 (4th Cir. 2012).

Though DNA evidence may be relatively new to American courts,<sup>1</sup> many of the questions it raises — how law enforcement may acquire, isolate, analyze, and use such evidence — are familiar and enduring Fourth Amendment questions of privacy and law enforcement efficacy. However, the benefits DNA technology affords and the limited drawbacks it involves should prompt a reevaluation of those questions. Recently, in *United States v. Davis*,<sup>2</sup> the Fourth Circuit held that police violated the Fourth Amendment by extracting DNA from evidence containing the blood of a shooting victim several years after the shooting and using it to create and retain a forensic DNA profile, which allowed the police to link the victim to the perpetration of an unrelated murder.<sup>3</sup> The court upheld the introduction of that DNA evidence at trial, however, on the ground that the police acted in good faith.<sup>4</sup> In light of the greater accuracy of outcomes and the reduced racial disparities in arrests and convictions that DNA evidence makes possible, as well as the limited privacy interests DNA evidence implicates, the court could have upheld the extraction and DNA profile creation without reaching the good faith exception. Instead, the court could have used the complexity and ambiguity of Fourth Amendment jurisprudence to hold that the extraction and profile creation did not constitute searches at the outset.

In August 2000, the Howard County Police Department (HCPD) in Maryland acquired Earl Davis's DNA when Davis was hospitalized for a gunshot wound.<sup>5</sup> A Howard County police officer, while interviewing Davis at the hospital, seized a bag of Davis's clothing, presuming that it would contain evidence of the shooting.<sup>6</sup> After seizing the clothing, the police — alerted by Davis's behavior — arrested him on a narcotics charge.<sup>7</sup> HCPD logged the clothing along with records of Davis's arrest but did not examine the clothing for DNA evidence.<sup>8</sup>

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<sup>1</sup> The first conviction in an American case utilizing DNA evidence came in 1987. Michelle Hibbert, *DNA Databanks: Law Enforcement's Greatest Surveillance Tool?*, 34 WAKE FOREST L. REV. 767, 773 (1999).

<sup>2</sup> 690 F.3d 226 (4th Cir. 2012).

<sup>3</sup> *Id.* at 229, 251.

<sup>4</sup> *See id.* at 256–57.

<sup>5</sup> *Id.* at 230.

<sup>6</sup> *See id.*

<sup>7</sup> *Id.* at 230–31. Davis had given a fake name and fake driver's license at the hospital, was uncooperative when police interviewed him, and had several incriminating items, including marijuana, in his car. *Id.* The drug charges were later dropped. *Id.* at 231.

<sup>8</sup> *See id.* at 230–31.

In June 2001, the Prince George's County Police Department (PGCPD) suspected Davis of murdering Michael Neal.<sup>9</sup> Because they lacked probable cause to arrest him, PGCPD obtained Davis's clothing from HCPD without a warrant.<sup>10</sup> In June 2004, PGCPD extracted Davis's DNA from the blood on his clothes and created a DNA profile from the results, also without a warrant.<sup>11</sup> Although Davis's DNA did not match the DNA from the murder scene, PGCPD retained Davis's DNA profile and entered it into the local DNA database.<sup>12</sup> About two months later, DNA collected from another murder scene matched Davis's DNA.<sup>13</sup> Based on that match, PGCPD obtained a warrant to collect a new sample from Davis, which confirmed the match.<sup>14</sup>

Davis filed a pretrial motion to suppress the use of his DNA against him, arguing that PGCPD violated his Fourth Amendment right against unreasonable searches and seizures by obtaining and extracting his DNA and by entering his profile into the database.<sup>15</sup> At trial, the prosecution presented the DNA evidence and the testimony of an eyewitness who had identified Davis from a photographic array as well as in person at trial.<sup>16</sup> The jury found Davis guilty, and the district court then denied the suppression motion.<sup>17</sup> The court found only one Fourth Amendment violation — PGCPD's retention of Davis's profile after failing to find a match in the Neal investigation — but held that the police had operated in good faith and that the exclusionary rule's application was therefore unjustified.<sup>18</sup> On appeal, Davis alleged three Fourth Amendment violations stemming from the use of his DNA: "(1) the seizure of his clothing from the hospital room and its subsequent search; (2) the extraction of his DNA profile and testing in connection with the Neal murder investigation; and (3) the retention of his DNA profile in the local DNA database."<sup>19</sup>

<sup>9</sup> *Id.* at 231 & n.6.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.* at 231.

