

“GENETIC SURVEILLANCE”—THE *BOGEYMAN* RESPONSE TO FAMILIAL DNA INVESTIGATIONS

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Now you’re subjecting a whole new class of innocent people to genetic surveillance by the government[.]¹

These are important scientific leads that need to be run down. And the fact that we can’t run them down in this country I think is shameful[.]²

The history of forensic use of DNA evidence to prove identity in criminal prosecutions may be best described as one of trading places—initial acceptance by the prosecution with resistance from criminal defense attorneys; an embrace of the technology by criminal defense attorneys investigating post-conviction claims of innocence and a corresponding prosecutorial resistance to re-examining closed cases; and the prosecutorial support for extending or abolishing statutes of limitations for criminal prosecutions in which DNA evidence is available, with strong opposition from criminal defense forces. A similar tension—from scrutiny and questioned acceptance³ to almost casual comfort with the science and its role in criminal investigations—pervaded the

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1. *60 Minutes: A Not So Perfect Match* (CBS television broadcast Apr. 1, 2007), available at http://www.cbsnews.com/stories/2007/03/23/60minutes/main2600721.shtml?source=search_story (quoting attorney Stephen Mercer).

2. *Id.* (quoting Denver District Attorney Mitch Morrissey).

3. DNA evidence was first challenged as unreliable science, and required prolonged hearings to establish admissibility. *See, e.g.,* *People v. Castro*, 545 N.Y.S.2d 985 (N.Y. Sup. Ct. 1989) (discussing a hearing to determine admissibility of DNA evidence that took twelve weeks and produced a transcript of over five thousand pages). Since that inception, DNA technology has been deemed apt for judicial notice. *United States v. Beasley*, 102 F.3d 1440, 1448 (8th Cir. 1996) (“[T]he reliability of the PCR method of DNA analysis is sufficiently well established to permit the courts of this circuit to take judicial notice of it in future cases.”). The same transition from skeptical acceptance to comfortable tolerance has been found in the use of random-match probability statistics. *Compare* *Commonwealth v. Curnin*, 565 N.E.2d 440, 445 (Mass. 1991) (excluding such estimates because of insufficient data), *with* *Young v. State*, 879 A.2d 44, 56 (Md. 2005) (holding that because of the database comparisons, “testimony of a match is admissible without accompanying contextual statistics.”). A fascinating history of the road from novelty to accepted technology is found in GEORGE CLARKE, *JUSTICE AND SCIENCE: TRIALS AND TRIUMPHS OF DNA EVIDENCE* (2007).

judicial response to forensic DNA technology and its applications.

That same point-counterpoint tension is now apparent in the dialogue over familial DNA “searches.”⁴ This technique, described in greater detail in Part I of this Article, may be understood simply as one that finds a partial match between a crime-scene evidence profile and a person in a DNA database where there is at least one *locus* where there is an exclusion, and then results in the investigation of near relatives of the excluded suspect.⁵ This investigative mechanism has been embraced by police services in Great Britain⁶ and enthusiastically extolled by prosecutors in the United States,⁷ yet it is criticized because of fears that it will disproportionately impact racial minorities⁸ and subject innocent members of the families of convicted criminals to “lifelong genetic surveillance.”⁹ It is also generating debate within the forensic laboratory community, with concerns predominating about efficacy, resource allocation, and privacy.¹⁰ The issue has recently become a significant public policy issue because California has announced a formal adoption of familial DNA searches,¹¹ and Maryland introduced legislation in 2008 authorizing DNA testing of violent crime arrestees but banning familial DNA investigations.¹²

The thesis of this Article is that such claims are unfortunate hyperbole and short-sighted, and that the familial DNA technology now opposed by

4. This term is in quotation marks because it is arguably a misnomer in Fourth Amendment standing terms. See *infra* Part II (questioning whether constant abandonment of genetic material constitutes a Fourth Amendment search and seizure).

5. A match is one where the alleles at thirteen specified *loci* on the DNA strand are identical for the crime scene profile and the suspect. COMMITTEE ON DNA FORENSIC SCIENCE, NATIONAL RESEARCH COUNCIL 1996. This is the standard utilized by the FBI: by typing these short tandem repeat (“STR”) *loci*, the random-match probability for a multiple locus profile will be exceedingly small. *Id.*; see Bruce Budowle et al, *Source Attribution of a Forensic DNA Profile*, 2 FORENSIC SCI. COMM., 3 (2000), available at <http://www.fbi.gov/hq/lab/fsc/backissu/july2000/source.htm#Introduction> (holding the average random-match probability for unrelated individuals for the thirteen STR loci is less than one in one trillion, even in populations with reduced genetic variability, such as Apaches).

6. See Duncan Carling, Note, *Less Privacy Please, We’re British: Investigating Crime with DNA in the U.K. and the U.S.*, 31 HASTINGS INT’L & COMP. L. REV. 487, 487 (2008) (citing DNA evidence as a well-established investigative tool in the United Kingdom).

7. See, e.g., *60 Minutes: A Not So Perfect Match*, *supra* note 1 (quoting a Colorado district attorney who extols the potential value of using family connections found through DNA to help uncover rape suspects); *State Offers Police Extra DNA Tool*, L.A. TIMES, Apr. 26, 2008, at A1, available at <http://articles.latimes.com/2008/apr/26/local/me-dna26> (noting California’s use of partial match DNA searching to identify elusive criminals by tracking down their relatives); American Prosecutors Research Institute, *Catching Criminals by Investigating Profiles with Allelic Similarities*, 10 SILENT WITNESS 2 (2006) (noting the use of partial match profiles in criminal investigations).

8. Jennifer Mnookin, *Devil in the DNA Database*, L.A. TIMES, Apr. 5, 2007, at A23, available at <http://articles.latimes.com/2007/apr/05/opinion/oe-mnookin5>.

9. *60 Minutes: A Not So Perfect Match*, *supra* note 1.

10. See, e.g., Minutes from the Commonwealth of Virginia Scientific Advisory Committee on Familial DNA (May 8, 2007), available at <http://www.dfs.virginia.gov/about/minutes/saCommittee/20070508.pdf> [hereinafter Virginia Minutes] (describing discussion about use of partial matching in Virginia). The FBI recently sponsored a two-day conference on familial DNA issues. *State Offers Police Extra DNA Tool*, *supra* note 7.

11. Press Release, California Office of the Attorney General, Brown Unveils DNA Technique to Crack Unsolved Crimes (Apr. 25, 2008), available at http://ag.ca.gov/cms_attachments/press/pdfs/n1548_08-bfs-01.pdf.

12. S. 211, 2008 Leg. session 425 (Md. 2008), available at <http://mlis.state.md.us/2008rs/bills/sb/sb0211e.pdf>.

criminal defense advocates can also serve innocents who are wrongfully accused. Part I of this Article reviews and assesses the process of using familial DNA in terms of its potential and limitations. Part II addresses the Fourth Amendment implications of use of familial DNA in investigations. Part III examines the arguments against familial DNA investigations and the weaknesses of the arguments against familial DNA investigations. In Part IV, this Article turns to the policy questions that familial DNA “searching” raises, and proposes three important safeguards: pre-screening of samples with Y-STR¹³ testing to quickly reduce the suspect pool; the destruction of any biological material samples taken in a familial DNA investigation that do not lead to perpetrator identification; and the exclusion (or expungement) from DNA databases of any DNA profiles obtained during the investigation that do not lead to arrest and prosecution. Part IV concludes with an “innocence” perspective on the need for privacy-protected familial DNA investigations.

I. FAMILIAL DNA—ITS SCIENCE¹⁴ AND APPLICATION

DNA, or deoxyribonucleic acid, is the genetic material found in the nucleus of cells, and is often referred to as the “blueprint of life.”¹⁵ It is the same in a person’s “blood, saliva, tissue, hair, semen, and other biological material.”¹⁶ The bases or components of DNA are four chemicals: Cytosine, Guanine, Thymine, Adenine. In DNA, Cytosine is normally paired with Guanine, while Thymine normally pairs with Adenine.

Across individuals, more than 99% of the DNA structure is the same. Scientists test the small percentage where DNA varies to identify individuals: termed “polymorphism,” these are the variations in DNA sequences. Because the human genome contains approximately 3 billion base pairs, the variable regions number close to 3 million.¹⁷ Among these are regions with no known coding function, in other words, the genetic material at these locations is not known to determine a human attribute such as height, weight, or susceptibility to a particular disease.¹⁸ It is at these locations (“*loci*”) that forensic identification analysis occurs.¹⁹

13. See *infra* text accompanying notes 52–62 (detailing Y-STR technology, which shows patrilineal heritage).

14. This section begins with an abbreviated explanation of the fundamentals of DNA and its capacity to serve as a forensic identification tool. The summary is limited, as the science at this point is well established and accepted by both courts and the academy. See, e.g., *People v. Soto*, 981 P.2d 958, 976–77 (Cal. 1999) (summarizing judicial and scientific acceptance of forensic DNA processes and statistical calculations).

15. *DNA Initiative Glossary*, <http://www.dna.gov/glossary/?showpopup=1> (last visited Mar. 13, 2009).

16. President’s DNA Initiative, *Where is DNA Found*, http://www.nfstc.org/forensic_dna/module2/2.1.003.htm (last visited Mar. 13, 2009).

17. NAT’L RESEARCH COUNCIL, *THE EVALUATION OF FORENSIC DNA EVIDENCE* 63 (1996), http://www.nap.edu/openbook.php?record_id=5141&page=63 (“[A]ny two people (unless they are identical twins) differ on the average in several million nucleotides”).

18. *Id.* Some studies have questioned whether in fact these regions are truly noncoding. See, e.g., W. Wayt Gibbs, *The Unseen Genome: Gems Among the Junk*, *SCI. AM.*, Nov. 2003, at 48 (suggesting that “non-coding” sequences are indispensable and that variations in these sequences are “what make one person, and one species different from the next.”).

19. NAT’L RESEARCH COUNCIL, *supra* note 17, at 65.

At each *locus* are two alleles.²⁰ They may be matching (homozygous) or different from one another (heterozygous).²¹ Forensic DNA analysis identifies the alleles at each of the thirteen *loci*,²² determines the frequency with which the combination at a single *locus* occurs across the population, and then calculates a “random-match probability” by multiplying each frequency applying the “product” rule.²³ The resulting statistic, the random-match probability, has been defined as “the probability that a person other than the suspect, randomly selected from the population, will have this profile”²⁴

The current forensic DNA regime²⁵ involves testing at a minimum of thirteen *loci*, or regions on the DNA strand.²⁶ Each of these *loci* was selected because of its polymorphic, or highly variable, nature. Adopted for use in 1997, they remain core to forensic identification practice.²⁷

A forensic DNA analysis proceeds, first, from the detection at and collection from a crime scene of an evidentiary relevant biological sample.²⁸ Once tested, a DNA profile of the sample’s source²⁹ is obtained; and if the conditions are sufficiently uncompromised, the profile will identify the alleles at the thirteen³⁰ designated *loci*.

20. *Id.* at 14.

21. *Id.*

22. *Id.* at 127.

23. The Biology Project, Blackett Family DNA Activity 2 (Oct. 27, 2000), http://www.biology.arizona.edu/human_bio/activities/blackett2/str_codis.html (providing a useful illustration of a DNA profile at 13 *loci* and the resulting calculation of the random-match probability); see Edward Ungvársky, *What Does One in a Trillion Mean?*, GENEWATCH, Jan.–Feb. 2007, <http://www.gene-watch.org/genewatch/articles/20-1Ungvarsky.html> (criticizing the product rule).

24. NAT’L RESEARCH COUNCIL, *supra* note 17, at 127.

25. This process utilizes STR markers, assessing the number of times a sequence of base pairs (the combinations of Cytosine, Guanine, Thymine, Adenine) is found at a particular allele at each tested *locus*. See John M. Butler et al., *Brief Introduction to STRs* (July 5, 2007), <http://www.cstl.nist.gov/biotech/strbase/intro.htm> [hereinafter Butler, *Brief Introduction to STRs*] (explaining the utility of STRs to genetic testing). Study of the forensic value of other genetic markers, in particular single nucleotide polymorphisms (“SNPs”) is ongoing, but at this time their value in determining identity remains unresolved. John M. Butler et al., *STRs vs. SNPs: Thoughts on the Future of Forensic DNA Testing*, 3 *Forensic Sci. Med. Pathology* 200, 200–01 (2007), available at http://www.cstl.nist.gov/biotech/strbase/pub_pres/FSMP_STRs_vs_SNPs.pdf.

26. See, e.g., *United States v. Jenkins*, 887 A.2d 1013, 1017 n.2 (D.C. 2005) (“The FBI always tests the same thirteen loci for use in the Combined DNA Index System”).

27. John M. Butler, *Genetics and Genomics of Core STR Loci Used in Human Identity Testing*, 51 *J. FORENSIC SCI.* 253, 253 (2006); Budowle et al., *supra* note 5; Julian Adams, *Nuclear and Mitochondrial DNA in the Supreme Courtroom*, 13 *J.L. & POL’Y* 69, 74 (2005) (“Outside of the hypervariable regions, the genomes of two randomly chosen individuals exhibit few differences. In contrast, within the hypervariable regions, two randomly chosen individuals will exhibit a number of differences.”).

28. Edwin Zedlewski & Mary B. Murphy, *DNA Analysis for “Minor” Crimes: A Major Benefit for Law Enforcement*, 253 *NIJ J.* 2, 2 (Jan. 2006), available at http://www.ojp.usdoj.gov/nij/journals/253/dna_analysis.html.

29. Some crime scene samples contain DNA from multiple sources, as in a sexual assault “gang rape” or in the sweat band of a hat worn by more than one user. These “mixture” cases can yield profiles of more than one person, often determined to be the “major” and “minor” contributors. See, e.g., Wingk Fung & Yue-Qing Hu, *Interpreting DNA Mixtures Based on the NRC-II Recommendation 4.1*, 2 *FORENSIC SCI. COMM.* (Oct. 2000), available at <http://www.fbi.gov/hq/lab/fsc/backissu/oct2000/fung.htm> (discussing how to determine DNA match probability in mixed-sample instances); Carle Ladd et al., *Interpretation of Complex Forensic DNA Mixtures*, 42 *CROATIAN MED. J.* 244, 244 (2001) (discussing different approaches to mixed-sample problems); John M. Butler, *Mixture Examples* (Apr. 3, 2007), http://cstl.nist.gov/div831/strbase/pub_pres/5_MixtureExamples.pdf (discussing steps in interpreting a mixture).

30. Some laboratories utilize an even more stringent standard, testing at 15 *loci*. See, e.g., Birmingham

At this stage, one of two investigative processes is utilized. If information has identified a particular person as the principal suspect, biological material may be obtained from this individual by judicial order,³¹ subsequent to an arrest,³² by consent,³³ or from a sample “abandoned” by the individual in a location where there is no expectation of privacy.³⁴ Where there is no known suspect, or where there is insufficient basis to seek the suspect’s DNA profile by judicial order and no other opportunity to obtain it exists, the crime scene profile will be compared to previously obtained offender profiles in the local, state, and national DNA databases.

The architecture of DNA databases is at once pyramidal and irregular.³⁵ Often mistakenly referred to as CODIS, which is the software program for managing the DNA databases and searches therein,³⁶ the structure is a triad of local, state, and national databases.³⁷ The neatness of this triad is disrupted by

v. State, 27 S.W.3d 351, 356–57 (Ark. 2000) (where the expert testified that the DNA evidence was analyzed at fifteen loci and that the random-match probability was one in one trillion).

