

WHEN PRIVACY FAILS: INVOKING A PROPERTY PARADIGM TO MANDATE THE DESTRUCTION OF DNA SAMPLES

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INTRODUCTION

The maxim “innocent until proven guilty” has assumed significance in legal scholarship, colloquial conversation, and the media; indeed, the concept resonates with American society. Its prominence in popular and legal culture reflects society’s concern for balancing the constitutional guarantee of liberty with the government’s duty to secure the well-being of its citizens. The maxim recognizes the inherent collisions of constitutional law and criminal law, of rights and responsibilities, and of privacy and protection. In the very nature of these ideas is the notion that Americans respect—and arguably require—laws that offer broad protection to society without eclipsing individual privacy. Recent scientific advances have afforded deoxyribonucleic acid (DNA) a preeminent role in providing such protections; with the advent of cataloged genetic “fingerprints” that can be matched to cellular material left at crime scenes, the modern American criminal justice system has become increasingly efficient and significantly more accurate.¹ Yet current law, which fails to mandate the destruction of voluntarily provided DNA samples, falls well short of providing genetic privacy to innocent individuals.²

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1. D.H. Kaye, *The Constitutionality of DNA Sampling on Arrest*, 10 CORNELL J.L. & PUB. POL’Y 455, 462 (2001).

2. See Michelle Hibbert, *DNA Databanks: Law Enforcement’s Greatest Surveillance Tool?*, 34 WAKE FOREST L. REV. 767, 796 (1999) (“Although many statutes make it a crime to misuse information in the databank itself, the [DNA] samples, which contain an unlimited amount of information about the offender, receive little, if any, protection.”); Mark A. Rothstein & Sandra Carnahan, *Legal and Policy Issues in Expanding the Scope of Law Enforcement DNA Data Banks*, 67 BROOK. L. REV. 127, 158 (2001) (suggesting that sensitive genetic information gleaned from DNA samples could be used for illicit purposes).

Progress in medical science has rendered possible both the collection of DNA on a physically noninvasive basis³ and the subsequent creation of identifying DNA profiles, which are contained in massive databases.⁴ Although the use of profiles has enhanced the success of criminal investigations,⁵ database opponents have voiced concerns about genetic privacy⁶ and the constitutional ramifications of DNA sampling and profiling under the First,⁷ Fourth,⁸ Fifth,⁹ Sixth,¹⁰ Eighth,¹¹

3. See Rothstein & Carnahan, *supra* note 2, at 155 (discussing the noninvasive collection of DNA with a buccal swab, which involves brushing the inside of the cheek with cotton); Richard Saltus, *DNA in Fingerprints Used as Identifier*, BOSTON GLOBE, June 19, 1997, at A5 (explaining that scientists can generate genetic profiles from objects that an individual has merely touched).

4. Kaye, *supra* note 1, at 461–62.

5. See *People v. Wesley*, 533 N.Y.S.2d 643, 644 (Sup. Ct. 1988) (calling DNA technology the “single greatest advance in the ‘search for truth’ . . . since the advent of cross-examination”); *DNA Links Convict to 21-Year-Old Slaying: Evidence Likened to “The Finger of God,”* THE RECORD (N.J.), Mar. 14, 2000, at A5 (quoting Jeanine Pirro, the district attorney for Westchester, NY, comparing DNA evidence to “the finger of God”); Charlie Goodyear & Erin Hallissy, *Dangerous Delay on DNA: State Struggles to Gather Genetic Profiles of Violent Felons*, S.F. CHRON., Oct. 19, 1999, at A1 (describing DNA as the “greatest breakthrough in modern crime fighting”).

6. See, e.g., Hibbert, *supra* note 2, at 796–98 (noting that DNA samples, which contain sensitive genetic information, receive little statutory protection); Rothstein & Carnahan, *supra* note 2, at 158–59 (hypothesizing that genetic information from DNA samples could be used improperly by employers and insurers as well as by child support and immigration agencies); Michael J. Markett, Note, *Genetic Diaries: An Analysis of Privacy Protection in DNA Data Banks*, 30 SUFFOLK U. L. REV. 185, 222–23 (1996) (encouraging the adoption of laws protecting sensitive genetic material); see also Allison Ito, Recent Development, *Privacy and Genetics: Protecting Genetic Test Results in Hawai’i*, 25 U. HAW. L. REV. 449, 453–57 (2003) (examining the need for, and attempts to, protect genetic information obtained outside the law enforcement context).

7. See, e.g., *Shaffer v. Saffle*, 148 F.3d 1180, 1181 (10th Cir. 1998) (addressing a prisoner’s claim that drawing blood to secure DNA violated his First Amendment rights).

8. See, e.g., Edward J. Imwinkelried & D.H. Kaye, *DNA Typing: Emerging or Neglected Issues*, 76 WASH. L. REV. 413, 417–45 (2001) (discussing the Fourth Amendment’s Search and Seizure Clause as it applies to DNA sampling and analysis); Kaye, *supra* note 1, at 472–507 (analyzing, under the Fourth Amendment, the collection of samples from convicted or arrested individuals).

9. See, e.g., *Cooper v. Gammon*, 943 S.W.2d 699, 705 (Mo. Ct. App. 1997) (holding that drawing blood for DNA profiling does not violate the Fifth Amendment privilege against self-incrimination); Kaye, *supra* note 1, at 463–64 (asserting that collecting samples from convicted or arrested individuals does not violate the Fifth Amendment right against self-incrimination).

10. See, e.g., Imwinkelried & Kaye, *supra* note 8, at 451–74 (examining the use of DNA analysis in prosecutions).

11. See, e.g., *Kruger v. Erickson*, 875 F. Supp. 583, 588 (D. Minn. 1995) (holding that the extraction of a DNA sample was not cruel and unusual punishment).

Ninth,¹² and Fourteenth¹³ Amendments. Their admonitions have recently assumed new significance, as law enforcement organizations have begun obtaining, analyzing, and retaining DNA samples through large-scale dragnets.¹⁴ DNA dragnets prompt unique concerns because they target individuals who lack a criminal history or a distinct connection to the crime under investigation.¹⁵ Consistent with the nature of dragnets, the vast majority of participants have no connection to the criminal activity.¹⁶

Thus, law enforcement agencies increasingly find themselves in possession of DNA samples from innocent individuals after convicting persons responsible for crimes.¹⁷ The utility of these samples, however, does not subside with the resolution of a criminal investigation; rather, the information contained in the samples remains attractive to an array of individuals, corporations, and agencies outside the law enforcement context. It is well recognized that DNA contains information regarding familial lineage, predisposition to disease, and even the propensity for aggressive, addictive, or criminal behaviors.¹⁸ Access to genetic information could prove valuable to—and engender discrimination from—insurance companies and employers,¹⁹ resulting in denied policies or

12. See, e.g., *Boling v. Romer*, 101 F.3d 1336, 1340 (10th Cir. 1996) (confirming the dismissal of a plaintiff's claim that a DNA database statute was unconstitutionally vague and conclusory).