<sup>12</sup> *Id.* The local database that PGCPD maintained was part of the Combined DNA Index System (CODIS), *id.* at 229, a linked system that allows state, local, and federal authorities to exchange, share, and compare DNA profiles electronically, *id.* at 229 n.2.

<sup>13</sup> *Id.* at 229.

<sup>14</sup> *Id.*

<sup>15</sup> *See id.* The district court judge withheld a ruling on the motion pending trial. *Id.*

<sup>16</sup> *Id.* at 257.

<sup>17</sup> *Id.* at 232; *see also* United States v. Davis, 657 F. Supp. 2d 630, 663–67 (D. Md. 2009).

<sup>18</sup> *Davis*, 690 F.3d at 232. In *Weeks v. United States*, 232 U.S. 383, 398 (1914), the Supreme Court held that evidence obtained in violation of the Fourth Amendment must be excluded from trial in federal courts. However, the Supreme Court has declined to exclude evidence when law enforcement has obtained it in good faith, though through unconstitutional means. *See, e.g.*, United States v. Leon, 468 U.S. 897, 922–26 (1984); *see also Davis*, 690 F.3d at 251–53.

<sup>19</sup> *Davis*, 690 F.3d at 232. Davis also argued on appeal that the district court erred in excluding expert testimony he attempted to present to challenge the eyewitness identification. *Id.* at 257. The district court found that the danger of prejudice presented by the expert testimony "heavily

The Fourth Circuit affirmed.<sup>20</sup> Writing for the panel, Judge Agee<sup>21</sup> agreed with the district court in finding no Fourth Amendment violation in the HCPD officer's search and seizure of Davis's clothing from the hospital.<sup>22</sup> Judge Agee departed from the district court, however, in finding that PGCPD's extraction and testing of Davis's DNA in connection with the Neal murder investigation constituted a Fourth Amendment violation, and in assuming without deciding that PGCPD's retention of Davis's DNA profile in the local database also constituted a Fourth Amendment violation.<sup>23</sup>

In evaluating the search and seizure of Davis's clothing, the court relied on the "plain view" doctrine to find the seizure justified.<sup>24</sup> The court found the DNA extraction and testing along with the subsequent profile creation to constitute a search for the purposes of the Fourth Amendment.<sup>25</sup> It rejected the government's argument that once police have lawful custody of clothing, they may test DNA it contains without obtaining a warrant, explaining instead that victims retain privacy interests in their DNA even if police have lawful custody of it.<sup>26</sup> The court further assumed without deciding that PGCPD's retention of Davis's DNA profile also constituted a search.<sup>27</sup>

In determining whether PGCPD's extraction and testing of Davis's DNA in the Neal murder investigation constituted an unreasonable search under the Fourth Amendment, the court employed the "totality of the circumstances" balancing test,<sup>28</sup> weighing Davis's privacy inter-

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outweighed the probative value of the testimony." *Id.* The Fourth Circuit declined to disturb this ruling. *Id.*

<sup>20</sup> *Id.* at 229.

<sup>21</sup> Judge Keenan joined Judge Agee's opinion.

<sup>22</sup> See *Davis*, 690 F.3d at 236–39.

<sup>23</sup> *Id.* at 232–33.

<sup>24</sup> See *id.* at 233–39. The court held that the officer was lawfully present in the hospital room and that he thus also "had lawful access in the ordinary course of his investigation to the bag of clothing which could be evidence against Davis' assailant." *Id.* at 234. It reasoned that it was a foregone conclusion that the bag contained material whose incriminating character was immediately apparent, *id.* at 235–36, thus satisfying the criteria required by the plain view doctrine, see *id.* at 238. Utilizing the same "foregone conclusion" reasoning, the court determined that the subsequent search of the material was also justified. *Id.*

<sup>25</sup> *Id.* at 246.

<sup>26</sup> See *id.* The government's argument relied on *United States v. Edwards*, 415 U.S. 800 (1974), in which the Supreme Court upheld a warrantless, incident-to-arrest search of the defendant's clothing for evidence of the crime for which he was arrested. See *id.* at 808–09; *Davis*, 690 F.3d at 242–43. The Fourth Circuit distinguished *Edwards* on the grounds that evidence containing Davis's DNA was obtained when Davis held the status of victim, *id.* at 244, and that biological evidence, unlike the evidence seized in *Edwards*, carries the potential to reveal "physiological data" and "private medical facts," *id.* at 243 (quoting *Skinner v. Ry. Labor Execs.' Ass'n*, 489 U.S. 602, 616–17 (1989)) (internal quotation marks omitted).