31. Courts have approved orders for taking DNA samples from uncharged suspects based on reasonable suspicion rather than the more stringent probable cause standard. See *In re Shabazz*, 200 F. Supp. 2d 578, 583 (D.S.C. 2002) (allowing the collection of a saliva sample from a suspect “based on [a] reasonable individualized suspicion that petitioner was engaged in criminal wrongdoing,” rather than probable cause); *United States v. Swanson*, 155 F. Supp. 2d 992, 1002 (C.D.Ill. 2001) (noting that a grand jury may issue a subpoena that under the circumstances may be reasonable but is less than a probable cause standard); *In re Grand Jury Proceedings Involving Vickers*, 38 F. Supp. 2d 159, 164 (D.N.H. 1998) (discussing the fact that the inquiry should not be one of probable cause, but rather whether the scope and subject matter of the subpoena are reasonable under the circumstances); *United States v. Garcia-Ortiz*, No. 01-111, 2005 U.S. Dist. LEXIS 38108, at *24 (P.R. Dec. 23, 2005) (finding that a subpoena allowing the FBI to collect blood, hair, saliva, and fingerprints was reasonable under the circumstances); *State v. Rodriguez*, 921 P.2d 643, 650 (Ariz. 1996) (based on Arizona Nontestimonial Order [NTO] statute); *State v. Lee*, 964 So. 2d 967, 979 (La. Ct. App. 2007) (approving the collection of a cheek swab from a suspect based on reasonable suspicion, given that the suspect had been previously arrested for being a “Peeping Tom” in the area of the murder); *In re Nontestimonial Identification Order Directed to R.H.*, 762 A.2d 1239, 1242 (Vt. 2000) (stating that the court would uphold nontestimonial identification procedures based only upon reasonable suspicion). A more detailed discussion of Fourth Amendment issues in DNA investigations is found in Part II, *infra*.

32. Compare *Anderson v. Commonwealth*, 650 S.E.2d 702, 705 (Va. 2007) (finding DNA sampling of arrestees no different than traditional fingerprinting), with *In re Welfare of C.T.L.*, 722 N.W.2d 484, 486 (Minn. Ct. App. 2006) (holding such a blanket policy to be an unreasonable seizure).

33. Consent has been found even where police deceive the subject as to why the DNA sample is sought. *Wyche v. State*, 906 So. 2d 1142, 1143–1149 (Fla. Dist. Ct. App. 2005).

34. See, e.g., *Commonwealth v. Cabral*, 866 N.E.2d 429, 435 (Mass. App. Ct. 2007) (expectorant on street); *Hudson v. State*, 205 S.W.3d 600, 604 (Tex. App. 2006) (DNA extracted from a soda can thrown into a trash receptacle); *State v. Athan*, 158 P.3d 27, 33 (Wash. 2007) (saliva on an envelope). Restrictions on such seizures may arise from state constitutional provisions. See, e.g., *Litchfield v. State*, 824 N.E.2d 356, 363 (Ind. 2005) (requiring search of garbage to be reasonable and an articulable basis justifying reasonable suspicion). See generally Stephen E. Henderson, *Learning from All Fifty States: How to Apply the Fourth Amendment and Its State Analogs to Protect Third Party Information from Unreasonable Search*, 55 CATH. U. L. REV. 373 (2006) (mentioning such state constitutional provisions).

35. NATIONAL INSTITUTE OF JUSTICE, USING DNA TO SOLVE COLD CASES (2002), <http://www.ncjrs.gov/pdffiles1/nij/194197.pdf> (discussing the history of DNA testing and various types of databases).

CODIS is a computer software program that operates local, State, and national databases of DNA profiles from convicted offenders, unsolved crime scene evidence, and missing persons. . . . [It] enables State, local, and national law enforcement crime laboratories to compare DNA profiles electronically

DNA.gov, What is CODIS?, <http://www.dna.gov/solving-crimes/cold-cases/howdatabasesaid/codis/> (last visited Mar. 13, 2009) [hereinafter “What is CODIS?”].

37. These labs are generally identified by their acronyms of LDIS (Local DNA Index System); SDIS (State DNA Index System); and NDIS (National DNA Index System). DNA.gov, LDIS, SDIS and NDIS,

two factors—each entity at each level has its own criteria for what offender profiles³⁸ it will upload and store,³⁹ and cross-checking of data between or among jurisdictions is available only through the national system, thus limiting each state's search criteria to those set by the FBI. This latter aspect has particular significance for familial DNA investigations. To understand its implications, the dynamics of familial DNA investigations must be explored.

In a typical DNA search, the profile from the pertinent crime-scene evidence is uploaded, and the CODIS software determines whether there is a "hit," *i.e.*, a match at all thirteen *loci*.⁴⁰ Until 2006, a correspondence at either twelve or eleven *loci*, with disparities at the remaining location(s), went unreported.⁴¹ Yet when such a high correspondence is found, it often means that the perpetrator is a close relation of the individual in the DNA index.⁴²

This derives from the genetic reality that "related individuals have more similar genetic fingerprints than unrelated individuals. Accordingly, individuals are more likely to be related if they have in common alleles that are very rare in the general population, or if they have very similar patterns of alleles."⁴³

However, when the allelic correspondence is at less than twelve *loci* the investigation becomes more sweeping. The English model is intensive if not extreme. Where a crime-scene forensic profile yields partial matches (but exclusions) with several people in the nation's DNA database, a process of "prioritisation" is undertaken.⁴⁴ For each of those persons, denominated

<http://www.dna.gov/solving-crimes/cold-cases/howdatabasesaid/ldisndisdis/> (last visited Mar. 13, 2009).

38. The term "offender profiles" may designate either convicted persons or arrestees. As of February 2009, all fifty states require that convicted sex offenders provide a DNA sample; forty-seven states require all convicted felons to provide a DNA sample to the state's database; sixteen states extend this requirement to persons convicted of designated misdemeanors; and fifteen states now authorize DNA sampling of at least some categories of arrestees. National Conference of State Legislatures, State Laws on DNA Databanks (Feb. 2009), <http://www.ncsl.org/programs/cj/dnadatabanks.htm>.

39. As of 2006, the National Index has been expanded to include not only convicted persons but also individuals charged with a crime "by indictment or information." 42 U.S.C.A. § 14132(a)(1)(B) (2008 supplement). This expansion dovetailed with statutory authorization in 2006 for the "Attorney General . . . [to] collect DNA samples from individuals who are arrested or from non-United States persons who are detained under the authority of the United States." Violence Against Woman and Department of Justice Reauthorization Act of 2005, 42 U.S.C. § 14135(a)(1)(A) (2006).

40. UNITED STATES DEPARTMENT OF JUSTICE, AUDIT REPORT, THE COMBINED DNA INDEX SYSTEM (Sept. 2001), <http://www.usdoj.gov/oig/reports/FBI/a0126/final.pdf> ("Each time a laboratory uploads DNA profiles to the next level in the hierarchy, the software automatically compares the two groups of profiles and notifies the appropriate laboratories if there is a potential match between two or more profiles."); *see also supra* notes 25–30 and accompanying text (describing the DNA testing process, which involves thirteen different testing regions called *loci*, in each DNA strand).

41. *Catching Criminals by Investigating Profiles with Allelic Similarities*, SILENT WITNESS (2006), http://www.ndaa.org/publications/newsletters/silent_witness_volume_10_number_2_2006.html ("Until recently, the FBI did not release the personal information of partial matches.")

42. *See* FrederickR. Bieber, Charles H. Brenner & David Lazer, *Finding Criminals Through DNA of Their Relatives*, 312 SCI. 1315, 1315 (2006) (discussing DNA analysis of relatives).

43. Harish Agarwal, *It's All Relative: DNA Fingerprinting Identifies Family Members—For Better and for Worse*, BERKELEY SCI. REV., Fall 2006, at 12, available at http://sciencereview.berkeley.edu/articles/issue11/briefs_3.pdf.

44. KARL BARROW ET AL., POLICE STANDARDS UNIT, HOME OFFICE & NAT'L CENTRE FOR POLICING EXCELLENCE, TACTICAL ADVICE: USING FAMILIAL DNA INTELLIGENCE PRODUCTS IN SERIOUS CRIME INVESTIGATIONS § 3.1, 3.3 (2006) (on file with the *University of Illinois Journal of Law, Technology & Policy*).

“nominals,” a ranking is developed on a matrix that incorporates allelic similarity, age of nominal (and thus the likelihood of having a parent, sibling, or child who might be the offender), and geographic proximity⁴⁵ to the crime scene. Once the ranking is completed, police identify the nominal’s family members (often by interviewing the nominal) and thereafter select family members for further investigation.⁴⁶ This may include asking siblings to voluntarily provide buccal [inner cheek] swabs for DNA sampling and comparison with crime scene evidence.⁴⁷ If the initial scan is not productive, investigators are urged to “re-run the familial DNA intelligence search” periodically to check against new additions to the national DNA database, which receives roughly 40,000 new profiles monthly.⁴⁸

In another variant, the crime scene DNA is examined to ascertain whether there are any rare alleles at particular loci.⁴⁹ The database is then checked to see whether any offender has that allele; if the initial screening finds such a person, but he or she is excluded as the perpetrator, the relatives of that person are investigated.⁵⁰

Though such efforts are resource intensive, the success of such efforts in criminal investigations is well documented. In one 1992 homicide, the crime scene DNA profile yielded an initial list of over 16,800 nominals, which was narrowed by matrix ranking first to a reduced list of seven hundred and then by further filtering to a list of thirty-four. “The brother of the person with the highest [matrix ranking] score subsequently was identified as the offender.”⁵¹

What marks the British system is not merely the scope of the inquiry but the acknowledgment of privacy concerns. Both for reasons of privacy and cost-effectiveness, nominals can be, and often are, screened out by application of Y-STR testing.

This DNA testing modality examines the Y chromosome that passed from father to son.⁵² Y-STRs are short tandem repeats⁵³ found solely on the

45. *Id.* at § 3.41. Geographic proximity may be identified in terms of either residence or location(s) where nominal has engaged in criminal conduct. *Compare id.* § 3.41 (detailing geographic filtering algorithm incorporating the home address of each nominal), *with id.* § 3.42 (describing geographic filtering method that conducts a database search for each nominal to identify the “location of offences committed or any other association” with the location of the instant offense).

46. *See id.* § 3.41 (suggesting nominals with highest rankings on scoring matrix be selected for further research to identify siblings); *see also id.* § 3.7 (“At the conclusion of the appropriate research the swabbing process may begin by approaching an individual from one of the familial search lists and finding out, as appropriate, the identity of their sons, brothers or father.”).

47. *Id.* §§ 3.5, 3.5.4.

48. *Id.* § 3.10.

49. Fredrick R. Beiber, *Turning Base Hits into Earned Runs: Improving the Effectiveness of Forensic DNA Data Bank Programs*, 34 J.L. MED. & ETHICS 222, 226 (2006) (detailing a murder solved in Cardiff, Wales, using this technique).

50. *Id.*

51. *Id.* Appendix A (including accounts of four successful forensic investigations using familial searching).

52. *See* DNA.gov, Y-Chromosome, http://www.dna.gov/research/ychromosome_research/ (last visited Mar. 13, 2009) (“Since fathers pass their Y chromosome onto their sons unchanged (except for an occasional mutation), all males in a paternal lineage will possess a common Y chromosome haplotype.”); *see also* John M. Butler, State of the Y-Chromosome: New Advance and State of Science, Canadian Forensic DNA Technology Workshop (June 8, 2005), http://www.cstl.nist.gov/div831/strbase/pub_pres/TorontoJune2005_Y.pdf (“Paternal lineages possess the same Y-STR haplotype (barring mutation) and thus

male-specific Y Chromosome that code for male sex determination, spermatogenesis, and other male-related functions.⁵⁴ The technique was developed in part to identify a male contributor or contributors in cases of sexual assault, where DNA from both the female and male(s) is present in a vaginal swab.⁵⁵ The technique may also be used in cases with “fingernail scrapings comprising cells from the (female) victim and cells from the perpetrator.”⁵⁶

Y-STR testing cannot establish who the singular contributor of a crime scene source is, as the male chromosome traits may be found across people in a population as well as within a family.⁵⁷ This methodology has also received mixed responses judicially in terms of its admissibility at trial.⁵⁸ Nonetheless, the value of this test is that it quickly and readily has the power to include an individual as a possible contributor of crime scene DNA⁵⁹ or to conclusively exclude him from the pool of possible suspects.⁶⁰

Exclusion by Y-STR testing quickly reduces the suspect list⁶¹ and the likelihood of “genetic surveillance” that could occur if a full DNA profile of each family member were to be uploaded into a database. The availability of

fathers, sons, brothers, uncles, and paternal cousins cannot be distinguished from one another . . .”).

53. Butler, *Brief Introduction to STRs*, *supra* note 27.

54. DNA Diagnostic Center, Y-STR - Forensic DNA Testing System, <http://www.forensicdnacenter.com/dna-ystr.html> (last visited Mar. 14, 2009).

55. Erin K. Hanson & Jack Ballantyne, *An Ultra-High Discrimination Y Chromosome Short Tandem Repeat Multiplex DNA Typing System* (Aug. 2007), <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1925149>; Julio J. Mulero et al., *Development and Validation of the AmpFISTR Yfiler PCR Amplification Kit: A Male Specific, Single Amplification 17 Y-STR Multiplex System*, 51 J. FORENSIC SCI. 64 (2006).

56. Hanson & Ballantyne, *supra* note 55.

57. *See, e.g.*, *Yeboah v. State*, No. A07-0739, 2008 WL 2020449, at *5 (Minn. Ct. App. May 13, 2008) (describing how expert testimony established that the crime scene sample matches “the Y chromosomal DNA profile obtained from . . . the known sample of [the accused]. . . was observed once in a population of 1,676 people”); *Mitchell v. Artus*, No. 07 Civ. 4688(LTJ) (AJP), 2008WL 2262606, at *8 (S.D.N.Y. June 2, 2008) (“After consulting a population database . . . Dr. Prinz concluded that the likelihood of both a Y-STR and THO-1 match to the stain is one in every 660 unrelated blacks, 4,400 whites, 800 Hispanics, and 260 Asians.”) A database for the frequency of Y-STR profiles is actively being developed and expanded. *See* Sascha Willuweit & Lutz. Roewer, *Y Chromosome Haplotype Reference Database (YHRD): Update*, FORENSIC SCI. INT’L: GENETICS 1, at 83, 83 (describing recent changes to the Y Chromosome Haplotype Reference Database, which stores the Y chromosome haplotypes from global populations); Jack Ballantyne et al., *Creating and Managing Effective Y-STR Databases*, 9 PROFILES IN DNA, at 10, 10–13 Sept. 2006, available at http://www.promega.com/profiles/902/ProfilesinDNA_902_10.pdf (discussing the intricacies of organizing Y-STR databases).

58. *Compare* *State v. Bell*, No. 06-MA-189, 2008 Ohio App. LEXIS 3332, at *P41–42 (Ohio Ct. App. July 25, 2008) (approving testimony regarding Y-STR testing as satisfying that state’s mandate for the reliability of scientific evidence), *with* *Yeboah*, No. A07-0739, at *1 (“[T]he district court erred in admitting the Y-STR DNA evidence without first holding an evidentiary hearing outside the presence of the jury.”).

59. *See, e.g.*, *Williams v. State*, No. 2-06-416-CR, 2008 Tex. App. LEXIS 3095, at *10 (Tex. App. Apr. 24, 2008) (“The partial profile . . . indicated that eleven of the seventeen traced markers matched the sample taken from appellant . . . [and therefore] appellant and any male within his lineage could not be excluded as a possible source of the DNA found on D.W.’s vaginal swab.”).

60. Hiroyoshi Koyama et al., *Utility of Y-STR Haplotype and mtDNA Sequence in Personal Identification of Human Remains*, 23 AM J. FORENSIC MED. PATHOLOGY 181, 184. The usefulness of this technology has been seen by commercial laboratories, which now offer such testing. *See* American Academy of Forensic Science, 2005 Abstracts 69 <http://www.aafs.org/pdf/NewOrleansabstracts05.pdf> (last visited Mar. 14, 2009) (noting that government forensic laboratories are outsourcing cases to private companies, such as ReliaGene, that offer systems to detect and profile male DNA).