13. See, e.g., Imwinkelried & Kaye, *supra* note 8, at 445–47 (discussing the equal protection ramifications of DNA profiling); Kaye, *supra* note 1, at 465–67 (arguing that DNA sampling of inmates and arrestees does not offend due process).

14. Fred W. Drobner, *DNA Dragnets: Constitutional Aspects of Mass DNA Identification Testing*, 28 CAP. U. L. REV. 479, 479 (2000).

15. *Id.* at 479–80.

16. For example, in one dragnet, none of the 160 men tested proved responsible for the crime. David Shepardson, *Suspects No More, They Want Blood Back*, DET. NEWS, July 24, 1995, at 1C.

17. See, e.g., Jeffrey S. Grand, Note, *The Bleeding of America: Privacy and the DNA Dragnet*, 23 CARDOZO L. REV. 2277, 2321 (2002) (arguing that samples obtained from dragnets should be destroyed or returned to the donor individuals); Shepardson, *supra* note 16 (noting that police planned to retain for thirty years the voluntarily donated DNA samples of 160 men declared innocent of the crime under investigation); see also Hibbert, *supra* note 2, at 809 (noting that the DNA of convicted individuals who are later exonerated is sometimes not expunged from state databanks); Richard Willing, *ACLU Seeks to End DNA Dragnet in Search for Killer in Mass. Town*, USA TODAY, Jan. 11, 2005, at 6A (explaining that only one innocent individual has been successful in suing for the return of his DNA sample).

18. Drobner, *supra* note 14, at 479–80.

19. George P. Smith II, *Accessing Genomic Information or Safeguarding Genetic Privacy*, 9 J.L. & HEALTH 121, 124 (1994–1995).

opportunities for individuals with enhanced susceptibility to mental illness, physical disease, or even less-desirable personality traits. Conceivably, the release of sensitive genetic information could have far-reaching effects, impacting placement decisions by adoption agencies, corrupting jury verdicts, and allowing prospective spouses to select mates based on perceived genetic advantage.²⁰ At this extreme, such biological determinism could induce “geneticide”: on the sole basis of individuals’ biological inheritance, society could evict “substandard” individuals from a range of traditions and programs despite uncertainty that an undesired trait would ever manifest itself.

Existing jurisprudence and legislation are insufficient to protect this sensitive personal information. Proposed solutions to genetic discrimination include mechanisms that would limit access to the information; however, these suggestions prove inadequate.²¹ The risk

20. The history of eugenics in America suggests that genetic information can serve as a substantial foundation for discrimination. See Paul A. Lombardo, *Genetic Confidentiality: What's the Big Secret?*, 3 U. CHI. L. SCH. ROUNDTABLE 589, 595 (1996) (“For most of this century, the suggestion of biologically verifiable genetic inferiority was used as the basis for sexual sterilization of thousands of residents of state institutions, laws to prohibit interracial marriage, and immigration quotas for some ethnic groups.” (footnotes omitted)).

21. Potential mechanisms for protecting access to such information include the Americans with Disabilities Act of 1990 (ADA), 42 U.S.C. §§ 12,101–12,213 (2000) and the Privacy Act of 1974 (Privacy Act), 5 U.S.C. § 552a (2000). The ADA states that “[n]o covered entity shall discriminate against a qualified individual with a disability because of the disability of such individual in regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions, and privileges of employment.” 42 U.S.C. § 12,112a. The Privacy Act requires that any government agency retaining records may not “disclose any record . . . by any means of communication to any person, or to another agency, except pursuant to a written request by, or with the prior written consent of, the individual to whom the record pertains.” 5 U.S.C. § 552a(b). Nonetheless, both “the ADA and the Privacy Act fall short of extending explicit protection to asymptomatic individuals with abnormal genotypes.” Smith, *supra* note 19, at 131. Because the ADA protects individuals with manifest disabilities that substantially interfere with a major life activity, it is purely speculative as to whether the ADA would prohibit discrimination against an asymptomatic individual with a mere genetic predisposition for a trait or illness. Marisa Anne Pagnattaro, *Genetic Discrimination and the Workplace: Employee's Right to Privacy v. Employer's Need to Know*, 39 AM. BUS. L.J. 139, 159–60 (2001); see also June Mary Z. Makdisi, *Genetic Privacy: New Intrusion a New Tort?*, 34 CREIGHTON L. REV. 965, 975–76 (2001) (discussing the weaknesses of the ADA and the Privacy Act in preventing genetic discrimination).

Additional protections are seemingly available under Executive Order 13,145, which prohibits discrimination in federal employment based on genetic information. See Exec. Order No. 13,145, 3 C.F.R. 235 (2000), reprinted in 42 U.S.C.A. § 2000e-16 (2003). However, not only is the order limited in its reach, applying only to federal employees, but it also fails to create any legally enforceable right. Pagnattaro, *supra*, at 157. The Health Insurance Portability and Accountability Act of 1996 (HIPAA), 42 U.S.C. § 1320d (2000), is an important attempt at limiting genetic discrimination in health insurance. Yet, HIPAA does not prevent certain forms

of failing protective mechanisms, combined with the reality that sample retention is unnecessary to achieve law enforcement interests, suggests that preventing sample retention altogether is the more prudent solution. This Note, therefore, suggests measures to fill existing gaps in jurisprudence and legislation by identifying and applying an alternative paradigm that precludes sample retention and protects genetic privacy.

In so doing, this Note investigates the unique constitutional issues implicated when law enforcement agencies collect DNA samples in dragnets and subsequently retain the samples of innocent individuals. Part I reviews the DNA sampling and profiling practices currently employed by state and federal law enforcement organizations. Part II follows with an analysis of the constitutional arguments—premised on the Fourth Amendment and the judicially created privacy doctrine—that have traditionally been offered in opposition to these identification practices.

Part III introduces an alternative paradigm, grounded in the theoretical and common law definitions of property, for considering DNA sampling and sample retention. This paradigm identifies the sample as the complete physical specimen that is withdrawn from an individual and that contains a wealth of information about genetic predispositions. It further distinguishes this physical sample from the resulting profile, which is created by scientists and consists merely of a numerical code representing the molecular sequence of the physical sample. Part III establishes this distinction between a DNA sample and a DNA profile as indispensable to the recognition of a DNA sample as the property of the individual from whom it was extracted. Finally, Part IV invokes this new paradigm as the basis for Fifth and Fourteenth Amendment arguments that better serve to protect the rights of innocent individuals whose DNA is collected and retained.