<sup>27</sup> *Davis*, 690 F.3d at 247.

<sup>28</sup> *Id.* at 247–49. The totality of the circumstances test determines a search's reasonableness by balancing "intru[sion] upon an individual's privacy" against the need for the search to promote

est against the state's interest in solving crimes.<sup>29</sup> Concluding that the extraction and testing was unreasonable, the court emphasized the lack of probable cause and a warrant.<sup>30</sup> The court then assumed without deciding that the retention of Davis's DNA profile was also unreasonable since it would not have been possible but for the unreasonable extraction and testing.<sup>31</sup> However, the court upheld the admission of Davis's DNA, applying the "good faith exception" to the Fourth Amendment exclusionary rule for both violations.<sup>32</sup> In its analysis, the court balanced the benefits of deterring police misconduct against the costs of "letting guilty and possibly dangerous defendants go free."<sup>33</sup> The court underscored the fact that penalties for failure to comply with DNA privacy statutes "already provide a deterrent effect against similar and future potential misuses of DNA information,"<sup>34</sup> and emphasized the unusual fact pattern of the case.<sup>35</sup> Given these substantial benefits and minimal costs, as well as the facts of the case, the court determined that the police had acted in good faith and that the DNA evidence had therefore been properly admitted.<sup>36</sup>

Judge Davis dissented.<sup>37</sup> He would have held that HCPD's search and seizure of Davis's clothes from the hospital violated the Fourth Amendment and would have applied the exclusionary rule.<sup>38</sup> He ob-

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"legitimate governmental interests." *Id.* at 247. The court ruled out the applicability of the "special needs" doctrine, which courts use "where a Fourth Amendment intrusion serves *special governmental needs*, beyond the normal need for law enforcement," and when, on balance, it would be impractical to require a warrant. *Id.* at 248 (quoting *United States v. Rendon*, 607 F.3d 982, 989 (4th Cir. 2010)) (internal quotation marks omitted).

<sup>29</sup> *Id.* at 249–50. The court evaluated Davis's privacy interest in light of the facts that PGCPD extracted and tested his DNA when he was a "free citizen," that he did not attempt to recover his clothing from HCPD, and that the collection of his DNA did not undermine his bodily integrity since the DNA was extracted from his clothing. *Id.* It also noted that DNA collection serves the state's compelling interests in "identifying arrestees, solving past crimes, preventing future crimes, and exonerating the innocent." *Id.* (quoting *Haskell v. Harris*, 669 F.3d 1049, 1062 (9th Cir. 2012), *reh'g en banc granted*, 686 F.3d 1121 (9th Cir. 2012)).

<sup>30</sup> *See id.* at 250.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.* at 253–57.

<sup>33</sup> *Id.* at 251 (quoting *Herring v. United States*, 129 S. Ct. 695, 701 (2009)). In measuring the potential value of deterrence, the court considered the deliberateness and culpability of the police who committed the violations, as well as whether the violations were a systemic and recurring problem or simply an isolated incident of negligence attenuated from the arrest. *See id.* at 251–56.

<sup>34</sup> *Id.* at 256. For example, federal law establishes criminal penalties, including imprisonment up to one year and fines up to \$250,000, for improperly obtaining DNA records. *See* 42 U.S.C. § 14135e(c) (2006).

<sup>35</sup> *See Davis*, 690 F.3d at 255 (noting that when PGCPD suspected Davis of a crime, they had available DNA evidence that was extracted unconstitutionally from clothing lawfully seized when Davis was a victim of an unrelated crime).

<sup>36</sup> *See id.* at 257.

<sup>37</sup> *Id.* at 258 (Davis, J., dissenting).

<sup>38</sup> *See id.* at 276–77.

jected to the court's use of the plain view doctrine to validate the seizure of Davis's clothing.<sup>39</sup> Finally, he disputed the court's application of the good faith exception to this police conduct,<sup>40</sup> in large part because he saw the nature of the violations as systemic rather than isolated.<sup>41</sup>

The court's decision illustrates the complexity of adapting Fourth Amendment jurisprudence to DNA databases.<sup>42</sup> While the Fourth Circuit's ruling accurately reflects the existing doctrine, the doctrine is sufficiently ambiguous that the court also could have plausibly reached a decision that would have preserved a more permissive use of DNA databases. Such greater permissiveness,<sup>43</sup> albeit with privacy protections in place, would pave a path toward increasing accuracy and decreasing racial disparities in law enforcement outcomes.