61. KARL BARROW ET AL., *supra* note 44 § 3.5.1.

screening procedures such as Y-STR technology offers a means of ensuring that any “search” of familial DNA is “reasonable,” the *sine qua non* of Fourth Amendment intrusions into individual privacy.⁶²

II. DNA AND FOURTH AMENDMENT PRINCIPLES—AN ILL FIT

The ease with which DNA samples are obtained from individuals, the minimally intrusive nature of the technique for securing the sample, and the constant “abandonment” of skin and other cells in public places, raise the question of whether obtaining such samples is indeed a Fourth Amendment search and seizure. Though the answer should be affirmative, posing this question is legitimate given conventional Fourth Amendment doctrine.

A. Is DNA Seizure and Analysis Subject to Fourth Amendment Protection?

The Fourth Amendment was drafted and adopted in response to problems of general warrants⁶³ and the correlate concern of protecting individual privacy in the face of criminal investigations.⁶⁴ Yet the privacy concerns in 1792 and thereafter did not involve genetics or even invasions of one’s body, but searches of a home or ship for papers or contraband or arrests (seizures) of a person.⁶⁵ Searches of the person’s clothing and possessions occurred

62. This is not to suggest that the “least restrictive” means of accomplishing a search is the standard for assessing reasonableness, as the Supreme Court has held explicitly to the contrary. *See Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 663 (1995) (“We have repeatedly refused to declare that only the ‘least intrusive’ search practicable can be reasonable under the Fourth Amendment.”). However, utilizing procedures such as Y-STR screening will, in light of the high personal privacy interest in DNA, ensure that such a methodology meets the reasonableness threshold.

63. *Groh v. Ramirez*, 540 U.S. 551, 572 (2004) (Thomas, J., dissenting) (“[T]he Amendment’s history . . . is clear as to [its] principal target (general warrants)”); *Payton v. New York*, 445 U.S. 573, 583 (1980) (“It is familiar history that indiscriminate searches and seizures conducted under the authority of ‘general warrants’ were the immediate evils that motivated the framing and adoption of the Fourth Amendment.”).

64. The principles laid down in this opinion affect the very essence of constitutional liberty and security. . . . [T]hey apply to all invasions on the part of the government and its employes of the sanctity of a man’s home and the privacies of life. It is not the breaking of his doors, and the rummaging of his drawers, that constitutes the essence of the offence; but it is the invasion of his indefeasible right of personal security, personal liberty and private property, where that right has never been forfeited by his conviction of some public offense. . . . [A]ny forcible and compulsory extortion of a man’s own testimony or of his private papers to be used as evidence to convict him of crime or to forfeit his goods, is within the condemnation of that judgment. In this regard the Fourth and Fifth Amendments run almost into each other. *Boyd v. United States*, 116 U.S. 616, 630 (1886).

65. Professor Steinberg maintains that the Fourth Amendment, as originally drafted, was meant only to regulate the searches of homes and not of persons:

The Framers adopted the Fourth Amendment exclusively to regulate house searches. Specifically, the Framers enacted the Fourth Amendment solely to prohibit physical entries into a house pursuant to a general warrant, or no warrant at all. When they enacted the Fourth Amendment, the Framers did not intend to regulate other types of searches or seizures.

David E. Steinberg, *Sense-Enhanced Searches and the Irrelevance of the Fourth Amendment*, 16 WM. & MARY BILL RTS. J. 465, 480 (2007). Although this view of the Amendment has never been accepted by the Supreme Court, it confirms that a historic-based analysis offers little in assessing the constitutionality of DNA searches. It is also contrary to the exhaustive study of the origins of the Fourth Amendment undertaken by Professor Davies, which concluded that the intent of the framers was to ban “Congress from authorizing use of general warrants [and instead require specific, fact-based warrants]; they did not mean to create any broad reasonableness standard for assessing warrantless searches and arrests. Thomas Y. Davies, *Recovering the*

appurtenant to lawful arrests and were accepted as an unquestioned right.⁶⁶

Traditional forensic testing of a person's blood,⁶⁷ breath,⁶⁸ or fingerprints⁶⁹ did not develop until a century or more after adoption. Thus, historical and original Fourth Amendment concerns and analyses offer an incomplete and probably inadequate measure for determining when the securing of a person's biological material (skin, saliva, blood, or hair) and its subsequent testing are searches and seizures subject to Constitutional protection.⁷⁰ The Supreme Court's bodily integrity search-and-seizure jurisprudence developed almost two centuries after the Amendment's drafting;⁷¹ if not drawn from historical sources, it lends some but not conclusive authority to issues arising from the seizing and testing of DNA.⁷² This jurisprudence must be read in conjunction with the expectation-of-privacy doctrine developed in *Katz*, "that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"⁷³

This test is of less utility regarding DNA analysis than might at first be apparent. *Katz* itself acknowledges that what individuals expose to the public is per se outside of the Fourth Amendment's protection: "objects . . . that he exposes to the 'plain view' of outsiders are not 'protected' because no intention to keep them to himself has been exhibited."⁷⁴

The *Katz* Court's emphasis that the Fourth Amendment does not protect items exposed to the public is not an isolated one. For example, using the *Katz* analysis the Supreme Court held that there is no Fourth Amendment privacy

Original Fourth Amendment, 98 MICH. L. REV. 547, 724 (1999).

66. See *Weeks v. United States*, 232 U.S. 383, 392 (1914) (discussing the Government's right under both English and American law, to search the person of the arrestee in order to find evidence of the crime); Akhil Reed Amar, *Fourth Amendment First Principles*, 107 HARV. L. REV. 757, 764 (1994) (summarizing the historic record accepting as normative body/clothing searches of fleeing felons and arrestees).

67. The system of blood typing did not begin until 1900, when Dr. Karl Landsteiner's research identified the A, B and O blood types. Randolph N. Jonakait, *Will Blood Tell? Genetic Markers in Criminal Cases*, 31 EMORY L.J. 833, 836 (1982).

68. Although a device known as the Drunkometer was reported as early as the late 1930s, the testing equipment known as the breathalyzer was developed in 1954. Breathalyzer.org, *History of Breathalyzers*, <http://www.breathalyzer.org/history.html> (last visited Mar. 14, 2009).

69. Forensic use of fingerprints as a means of identification began in or around 1892. Onin.com, *The History of Fingerprints*, <http://onin.com/fp/fphistory.html> (last visited Mar. 14, 2009). In the United States, the first use of fingerprinting as a means of identifying criminals was in 1902. *Id.*

70. Tracey Maclin, *Is Obtaining an Arrestee's DNA a Valid Special Needs Search Under the Fourth Amendment? What Should (and Will) the Supreme Court Do?* 34 J.L. MED. & ETHICS 165, 170 (2006).

71. *Skinner v. Ry. Labor Executives' Ass'n*, 489 U.S. 602, 618-19 (1989) (holding that the Fourth Amendment applied to drug and alcohol testing mandated by the Federal Railroad Administration); *Winston v. Lee*, 470 U.S. 753, 766 (1985) (holding that the surgical removal of a bullet from a suspect, forcing the suspect to undergo anesthesia, was unreasonable). The development of this jurisprudence began with the court's acknowledgement in *Schmerber v. California* that there was no historical framework for analyzing searches of a person's body, as opposed to clothing or effects. *Schmerber v. California*, 384 U.S. 757, 767-68 (1966) ("Because we are dealing with intrusions into the human body rather than with state interferences with property relationships or private papers—'houses, papers, and effects'—we write on a clean slate.")

72. See generally Roberto Iraola, *DNA Dragnets – A Constitutional Catch*, 54, DRAKE L. REV. 15 (2005) (discussing the application of Supreme Courts search and seizure common law in analyzing the acquisition of a DNA Sample).

73. *Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

74. *Id.*

right in the sound of a person's voice, again because

[t]he physical characteristics of a person's voice, its tone and manner, as opposed to the content of a specific conversation, are constantly exposed to the public. Like a man's facial characteristics, or handwriting, his voice is repeatedly produced for others to hear. No person can have a reasonable expectation that others will not know the sound of his voice, any more than he can reasonably expect that his face will be a mystery to the world.⁷⁵

Like little else, DNA is exposed to the public and abandoned every time we move.⁷⁶ Coupled with the loss of privacy occasioned by our 'exposing' our DNA to others is the Supreme Court's 'sliding scale' approach to privacy, treating it at least in part as a function of how technological advances have exposed aspects of our personal lives (even in the home, considered the most sacrosanct location for personal privacy concerns) to others.⁷⁷ The Supreme Court has acknowledged that advances in science may diminish, if not eliminate, privacy expectations within the walls of the proverbial "castle."⁷⁸ For DNA testing, the technology is not in the hands of private individuals but is easily obtained, at modest cost, from labs nationwide.⁷⁹

Nonetheless, the Supreme Court has consistently treated *compelled* examinations and/or testing of bodily tissue, blood and viscera as Fourth Amendment searches.⁸⁰ The Supreme Court's Fourth Amendment

75. *United States v. Dionisio*, 410 U.S. 1, 14 (1973).

76. The doctrine of abandonment, as applied to DNA, is discussed later in this Article. *See infra* text accompanying notes 125–34; *see also* Edwin Zedlewski & Mary B. Murphy, *DNA Analysis for "Minor" Crimes: A Major Benefit for Law Enforcement*, 253 *NIJ JOURNAL* 2, available at http://www.ojp.usdoj.gov/nij/journals/253/dna_analysis.html (detailing how DNA evidence is often able to be located at property crime scenes).

77. Professor Henderson urges that there be some constitutional protection to information and/or materials that are "disclosed" to third parties, emphasizing as one criterion the private nature of the information. Stephen E. Henderson, *Beyond the (Current) Fourth Amendment: Protecting Third-Party Information, Third Parties, and the Rest of Us Too*, 34 *PEPP. L. REV.* 975, 1050 (2007). This Article does not dispute the appropriateness of a more protective third party doctrine, but that is not currently the Supreme Court's approach. *Id.* at 988.

78. *Kyllo v. United States*, 533 U.S. 27, 31, 34 (2001). The Supreme Court described the privacy within one's home as being "at the very core of the Fourth Amendment" but declared that the privacy right was relative to advances in technology: "We think that obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical 'intrusion into a constitutionally protected area,' constitutes a search—at least where (as here) the technology in question is not in general public use." *Id.* at 34 (citation omitted) (emphasis added). The equation that privacy against the Government diminishes as technology passes into the hands of the citizenry has not gone unremarked. *See, e.g.,* Sam Kamin, *The Private Is Public: The Relevance of Private Actors in Defining the Fourth Amendment*, 46 *B.C. L. REV.* 83, 115 (2004) ("This language . . . makes absolutely clear the importance of private conduct to the definition of reasonable expectations of privacy"); Ric Simmons, *From Katz to Kyllo: A Blueprint for Adapting the Fourth Amendment to Twenty-First Century Technologies*, 53 *HASTINGS L.J.* 1303, 1321 (2002) ("Kyllo . . . [has forced] courts to struggle with an increasingly significant question: to what extent should the method of investigation or surveillance used by the government—and specifically, its degree of invasiveness—be considered in evaluating whether a 'search' has occurred?").

79. A Google search of the term "DNA testing centers," conducted Mar. 14, 2008, resulted in nearly three million results. Services for DNA paternity and identity testing were available, with fees ranging from \$79 to \$165, including testing for "DNA Identification and Verification." Metaphyse Genetics, DNA Paternity Testing, <http://www.metaphasegenetics.com> (last visited Mar. 11, 2009); Biosynthesis Inc., Relationship Tests Infidelity Detection Services, <http://www.800dnaexam.com/about.aspx> (last visited Mar. 14, 2009).

80. As the Supreme Court explained in 1985,

jurisprudence on scientific exploration and testing of the human body has focused on the degree of physical invasiveness, largely disapproving of surgically retrieving evidence⁸¹ while tolerating blood tests⁸² *assuming the initial detention was proper*.⁸³ This assessment of the means of testing finds its antecedents in the Supreme Court's due process rejection of forced extraction of evidence from a suspect's stomach.⁸⁴

The taking of bodily material for DNA testing is perhaps the least intrusive of all seizures—it involves no penetration of the skin, pain, or substantial inconvenience. Rather, when accomplished formally, it may require as little effort as the swabbing the inside of a cheek or the collection of saliva.⁸⁵ And advances in securing a DNA profile from skin cells may mean as little as a handshake or a brushing against another's skin can permit the collection (seizure) of biological material from which a DNA profile can be extracted. Nonetheless, in determining whether Fourth Amendment interests have been violated, the Supreme Court has consistently addressed not only the physical nature of the intrusion but the nature of the information derived from the search. The Supreme Court's most emphatic recognition of this privacy interest came in *Skinner*:

[C]hemical analysis of urine, like that of blood, can reveal a host of private medical facts about an [individual], including whether he or she is epileptic, pregnant, or diabetic . . . [T]hese intrusions must be deemed searches under the Fourth Amendment.⁸⁶

Thus, the fact that our urine or the DNA in our urine may be exposed to the public does not remove all DNA testing from Fourth Amendment constraints. Indeed, the Supreme Court has reached the same conclusion with fingerprinting (despite the fact that we regularly deposit latent impressions in public)⁸⁷ and with one's name⁸⁸ (though one's name is not physical evidence, it

The intrusion perhaps implicated Schmerber's most personal and deep-rooted expectations of privacy The Fourth Amendment neither forbids nor permits all such intrusions; rather, the Amendment's proper function is to constrain, not against all intrusions as such, but against intrusions which are not justified in the circumstances, or which are made in an improper manner.

Winston v. Lee, 470 U.S. 753, 760 (1985) (internal quotations omitted).

81. *Id.* at 759 (“A compelled surgical intrusion into an individual's body for evidence, however, implicates expectations of privacy and security of such magnitude that the intrusion may be ‘unreasonable’ even if likely to produce evidence of a crime.”).

82. *Schmerber v. California*, 384 U.S. 757, 771 (1966) (“Such tests are a commonplace in these days of periodic physical examinations[:] . . . the quantity of blood extracted is minimal, and . . . for most people the procedure involves virtually no risk, trauma, or pain.”).

83. “Detention for fingerprinting may constitute a much less serious intrusion upon personal security than other types of police searches and detentions. Fingerprinting involves none of the probing into an individual's private life and thoughts that marks an interrogation or search.” *Davis v. Mississippi*, 394 U.S. 721, 727 (1969) (rejecting dragnets for fingerprinting potential suspects but nonetheless acknowledging the low degree of intrusiveness as a possible factor in permitting fingerprinting on less than probable cause).

84. “Illegally breaking into the privacy of the petitioner, the struggle to open his mouth and remove what was there, the forcible extraction of his stomach's contents . . . are methods too close to the rack and the screw to permit of constitutional differentiation.” *Rochin v. California*, 342 U.S. 165, 172 (1952).

85. See Walker et al., *Collection of Genomic DNA by Buccal Swabs for Polymerase Chain Reaction-Based Biomarker Assays*, 107 ENVTL. HEALTH PERP. 517, 520 (discussing the noninvasive nature and acceptance of a swab of the cheek).

86. *Skinner v. Ry. Labor Executives' Ass'n*, 489 U.S. 602, 617 (1989).

87. See *Davis*, 394 U.S. at 727 (“Detentions for the sole purpose of obtaining fingerprints are . . . subject

is something we all disclose regularly and publicly). For the latter, the Supreme Court chose to analyze a state law compelling the giving of one's name *after* a lawful police stop based on reasonable suspicion as valid under the Fourth Amendment, rather than as not being a search at all.⁸⁹ Taking and analyzing human DNA *in a circumstance where there is a reasonable expectation of privacy*⁹⁰ is a Fourth Amendment search.⁹¹

B. That Which the Fourth Amendment Gives it Also Takes Away—Diminished Rights and the Ease of Obtaining DNA

Placing DNA seizure and analysis within the reach of the Fourth Amendment does little to inhibit its collection by law enforcement. The great flexibility⁹² in the Fourth Amendment “reasonableness” doctrine as an overlay to its warrant and probable cause requirements is at the root of court approval of a variety of means for the warrantless securing of DNA samples, to the point that it may appear as if there is no barrier whatsoever.⁹³

to the constraints of the Fourth Amendment.”).