I. DNA AND ITS APPLICATION IN LAW ENFORCEMENT

In the half-century since the discovery of DNA, state and federal law enforcement agencies have come to rely on genetic information as a central component of their investigative and prosecutorial

of discrimination in premium pricing based on genetic information, nor does it do anything to protect people who purchase individual policies instead of group plans. Pagnattaro, *supra*, at 167. Finally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000e–2000e-17, may achieve some success at prohibiting genetic discrimination; however, it only applies when the disparate genetic impact involves “race, color, religion, sex, or national origin,” *id.* § 2000e-2(a).

duties.²² By gathering DNA samples from criminal perpetrators and potential suspects, investigators can utilize elaborate matching techniques and systems to determine the probability that any one individual is responsible for committing a crime.²³ Once a perpetrator is positively identified, however, police may remain in possession of the DNA samples given by exonerated individuals.²⁴ Sample retention is problematic not only because of these individuals' innocence, but also because of the resulting availability of sensitive genetic information and the lack of legislative and jurisprudential protections guarding release of the information.²⁵ The following Sections provide a succinct review of the biological foundations of DNA and discuss DNA's relevance to law enforcement investigation and prosecution.

A. *DNA: A Foundational Review of Human Genetic Material*

In 1953, James D. Watson and Francis H.C. Crick made public their research concerning the structure of DNA.²⁶ Their discovery would permanently and irrefutably alter the international approach to criminal investigation and prosecution.²⁷

The significance of DNA in effective law enforcement stems both from its widespread availability and from its capacity as a unique identifier of individuals. With the exception of red blood cells, all of the ten trillion cells in the human body²⁸ contain an individual's genetic information in the form of DNA.²⁹ A single DNA strand is composed of four types of nucleotide bases: adenine, cytosine, thymine, and guanine.³⁰ The oft-conceptualized twisting double helix results when a nucleotide base on one DNA strand bonds with a

22. See *supra* note 5 and accompanying text.

23. See *infra* notes 43–65 and accompanying text.

24. See *supra* note 17 and accompanying text.

25. See *supra* notes 18–21 and accompanying text.

26. James D. Watson & Francis H.C. Crick, *Molecular Structure of Nucleic Acids*, 171 NATURE 737, 737 (1953).

27. See *People v. Wesley*, 533 N.Y.S.2d 643, 644 (Sup. Ct. 1988) (recognizing the significance of DNA fingerprinting in successful prosecutions); Imwinkelried & Kaye, *supra* note 8, at 413 (“DNA typing has had a major impact on the criminal justice system.”); Kaye, *supra* note 1, at 457 (noting that the United Kingdom and most continental European countries maintain DNA databases for use in criminal prosecutions).

28. Randolph M. Nesse & George C. Williams, *Evolution and the Origins of Disease*, SCI. AM., Nov. 1998, at 86, 86.

29. Richard A. Nakashima, *DNA Evidence in Criminal Trials: A Defense Attorney's Primer*, 74 NEB. L. REV. 444, 445 n.1 (1995).

30. *Id.* at 445.

corresponding base on a second strand, creating multiple base pairs and forming a ladderlike structure that coils back upon itself.³¹ It is this DNA double helix that is contained in each chromosome³² in the nucleus of human cells,³³ enabling DNA replication within the confines of those cells.³⁴

Greater than 99 percent of DNA is identical among humans and is responsible for the basic human form.³⁵ The remaining base pairs, however, are unique to each individual and account for the physical differences among people.³⁶ It is these individually varying regions, known as polymorphic loci, that are used in DNA profiling and identification techniques.³⁷ If the loci are identical in two known samples, scientists can determine the probability that the samples came from the same individual based on the polymorphism's frequency of occurrence in the general population.³⁸

B. The Relevance of DNA in the Law Enforcement Context

DNA profiling and identification have become fundamental techniques in law enforcement investigation and prosecution. The effective matching of samples from potential suspects and criminal perpetrators necessitates a four-stage process. First, DNA must be collected at the scene of a crime and subsequently analyzed.³⁹ Second, law enforcement agencies must select individuals from whom to collect DNA and obtain such samples for comparison with the crime scene DNA.⁴⁰ Third, the samples obtained from these individuals must be analyzed, and the resulting profiles must be organized in a

31. *Id.*

32. *Id.*

33. JAMES L. GOULD & WILLIAM T. KEETON, *BIOLOGICAL SCIENCE* 121–22 (6th ed. 1996).

34. T.H. Milby, *The New Biology and the Question of Personhood: Implications for Abortion*, 9 *AM. J.L. & MED.* 31, 34 (1983).

35. Sue Rosenthal, Note, *My Brother's Keeper: A Challenge to the Probative Value of DNA Fingerprinting*, 23 *AM. J. CRIM. L.* 195, 198 (1995).

36. Nakashima, *supra* note 29, at 446.

37. *Id.*

38. Veronica Valdivieso, Note, *DNA Warrants: A Panacea for Old, Cold Rape Cases?*, 90 *GEO. L.J.* 1009, 1014 (2002); *see id.* (noting that a match between samples indicates that the suspect is potentially the individual who left the DNA at the crime scene).

39. Paul E. Tracy & Vincent Morgan, *Big Brother and His Science Kit: DNA Databases for 21st Century Crime Control?*, 90 *J. CRIM. L. & CRIMINOLOGY* 635, 649 (2000).

40. D.H. Kaye & Michael E. Smith, *DNA Identification Databases: Legality, Legitimacy, and the Case for Population-Wide Coverage*, 2003 *WIS. L. REV.* 413, 414.

manner conducive to ascertaining a match.⁴¹ Finally, government agencies and officials must decide whether to retain or destroy the original DNA samples.⁴² This Section elaborates on each of these four stages, providing a framework for the subsequent discussion of the constitutional issues implicated in the process.

1. *Gathering Samples: Procuring DNA from Perpetrators and Potential Suspects.* The nature of DNA is such that criminal perpetrators will likely leave genetic material at the scenes of their crimes.⁴³ During a crime scene investigation, forensic technicians and specialists collect such genetic evidence.⁴⁴ Even the most significant amounts of acquired DNA, however, would be of no import without comparison samples from potential suspects.

Law enforcement agencies typically employ one of four approaches in identifying a population of potential suspects from whom they will collect DNA. Traditionally, state statutes have provided for DNA collection from all individuals convicted of violent crimes.⁴⁵ In recent years, many states have statutorily expanded their collection parameters; several states now allow for acquisition from individuals convicted of nonviolent felonies and misdemeanors, and some states permit collection from people merely arrested for crimes.⁴⁶ When an individual has been arrested for or convicted of a crime, sample collection is constitutional under the Fourth Amendment Search and Seizure Clause.⁴⁷

Under pressure to combat crime, police departments have begun implementing a fourth form of sampling—DNA dragnets.⁴⁸ Dragnets

41. Kaye, *supra* note 1, at 461.

42. See Christopher L. Blakesley, *La Preuve Pénale et Tests Génétiques United States Report*, 46 AM. J. COMP. L. 605, 610 (Supp. 1998) (“Federal law fails to address the procedure for disposition of the DNA samples themselves.”).

43. See Imwinkelried & Kaye, *supra* note 8, at 436–37 (discussing the range of ways in which DNA can be shed by an individual).

44. Tracy & Morgan, *supra* note 39, at 649.

45. See, e.g., COLO. REV. STAT. §§ 16-11-102.3 (2003); VT. STAT. ANN. tit. 20, § 1933 (2000); see also David H. Kaye, *Two Fallacies About DNA Data Banks for Law Enforcement*, 67 BROOK. L. REV. 179, 180 (2001).