Fourth Amendment jurisprudence could have supported a holding that forensic DNA evidence is not subject to a reasonable expectation of privacy, and thus that its use in this case did not constitute a Fourth Amendment search.<sup>44</sup> The court might have highlighted previous findings that publicly exposed material and personal characteristics fall outside the scope of Fourth Amendment protection because there are no reasonable expectations of privacy in them.<sup>45</sup> While DNA carries an individual's entire genetic makeup and is therefore arguably more personal than other publicly exposed material,<sup>46</sup> forensic DNA profiles contain very limited information.<sup>47</sup> Indeed, sister circuits have found the creation of forensic DNA profiles more analogous to fingerprint-

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<sup>39</sup> Judge Davis argued that the officer lacked lawful access to the clothing, *see id.* at 267, that the plain view doctrine justifies warrantless seizures but not searches, *id.* at 268, and that the bag's contents were not obviously incriminating, *see id.* at 272–73.

<sup>40</sup> *See id.* at 278. Judge Davis reasoned that the exception stems from violations by non-law enforcement actors. *See id.* at 277–78.

<sup>41</sup> *Id.* at 278.

<sup>42</sup> For other examples of the complexity of adapting the Fourth Amendment to recently developed technology, see *United States v. Jones*, 132 S. Ct. 945 (2012) (GPS technology), and *Kyllo v. United States*, 533 U.S. 27 (2001) (thermal imaging technology).

<sup>43</sup> While courts may prefer restraint to testing boundaries, *see, e.g., NASA v. Nelson*, 131 S. Ct. 746, 751 (2011) (assuming without deciding that a constitutional right to informational privacy exists), there is also a long tradition of courts' exploring boundaries of Fourth Amendment protections as technology evolves, *see* Orin S. Kerr, *An Equilibrium-Adjustment Theory of the Fourth Amendment*, 125 HARV. L. REV. 476, 494–525 (2011) (discussing cases adjusting Fourth Amendment doctrine to account for technological change).

<sup>44</sup> *Cf. Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring) (finding a reasonable expectation of privacy required for Fourth Amendment protections to attach).

<sup>45</sup> *See California v. Greenwood*, 486 U.S. 35 (1988) (trash left at the curb); *United States v. Dionisio*, 410 U.S. 1 (1973) (physical characteristics of a person's voice).

<sup>46</sup> *But see Greenwood*, 486 U.S. at 50 (Brennan, J., dissenting) (noting that searches of household trash "can relate intimate details about sexual practices, health, and personal hygiene").

<sup>47</sup> *See, e.g., Appellee's Response to Amicus Electronic Frontier Foundation* at 1, *Haskell v. Harris*, No. 10-15152 (9th Cir. Sept. 12, 2012) (en banc).

ing,<sup>48</sup> which the Supreme Court has found not to constitute a search.<sup>49</sup> Like fingerprints, traces of DNA material remain on touched objects; DNA is shed everywhere human beings go.<sup>50</sup> Therefore, DNA material is arguably publicly exposed.<sup>51</sup> Since HCPD had lawful access to Davis's DNA sample,<sup>52</sup> the court could have found that Davis no longer retained a reasonable privacy expectation in the forensic DNA within the sample, and read the law enforcement uses of his DNA not to constitute Fourth Amendment searches.<sup>53</sup>

The privacy concerns linked with DNA are perhaps overstated when it comes to DNA evidence. Significant statutory limitations curb the use and scope of forensic DNA databases: the federal statute that authorizes the FBI to create an index of DNA identification information from crime scenes and from individuals convicted of "qualifying Federal offense[s]"<sup>54</sup> restricts the use and disclosure of DNA test results "to criminal justice agencies for law enforcement identification purposes."<sup>55</sup> An accompanying provision establishes criminal penalties for misuse of DNA information.<sup>56</sup> Under these limitations, the creation and use of such databases can be understood to reveal very little, if any, private information.<sup>57</sup> These existing protections largely safe-

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<sup>48</sup> See *United States v. Amerson*, 483 F.3d 73, 85–86 (2d Cir. 2007); *Nicholas v. Goord*, 430 F.3d 652, 671 (2d Cir. 2005); *Rise v. Oregon*, 59 F.3d 1556, 1559–60 (9th Cir. 1995).

<sup>49</sup> *Davis v. Mississippi*, 394 U.S. 721, 727 (1969) ("Fingerprinting involves none of the probing into an individual's private life and thoughts that marks an interrogation or search.").