88. See *Hibel v. Sixth Judicial Dist. Court of Nevada, Humboldt County*, 542 U.S. 177, 188 (2004) (holding that name disclosure falls within the Fourth Amendment).

89. *Id.*

90. The Supreme Court's Fourth Amendment standing/expectation of privacy framework mandates that there is no search *invasive of a particular individual's rights* if evidence is seized from a place in which that person lacks an expectation of privacy. *Rakas v. Illinois*, 439 U.S. 128, 139 (1978) (“[T]he issue of standing involves two inquiries: first, whether the proponent of a particular legal right has alleged ‘injury in fact,’ and, second, whether the proponent is asserting his own legal rights and interests rather than basing his claim for relief upon the rights of third parties.”). This construct has been amply criticized. See, e.g., Craig M. Bradley, *Criminal Procedure in the Rehnquist Court: Has the Rehnquistion Begun?*, 62 IND. L.J. 273, 286 (1986–87) (stating that the Court in *Rakas* “took a rather narrow view of a defendant's standing to raise fourth amendment claims”); Wesley MacNeil Oliver, *Toward a Better Categorical Balance of the Costs and Benefits of the Exclusionary Rule*, 9 BUFF. CRIM. L. REV. 201, 219 n.29 (2005) (describing the Court's decision as “empirical assessments of society's expectations”); Stephen A. Saltzburg, *The Supreme Court, Criminal Procedure and Judicial Integrity*, 40 AM. CRIM. L. REV. 133, 144–45 (2003) (stating that the Court's decision represents a narrow and pessimistic view of “how people live and act”).

91. All courts addressing compelled DNA testing of convicted felons have, while upholding the mandate, acknowledged the process to be a search. See, e.g., *Johnson v. Quander*, 440 F.3d 489, 493 (D.C. Cir. 2006); *Nicholas v. Goord*, 430 F.3d 652, 658 (2d Cir. 2005); *Padgett v. Donald*, 401 F.3d 1273, 1277 (11th Cir. 2005); *United States v. Sczubelek*, 402 F.3d 175, 182 (3d Cir. 2005); *Green v. Berge*, 354 F.3d 675, 676–77 (7th Cir. 2004); *Groceman v. U.S. Dep't of Justice*, 354 F.3d 411, 413 (5th Cir. 2004) (per curiam); *United States v. Kincade*, 379 F.3d 813, 821 n.15 (9th Cir. 2004); *United States v. Kimler*, 335 F.3d 1132, 1146 (10th Cir. 2003); *Jones v. Murray*, 962 F.2d 302, 306 (4th Cir. 1992).

92. The term “flexibility” is value neutral. The Amendment's flexibility may have been best articulated by Justice Thomas in *Samson v. California*:

The touchstone of the Fourth Amendment is reasonableness, not individualized suspicion. Thus, while this Court's jurisprudence has often recognized that ‘to accommodate public and private interests some quantum of individualized suspicion is usually a prerequisite to a constitutional search or seizure’, we have also recognized that the ‘Fourth Amendment imposes no irreducible requirement of such suspicion’

Samson v. California, 547 U.S. 843, 854 n.4 (2006) (internal quotations and citations omitted).

93. The criticism of the Supreme Court's devaluing of the probable cause requirement is extensive and ongoing. See, e.g., Bruce A. Antkowiak, *Saving Probable Cause*, 40 Suffolk U. L. Rev. 569, 576 (2007) (criticizing a court that “seems to argue that the Court may excise the doctrine from the Fourth Amendment reasonableness equation whenever the modern needs of law enforcement require.”); David J.R. Frakt, *Fruitless Poisonous Trees in a Parallel Universe: Hudson v. Michigan, Knock-and-Announce, and the Exclusionary Rule*, 34 Fla. St. U. L. Rev. 659, 700–03 (Spring 2007) (examining the decline in support for the exclusionary rule); Tracy Maclin, *When The Cure for the Fourth Amendment is Worse than the Disease*, 68 S. Cal. L. Rev. 1, 28 (Nov. 1994) (“The inevitable result of the Constitution's prohibition against unreasonable searches and

As applied to DNA seizures and subsequent searches, the flexibility of the Amendment was first seen in the exponential adoption and approval of statutes mandating the collection of DNA from convicted persons and from juveniles adjudicated delinquent of specified offenses.⁹⁴

Following the lead of Virginia's 1989 statutory mandate⁹⁵ for DNA collection from convicted felons, all fifty states now require such databanking.⁹⁶ As of January, 2008, roughly two-thirds of the states mandated collection from at least some categories of juvenile offenders.⁹⁷ Almost universally, such statutory mandates for collection from adult offenders have been upheld;⁹⁸ the sole exception to date is the District Courts holding in *United States v. Stewart*, which found such a requirement unconstitutional *as applied* to a probationer convicted of a nonviolent offense.⁹⁹ The District Court's determination of unconstitutionality was subsequently overturned.¹⁰⁰ Challenges to the collection of DNA from juveniles adjudicated delinquent have also been rejected.¹⁰¹

seizures and its requirement that no warrant shall issue but upon probable cause is that police officers who obey its strictures will catch fewer criminals.”).

94. See Meghan Riley, *American Courts Are Drowning in the “Gene Pool”: Excavating the Slippery Slope Mechanisms Behind Judicial Endorsement of DNA Databases*, 39 J. MARSHALL L. REV. 115, 120 n.29 (2005) (“Currently all fifty states have some type of DNA collection statute requiring some or all convicted felons to submit either a blood, saliva, or other tissue sample.”).

95. VA. CODE ANN. §§ 19.2-310.2 (2008) (mandating that a blood, saliva, or tissue sample is required for DNA analysis upon conviction of a felony).

96. ALA. CODE § 36-18-24 (2008); ALASKA STAT. § 44.41.035 (2008); ARIZ. REV. STAT. ANN. § 13-610 (2009); ARK. CODE ANN. § 12-12-1109 (2009); CAL. PENAL CODE § 290.7 (West 2008); COLO. REV. STAT. § 17-2-201 (2008); CONN. GEN. STAT. ANN. § 54-102g (West 2008); DEL. CODE ANN. tit. 29, § 4713 (2008); FLA. STAT. ANN. § 943.325 (West 2008); GA. CODE ANN. § 24-4-60 (2008); HAW. REV. STAT. ANN. § 706-603 (LexisNexis 2008); IDAHO CODE ANN. § 19-5507 (2008); 730 ILL. COMP. STAT. ANN. 5/5-4-3 (West 2009); IND. CODE ANN. § 10-13-6-10 (West 2008); IOWA CODE ANN. § 81.2 (West 2009); KAN. STAT. ANN. § 21-2511 (2008); KY. REV. STAT. ANN. § 17.170 (West 2008); LA. REV. STAT. ANN. § 15:609 (2008); ME. REV. STAT. ANN. tit. 25, § 1574 (2008); MD. CODE ANN., PUB. SAFETY § 2-504 (West 2008); MASS. GEN. LAWS ch. 22E, § 3 (2008); MICH. COMP. LAWS ANN. § 28.176 (West 2008); MINN. STAT. ANN. § 609.117 (West 2008); MISS. CODE ANN. § 45-33-37 (2008); MO. ANN. STAT. § 650.055 (West 2008); MONT. CODE ANN. § 44-6-102 (2007); NEB. REV. STAT. § 29-4106 (2008); NEV. REV. STAT. ANN. § 176.0913 (West 2008); N.H. REV. STAT. ANN. § 651-C:2 (2008); N.J. STAT. ANN. § 53:1-20.20 (West 2008); N.M. STAT. ANN. § 29-16-6 (West 2008); N.Y. EXEC. LAW § 995-c (McKinney 2008); N.C. GEN. STAT. § 15A-266.4 (2008); N.D. CENT. CODE § 31-13-03 (2008); OHIO REV. CODE ANN. § 2901.07 (West 2008); OKLA. STAT. ANN. tit. 74, § 150.27a(A) (2008); OR. REV. STAT. § 137.02008; 44 PA. CONS. STAT. ANN. § 2301 (West 2008); R.I. GEN. LAWS § 12-1.5-8 (2008); S.C. CODE ANN. § 23-3-620 (2008); S.D. CODIFIED LAWS § 23-5A-1 (2008); TENN. CODE ANN. § 40-35-321 (2008); TEX. GOV'T CODE ANN. § 411.1471 (Vernon 2007); UTAH CODE ANN. § 53-10-403 (2008); VT. STAT. ANN. tit. 20, § 1933 (2008); VA. CODE ANN. § 19.2-310.2 (2008); WASH. REV. CODE ANN. § 43.43.754 (West 2008); W. VA. CODE ANN. § 15-2B-6 (West 2008); WIS. STAT. ANN. § 165.76 (West 2008); WYO. STAT. ANN. § 7-19-403 (2008).

97. National Conference of State Legislatures, *State Laws on DNA Data Banks: Qualifying Offenses, Others Who Must Provide Sample*, <http://www.ncsl.org/programs/cj/dnadatabanks.htm> (last visited Mar. 14, 2009).

98. *United States v. Amerson*, 483 F.3d 73, 78 n.3 (2d Cir. 2007) (“All the federal circuits that have considered the question have upheld the state and federal DNA indexing laws, as have the overwhelming majority of district courts and state courts.”).

99. 468 F. Supp. 2d 261, 279 (D. Mass. 2007); *contra*, *Amerson*, 483 F.3d at 75 (“[W]e revisit the issue here to consider whether the 2004 DNA Act violates the Fourth Amendment when applied to individuals convicted of nonviolent crimes who were sentenced only to probation . . . [and] conclude that it does not.”).

100. *United States v. Stewart*, 532 F.3d 32, 34 (1st Cir. 2008).

101. *In re Leopoldo L.*, 99 P.3d 578, 584 (Ariz. Ct. App. 2004); *In re D.L.C.*, 124 S.W.3d 354, 373-74 (Tex. App. 2003); *L.S. v. State*, 805 So. 2d 1004, 1007 (Fla. App. 2001); *see also* *In re Appeal in Maricopa*

The consequences of such statutory mandates are themselves far reaching in terms of genetic information databasing, both quantitatively and qualitatively. Recent data from the United States Department of Justice show that one out of every forty-five Americans—over five million persons—is either in prison, on parole, or on probation.¹⁰² Because the pool of imprisoned and criminally supervised individuals does not mirror the general population, the database itself is racially disproportionate. African-Americans constituted 38 percent of the prison population in 2006,¹⁰³ while their over-all representation in the population of the United States was less than 14 percent.¹⁰⁴ An even more extreme disparity is projected for Hispanics.¹⁰⁵

The expansion of databasing continues, with twelve states¹⁰⁶ and the federal government¹⁰⁷ mandating DNA sample collection from at least some categories of arrestees.¹⁰⁸ To date, courts are divided on whether mandatory

County Juvenile Action Numbers JV-512600 & JV-512797, 187 Ariz. 419, 930 P.2d 496 (Ariz. Ct. App. 1996) (finding statute did not violate the juveniles' right to privacy or authorize an unreasonable search and seizure); In re Calvin S., 58 Cal. Rptr. 3d 559, 563 (Cal. Ct. App. 2007) (stating that requiring juvenile found to have committed felony car theft and driving without a license to provide DNA sample did not violate Fourth Amendment); In re Lakisha M., 882 N.E.2d 570, 573–80 (Ill. 2008) (surveying law nationally and upholding DNA testing of juvenile against a Fourth Amendment challenge); A.A. ex rel. B.A. v. Attorney General, 189 N.J. 128, 914 A.2d 260, 264–66 (N.J. 2007) (stating that DNA testing applies equally to juveniles found delinquent and adults found guilty of a crime); In re Nicholson, 724 N.E.2d 1217, 1221 (Ohio Ct. App. 1999) (rejecting Fourth Amendment challenge of Ohio DNA statute as applied to juveniles); In re Orozco, 878 P.2d 432 (Or. Ct. App. 1994) (determining Oregon DNA statute did not violate fourth amendment when applied to juvenile sex offender); In re T.E.H., 928 A.2d 318, 324 (Pa. Super. Ct. 2007) (approving trial court order for juvenile to submit to DNA sampling under the DNA act after adjudication of delinquency).

102. WILLIAM J. SABOL ET AL., U.S. DEP'T OF JUSTICE, PRISONERS IN 2006 3 (2007) <http://www.ojp.usdoj.gov/bjs/pub/pdf/p06.pdf> [hereinafter PRISONER IN 2006] (“At yearend 2006 correctional facilities in the United States held an estimated 2,385,213 inmates in custody, including inmates in Federal and State prisons, territorial prisons, local jails, facilities operated by or exclusively for U.S. Immigration and Customs Enforcement (ICE), military facilities, jails in Indian country, and youth in juvenile facilities.”); U.S. Dep’t of Justice, Probation and Parole Statistics, <http://www.ojp.usdoj.gov/bjs/pandp.htm> (last visited Mar. 17, 2009) (reporting that at the end of 2007, over 5.1 million adult men and women were under federal, state, or local probation or parole jurisdiction with approximately 4,293,163 on probation and 824,365 on parole).

103. PRISONERS IN 2006, at 105 (“Black men represented the largest proportion of sentenced male inmates at year end 2006 (38%); white men made up 34%; and Hispanic men, 21%.”).

104. Press Release, Minority Population Tops 100 Million (May 17, 2007), <http://www.census.gov/Press-Release/www/releases/archives/population/010048.html> (stating that of a total population of over 300 million, there were 40.2 million African-Americans).

105. Daniel J. Grimm, Note, *The Demographics of Genetic Surveillance: Familial DNA Testing and The Hispanic Community*, 107 COLUM. L. REV. 1164, 1166 (June, 2007) (“Under familial testing, Hispanics will be more likely than other demographic groups to be added to the databank system, more likely to partially match a sample once it is added to the database, and, therefore, will be more likely to be targeted by law enforcement for DNA sample collection.”).

106. National Conference of State Legislatures, State Laws on DNA Data Banks Qualifying Offenses, Others Who Must Provide Sample, January 2008 <http://www.ncsl.org/programs/cj/dnadatabanks.htm>.

107. 42 U.S.C.A. § 14135a, Pub. L. No. 110-360, 122 Stat. 4008 (2008) (“The Attorney General may, as prescribed by the Attorney General in regulation, collect DNA samples from individuals who are arrested, facing charges, or convicted or from non-United States persons who are detained under the authority of the United States.”).

108. Here, again, the racially disparate impact will be keen, particularly in states with a significant minority population. 2006 data from New York City for marijuana arrests show that “[f]or every 100,000 Whites in New York City, 124 were arrested; for every 100,000 Hispanics, 430 were arrested; and for every 100,000 Blacks, 975 were arrested.” *Regarding Pending and Proposed Legislation to Collect DNA from All People Convicted of a Misdemeanor in New York State, and Also Regarding New York City’s Epidemic of Marijuana Possession Arrests: Hearing Before New York State Assembly Comm. on Codes and on*

testing of all arrestees (or of persons arrested for designated offenses) is unconstitutional.¹⁰⁹ In *In re Welfare of C.T.L.*¹¹⁰ the Minnesota Court of Appeals forbade such a practice, deeming it a search for evidence with no probable cause determination.¹¹¹ That Court also focused on the defendant's privacy interest in his/her DNA.¹¹²

By contrast, the Virginia Supreme Court ruled in 2007 that such legislation is constitutional, finding it an identification procedure rather than an evidence-gathering one.¹¹³ The Court reasoned that "[l]ike fingerprinting, the 'Fourth Amendment does not require an additional finding of individualized suspicion' before a DNA sample can be taken."¹¹⁴ The divergent views of these courts reflect the divide over the significance of government possession of DNA—as simply an opportunity to glean noncoding region identifying markers, or as a sample of biological material able to disclose a host of personal traits and susceptibilities. When confronting the latter privacy dilemma directly, the First Circuit diminished its relevance, emphasizing first that criminal sanctions apply to anyone who "misuses" a DNA sample and, second, that *current* science discerns little personal information that can be gleaned from the "junk" DNA *loci* used for forensic identification purposes.¹¹⁵ The Court of Appeals did note the risk of such junk DNA in fact possibly being "genetic," *i.e.*, linked to specific conditions or propensities, and emphasized that if such were shown to be the case "a reconsideration of the reasonableness balance struck would be necessary."¹¹⁶ That Court emphasized, however, that genetic uses of the forensic DNA *loci* would have to be "significantly greater" than current science shows before such a reassessment would be mandated.¹¹⁷ Of relevance to this Article but undeveloped by that Court was the related concern that possession of one person's DNA provides "information relating to hereditary characteristics, and thus the collection of such information also may reveal information about

Corrections, 2007 Leg. Sess. (N.Y. 2007) (statement of Harry G. Levine, Professor, Dep't of Sociology, Queens Coll. and the Graduate Ctr., City Univ. of N.Y.).