46. Kaye, *supra* note 45, at 180–81.

47. See *Rise v. Oregon*, 59 F.3d 1556, 1559–60 (9th Cir. 1995) (holding that the procurement of genetic information from a convicted felon constituted only a minimal intrusion on his Fourth Amendment rights); Imwinkelried & Kaye, *supra* note 8, at 419 (“[I]f a person is legitimately under arrest, the seizure of the person is justified . . .”).

48. Drobner, *supra* note 14, at 479.

“are essentially warrantless searches administered *en masse* to large numbers of persons whose only known connection with a given crime is that authorities suspect that a particular class of individuals may have had the opportunity to commit it.”⁴⁹ Because dragnets typically proceed with the consent of the individuals from whom DNA is procured, dragnets do not implicate the Fourth Amendment.⁵⁰ Should an individual refuse to participate in a dragnet, police may comply with the Fourth Amendment by obtaining a warrant requiring sample donation based on the individual’s refusal to cooperate.⁵¹

The samples, whether acquired voluntarily or mandated on the grounds of reasonable suspicion, are procured in noninvasive ways. Most commonly, authorities use buccal swabbing, a procedure in which the inside of a suspect’s cheek is briefly and painlessly brushed with cotton.⁵² Sample procurement, however, is merely the beginning of the analysis. Once the cellular material is obtained, the DNA must be extracted from the sample.⁵³ The isolated DNA is then converted into a DNA “profile” or “fingerprint” for use by law enforcement in the matching process.⁵⁴

2. *Striking a Match: The Technical and Organizational Systems Enabling Profile Comparison.* The matching process depends only on the existence of a DNA profile and not on the retention of the physical sample.⁵⁵ A DNA sample is the physical specimen withdrawn from the cells of an individual, whereas a profile is merely a numerical code—created by scientists analyzing the sample—that represents the molecular sequence in the physical DNA.⁵⁶ Only the

49. *Id.* at 479–80.

50. Imwinkelried & Kaye, *supra* note 8, at 444.

51. *See With Suspect Caught, Task Force Wrestles with DNA Samples: More Than 1,000 Swabs Taken from Men*, SHREVEPORT TIMES, June 2, 2003, at 3B (explaining that one man who refused to volunteer a genetic sample requested during a dragnet was later ordered to submit to testing).

52. *Id.*

53. Nakashima, *supra* note 29, at 447. DNA sample analysis typically is completed through one of two processes: Restriction Fragment Length Polymorphism (RFLP) analysis or Polymerase Chain Reaction (PCR) amplification. *Id.* For an in-depth discussion of these methods, see *id.* at 447–50.

54. Drobner, *supra* note 14, at 483.

55. *Id.*

56. *See* Nakashima, *supra* note 29, 447–50 (discussing the process of extracting DNA from a cellular sample and converting that sample into a DNA profile).

DNA sample contains information sufficient to discern complex and comprehensive information about an individual.⁵⁷

DNA samples may reveal private information regarding familial lineage and predisposition to over four thousand types of genetic conditions and diseases; they may also identify genetic markers for traits including aggression, sexual orientation, substance addiction, and criminal tendencies.⁵⁸ In contrast, as a simple series of numbers,⁵⁹ a DNA profile serves only identification purposes and can in no way indicate information concerning an individual's personal traits.⁶⁰

A DNA profile would be an investigative tool with little intrinsic value in the absence of a system to catalog and compare profiles. Earning the gratitude of law enforcement agencies, state and federal legislatures foresaw and addressed the need for an overarching profile organizational system. All fifty states have passed legislative provisions authorizing the use of DNA databases to store the genetic profiles of convicted criminals.⁶¹ To complement these statutes,

57. Jonathan Kimmelman, *Risking Ethical Insolvency: A Survey of Trends in Criminal DNA Databanking*, 28 J.L. MED. & ETHICS 209, 209 (2000).

58. *Id.* at 209, 212.

59. Kaye & Smith, *supra* note 40, at 431.

60. *Id.*

61. ALA. CODE § 36-18-24 (2001); ALASKA STAT. § 44.41.035 (Michie 2002); ARIZ. REV. STAT. ANN. § 13-4438 (West 2001); ARK. CODE ANN. § 12-12-1105 (Michie 2003); CAL. PENAL CODE § 295 (West 1999); COLO. REV. STAT. § 16-11-102.3 (2003); CONN. GEN. STAT. ANN. § 54-102g (West 2001); DEL. CODE ANN. tit. 29, § 4713 (2003); FLA. STAT. ANN. § 943.325 (West 2001); GA. CODE ANN. § 24-4-60 (1995 & Supp. 2004); HAW. REV. STAT. ANN. § 706-603 (Michie 2003); IDAHO CODE § 19-5501 (Michie 1997); 730 ILL. COMP. STAT. ANN. 5/5-4-3 (West 1997 & Supp. 2004); IND. CODE ANN. § 10-13-6-1 (Michie 2003); IOWA CODE ANN. § 13.10 (West 2000 & Supp. 2004); KAN. STAT. ANN. § 21-2511 (1995 & Supp. 2003); KY. REV. STAT. ANN. § 17.170 (Banks-Baldwin 2004); LA. REV. STAT. ANN. § 15:605 (West Supp. 2004); ME. REV. STAT. ANN. tit. 25, § 1571 (West Supp. 2003); MD. CODE ANN., PUBLIC SAFETY § 2-502 (2003); MASS. ANN. LAWS ch. 22E, § 2 (Law. Co-op. 2003); MICH. COMP. LAWS ANN. § 28.171 (West Supp. 2004); MINN. STAT. ANN. § 299C.155 (West 1999); MISS. CODE ANN. § 45-3337 (2000 & Supp. 2003); MO. ANN. STAT. § 650.050 (West 2002); MONT. CODE ANN. § 44-6-102 (2003); NEB. REV. STAT. ANN. § 29-4104 (Michie 2003); NEV. REV. STAT. ANN. 176.0913 (Michie 2001 & Supp. 2003); N.H. REV. STAT. ANN. § 651-C:2 (Supp. 2003); N.J. STAT. ANN. § 53:1-20.18 (West 2001); N.M. STAT. ANN. § 29-16-4 (Michie 2001); N.Y. EXEC. LAW § 995-c (McKinney 1996 & Supp. 2004); N.C. GEN. STAT. § 15A-266.4 (2000 & Supp. 2003); N.D. CENT. CODE § 31-13-05 (1996 & Supp. 2003); OHIO REV. CODE ANN. § 2901.07 (West 1997 & Supp. 2004); OKLA. STAT. ANN. tit. 74, § 150.27 (West 2002); OR. REV. STAT. § 137.076 (2003); 42 PA. CONS. STAT. ANN. § 4702 (West 2004); R.I. GEN. LAWS § 12-1.5-4 (2002); S.C. CODE ANN. § 23-3-610 (Law. Co-op. Supp. 2003); S.D. CODIFIED LAWS § 23-5A-12 (Michie Supp. 2003); TENN. CODE ANN. § 40-35-321 (2003); TEX. GOV'T CODE ANN. § 411.142 (Vernon 1998 & Supp. 2004); UTAH CODE ANN. § 53-10-404 (2002 & Supp. 2003); VT. STAT. ANN. tit. 20, § 1936 (2000); VA. CODE ANN. § 19.2-310.2 (Michie 2000 & Supp. 2003); WASH. REV. CODE ANN. §