<sup>50</sup> See Roland A.H. van Oorschot & Maxwell K. Jones, *DNA Fingerprints from Fingerprints*, 387 NATURE 767 (1997) (revealing findings that in addition to "old blood stains, seminal stains, vaginal swabs, hair, bone, urine and cigarette butts," individual genetic profiles can be generated from "objects touched by hands").

<sup>51</sup> It is also arguably easily tested by non-law enforcement individuals. See Jules Epstein, "Genetic Surveillance" — *The Bogeyman Response to Familial DNA Investigations*, 2009 U. ILL. J.L. TECH & POL'Y 141, 151 (noting that DNA testing technology, though "not in the hands of private individuals," is "easily obtained, at modest cost, from labs nationwide").

<sup>52</sup> See *Davis*, 690 F.3d at 234. DNA's public exposure does not allow police to obtain samples by any means; just as the public exposure of trash does not allow police to enter a home without a warrant to search through the trash inside, forcible police extraction of DNA from one's person falls within the scope of Fourth Amendment protection. See Epstein, *supra* note 51, at 153 n.91 (noting that "[a]ll courts addressing compelled DNA testing of convicted felons have . . . acknowledged the process to be a search").

<sup>53</sup> If a court adopted this interpretation, any extraconstitutional privacy interests Davis retained in his DNA would still be protected statutorily. See, e.g., DNA Identification Act, 42 U.S.C. § 14132 (2006).

<sup>54</sup> *Id.* § 14135a.

<sup>55</sup> *Id.* § 14132(b)(3)(A).

<sup>56</sup> *Id.* § 14135e(c).

<sup>57</sup> Though some have highlighted recent studies that may call this proposition into question, see, e.g., Gina Kolata, *Study Discovers Road Map of DNA; A Key to Biology*, N.Y. TIMES, Sept. 6, 2012, at A1, others have challenged those studies, see, e.g., Appellee's Response to Amicus Electronic Frontier Foundation, *supra* note 47, at 1 (noting that "none of those studies have examined the *specific loci* used by the federal government . . . in developing a DNA profile" and citing a study that "did examine those specific loci" and concluded that "[t]he utility of the CODIS profile

guard privacy even if the use of DNA databases is read not to constitute a search and thus falls outside Fourth Amendment protection.<sup>58</sup> Moreover, given the limited scope of such databases, the *functional* privacy implications with respect to medical history or physical attributions would likely be minor or even nonexistent should a forensic DNA database be compromised.<sup>59</sup> Thus, this central concern of the court, and of Fourth Amendment jurisprudence generally,<sup>60</sup> may be exaggerated as it applies to DNA profiles.

A holding allowing greater permissiveness in DNA database use would have increased the likelihood of accuracy in convictions and exonerations and decreased the racial disparity in arrests and convictions. The Justice Department has cited many jurisdictions that have enjoyed significant success in utilizing DNA technology to solve crimes.<sup>61</sup> Additionally, studies have shown that use of forensic DNA analysis has prevented thousands of wrongful arrests<sup>62</sup> and overturned hundreds of wrongful convictions.<sup>63</sup> Moreover, the benefits of warrantless forensic DNA searches arguably outweigh any infringement upon the rights of free citizens since the more expansive the database containing forensic DNA profiles, the more likely are accurate outcomes.<sup>64</sup> DNA testing could also diminish racial disparities in law enforcement outcomes if DNA databases include forensic DNA profiles

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itself, even in light of the significance of various epigenetic effects and roles of noncoding RNAs, is limited to identification purposes at this time” (quoting Sara H. Katsanis & Jennifer K. Wagner, *Characterization of the Standard and Recommended CODIS Markers*, J. FORENSIC SCI., Aug. 24, 2012, at 1, 3) (internal quotation marks omitted).

<sup>58</sup> Indeed, in applying the good faith exception in this case, Judge Agee highlighted the statutory penalties for law enforcement misuse of DNA, finding them to provide an adequate deterrent effect. See *Davis*, 690 F.3d at 256.

<sup>59</sup> See sources cited *supra* note 57.

<sup>60</sup> The Court has established privacy as the key value in analyzing Fourth Amendment searches. See *Katz v. United States*, 389 U.S. 347, 349, 353 (1967).