109. Disagreement exists within the scholarly community as well. See Tracey Maclin, *Is Obtaining an Arrestee's DNA a Valid Special Needs Search Under the Fourth Amendment?*, 34 J.L. MED. & ETHICS 165, 181 (2006) (arguing that if the Supreme Court were to address the Virginia and Louisiana's laws authorizing DNA sampling of certain categories of arrestees, it would declare them unconstitutional). See generally D.H. Kaye, *Who Needs Special Needs? On the Constitutionality of Collecting DNA and Other Biometric Data from Arrestees*, 34 J.L. MED. & ETHICS 188 (2006) ("[T]he Supreme Court's opinions do not necessarily imply that DNA sampling at the point of arrest is unconstitutional.").

110. 722 N.W.2d 484, 486 (Minn. Ct. App. 2006).

111. *Id.* at 491 ("By directing that biological specimens be taken from individuals who have been charged with certain offenses solely because there has been a judicial determination of probable cause to support a criminal charge, [these statutes] dispense with the requirement under the Fourth Amendment that before conducting a search, law-enforcement personnel must obtain a warrant based on a neutral and detached magistrate's determination that there is a fair probability that the search will produce contraband or evidence of a crime. Under the statute, it is not necessary for anyone to even consider whether the biological specimen to be taken is related in any way to the charged crime or to any other criminal activity.").

112. *Id.* at 492.

113. *Anderson v. Commonwealth*, 650 S.E.2d 702, 706 (Va. 2007).

114. *Id.* at 705.

115. *United States v. Weikert*, 504 F.3d 1, 12–13 (1st Cir. 2007).

116. *Id.* (citation and internal quotation omitted).

117. *Id.* at 13.

profiled individuals' family members."¹¹⁸ This derivative privacy concern, the protection of third parties, played no part in the Supreme Court's calculus of the lawfulness of retaining DNA samples of convicted persons.

Whether limited to convicted persons or expanded to arrestees, these database samples have at least a modest virtue—their collection occurs after (at a minimum) a determination of probable cause that the subject has been involved in criminal activity.¹¹⁹ That probable cause determination may have been made by a police officer¹²⁰ rather than an independent magistrate, but it remains a prerequisite to the seizure and sampling. Ironically, it is for the non-custodial individual where DNA can be obtained virtually on a whim.¹²¹

The ease of obtaining DNA from a non-custodial individual is seen first in the decisional law applying “abandonment” principles to police seizure of nonarrested citizens' DNA. The Supreme Court has held that there is no “expectation of privacy” in trash placed outside of the home for collection¹²² notwithstanding the intimate items and information that may be contained therein.¹²³ This is true even when steps are taken to mask the contents, as with shredded documents; once in the trash, they are “exposed” to the public and recoverable (and subject to reconstruction) at the discretion of police.¹²⁴ Whether viewed as an affirmative abandonment (a point de-emphasized in *Greenwood*) or merely as public exposure without restriction (the recurrent theme), the depositing of items outside of the home made them fair game for police surveillance, seizure, and examination. Coupled with the Supreme Court's acceptance of “forced abandonment”¹²⁵ as being outside of the Fourth

118. *Id.* at 16. This disregard of third-party interests comports with Fourth Amendment “standing” doctrine, which limits the right to challenge a search or seizure to those with an “expectation of privacy” in the place or body examined. *See infra* note 137 and accompanying text (discussing issues related to the the Fourth Amendment expectation of privacy).

119. *See e.g.* *State v. Dickens*, 484 S.E.2d 553, 558–59 (N.C. 1997) (explaining that DNA samples must be based on probable cause for evidence of an offence).

120. *United States v. Watson*, 423 U.S. 411, 423 (1976) (“[T]he judgment of the Nation and Congress has for so long been to authorize warrantless public arrests on probable cause . . .”). The DNA sampling, just as fingerprinting, may take place well before the suspect's arrest is reviewed by a magistrate. *See County of Riverside v. McLaughlin*, 500 U.S. 44, 56 (1991) (“[W]e believe that a jurisdiction that provides judicial determinations of probable cause within 48 hours of arrest will, as a general matter, comply with the promptness requirement [of the Fourth Amendment].”).

121. *See California v. Greenwood*, 486 U.S. 35, 43 (1988) (noting that there is no reasonable expectation of privacy in items placed in the trash on the side of the road).

122. *Id.* at 40 (“[R]espondents exposed their garbage to the public sufficiently to defeat their claim to Fourth Amendment protection. It is common knowledge that plastic garbage bags left on or at the side of a public street are readily accessible to animals, children, scavengers, snoops and other members of the public.”).

123. *See, e.g., California v. Rooney*, 483 U.S. 307, 321 (1987) (White, J., dissenting) (“[T]he domestic garbage can contains numerous ‘tell-tale items on the road map of life in the previous week.’”).

124. Gordon J. McDonald, *Stray Katz: Is Shredded Trash Private?*, 79 CORNELL L. REV. 452, 476 (1994).

125. The Supreme Court held that a police officer's attempt to stop an individual, undertaken with no lawful justification, does not implicate the Fourth Amendment *until* the person either acquiesces to authority or is restrained, and evidence discarded during the unwarranted pursuit is not the product of a violation of the Amendment. *See In Cal. v. Hodari D.*, 499 U.S. 621, 626 (1991) (“The word “seizure” readily bears the meaning of a laying on of hands or application of physical force to restrain movement. . . . It does not remotely apply, however, to the prospect of a policeman yelling “Stop, in the name of the law!” at a fleeing form that continues to flee. That is no seizure.”).

Amendment entirely, voluntary placement of items where the public might foreseeably examine them or dropping them after a police pursuit begun without any suspicion leaves items with individual's DNA available for police collection, testing, and date-basing (absent limits in the data-base rules).

In *California v. Greenwood*, emphasis was placed on the deliberateness of the exposure to public examination¹²⁶ and the clear risk of public access and inspection at the location in question.¹²⁷ Yet lower courts have readily and consistently found DNA to be abandoned even when there is no conscious or affirmative act of disposal. A person "abandons" a soda can handed to him by police when he finishes the drink and places it in a nearby trash can;¹²⁸ when he expectorates on a public street;¹²⁹ and when he licks and sends an envelope after police create a ruse and mail the suspect a letter purportedly from a law firm inviting him to join in a lawsuit.¹³⁰ The exception is where the "abandonment" occurs within the curtilage, as when a person tosses a half-smoked cigarette onto a trash pile at his home; there, the expectation of privacy prohibits police from seizing the cigarette butt for DNA testing (the same, presumably, as if police, admitted into a home, were to rummage in a trash container still in the kitchen).¹³¹ For DNA, there need be no awareness that it is likely (or even possible) to be collected; it need only be "shed" in public to be subject to collection, and police facilitation of the abandonment implicates no Fourth Amendment interest.

That which cannot be obtained from a public source may be secured by consent, even when trickery and outright dishonesty come into play. The doctrine of consent has received substantial criticism because it does not require a waiver of the right to be searched or have property seized.¹³² Perhaps

126. *Greenwood*, 486 U.S. at 40–41 ("[R]espondents placed their refuse at the curb for the express purpose of conveying it to a third party, the trash collector, who might himself have sorted through it or permitted others, such as the police, to do so.")

127. The Supreme Court emphasized that the location of the trash pickup was "in an area particularly suited for public inspection and, in a manner of speaking, public consumption, for the express purpose of having strangers take it . . ." (internal citation omitted) *Id.* The Supreme Court arguably retreated from this stance in *Bond v. United States*, where the court held that police "manipulation" of soft luggage to try and determine its contents was a search, even though the luggage was on a bus rack with belongings of other travelers and thus subject to being handled by strangers. *Bond v. United States*, 529 U.S. 334, 338–39 (2000). In *Bond*, it was the nature or degree of the manipulation that breached a reasonable expectation of privacy. *Id.* at 339. Although some have written of *Bond* as expanding privacy protections by focusing on the nature of the contact rather than exposure to the public, it cannot be said with any certainty that its analysis would in any way preclude police from seizing items touched by an individual and left in public (as opposed to luggage, where the owner retains a substantial interest in the item and retains at least some control over it). See Stacy E. Roberts, *Bond and Beyond: A Shift in the Understanding of What Constitutes a Fourth Amendment Search*, 33 U. TOL. L. REV. 457, 472–473 (2002) ("Bond was protected from the search because the physical manipulation of his luggage went beyond that which he could expect from normal inquiry.")

128. *Hudson v. State*, 205 S.W.3d 600, 604 (Tex. App. 2006).

129. *Commonwealth v. Cabral*, 866 N.E.2d 429, 433 (Mass. App. Ct. 2007).

130. *State v. Athan*, 158 P.3d 27, 33 (Wash. 2007).

131. *State v. Reed*, 641 S.E.2d 320, 323 (N.C. Ct. App. 2007) ("[T]he police may not, however, by removing evidence from the curtilage, proceed as if the evidence had been left open to the public by defendant.")

132. In *Schneckloth v. Bustamonte*, the Supreme Court emphasized that the sole concern in consent cases is voluntariness:

the question whether a consent to a search was in fact "voluntary" . . . is . . . to be determined from the totality of all the circumstances . . . Knowledge of the right to refuse consent is one factor to be taken

more significantly in the DNA acquisition context, outright deception as to purpose and scope of use are tolerated. Accompanying this is a readiness of courts to conclude that *all* expectation of privacy is lost when items are placed in the hands of police for *any* purpose.¹³³

The first consent paradigm is where police ask for a subject's DNA ostensibly to check it against one crime scene's evidence, but instead compare it to crime scene evidence from another crime or from several other crimes. Courts addressing this practice have approved it, focusing on the loss of an expectation of privacy in the DNA profile but not discussing the separate issue of whether the scope of consent has been exceeded.¹³⁴

The next practice, a variation on the preceding one, is where a DNA profile is sought for comparison with evidence from one crime scene but is then uploaded into a local, regional or national DNA database. The decisional law analyzing such practices has approved them, finding that relinquishing one's DNA profile to police ends *all* expectations of privacy.¹³⁵ As the Virginia Court of Appeals explained,

society is unwilling to recognize as reasonable the subjective expectation of privacy infringed by the government when a DNA sample validly obtained from a suspect in one criminal case is used to analyze and compare the suspect's DNA in an unrelated criminal

into account, [but] the government need not establish such knowledge as the sine qua non of an effective consent.

Schneckloth v. Bustamonte, 412 U.S. 218, 227 (1973). The criticism of this standard as antidemocratic is substantial. See Morgan Cloud, *Consent Searches by Ignorant Citizens: Ignorance and Democracy*, 39 TEX. TECH L. REV. 1143, 1169 (2007) ("Any competent person can give up rights at the request of the government. But it is hard to comprehend a theory of individual rights that permits that decision to be made by someone unaware that he is relinquishing a fundamental civil liberty."); John M. Burkoff, *Searches by Ignorant Citizens: Search Me?*, 39 TEX. TECH L. REV. 1109, 1114 (2007) (questioning the validity of such consent as "the existing empirical evidence also suggests that observers outside of the situation systematically overestimate the extent to which citizens in police encounters feel free to refuse."); Arnold H. Loewy, *Citizen Ignorance, Police Deception, and the Constitution: A Symposium: Essay: Police, Citizens, the Constitution, and Ignorance: The Systemic Value of Citizen Ignorance in Solving Crime*, 39 TEX. TECH L. REV. 1077 (2007) ("[T]he Supreme Court has purposely created a jurisprudence designed to allow the police to exploit citizen ignorance."); Gerald Lynch, *Commentary Symposium: Why Not a Miranda for Searches?*, 5 OHIO ST. J. CRIM. L. 233 (2007) (emphasizing the disconnect between a waiver analysis for confessions and a voluntariness standard for searches); Andrew E. Taslitz, Note, *Bullshitting the People: The Criminal Procedure Implications of a Scatalogical Term*, 39 TEX. TECH L. REV. 1383, 1391–92 (2007) (explaining a practice that "relies on citizen ignorance or misunderstanding of constitutional rights in the criminal justice system expresses disrespect for individuals; severs the bonds of peoplehood, especially those linking racial and ethnic minorities to the broader political system; distorts individual identity and rationality; and hampers the quality of public deliberation.").

133. See, e.g., *Wilson v. State*, 752 A.2d 1250, 1272 (Md. Ct. Spec. App. 2000) ("Once an individual's fingerprints and/or his blood sample for DNA testing are in lawful police possession, that individual is no more immune from being caught by the DNA sample he leaves on the body of his rape victim than he is from being caught by the fingerprint he leaves on the window of the burglarized house or the steering wheel of the stolen car By the same token, photographs, handwriting exemplars, ballistics tests, etc., lawfully obtained in the course of an earlier investigation are freely available to the police in the course of a new and unrelated investigation.").

134. See, e.g., *id.* at 1269–72 (determining that the characteristics of the blood sample are the same regardless of when or how many times the sample is analyzed, and that the expectation of privacy disappears when the sample is lawfully seized.).

135. *State v. Notti*, 71 P.3d 1233, 1237–38 (Mont. 2003).

case.¹³⁶

Such an analysis negates any notion of informed/limited consent. A request by police for a hair or tissue sample to compare to evidence from a specific crime scene is in no way an authorization for police to make unrestricted use of that sample, a point only a few courts have acknowledged.¹³⁷ Yet even in those cases, the limitation arises from the particular restrictions inherent in DUI implied consent laws;¹³⁸ apparently, unless the subject places restrictions on use, or receives an explicit promise limiting testing, the DNA is available for police use at any time and for any purpose.¹³⁹ To date, only one court majority has expressed concern, less because of the police investigations that might follow from retention of a DNA sample than for the medical and personal information that further exploration of the genome may one day disclose:

[t]he argument for a continued expectation of privacy despite the legality of an initial search is particularly deserving of separate consideration given the wealth of information that DNA has the potential to reveal, as well as the fact that science is continually uncovering new information that is contained in our DNA. We are hesitant to say that an individual has no continued expectation of privacy in a DNA profile when our understanding of the information that such a profile contains is necessarily incomplete.¹⁴⁰

Yet this argument primarily addresses retention of the biological sample, not the forensic identifiers of the DNA thirteen-*loci* profile. It in no way limits police use of the profile for future (or concurrent) investigations.

In sum, whether pursuant to conviction (and now, in many jurisdictions, to arrest), by takings in public locations,¹⁴¹ or by consent, there are few if any

136. *Pharr v. Commonwealth*, 646 S.E.2d 453, 457 (Va. Ct. App. 2007); *see also State v. Glynn*, 166 P.3d 1075, 1078 (Kan. Ct. App. 2007) (“We hold there is no constitutional violation or infringement of any rights of privacy when the police use a DNA profile lawfully obtained in one case to investigate and charge the DNA donor in a subsequent and different case or cases.”).