Congress enacted the DNA Identification Act in 1994.⁶² The Act authorized the Federal Bureau of Investigation (FBI) to create a federal system for sharing profile information contained in state databases and provided states up to \$40 million to create or improve their own databases.⁶³ The FBI responded promptly, implementing the National DNA Index System, a national database in which state and local law enforcement agencies can include DNA profiles.⁶⁴ The multilevel system of local, state, and national databases, which facilitates information sharing and matching across department lines, constitutes the Combined DNA Index System (CODIS).⁶⁵

3. *After the Match: Determining the Future of the DNA Sample.*

The final step in the DNA identification and matching process is the decision to retain or destroy an original DNA sample.⁶⁶ Many legislatures have enacted statutes regulating sample retention.⁶⁷ Twenty-nine states currently authorize or require agencies to retain tissue samples after profiling is completed.⁶⁸ In contrast, only five states mandate that officials automatically eliminate innocent individuals' samples from state databanks.⁶⁹ At least eleven states

43.43.754 (West 1998 & Supp. 2004); W. VA. CODE ANN. § 15-2B-4 (Michie 2000); WIS. STAT. ANN. § 165.77 (West 1997 & Supp. 2003); WYO. STAT. ANN. § 7-19-402 (Michie 2003).

62. DNA Identification Act of 1994, Pub. L. No. 103-322, 108 Stat. 2069 (1994) (codified at 42 U.S.C. § 14,132 (2000)).

63. Kimmelman, *supra* note 57, at 210. The Act also created quality assurance standards for participating laboratories and established penalties for the unauthorized disclosure of database information. 42 U.S.C. § 3796kk-2 (2000).

64. Press Release, Federal Bureau of Investigation, National DNA Index System Reaches 1,000,000 Profiles, at <http://www.fbi.gov/pressrel/pressrel02/ndis061402.htm> (June 14, 2002) (on file with the *Duke Law Journal*).

65. Kaye, *supra* note 1, at 462.

66. See Blakesley, *supra* note 42, at 610 (noting that procedures for sample disposition are governed by state law).

67. Kimmelman, *supra* note 57, at 211.

68. *Id.*; see, e.g., ALA. CODE § 36-18-20 (2001); CONN. GEN. STAT. ANN. § 54-102g (West 2001 & Supp. 2004); IDAHO CODE § 19-5505 (Michie 1997 & Supp. 2003); MASS. ANN. LAWS ch. 22E, § 3 (Law. Co-op. 2003 & Supp. 2004); N.M. STAT. ANN. § 29-16-4 (Michie 2001 & Supp. 2003); OR. REV. STAT. § 181.085 (2003); S.C. CODE ANN. § 23-3-640 (Law. Co-op. Supp. 2003); WASH. REV. CODE ANN. § 43.43.7532 (West Supp. 2004). For a chart containing databank policies by state, see Kimmelman, *supra* note 57, at 218–20.

69. Kimmelman, *supra* note 57, at 211; see ALASKA STAT. § 44.41.035 (Michie 2002); CAL. PENAL CODE § 299 (West 1999 & Supp. 2004); MONT. CODE ANN. § 44-6-107 (2003); N.Y. EXEC. LAW § 995-c (McKinney 1996 & Supp. 2004); VT. STAT. ANN. tit. 20 § 1940 (2000).

have no policy on sample retention.⁷⁰ The dearth of statutory guidance in these states, and the statutory acceptance or requirement of retention in the majority of the remaining jurisdictions, suggest that DNA sample retention is far from rare.

States' decisions to retain the samples of innocent individuals have generated much concern among proponents of individual rights⁷¹ and have produced lawsuits from innocent individuals whose DNA was obtained through dragnets. Of the more than twenty-four innocent men who have sued for the return of their DNA samples, only one has been successful.⁷² Although the constitutionality of retaining samples from *any* individual may be at issue, the retention of a sample belonging to an innocent individual, particularly one who was neither arrested nor the focus of individualized suspicion, merits unique consideration. This precise situation invites a depth of constitutional analysis not implicated by the retention of samples procured from convicted, arrested, or suspected individuals.⁷³ In its scope, this Note focuses on the issues unique to the retention of samples obtained from innocent individuals targeted through dragnets.

II. FOURTH AMENDMENT PRIVACY ANALYSES FAIL TO PROVIDE ADEQUATE PROTECTION

The Fourth Amendment historically provides an implicit right to privacy that, at first blush, might appear sufficient to prevent the retention of innocent individuals' DNA samples. Nonetheless, although DNA sample collection has traditionally survived judicial review, the constitutionality of sample retention implicates a distinct analysis and has yet to encounter substantial challenge. Recent

70. See Kimmelman, *supra* note 57, at 211 (noting that only thirty-nine states have codified retention policies for DNA samples from innocent individuals and providing information on the policies of thirty-four of those jurisdictions).

71. Jane Black, *Whose DNA Is It Anyway?: Asking Convicted Felons to Surrender Their Genetic Privacy Is One Thing. Making the Same Demand of Innocent People Goes Way Too Far*, BUS. WK. ONLINE, June 26, 2003, at http://www.businessweek.com/technology/content/jun2003/tc20030626_6947_tc073.htm (on file with the *Duke Law Journal*).

72. Willing, *supra* note 17.

73. See *Rise v. Oregon*, 59 F.3d 1556, 1559–60 (9th Cir. 1995) (noting that convicted individuals have lessened privacy expectations with respect to DNA sampling). For a discussion of the diminished Fourth Amendment expectations and rights of individuals suspected of or arrested for crimes, see Kaye & Smith, *supra* note 40, at 424, and Imwinkelried & Kaye, *supra* note 8, at 419.

judicial decisions, however, suggest that the Fourth Amendment will prove inadequate to guard against DNA sample retention.

A. *DNA Sample Collection under the Fourth Amendment*

Individuals concerned with the constitutionality of DNA sampling have historically predicated their arguments on the judicially created doctrine of privacy.⁷⁴ Although the Constitution does not explicitly grant a right to privacy, intrusions upon an individual's "right to be let alone" implicitly violate the Fourth Amendment.⁷⁵ Recent jurisprudence has strengthened the connection between the Fourth Amendment and citizens' rights to privacy,⁷⁶ rendering privacy the Fourth Amendment's "core value."⁷⁷

The Search and Seizure Clause of the Fourth Amendment provides that "[t]he right of the people to be secure in their persons . . . against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause."⁷⁸ When an individual has been convicted of, or arrested for, a crime, sample collection is constitutional under the Clause.⁷⁹ The use of large-scale DNA dragnets also survives constitutional review because, "[a]s a legal matter, police may ask anyone to give DNA and, as long as they do not engage in coercion or misrepresentation, the police may collect voluntary samples for analysis."⁸⁰ An individual's refusal to submit to dragnet-based testing may arouse heightened suspicion, which may be sufficient to judicially compel the individual to provide a sample.⁸¹

74. See, e.g., Drobner, *supra* note 14, at 510 (explaining that the collection of DNA samples requires Fourth Amendment analyses because it implicates privacy interests); Rothstein & Carnahan, *supra* note 2, at 153 (noting that the constitutionality of DNA databanks rests on Fourth Amendment privacy doctrine).