<sup>61</sup> See *DNA in “Minor” Crimes Yields Major Benefits in Public Safety*, IN SHORT (Nat’l Inst. of Justice, U.S. Dep’t of Justice, Washington, D.C.) Nov. 2004, at 1, 2–3, available at <https://www.ncjrs.gov/pdffiles1/nij/207203.pdf>.

<sup>62</sup> See John P. Cronan, *The Next Frontier of Law Enforcement: A Proposal for Complete DNA Databanks*, 28 AM. J. CRIM. L. 119, 151 (2000) (citing a study showing that between 1989 and 2000, forensic DNA analysis excluded primary suspects in approximately a quarter of the sexual assault cases referred to the FBI).

<sup>63</sup> The Innocence Project has identified 300 postconviction exonerations attributable to DNA in the United States. See *Facts on Post-Conviction DNA Exonerations*, INNOCENCE PROJECT, [http://www.innocenceproject.org/Content/Facts\\_on\\_PostConviction\\_DNA\\_Exonerations.php](http://www.innocenceproject.org/Content/Facts_on_PostConviction_DNA_Exonerations.php) (last visited Oct. 27, 2012).

<sup>64</sup> See Akhil Reed Amar, *A Search for Justice in Our Genes*, N.Y. TIMES, May 7, 2002, at A31 (proposing a universal DNA database that would “treat all citizens equally, unlike current laws that often give authorities vast discretion to test some Americans but not others” and would “typically do more than generate a negative match with the innocent [person]; it would also generate a positive match identifying a specific person whose DNA profile fits that found at the crime scene . . . [making it] easier for innocent [persons] to exonerate themselves”).

not only of those for whom law enforcement has probable cause and a warrant to extract DNA but also of those not yet connected to the criminal justice system.<sup>65</sup> Given the accuracy of forensic DNA testing,<sup>66</sup> free citizens are exposed to no more vulnerability by inclusion in the database beyond *rightful* conviction of crimes they committed, against which the Fourth Amendment should not protect.<sup>67</sup>

While a more permissive holding might seem contrary to the Court's generally conservative approach to new technology not widely utilized by the public,<sup>68</sup> the usefulness of DNA technology in facilitating accurate law enforcement outcomes may counsel against such a conservative approach.<sup>69</sup> Courts have also underscored the importance of not being tethered to rules established at or before the nascent of a now-useful technology.<sup>70</sup>

DNA offers unparalleled accuracy,<sup>71</sup> significantly benefiting both law enforcement and wrongfully suspected individuals. Statutory limitations carefully constrain profiles' content to identifying information and criminalize misuse of DNA, thereby protecting privacy considerations. Moreover, universal forensic DNA databases have the potential to mitigate racial disparities in arrests and convictions. Courts should therefore consider these substantial benefits in evaluating cases that turn on the use of DNA evidence, and favor permissive use of forensic DNA profiles.

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<sup>65</sup> See D.H. Kaye & Michael E. Smith, *DNA Identification Databases: Legality, Legitimacy, and the Case for Population-Wide Coverage*, 2003 WIS. L. REV. 413, 452–58 (arguing that “a population-wide DNA database could serve as at least a partial, much-needed antidote for the racial distortions that plague the criminal justice system,” *id.* at 458).

<sup>66</sup> Epstein, *supra* note 51, at 142 n.5 (explaining that the probability of a random match for unrelated individuals is “less than one in one trillion, even in populations with reduced genetic variability”).

<sup>67</sup> See generally Arnold H. Loewy, *The Fourth Amendment as a Device for Protecting the Innocent*, 81 MICH. L. REV. 1229 (1983).

<sup>68</sup> See, e.g., *Kyllo v. United States*, 533 U.S. 27, 40 (2001) (finding use of a thermal imaging device to determine whether a home's occupants were growing marijuana to constitute a search presumptively unreasonable without a warrant).

<sup>69</sup> Cf. Frederic L. Borch III, *The Use of Co-Conspirator Statements Under the Rules of Evidence: A Revolutionary Change in Admissibility*, 124 MIL. L. REV. 163, 189 (1989) (noting that the admissibility of co-conspirator statements has been permitted out of necessity, because without them, “successful conspiracy prosecutions” would have been “virtually impossible”).

<sup>70</sup> See Epstein, *supra* note 51, at 151 (“The Supreme Court has acknowledged that advances in science may diminish, if not eliminate, privacy expectations within the walls of the proverbial ‘castle.’” (citing *Kyllo*, 533 U.S. at 31, 34)).

<sup>71</sup> See *United States v. Amerson*, 483 F.3d 73, 83 (2d Cir. 2007).