137. *See, e.g., State v. Gerace*, 437 S.E.2d 862, 863 (Ga. Ct. App. 1993) (consent to alcohol and drug testing in blood did not extend to DNA testing); *State v. Binner*, 886 P.2d 1056, 1059 (Or. Ct. App. 1994) (consent for alcohol testing of blood and refusal to allow drug testing of blood must be honored).

138. *Pace v. State*, 524 S.E.2d 490, 498 (Ga. 1999).

The consent form signed by Pace states that his blood and hair will be used against him in a court of law and that he was a suspect in the Hudson murder. However, unlike an implied consent warning, the form does not limit the use of the blood or hair to only the Hudson murder investigation or to any particular purpose, and there is no evidence that Pace placed any limits on the scope of his consent. . . . The police were not required to explain to Pace that his blood or hair could be used in prosecutions involving other victims, or that he had a right to refuse consent.

Id.

139. *Cf., United States v. Yang*, 478 F.3d 832, 835 (7th Cir. 2007) (relinquishing notebook to police for fingerprint analysis allowed police to *read* notebook). Whether the “reasonableness” command of the Fourth Amendment places limits on use is a subject that has received academic attention and support but little judicial acceptance. *Wilson v. State*, 752 A.2d 1250, 1272 (Md. Ct. Spec. App. 2000) (citing Krent but concluding that “[o]nce an individual’s . . . blood sample for DNA testing [is] in lawful police possession. . . . [it is] freely available to the police in the course of a new and unrelated investigation.”); Harold J. Krent, *Of Diaries and Data Banks: Use Restrictions Under the Fourth Amendment*, 74 TEX. L. REV. 49, 51 (1995).

140. *United States v. Weikert*, 504 F.3d 1, 17 (1st Cir. 2007).

141. When lecturing on this subject, this author has often walked up to an individual in the audience to shake hands. When the author then announces “my new friend did not know this, but I had tape on my hand and I now have skin cells for DNA typing—is this a search,” there is discomfiture and disagreement. The

Fourth Amendment constraints in securing a person's DNA.

III. THE CRITICISMS OF ALLOWING OR EXPANDING FAMILIAL DNA INVESTIGATIONS

Whatever problems critics may have with familial DNA investigations, it is clear that Fourth Amendment doctrine precludes any third-party objection to use of one family member's DNA already lawfully in police possession to generate leads. The Supreme Court's expectation of privacy cases deny standing to other family members, as Fourth Amendment rights are deemed "personal."¹⁴² Thus, a comparison of crime scene DNA to a known database profile, and the release of information to investigators that the two profiles have a high correspondence but fail to match at one or two *loci* (thereby indicating that the source of the evidence is likely to be a relative), has invaded no recognized privacy interest of any family member.¹⁴³ Even in states where the standing doctrine is broader,¹⁴⁴ application will offer no relief—for

Supreme Court's restriction on invasive or "exploratory" tactile searches in *Bond* provides guidance but no clear answer:

[A] bus passenger clearly expects that his bag may be handled. He does not expect that other passengers or bus employees will, as a matter of course, feel the bag in an exploratory manner. But this is exactly what the agent did here. We therefore hold that the agent's physical manipulation of petitioner's bag violated the Fourth Amendment.

Bond v. United States, 529 U.S. 334, 338–39 (2000). Whether the lifting of a few skin cells by application of scotch tape will be deemed impermissibly "exploratory" can only be guessed.

142. *Rakas v. Illinois*, 439 U.S. 128, 143 (1978). The Supreme Court's standing jurisprudence has received much critical analysis. *See, e.g.*, Phyllis T. Bookspan, *Reworking the Warrant Requirement: Resuscitating the Fourth Amendment*, 44 VAND. L. REV. 473, 478–79 (1991) (arguing that Fourth Amendment protections have been eroded and the rules applying it are unclear); Sherry F. Colb, *Standing Room Only: Why Fourth Amendment Exclusion and Standing Can No Longer Logically Coexist*, 28 CARDOZO L. REV. 1663, 1665–66 (2007) (criticizing the Court's arbitrary *ex post* standing analysis, which considers facts regardless if they were known to or reasonably understood by the police or not); Donald L. Doernberg, *The Right of the People: Reconciling Collective and Individual Interests Under the Fourth Amendment*, 58 N.Y.U. L. REV. 259, 282–83 (1983) (pointing out the Supreme Court's use of two different, conflicting standing analyses—one from an individual perspective and one from a societal perspective); Daniel J. Meltzer, *Detering Constitutional Violations by Law Enforcement Officials: Plaintiffs and Defendants As Private Attorneys General*, 88 COLUM. L. REV. 247, 274 (1988) (insisting that a broader interpretation of who has a right to privacy in a certain area is necessary); Elwood Earl Sanders, Jr., *Fourth Amendment Standing: A New Paradigm Based on Article III Rules and Right to Privacy*, 34 CAP. U. L. REV. 669, 670 (2006) (advocating for a broad interpretation of standing—that anyone against whom evidence is being introduced should have standing to argue its inadmissibility based on a Fourth Amendment violation). Looking beyond the Fourth Amendment, even the due process right to control children's education or upbringing cannot extend far enough to reach the right to challenge scrutiny of a family member's DNA. Greeley et al., *Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin*, 34 J.L. MED. & ETHICS 248, 258 (2006).

143. The practice is no different than showing a mugshot to a crime victim or eyewitness. If the witness makes a positive identification but it is proved that the subject had an airtight alibi; or if the witness declares that there is a close resemblance between the perpetrator and the person shown in the photograph, nothing bars the police from pursuing lawful investigations of relatives with similar appearances. Indeed, Professor Mnookin acknowledges the validity of such a practice:

we use partial information all the time in other settings. If someone looks at suspects in a photo spread, for example, and says, "It's not any of those people, but the perpetrator looked a lot like No. 3," any competent investigator would think to ask if No. 3 had a brother.

Jennifer Mnookin, *Devil in the DNA Database*, L.A. TIMES, Apr. 5, 2007, at A-23.

144. *See Commonwealth v. Watson*, 723 N.E.2d 501, 504 n.4 (Mass. 2000) ("[A] defendant who is charged with possession has automatic standing to contest the propriety of an automobile search under the Massachusetts Declaration of Rights."); *State v. Gonzalez*, 738 A.2d 1247, 1252 (N.H. 1999) (New Hampshire Constitution "affords a defendant automatic standing to contest a search and seizure when charged with a

standing addresses only the right to test the constitutionality of the initial seizure, and in DNA databases the collection has already occurred lawfully.

The criticisms, then, must be seen as those of social policy and fairness. Some, as will be demonstrated, are *non sequitur*ial; others go to the heart of racial disparate impact and core notions of privacy.

Professor Mnookin criticizes familial searching as “discriminatory.”¹⁴⁵ Her claim is not restricted to race or class, though she emphasizes the increased disparity in those populations.¹⁴⁶ Rather, her fundamental objection is that such searches impact those with “bad” relatives, while ignoring those with “good” (or not yet caught) family members:

If I have the bad luck to have a close relative who has been convicted of a violent crime, authorities could find me using familial search techniques. If my neighbor, who has the good fortune to lack felonious relatives, left a biological sample at a crime scene, the DNA database would not offer any information that could lead to her.¹⁴⁷

The critique is peculiar, given Professor Mnookin’s acknowledgment of the legitimacy of using mugshots to the same end.¹⁴⁸ She offers no principle to distinguish the techniques (although an implicit one is that a familial DNA ‘search’ is broader in its reach, spreading further across relatives). As problematically, she omits the perverse consequence of her acceptance of mugshot-based leads and rejection of familial DNA—eyewitness identification has significant reliability deficits¹⁴⁹ (especially after a witness has seen one

crime in which possession of the seized evidence is an element of the offense.”); *Commonwealth v. Gordon*, 683 A.2d 253, 256 (Pa. 1996) (“[A]ny defendant charged with a possessory crime . . . has automatic standing to challenge a search and seizure”); *State v. Alston*, 440 A.2d 1311, 1319 (N.J. 1981) (“[C]riminal defendant is entitled to bring a motion to suppress evidence obtained in an unlawful search and seizure if he has a proprietary, possessory or participatory interest in either the place searched or the property seized.”); *State v. Wood*, 536 A.2d 902, 908 (Vt. 1987) (“[A] defendant need only assert a possessory, proprietary or participatory interest in the item seized or the area searched to establish standing”); *State v. Simpson*, 622 P.2d 1199, 1206–1207 (Wash. 1980) (defendant has automatic standing “if: (1) the offense with which he is charged involves possession as an ‘essential’ element of the offense; and (2) the defendant was in possession of the contraband at the time of the contested search or seizure.”).

145. Mnookin, *supra* note 143, at A23.

146. *Id.*

147. *Id.* Professor Mnookin restates the point later in her article, complaining that “it is not right to have an investigative technique that targets not just convicted criminals but also their relatives while leaving the rest of us immune.” *Id.*

148. *Id.*

149. Indeed, the study of DNA exonerations confirms that “science” trumps eyewitnesses. *See, e.g.*, Jules Epstein, *The Great Engine that Couldn’t: Science, Mistaken Identifications, and the Limits of Cross-Examination*, 36 STETSON L. REV. 727, 729 (2007) (based on science of perception and memory, eyewitness testimony by cross-examination is not as reliable as traditionally believed); EDWARD CONNERS ET AL., CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL 24 (1996), available at <http://www.ncjrs.org/pdffiles/dnaevid.pdf> (noting the need to reevaluate criteria for determining reliability of eyewitness testimony); The Innocence Project, *The Causes of Wrongful Conviction*, <http://www.innocenceproject.org/understand/> (last visited Mar. 29, 2009) (citing lack of DNA evidence as cause of wrongful convictions). It is generally acknowledged that eyewitness error is the leading cause of wrongful conviction. *See, e.g.*, Tim Bakken, *Truth and Innocence Procedures to Free Innocent Persons: Beyond the Adversarial System*, 41 U. MICH. J. L. REFORM 547, 551–52 (2008) (linking unreliability of identification procedures with conviction of innocent persons); Brandon L. Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 73 (2008) (noting that a study of two hundred exonerated individuals convicted of rape and murder found that almost all were convicted based on eyewitness identification, forensic evidence, an informant’s testimony, or a confession).

mugshot of a relative), while DNA testing, if performed without contamination and in a properly accredited lab, comes closest to the “gold standard” for perpetrator identification.¹⁵⁰

The notion of discrimination has a second aspect for Professor Mnookin. In her view, it is unfair because the “misfortune of having a criminal in the family tree ought not to be what determines whether a DNA search can find you.”¹⁵¹ Professor Mnookin does not elaborate upon this contention in her Article, and it is unclear whether her complaint is to using familial DNA searches to catch the perpetrator in an unsolved crime, or making use of the family members’ DNA in future criminal investigations. Regardless, neither objection is availing—for the predicate for such use is criminal conduct, and that can hardly give rise to a notion of a protected class.

Where Professor Mnookin is on much stronger ground is in her recognition that familial DNA searches will have a race- and class-based disparate impact. Indeed, as noted above, the figures for this are compelling.¹⁵² Yet, again, the criticism needs to be addressed in two spheres—in the investigation of an open case, and in the retention of familial DNA profiles for future investigations.

As to the former, the pervasiveness of racial disparity in the criminal justice system must be acknowledged. Indeed, to many it is a bitter legacy of the Supreme Court’s capital punishment jurisprudence.¹⁵³ Yet no police investigative practice has been deemed unconstitutional because the *unintended* result is the targeting of a particular racial group.¹⁵⁴ In familial DNA investigations, the opposite is the case: the prosecution has targeted no one; instead, a database search has identified a possible relative of the perpetrator.

More importantly, a policy of prohibiting an investigative technique solely because it will impact more on one racial group cannot survive.

150. “DNA analysis now sets the gold standard against which other forensic sciences are measured.” Craig M. Cooley, *DNA Analysis Now Sets the Gold Standard Against Which Other Forensic Sciences Are Measured*, 17 GEO. MASON U. CIV. RTS. L.J. 299, 337 (2007). Although concerns arise in some DNA cases, as when mixtures with the genetic material of two or more contributors is present, its superiority to eyewitness proof is clear. See, e.g., D. Michael Risinger et al., *The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 CAL. L. REV. 1, 36 (2002) (“[E]ven what is often referred to as the ‘gold standard’ of forensic science, DNA testing, can present substantial problems of ambiguity in reading and interpreting results under some conditions, especially with specimens that might contain DNA from more than one person.”).

151. Mnookin, *supra* note 143, at A-23.

152. See *supra* text accompanying note 106 (showing that based on the given percentages on sentenced male prison inmates, African Americans, Caucasians, and Latinos will not be proportionately represented when familial DNA is used in searches).

153. See, e.g., Jeffrey Fagan and Mukul Bakshi, *NEW FRAMEWORKS FOR RACIAL EQUALITY IN THE CRIMINAL LAW* (2008), <http://lsr.nellco.org/cgi/viewcontent.cgi?article=1034&context=columbia/pllt> (summarizing the continued impact after twenty years of *McCleskey v. Kemp*, 481 U.S. 279 (1987), which upheld a death sentence despite statistical proof of racially disparate outcomes in capital trials).

154. Where the racial component is a factor in choosing who is targeted, as in racial profiling cases, the Equal Protection guarantee is violated, even if the Fourth Amendment may not be. David Rudovksy, *Litigating Civil Rights Cases to Reform Racially Biased Criminal Justice Practices*, 39 COLUM. HUMAN RIGHTS L. REV. 97, 106–07 (2007) (contending that the Supreme Court’s Fourth Amendment holding in *Whren v. United States*, 517 U.S. 806 (1987) does not protect against racially discriminatory police practices).

Investigations of methamphetamine sellers inevitably target white offenders disproportionate to their representation in the overall population.¹⁵⁵ Data-mining of utility records¹⁵⁶ to search for those who use excessive amounts of electricity, and thus might be engaged in indoor cultivation of marijuana, may have the same impact.¹⁵⁷ Ultimately, the real concern, from a privacy perspective, is the re-use of gathered information (the genetic profiles) in future investigation. Not addressed directly by Professor Mnookin, this problem can be mitigated by the reforms/controls proposed in Part IV, *infra*.¹⁵⁸

Beyond Professor Mnookin's stated concerns is the sound-bite derogation of familial DNA investigations, made by other critics,¹⁵⁹ as "lifelong genetic surveillance." The term "surveillance" is itself a mis-nomer, as no one is watching or re-testing the profile once it is collected; rather, it is stored passively, and only compared against new crime scene profiles uploaded into the database.¹⁶⁰ This distinction is not insignificant, as there is no ongoing examination of the sample to learn more about the individual. Given the authoritarian, "Big Brother"¹⁶¹ connotation of lifelong surveillance, use of the terminology is ill-advised.

The term is disproportionate for a second reason—the limited number of instances in which familial DNA "searching" will even occur. Here, the more aggressive British experience is telling. "In 2004, . . . approximately 20 familial searches had been undertaken . . . The reasons for this limited application include a recognition of the novelty of the process and also the volume of partial matches it may provide."¹⁶² Although the ever-increasing use of DNA database searches cannot be disputed,¹⁶³ the likelihood of

155. See, e.g., Texas Department of State Health Services, Methamphetamine Admissions Data by Fiscal Year by Ethnicity, <http://www.dshs.state.tx.us/sa/meth/MethRace.shtm> (last visited Mar. 29, 2009) (showing methamphetamine users to be disproportionately Caucasian); Drug and Alcohol Services Information System, *Methamphetamine/Amphetamine Treatment Admissions in Urban and Rural Areas: 2004, 2006*, <http://www.oas.samhsa.gov/2k6/methRuralTX/methRuralTX.htm> (same).

156. See, e.g., *APD Pot-Hunters Are Data-Mining at AE*, AUSTIN CHRONICLE, Nov. 16, 2007, at 34, available at <http://www.austinchronicle.com/gyrobase/Issue/story?oid%3A561535>.