75. *Olmstead v. United States*, 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting).

76. Scott E. Sundby, "Everyman's Fourth Amendment: Privacy or Mutual Trust Between Government and Citizen?", 94 COLUM. L. REV. 1751, 1756 (1994).

77. *Id.*

78. U.S. CONST. amend. IV.

79. See *Rise v. Oregon*, 59 F.3d 1556, 1559–60 (9th Cir. 1995) (holding that the collection of DNA from a convicted felon did not violate his Fourth Amendment rights); Imwinkelried & Kaye, *supra* note 8, at 419 (noting that the seizure of an arrested individual is per se justified).

80. Imwinkelried & Kaye, *supra* note 8, at 445.

81. See Drobner, *supra* note 14, at 508 ("[P]olice have indicated that anyone refusing to yield a DNA sample will likely be under heightened suspicion."); see also Imwinkelried & Kaye, *supra* note 8, at 423–24 ("If a person can be compelled to submit to fingerprinting on reasonable

When individuals subjected to police dragnets submit samples voluntarily or by proper court order, the Fourth Amendment is not implicated. However, only a rote and cursory analysis would lead to the conclusion that the subsequent retention of the samples is similarly allowed under Fourth Amendment privacy rationales. Such an overly deferential approach is unwarranted in light of the Court's Fourth Amendment jurisprudence.

In determining whether the constitutionality of DNA sample retention flows directly from the constitutionality of DNA sample procurement, the cornerstone inquiry is the scope of the initial consent or court order. The parameters of that consent or order dictate whether a second, independent Fourth Amendment analysis must be applied to DNA sample retention.

Although the Court has not addressed the relationship of sample procurement to sample retention, it has expressly recognized that the initial procurement of a biological sample and the subsequent analysis of the sample are two conceptually distinct events necessitating independent Fourth Amendment analyses.⁸² By analogy, the initial procurement of a DNA sample for use in solving a specific crime is an event conceptually and temporally distinct from the retention of the DNA sample for future analysis related to a different crime. Because the initial procurement and the retention for later analysis are distinct processes, a consent or court order relating to the initial acquisition cannot extend to the retention of the sample. Therefore, unless a court order or instrument of consent explicitly provides for sample retention⁸³—as opposed to the retention of the DNA profile—sample retention must survive an independent Fourth Amendment privacy analysis. As discussed in the following Section, recent trends in

suspicion rather than probable cause, he or she can be required to submit to DNA sampling on the same showing.”).

82. See *Skinner v. Ry. Labor Executives' Ass'n*, 489 U.S. 602, 616, 618 (1989) (noting that the “ensuing chemical analysis of the sample to obtain physiological data is a further invasion of . . . privacy interests,” and holding that “the collection and subsequent analysis of the requisite biological samples must be deemed Fourth Amendment searches”).

83. It is arguable whether individuals could give fully informed consent for long-term or permanent DNA sample retention. When individuals consent to the future use of biological materials, they are necessarily prevented from providing fully informed consent; consistent with advancing scientific technology, the specimens may assume a purpose at the time of sample utilization that was not, and could not possibly have been, contemplated at the time of sample procurement. Ken M. Gatter, *Genetic Information and the Importance of Context: Implications for the Social Meaning of Genetic Information and Individual Identity*, 47 ST. LOUIS U. L.J. 423, 445–46 (2003).

Fourth Amendment jurisprudence indicate that even an independent privacy analysis fails to prohibit sample retention.

B. The Fourth Amendment Fails to Guard against the Retention of Innocents' Samples

It is increasingly evident that Fourth Amendment protections are insufficient to guard against the retention of innocent individuals' DNA samples obtained not on the basis of individualized suspicion but through DNA dragnets.⁸⁴ The judicial "skepticism of constitutional privacy claims is especially apparent where the challenged government intrusion is not the classic police-criminal suspect encounter but involves planned government intrusions without individualized suspicion."⁸⁵

For two distinct reasons, the Court's current approach to Fourth Amendment analysis is likely insufficient to recognize a constitutional violation in the retention of an innocent individual's DNA sample. First, individuals' privacy interests in genetic material have been eradicated by recent scientific advances that enhance the public availability of their DNA; accordingly, the government need no longer provide a sufficient interest to render constitutional the seizure of a DNA sample. Second, the Court's jurisprudence indicates that cellular samples obtained in non-law enforcement contexts appropriately may be relegated to subsequent investigative usage.

1. *Recent Jurisprudence Tips the Scales in Favor of the Government's Interests.* Under the Court's recent Fourth Amendment jurisprudence, the constitutionality of a search and seizure turns on whether an individual has a "reasonable expectation of privacy" with respect to a particular item and, if so, whether the government's interests outweigh the privacy intrusion.⁸⁶ A reasonable expectation

84. See Sundby, *supra* note 76, at 1754 (arguing generally that the protections granted under the Fourth Amendment, particularly "the right to be let alone," no longer serve adequately to limit government intrusion); see also Harold J. Krent, *Of Diaries and Data Banks: Use Restrictions Under the Fourth Amendment*, 74 TEX. L. REV. 49, 49 (1995) ("The Supreme Court has dramatically curtailed protection for individual privacy under the Fourth Amendment. Contemporary decisions have restricted the warrant requirement, eased the government's burden of justifying searches and seizures, narrowed the definition of both searches and seizures, and constrained the ability of individuals to challenge government searches." (footnotes omitted)).

85. Sundby, *supra* note 76, at 1764.

86. *Id.* at 1760.

of privacy vests when an individual has no expectation that others will have access to the individual's person or possessions.⁸⁷ In recent years, however, academics have expressed concern that this standard is becoming virtually obsolete:

To maintain privacy, one must not write any checks nor make any phone calls. It would be unwise to engage in conversation with any other person, or to walk, even on private property, outside one's house. . . . Upon retiring inside, be sure to pull the shades together tightly so that no crack exists and to converse only in quiet tones. When discarding letters or other delicate materials, do so only after a thorough shredding of the documents. . . .⁸⁸

Advances in science have rendered DNA ostensibly indiscriminate from such "delicate materials" discarded in public places. DNA is present on any item touched by an individual; it exists in hair, which is shed in public, and in saliva, such that it may be gathered from any used cup, straw, or spoon.⁸⁹ The public nature of DNA belies and discredits the expectation that it should remain solely within the access of the individual in whose body it originated.⁹⁰ Thus, the traditional inquiry defining a "reasonable expectation of privacy" is almost wholly defeated by the unique nature of DNA.

Under current Fourth Amendment doctrine, "minimizing the level of the privacy intrusion can help compensate for a weaker government justification."⁹¹ When the reasonable expectation of privacy is altogether eradicated, the government's interest ceases to be a significant factor in the constitutionality of a search and seizure.⁹² Thus, just as law enforcement's storage of fingerprints survives Fourth Amendment analysis because "fingerprints are an identifying

87. *See id.* at 1760–61 (noting that because the Court analyzes issues, such as whether bank and phone records should be kept private, by addressing individuals' expectations of whether others will see and use their records, Fourth Amendment protections will decline as expectations of privacy fade).

88. *Id.* at 1789–90.

89. Imwinkelried & Kaye, *supra* note 8, at 436–37; Saltus, *supra* note 3.

90. *See* Panel Discussion, *The Human Genome Project, DNA Science and the Law: The American Legal System's Response to Breakthroughs in Genetic Science*, 51 AM. U. L. REV. 401, 409–10 (2002) (remarks of Professor David Kaye) (noting that police have convicted individuals using DNA evidence extracted from saliva left on drinking straws).

91. Sundby, *supra* note 76, at 1762.

92. *See id.* at 1760 (explaining that the government's interest is implicated only if an individual has a "reasonable expectation of privacy" with regard to an item).

factor readily available to the world at large,”⁹³ so too will the retention of DNA survive constitutional analysis.

2. *Transitioning Uses: The Fourth Amendment Allows Law Enforcement to Obtain Cellular Samples from Other Sources.* The second manner in which the Court’s Fourth Amendment jurisprudence fails to protect adequately an innocent individual’s DNA sample is evidenced by recent opinions suggesting that law enforcement could permissibly analyze and retain cellular samples obtained outside the criminal justice context. An analogy to fingerprinting again proves instructive: law enforcement may assimilate into its files, without violating the constitutional rights of fingerprinted individuals, fingerprints obtained in a noncriminal context.⁹⁴ Similarly, law enforcement could integrate DNA samples from an individual’s medical records into criminal identification files.⁹⁵

In 1976, Justice Powell provided the constitutional groundwork for such a maneuver:

This Court has held repeatedly that the Fourth Amendment does not prohibit the obtaining of information revealed to a third party and conveyed by him to Government authorities, even if the information is revealed on the assumption that it will be used only for a limited purpose and the confidence placed in the third party will not be betrayed.⁹⁶

Lower courts have applied Justice Powell’s analysis to the acquisition of biological samples.⁹⁷ “The majority view is that if a private hospital

93. *Palmer v. State*, 679 N.E.2d 887, 891 (Ind. 1997).

94. *Thom v. N.Y. Stock Exch.*, 306 F. Supp. 1002, 1011 (S.D.N.Y. 1969), *aff’d sub nom.*, *Miller v. N.Y. Stock Exch.*, 425 F.2d 1074 (2d Cir. 1970) (clarifying that *Davis v. Mississippi*, 394 U.S. 721 (1969), “does not place any limitations upon the use of fingerprints properly obtained”).

95. See *Imwinkelried & Kaye*, *supra* note 8, at 433–34 (discussing courts’ willingness to allow private medical centers to surrender samples to government authorities); *cf.* *United States v. Miller*, 425 U.S. 435, 443 (1976) (permitting banks to convey voluntarily provided financial information to law enforcement authorities).

96. *Miller*, 425 U.S. at 443; *see id.* (declining to recognize a violation of the Fourth Amendment when a bank surrendered copies of the defendant’s bank records, checks, and deposit slips because the defendant did not own these records and because they contained information that he had provided to the bank voluntarily).

97. *Imwinkelried & Kaye*, *supra* note 8, at 431. *But see* *Ferguson v. City of Charleston*, 532 U.S. 67, 86 (2001) (holding that a public hospital’s surrender of test data to law enforcement was a violation of the Fourth Amendment). *Ferguson*, however, is a narrow decision, dealing only

or laboratory obtains a biological sample on its own initiative for lawful medical reasons, its subsequent surrender of the sample to the authorities does not violate any constitutionally protected expectation of privacy.”⁹⁸ This view assumes monumental significance upon the recognition that most individuals consent to provide biological samples to hospitals at some point in their lifetimes.⁹⁹

A second source of DNA that may not invite Fourth Amendment protection under the Court’s current analysis is cellular material inadvertently abandoned in public places.

[C]ollecting DNA left in public places entails neither a bodily invasion nor a seizure of the person. It seems clear that, in a public restaurant after a suspect departed, the police could pick up a coffee cup used by the suspect and, consistent with the Fourth Amendment, examine it for fingerprints.¹⁰⁰

Moreover, abandoned DNA samples are necessarily at greater risk for retention; in states without statutorily mandated sample destruction, individual litigation is the only mechanism to prevent sample retention. Yet, individuals who fail to recognize that their DNA has been collected and analyzed will lack sufficient awareness to litigate.

The Court’s probable recognition of a lessened privacy interest in DNA and potential approval of alternative sources for DNA collection and storage demonstrate well the jurisprudential limitations on Fourth Amendment protections. Although traditional Fourth Amendment notions of privacy are manifestly inadequate to require either the destruction or return of DNA samples, an alternative paradigm would assure concerned courts, legislatures, and sample providers that individuals would receive protection. Specifically, the theoretical and common law framework of property

with programs “developed by the police and a public hospital requiring the systematic disclosure of patient records for the ‘primary purpose’ of advancing ‘the general interest in crime control.’” Imwinkelried & Kaye, *supra* note 8, at 435–36 (quoting *Ferguson*, 532 U.S. at 81). If a hospital obtained data as a function of regular hospital procedures, presumably *Miller* would control. *Id.* at 436; *see also* Kaye & Smith, *supra* note 40, at 437 (noting that *Miller* is not easily distinguished from cases involving medical records, including DNA samples contained in tissue repositories).

98. Imwinkelried & Kaye, *supra* note 8, at 433–34.

99. *See* *People v. Perlos*, 462 N.W.2d 310, 324 (Mich. 1990) (Levin, J., dissenting) (“In today’s society, a person has little choice but to undergo medical treatment at a medical facility, generally licensed by and authorized to operate by the state.”).

100. Imwinkelried & Kaye, *supra* note 8, at 439.

doctrine provides an appropriate sanctuary for individual rights by constructing an analytical foundation sufficient to prevent the retention of an innocent individual's DNA sample.