157. According to 2004 data, "Whites made up the majority of suspects arrested for most drug types: amphetamines (91%), marijuana (87%) . . ." BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, COMPENDIUM OF FEDERAL JUSTICE STATISTICS 23 (2004), available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/cfjs0401.pdf>.

158. See *infra* text accompanying notes 174–204 (suggesting reforms that will minimize the privacy concerns that accompany retention of genetic information for future use).

159. See *supra* note 3 (stating that the admissibility of DNA evidence was initially challenged but is now mostly tolerated).

160. What is CODIS?, *supra* note 36.

161. See *The Literature Network*, 1984 by George Orwell, <http://www.online-literature.com/orwell/1984/> (last visited Mar. 29, 2009) (characterizing George Orwell's book 1984 as "the definitive dystopian novel" with each person in the society subjected to constant surveillance and the "[f]igurehead of the system is the omnipresent and omnipotent Big Brother.>").

162. Robin Williams and Paul Johnson, *Inclusiveness, Effectiveness and Intrusiveness: Issues in the Developing Uses of DNA Profiling in Support of Criminal Investigations*, 34 J. L. MED. & ETHICS 234, 243 (2006).

163. Although the FBI does not disclose the number of database searches, it publicizes the results, with a recent claim that "[a]s of January 2009, CODIS has produced over 83,800 hits assisting in more than 83,000 investigations." Fed. Bureau of Investigation, CODIS-NDIS Statistics, <http://www.fbi.gov/hq/lab/codis/clickmap.htm> (last visited Mar. 29, 2009). At the same time, police officials are experimenting with applying DNA investigative practices to property crimes, a use that will undoubtedly increase database

substantial *familial* searching has not been demonstrated. The only validity of the term “genetic surveillance” is that of the risk of use of the stored DNA information for non-forensic purposes. This concern, if valid, applies primarily to the individual in the database, and not (for the most part) to relatives.

A final concern in the literature is that of disclosing or disrupting familial relationships by identifying or proving the absence of genetic links among persons. A database link between an offender whose profile partially matches that of the crime scene evidence contributor may first disclose the criminal history of that offender to family members who the police then approach for samples; it may also cause people to learn that they are related to someone they did not suspect was in their family; and, finally, testing of the putative family member of the offender may show the *absence* of a genetic link and thus a “false” claim of biological relatedness.¹⁶⁴ Yet the first consequence will occur *only* if the police reveal how and why they came to seek a DNA sample from the family member, a condition that is not necessary in many instances and that reveals only already-public information (the offender’s status as a convicted person).¹⁶⁵ The second consequence is more hypothetical than real, as police will be checking public records to identify the offender’s relatives.¹⁶⁶ As to the third, a person who believes he/she is the relative of someone in the data-base will never be informed by police that the genetic connection is missing; rather, that individual will be simply and quickly excluded as a suspect, with no reason given.¹⁶⁷

Thus, although with some potential, the likelihood of disrupting or disclosing family relationship information is *de minimis*.

What becomes clear is that the Fourth Amendment, as currently interpreted, provides no privacy bar to the implementation of familial DNA investigation regimes. Histrionic cries of surveillance fail to match the actual consequences of this investigatory tool. The condemnation of its discriminatory impact is more a reflection of the already-existing racial and

searches. JOHN K. ROMAN ET AL., U.S. DEP’T OF JUSTICE, DOC. NO. NCJ 222318, THE DNA FIELD EXPERIMENT: COST-EFFECTIVENESS ANALYSIS OF THE USE OF DNA IN THE INVESTIGATION OF HIGH-VOLUME CRIMES 3 (2008), available at <http://www.ncjrs.gov/pdffiles1/nij/grants/222318.pdf>.

164. These concerns are addressed in a medical-ethics context in Erica Haimes’s article, *Social and Ethical Issues in the Use of Familial Searching in Forensic Investigations: Insights from Family and Kinship Studies*. Erica Haimes, *Social and Ethical Issues in the Use of Familial Searching in Forensic Investigations: Insights from Family and Kinship Studies*, 34 J. L. MED. & ETHICS 263, 269–73 (2006).

165. Indeed, so long as the person consents to the testing, whether and how the police present the need for it is irrelevant. See, e.g., *Wyche v. State*, 906 So.2d 1142, 1143–44 (Fla. Dist. Ct. App. 2005) (noting that defendant’s consent to DNA swab not vitiated by the fact that police officer based his request on the premise of investigating a fictitious crime).

166. When police ask the offender for names of relatives, only in rare instances will the offender provides the name of someone who until that time was unaware of the relationship.

167. Haimes, *supra* note 170, at 276 n.65. Haimes notes the unlikelihood of this:

since the police would expect to approach the person on the database, get his/her relative’s names, approach those relatives for a DNA sample and then, if the samples do not match the crime scene sample, those relatives are eliminated from the investigation. Therefore although the scientists might discover an unexpected genetic relationship, the sample providers and the person on the database are not told this directly

Id.

class disparities in criminal offender populations in this country than a *bona fide* basis for banning the practice and fails to acknowledge that a slightly circumscribed protocol for familial DNA collection and sample retention may mitigate the feared harm substantially. Perhaps most importantly, the criticisms do not account for the potential use of this tool by indigent and minorities seeking to prove their innocence. The reasonable restrictions on familial DNA testing, and the importance of this tool for innocence investigations, are addressed next.

IV. A PARADIGM FOR FAMILIAL DNA INVESTIGATIONS, AND THE LINK TO INNOCENCE CLAIMS

Although this Article seeks to debunk the “bogeyman” attack on familial DNA investigations, it does not (and cannot) dispute that any technique such as this one implicates privacy and social equality concerns. Retention of private DNA information in a national (or regional or local) database with no predicate of criminal wrongdoing or legislative authorization (the latter presumably connoting a social compact and popular acceptance) is incompatible with the historic condemnation of general warrants¹⁶⁸—it leaves unreviewed the decision of what law enforcement may seize and retain. Such a system is particularly disturbing given the amount of personal health data that DNA holds.¹⁶⁹ Every incremental racial disparity in privacy information and retention breeds distrust of the criminal justice system and law enforcement.¹⁷⁰

Yet current constitutional jurisprudence offers virtually no bar to collection practices with such disparate results.¹⁷¹ The response, therefore, must be crafted in the legislative and lab policy and practice fields, a process already under way.¹⁷² Four steps may assuage these concerns and at least mitigate the incursions into privacy and the racial and class impacts feared by

168. *Virginia v. Moore*, 128 S. Ct. 1598, 1603 (2008) (“The immediate object of the Fourth Amendment was to prohibit the general warrants and writs of assistance that English judges had employed against the colonists . . .”).

169. This concern has informed legal challenges to DNA collection from unsuspecting individuals:

Amicus American Civil Liberties Union (ACLU) argues DNA has the potential to reveal a vast amount of personal information, including medical conditions and familial relations. . . . While this may be true in some circumstances, the State’s use of Athan’s DNA here was narrowly limited to identification purposes The concerns raised by the ACLU, while valid, are not present in this case. The State used the sample for identification purposes only, not for purposes that raise the concerns advanced by the ACLU. *State v. Athan*, 158 P.3d 27, 34 (Wash. 2007).

170. This distrust already exists, particularly in the public perception of police investigatory practices. Bennett L. Gershman, *Use of Race in “Stop-and-Frisk”: Stereotypical Beliefs Linger, But How Far Can the Police Go?*, PACE LAW FACULTY PUBLICATIONS (2000), available at <http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1059&context=lawfaculty> (“[T]he belief has always existed that stop-and-frisk tactics are often used indiscriminately and abusively against minority groups.”). In 2007, the New York City Police Department commissioned a Rand study of stop-and-frisk practices, in part because of complaints of racial profiling. Al Baker, *Amid Claims of Police Profiling, Study Will Review “Stop and Frisks,”* N.Y. TIMES, Mar. 1, 2007, at B1, available at <http://www.nytimes.com/2007/03/01/nyregion/01rand.html>.

171. *Washington v. Davis*, 426 U.S. 229, 239 (1976) (“[O]ur cases have not embraced the proposition that a law or other official act, without regard to whether it reflects a racially discriminatory purpose, is unconstitutional solely because it has a racially disproportionate impact.”).

172. See *supra* note 12 (noting that in 2008 Maryland introduced legislation authorizing DNA testing of violent crime arrestees but banning familial DNA investigations).

opponents of familial DNA investigations—Y-STR testing, destruction of the biological material, no database inclusion, and informed and limited consent.

A. Y-STR Testing

Y-STR Testing,¹⁷³ as described above, should be mandated as a screening technology in familial DNA investigations. This practice is relied on in Great Britain,¹⁷⁴ and it offers dual advantages—police quickly narrow the field of suspects, and those persons whose biological material has been gathered for comparison will have more of their privacy protected, as the results will show at most the patrilineal heritage.

B. Destruction of the Biological Material

The fear of DNA testing is, often, the potential for identifying private medical¹⁷⁵ and mental health¹⁷⁶ information, rather than the development and retention of the thirteen-*loci* profile. Although law-enforcement officials have claimed the need to preserve the actual biological source material for persons in the offender databases, justifying it because of the need to “make sure an old analysis was done correctly . . . [and] to be able to use new DNA identification methods on older samples as the science improves[.]”¹⁷⁷ such reasoning has no validity for persons shown to be excluded as the contributor to the crime scene evidence at issue and not otherwise a demonstrated criminal suspect.

An additional reason, one connected to the racial disparities occasioned by familial DNA investigations, warrants destruction of the physical sample. Among African-Americans, there remains a residual distrust¹⁷⁸ of the

173. See *supra* text accompanying notes 52–62 (explaining Y-STR’s usefulness in determining pools of included or excluded suspects without creating a full DNA profile).

174. *Id.*

175. Information can extend to “disease susceptibilities that could affect employment and health insurance prospects and, in some cases, surprises about who a child’s father is.” Rick Weiss, *Vast DNA Data Bank Pits Policing v. Privacy*, WASH. POST, June 3, 2006, at A01, http://www.washingtonpost.com/wp-dyn/content/article/2006/06/02/AR2006060201648_pf.htm. For example, genes have been associated with increased risk of breast cancer. BreastCancer.org., Genetics and Breast Cancer Risk, <http://www.breastcancer.org/risk/genetic/index.jsp?gclid=CPSs9snetZICFQTGsgod3lIXR> (last visited Mar. 29, 2009).

176. *Schizophrenia Tied to Multiple Genetic Errors*, HEALTHDAY NEWS, March 27, 2008, <http://www.headache.net/schizophrenia-tied-multiple-genetic-errors.html> <http://www.ajc.com/health/content/shared-auto/healthnews/rsrc/613908.html> (“Scientists have found that deletions and duplications in DNA are more common in people with schizophrenia, and these errors are in genes related to brain development and neurological function.”). A similar finding links genes and alcoholism, at least in some families. MedicineNet.com, A Gene for Alcoholism is Discovered, <http://www.medicinenet.com/script/main/art.asp?articlekey=> (last visited Mar. 29, 2009).

177. Weiss, *supra* note 175, at A01 (quoting Thomas Callaghan, the FBI’s CODIS Unit Chief. Callaghan maintained that without such preservation “you’d be freezing the database to today’s technology.”). As familial DNA “contributors” don’t belong in the database *ab initio*, the argument cannot hold.

178. Vanessa Northington Gamble, Chair, Presidential Committee on the Legacy of Tuskegee, Address on Tuskegee Lessons: Syphilis Study Leaves Behind Legacy of Mistrust (2002), *available at* <http://www.npr.org/programs/morning/features/2002/jul/tuskegee/commentary.html> (“Many African Americans point to the syphilis study as a reason why they won’t participate in clinical trials, donate organs, and more recently in the case of postal workers at the Brentwood post office in Washington, D.C., are wary of being vaccinated against anthrax.”).

Government and its application of science and medical practices traceable to the Tuskegee syphilis experiments, an abomination where “[f]or forty years, from 1932 to 1972, 399 African-American males were denied treatment for syphilis and deceived by officials of the United States Public Health Service.”¹⁷⁹ The distrust remains current and vivid.¹⁸⁰ Without sample destruction, the persistence in feelings of racial disparity in the application of science will undercut public support for and acceptance of a valid investigative tool.¹⁸¹

C. No Database Inclusion

The claim that familial DNA investigation leads to lifelong “genetic surveillance,” already shown to be a misnomer,¹⁸² is defeated soundly if local and state entities enact regulations, or states adopt legislation, banning the retention in any database of DNA profiles collected in a familial DNA investigation that are not of the suspect who is eventually arrested and charged. Notwithstanding the judicial tolerance of “lifelong” retention and re-examination of DNA collected consensually,¹⁸³ there is no law-enforcement justification sufficient to overcome the privacy concerns of individuals shown to not be the suspect in the crime under investigation. Such a no-retention, no-upload policy is consistent with existing state statutes that limit *statewide* databases to convicted (or in some states arrested) individuals.¹⁸⁴ However, explicit legislation is needed in light of statutory language authorizing broad collection and retention practices by individual law enforcement agencies¹⁸⁵ and the failure of state DNA database laws to impose restrictions on local

179. Bad Blood: The Tuskegee Syphilis Study, http://www.hsl.virginia.edu/historical/medical_history/bad_blood/ (last visited Mar. 29, 2009).

180. This distrust can draw further from general disparities in the offering of health care. Marshall and Koenig, *Accounting for Culture in a Globalized Bioethics*, 32 J.L. MED. & ETHICS 252, 262 (2004) (“Studies show that the health status of whites is better than ethnic and racial minorities even when income, education and other factors are controlled.”).

181. This is no different than the deleterious impact on community-police relations found in communities where it is perceived that police engage in racial profiling for pedestrian or traffic stops. *See, e.g.*, Taslitz, *supra* note 137 at 1416 (“Blacks are also more inclined than whites to perceive racial disparities in their treatment by the police.”); Scott Moriarity, *Responding to the Issue of “Driving While Black”: A Plan for Community Action through Litigation and Legislation*, 27 WM. MITCHELL L. REV. 2031, 2032 (2001) (describing the “broad impact” of such policies on community-police relations).

182. *See supra* text accompanying note 152–153 (explaining Professor Mnookin’s theory that familial searching is “discriminatory” because it impacts people with “bad” relatives and ignores those with “good” relatives).

183. *See supra* text accompanying notes 130–132 (noting that courts have held that consensually discarded evidence, even without a conscious or affirmative act of disposal, are not protected by the Fourth Amendment).

184. *See, e.g.*, MASS. GEN. LAWS ANN. Ch 22E, § 3 (2007) (limiting state databases to persons convicted of a crime punishable by imprisonment in a state prison); N.J. STAT. ANN. § 53:1-20.19 *et seq.* (West 2001) (limiting the state database to persons convicted or adjudicated delinquent of, or found not guilty by reason of insanity for, specified offenses).

185. *See, e.g.*, 44 PA. CONS. STAT. § 2336 (2002) (“Nothing in this chapter shall limit or abrogate any existing authority of law enforcement officers to take, maintain, store and utilize DNA samples for law enforcement purposes.”); N.J. STAT. ANN. § 53:1-20.20i (“Nothing in this act shall be deemed to limit or preclude collection of DNA samples as authorized by court order or in accordance with any other law.”).

DNA database retention practices.¹⁸⁶ Indeed, it is the retention of samples and profiles by local authorities that is now the focus of critics of familial DNA investigations.¹⁸⁷

D. Informed and Limited Consent

A fourth response to the intrusiveness and privacy concerns raised by familial DNA testing is to require informed consent before obtaining samples, a proposal emphatically urged by Professor Bieber.¹⁸⁸ While resistance to such a mandate might be expected from law enforcement, there is no reason to assume that such a requirement will diminish the extent of civilian cooperation with police requests for DNA samples. Anecdotally, it is clear that many people cooperate voluntarily when asked for DNA for such a comparison.¹⁸⁹ This degree of cooperation is similarly found in “informed consent” automobile searches, where two studies have shown that well over 80 percent of the drivers agree to searches even after being advised of their right to refuse.¹⁹⁰

The debate here is akin to that which followed the Supreme Court’s decision in 1966 in the *Miranda*¹⁹¹ decision, where it was claimed that requiring a Fifth Amendment advisory at the beginning of an interrogation would “handcuff” the police.¹⁹² While it has been argued by some that

186. See *supra* note 192 (citing New Jersey and Massachusetts statutes pertaining to statewide DNA databases). Neither statute imposes any restriction on local police collection and retention practices.

187. Barry Scheck of the Innocence Project elaborated in a 2008 interview, “If I get a sample from you and I don’t tell you I want to put it in the database, that violates the scope of the Fourth Amendment.” Ellen Nakashimi, *From DNA of Family, a Tool to Make Arrests: Privacy Advocates Say the Emerging Practice Turns Relatives into Genetic Informants*, WASH. POST, Apr. 21, 2008, at A1, available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/04/20/AR2008042002388.html>.

188. Frederick R. Bieber and David Lazar, *DNA Sweep Must Be Accompanied by Informed Consent*, PROVINCETOWN BANNER, Jan. 25, 2005, at 9, available at <http://www.hks.harvard.edu/davidlazer/files/papers/Lazer%20&%20Bieber%20DNA%20Sweep.pdf>.

189. See, e.g., Rebecca Leung, *DNA Dragnet: Police Seek DNA Samples from the Public to Catch the Guilty*, CBS NEWS, Sept. 12, 2004, <http://www.cbsnews.com/stories/2004/09/10/60minutes/main642684.shtml> (describing a police investigation where hundreds cooperated by voluntarily providing samples, but noting that some hesitated or refused); *The DNA Dragnet*, TIME, Jan. 16, 2005, <http://www.time.com/time/magazine/article/0,9171,1018083,00.html> (same); *DNA Dragnet Raises Concerns*, ASSOCIATED PRESS, June 17, 2003, http://www.sptimes.com/2003/06/17/State/DNA_dragnet_raises_co.shtml (reporting police comment that, “The vast majority have signed [consent forms associated with DNA samples] willingly [while some] people have refused and have been allowed to go on their way.”).

190. Matthew Phillips, Note, *Effective Warnings Before Consent Searches: Practical, Necessary, and Desirable*, 45 AM. CRIM. L. REV. 1185, 1195–1201 (2008) (showing cooperation rates of 88.3% for New Jersey drivers and 92.9% in Ohio). Although a further portion of the Ohio study showed that many respondents explained that they consented due to fear or reprisal, the data still provide substantial support for the contention that an informed consent requirement will not significantly hamper police investigation). As Professor Taslitz concludes, informed consent

will likely impose little in the way of the social cost of reducing consensual searches and confessions.

Indeed, the available empirical data, as well as psychological theory, suggest that the guilty as well as the innocent will generally not be less compliant simply because they are made aware of their rights.

Taslitz, *supra* note 137, at 1428.

191. *Miranda v. Arizona*, 384 U.S. 436 (1966).

192. See, e.g., Paul G. Cassell and Richard Fowles, *Handcuffing the Cops? A Thirty-Year Perspective on Miranda’s Harmful Effects on Law Enforcement*, 50 STAN. L. REV. 1055, 1056–57 (1998) (summarizing the contemporaneous response to *Miranda* and the stated fear that it would impede law enforcement).

Miranda reduced the confession rate,¹⁹³ others note that confessions continue at a high rate notwithstanding the requirement of warnings, with one report contending that “four out of five custodial suspects in the United States who are asked to submit to interrogation do so, while one in five declines.”¹⁹⁴

A similar debate is ongoing today regarding proposals to mandate electronic recording of police custodial interrogations. Although the stated fear is that the presence of video equipment will deter suspects from speaking or “interfere with [the police investigator’s] rapport-building style of interviewing[,]”¹⁹⁵ surveys of police nationwide have shown that the process of recording rarely dissuades a suspect from speaking with interrogators.¹⁹⁶

The debate over whether requiring *informed* consent will deter police investigations cannot be resolved, although the experience with *Miranda* and with electronic recordation of interrogations strongly suggests a minimal effect if any. Less necessary to mitigate the privacy concerns than this Article’s other proposals, an informed consent policy can nonetheless serve a critical purpose—increasing social acceptance of this critical police investigative tool. A society fully informed of why police need information and the limited use that will be made of this material is much more likely to be supportive of such an investigative technique.

V. FAMILIAL DNA “SEARCHES” AND INNOCENCE

The immediately discussed reforms presume the desirability of familial DNA investigations. That presumption should be accepted, as the availability of such testing is key to the innocent accused as much as to the prosecution. No case illustrates this more tellingly than that of Darryl Hunt.

Hunt was accused of a rape-murder that occurred in North Carolina in 1984.¹⁹⁷ His case had the fallibilities common to many DNA exonerations;¹⁹⁸ no witness described the perpetrator as wearing his hair in cornrows, which Hunt did; when his photo was placed in an array it had a different colored background than the other pictures did; and Hunt, pre-trial, passed an independent polygrapher’s test regarding his innocence.¹⁹⁹

193. *Id.* at 1132.

194. Steven B. Duke, *Does Miranda Protect the Innocent or the Guilty?*, 10 CHAP. L. REV. 551, 555 (2007).

195. Julie Renee Linkins, Note, *Satisfy the Demands of Justice: Embrace Electronic Recording of Custodial Investigative Interviews Through Legislation, Agency Policy, or Court Mandate*, 44 AM. CRIM. L. REV. 141, 157 (2007).

196. Thomas P. Sullivan, *Electronic Recording of Custodial Interrogations: Everybody Wins*, 95 J. CRIM. L. & CRIMINOLOGY 1127, 1129 (2005) (“In most instances, the ability to obtain confessions and admissions is not affected by recording.”).

197. Troy Duster, *Explaining Differential Trust of DNA Forensic Technology: Grounded Assessment or Inexplicable Paranoia?*, 34 J. L. MED. & ETHICS 293, 296 (2006).

198. Samuel R. Gross et al., *Exonerations in the United States 1989 Through 2003*, 95 J. CRIM. L. & CRIMINOLOGY 523, 533, 543 (2005) (noting the prevalence of eyewitness and police error in wrongful convictions).

199. This and the remaining details presented here are drawn from the eight-part investigative report prepared by the Winston-Salem Journal and published in November 2007. Phoebe Zerwick, *Murder, Race, Justice: The State vs. Darryl Hunt*, JOURNALNOW, Nov. 17, 2007, <http://darrylhunt.journalnow.com/>

Convicted, Hunt won a re-trial but was again found guilty. In 1994, the availability of PCR technology permitted DNA analysis to be conducted in this case for the first time. DNA from the attacker's semen was proved to have come from someone other than Hunt. The state then tested the DNA of acquaintances of Hunt also suspected to have participated; they too were excluded as the source. Notwithstanding this proof, the judge denied a request for a new trial. Divided four to three, the North Carolina Supreme Court affirmed.²⁰⁰

Nearly a decade later the DNA profile from the sperm found on the murder victim was checked against a criminal offender database. There was no match, but a near-match was found between the crime-scene profile and one convicted offender, although he was excluded as the source. Investigation found that one of the offender's brothers was also incarcerated; and after police obtained a DNA profile, it was shown that he was the source of the sperm. That man, Willard Brown, ultimately confessed to being the slayer and Hunt was released from custody.²⁰¹

Hunt's travail confirms the exonerative power of familial DNA investigations and the need for this tool to be embraced by the defense and innocence communities, with appropriate safeguards for individual privacy. Without such a process, submitting the crime scene DNA profile to a state or national DNA database would come back with a "no match" response, and deprive the accused of critical if not conclusive proof of innocence.

The irony is that defendants and convicted persons have fought for the right to have DNA profiles from crime scene evidence uploaded into NDIS to search for alternative suspects. That power has largely been in the discretion of prosecutors, although a handful of states now mandate such access through their DNA legislation.²⁰² At least one exoneration *and identification of the actual perpetrator* has come from such defense-requested screening.

In 1990, Jeffrey Deskovic was convicted of a murder to which he

stories/parttwo/story.html.

200. State v. Hunt, 457 S.E.2d 276 (N.C. 1994). The dissent presciently noted the significance of the DNA evidence:

[T]he PCR/DNA report eliminating defendant as the source of the sperm taken from the victim is powerful evidence tending to weaken the State's entire case and strengthen defendant's defense. Thus, I would hold that defendant has established the seventh prerequisite to a new trial: that the newly discovered evidence is of such a nature as to show that on another trial a different result will probably be reached and that the right will prevail.

Id. at 299-300 (Frye, J. dissenting).

201. William J. Cromie, *Catching Criminals Through Their Relatives' DNA*, HARV. U. GAZETTE, May 11, 2006, <http://www.hno.harvard.edu/gazette/daily/2006/05/11-dna.html>.

202. 725 ILL. COMP. STAT. § 5/116-5 (2005) (allowing such searches by court order); GA. CODE ANN. § 24-4-63 (2005) (providing similar access upon a showing that "access to the DNA data bank is material to the investigation, preparation, or presentation of a defense at trial or in a motion for a new trial."); Other statutes seem to permit such access without specifically identifying criminal defendants as those with rights to request such searches. *See, e.g.* HAW. REV. STAT. § 844D-82 (2006) (providing defendant's access to their DNA, but forbidding them to compel the state to turn over the DNA of alternative suspects); N.J. STAT. ANN. § 53:1-20.21 (2006) (allowing defendants access to "relevant samples and analyses" performed in connection with the defendant's case); CAL. PENAL CODE § 299.5(g)-(h) (West 2005) (making a defendant's DNA available to the defendant, but protecting the DNA of alternative suspects from discovery); N.C. GEN. STAT. § 15A-266.8 (2005) (making DNA records available to law enforcement agencies upon receipt of a valid court order).

allegedly confessed, in a case where DNA showed that he could not be the source of semen in the victim's body.²⁰³ It was sixteen years later, when the prosecution exercised its discretion to do so, that the DNA profile was checked against the offender database.²⁰⁴ The profile matched that of an inmate convicted of another murder committed in the same area, and he subsequently confessed to the crime Deskovic had been imprisoned for.²⁰⁵ Had the prosecutor not cooperated, Deskovic would have remained wrongly incarcerated.

Defense access to DNA databases, whether by authority conferred by statute or as a due process claim applying *Brady v. Maryland*,²⁰⁶ is critical to proving innocence. Just as access is needed to find matches, so too is access needed to find partial match familial DNA leads. From an innocence perspective, as well as a reliability-of-verdict one, the two are indistinguishable.

VI. CONCLUSION

The conundrum of familial DNA investigations is that of purpose versus perversion or misuse. Nominally, the "search" is limited to a criminal investigation, with the power to dispositively identify the perpetrator or exclude the suspect; yet the additional information available from DNA has frightening policy and privacy implications. As the Washington Supreme Court captured the competing views:

Amicus . . . argues DNA has the potential to reveal a vast amount of personal information, including medical conditions and familial relations; therefore DNA should constitute a privacy interest. While this may be true in some circumstances, the State's use of Athan's DNA here was narrowly limited to identification purposes. . . . The concerns raised by the [amicus], while valid, are not present in this

203. Fernanda Santos, *DNA Testing Frees Man Imprisoned for Half His Life*, N.Y. TIMES, Sept. 21, 2006, at B1, available at <http://www.nytimes.com/2006/09/21/nyregion/21dna.html>.

204. *Id.*

205. *Id.*

206. 373 U.S. 83 (1963). In *Brady*, the Supreme Court mandated that prosecutors must disclose evidence exculpatory to guilt or punishment. *Id.* at 87. *Brady* applies to information in the possession of the prosecutor or in the hands of the pertinent law enforcement agencies "acting on the government's behalf in the case, including the police." *Kyles v. Whitley*, 514 U.S. 419, 437 (1995).

Whether defense access to a state and federal database for evidence comparison is within the *Brady* obligation has not been addressed. Because of the interdependence of the local, state and national databases, it is arguable that all are agencies cooperating in the particular prosecution, thereby bringing all within the disclosure obligation. *See generally* *United States v. Risha*, 445 F.3d 298, 303 (3d Cir. 2006) (applying the *Brady* disclosure obligation to cross-jurisdiction agencies participating in the investigation or prosecution). This question is well beyond the scope of this Article, but it deserves note that on the more narrow question of whether there is a right to have biological material compared to the defendant's profile, some courts have found the Due Process Clause to guarantee such testing. *Osborne v. Dist. Attorney's Office*, 521 F.3d 1118, 1132 (9th Cir. 2008). *See generally* Seth F. Kreimer & David Rudovsky, *Double Helix, Double Bind; Factual Innocence and Post Conviction DNA Testing*, 151 U. PA. L. REV. 547 (2002) (arguing that substantive and procedural issues as factors to weigh against admitting post-conviction DNA evidence are unpersuasive against the constitution claims in cases where the DNA evidence is potential exculpatory).

case.²⁰⁷

In part, the Washington Court is wrong. Given the retention of the biological material from which DNA profiles are extracted, the privacy issues are present, limited only by legislative controls or particular lab practices. The perversion of the process is dual: leaving in place the risk of misuse of private biological information, and creating an ever more racially and economically-disparate database, resulting in differential treatment (or perceived different treatment) of racial or ethnic populations. But the Supreme Court's intuition—that limited forensic identification use may outweigh those privacy concerns—has firm grounding.

The dilemma, from a civil libertarian perspective has been well-articulated by Professor Kreimer:

[T]he promise of epistemological certainty provided by DNA testing has a dark side for civil libertarians. . . . [I]ncreased payoffs to DNA evidence generate increased pressure to collect that evidence from willing and unwilling subjects alike²⁰⁸

Professor Kreimer also recognized the cost of limited DNA access and testing: “each excluded DNA profile not only reduces the probability that a guilty person will be convicted of a crime (or a potential offender deterred), but reduces as well the probability that an innocent person will go free.”²⁰⁹

Complete resolution of these competing needs and concerns may be impossible, particularly as current databases do not include or affect the majority of citizens.²¹⁰ But approval of a tightly regulated regime for familial DNA investigations, with the controls proposed herein: initial screening using the less-discriminating Y-STR technology to narrow the field of ‘persons of interest’; destruction of biological material after the profile is extracted; and a ban on uploading profiles into any database—offers the greatest protection of privacy and the potential for social acceptance across racial, ethnic, and class lines of this potentially intrusive technique. Although the need to pursue proof of innocence cannot call for the elimination or erosion of constitutional rights, it can seek their accommodation. A carefully cabined approach to familial DNA investigations serves that end.

207. *State v. Athan*, 158 P.3d 27, 34 (Wash. 2007).

208. Seth F. Kreimer, *Truth Machines and Consequences: The Light and Dark Sides of “Accuracy” in Criminal Justice*, 60 N.Y.U. ANN. SURV. AM. L. 655, 658 (2005).

209. *Id.* at 669.

210. Some scholars have called for a discussion of the creation of a national DNA database for the following reason:

[N]otions of common fairness dictate that a better system would utilize an all-inclusive database to which everyone was required to contribute. If such a system were proposed, it would benefit from the spirited dialogue that would no doubt result from any program in which those in power must participate.

Stephen E. Henderson, *Nothing New Under the Sun? A Technologically Rational Doctrine of Fourth Amendment Search*, 56 MERCER L. REV. 507, 555–56 (Winter, 2005). Professor Henderson's emphasis is that implementation after such a national dialogue would give a database “democratic legitimacy.” *Id.* As Professor Kreimer notes, “Misuse of a database that includes only the dispossessed will be of relatively little concern to the complacent majority. As a second-best solution, the force of the ‘truth machine’ may drive civil libertarians to support universal DNA databanks.” Kreimer, *supra* note 212, at 669.