III. PROTECTING INNOCENTS UNDER PROPERTY DOCTRINE: TOWARD A RECOGNITION OF PROPERTY RIGHTS IN EXTRACTED DNA

Neither America's forefathers nor its current elected representatives have enacted provisions that expressly recognize a property right in one's physical person. In light of recent biotechnological advances, however, this approach proves increasingly anachronistic. Rather, a judicially or legislatively created proprietary interest in genetic materials—even one limited to samples obtained from innocent individuals in a law enforcement context—is the only paradigm that provides a sufficient conceptual infrastructure for the consideration and protection of genetic material. Moreover, recognizing property rights in DNA samples is consistent with the historical and theoretical underpinnings of property. Finally, the jurisprudential challenges and policy-based concerns animating *Moore v. Regents of the University of California*,¹⁰¹ commonly cited by opponents of a recognized property interest in genetic material, are not implicated in the distinct situation that arises when DNA is procured from an innocent individual for law enforcement purposes.

A. *Recent Technological Advances Challenge Traditional Nonproprietary Notions of the Body*

The Constitution fails to recognize an express property interest in the body or body parts.¹⁰² Similarly, no federal statute governs the individual ownership of genetic material.¹⁰³ Until recently, the absence of recognized property rights was appropriately premised on the notion that the distinct attributes of property were poorly suited to the human body.¹⁰⁴ Underlying this justification was the normative

101. 793 P.2d 479 (Cal. 1990).

102. See Carol A. Schneider et al., *Patenting Life: A View from the Constitution and Beyond*, 24 WHITTIER L. REV. 406, 406 (2002) (noting that the Constitution does not recognize a property interest in genetic material, particularly after that material leaves the human body).

103. *Id.*

104. See Richard Gold, *Owning Our Bodies: An Examination of Property Law and Biotechnology*, 32 SAN DIEGO L. REV. 1167, 1170–71 (1995) (asserting that the attributes of property law are not properly applied to biotechnological discoveries in the human body).

understanding that property rights vest in those items that have economic value.¹⁰⁵

Technological advances, however, are eroding the delicate support for this argument. Currently, the law permits the sale or trade of specific classes of body parts on the open market.¹⁰⁶ Biotechnological and genetic research further commodifies body parts, generating billions of dollars of economic gain from the use of information and materials gleaned from biological laboratory studies.¹⁰⁷ Even the application of DNA identification techniques to law enforcement confers an economic benefit. By increasing the efficiency and efficacy of criminal investigations and prosecutions,¹⁰⁸ the government reduces the associated costs of crime control.

Although the economic value formulation of property rights supports conceptualizing a proprietary interest in DNA, a second ideational framework demonstrates the necessity of a recognized property right. The human form has historically evoked debate over its proper categorization as property or, alternatively, as the subject of privacy rights.¹⁰⁹ In contemporary discussions, however, only the property perspective provides the appropriate context for an informed consideration of genetic material extracted from an individual.

It is precisely the recent enhancements in the usefulness of DNA and in the ability to extract DNA from the human body that render property doctrine the superior framework for analyzing genetic material removed from an individual. So long as a strand of DNA remains within the physical confines of a living body, the DNA and the individual are “indivisible and inextricably intertwined.”¹¹⁰ This

105. *Id.* at 1172–73.

106. See Gloria J. Banks, *Legal & Ethical Safeguards: Protection of Society's Most Vulnerable Participants in a Commercialized Organ Transplantation System*, 21 AM. J.L. & MED. 45, 79 (1995) (noting that existing laws “permit the sale of human blood, semen, and other regenerative body tissue and by-products”).

107. See *Moore v. Regents of the Univ. of Cal.*, 249 Cal. Rptr. 494, 504 (Ct. App. 1988) (“John Moore’s mere cells could become the foundation of a multi-billion dollar industry from which patent holders could reap fortunes.”).

108. See *supra* note 5 and accompanying text.

109. See, e.g., Radhika Rao, *Property, Privacy, and the Human Body*, 80 B.U. L. REV. 359, 363 (2000) (discussing this debate and suggesting that “[t]he law of the body is currently in a state of confusion and chaos”).

110. See *id.* at 364 (noting that privacy theory envisions the body and the person as necessarily fused).

gestalt formulation favors a privacy analysis.¹¹¹ In contrast, DNA extracted from an individual assumes an identity of its own. “[W]hen the human body is fragmented from the person and it becomes possible to disaggregate rights in the body . . . we should employ the property paradigm because it alone possesses the conceptual framework and the vocabulary for allocating rights and responsibilities among all those who share an interest”¹¹²

Not only does a reconsideration of DNA as property prove necessary in light of technological advances, but it also comports with the theoretical infrastructure supporting property rights. Three theories—libertarian or labor, utilitarian, and personality—have dominated the analysis, application, and justification of private property rights.¹¹³

B. The Theoretical Infrastructure Supports a Property Paradigm for Extracted DNA

Applying the labor, utilitarian, and personality theories to an analysis of property rights in a DNA sample demonstrates that the concept of DNA as property is consistent with the theoretical foundations of property. However, more importantly, this analysis is also instructive in determining in whom the property right in DNA vests. An analysis premised on the three theories confirms that a DNA sample—as distinguished from a DNA profile created from the sample—is the property of the individual from whose body it was extracted. Conversely, under the labor and utilitarian theories, the DNA profile constitutes the property of the law enforcement agency that created and cataloged it.

Labor or libertarian theory asserts that property rights inhere in things that individuals create with their own labor.¹¹⁴ Under a labor theory analysis, the critical characteristic of DNA is its ability to replicate within the cells of the body. As the individual’s body is the sole entity responsible for DNA production, the labor theory

111. *See id.* (“[W]hen we seek to preserve the physical integrity of the body without necessarily permitting rights in the human body to be conveyed to others, and when we wish to shield intimate associations but not arms-length transactions, we should adopt the language of privacy rather than that of property.”).

112. *Id.*

113. Patty Gerstenblith, *Identity and Cultural Property: The Protection of Cultural Property in the United States*, 75 B.U. L. REV. 559, 568 (1995).

114. JOHN LOCKE, *Second Treatise of Government*, in TWO TREATISES OF GOVERNMENT para. 27, at 305–06 (Peter Laslett ed., 2d ed. Cambridge Univ. Press 1967) (1690).

postulates that DNA belongs to the body that created it. In contrast, a DNA profile is distinctly a product of the technicians who extracted the DNA from the physical sample and subjected it to the chemical analysis that resulted in the profile.¹¹⁵ The profile should, therefore, be recognized as the property of those technicians or their employers.

The utilitarian theory justifies private property ownership on the premise that society benefits from private, rather than communal, ownership of property.¹¹⁶ This theory implies a two-step analysis that first inquires whether there is societal benefit in use of an item and second questions whether the greatest benefit arises from private or from communal ownership of the item.

Applying this analysis to the use of DNA in a criminal justice setting requires preliminary recognition that both DNA samples, which are necessary for creating profiles, and profiles themselves bestow a benefit on society by enhancing the accuracy and efficiency of law enforcement. Nonetheless, communal ownership of and access to DNA samples and profiles harm society in a manner that private ownership of samples and profiles would avoid. Specifically, communal access to samples renders their genetic information publicly available and, therefore, increases the risk of widespread societal discrimination. Further, communal access to DNA profiles could detrimentally increase traffic on the nation's law enforcement databases, impeding database use by the agencies that confer its societal benefit. The detriment arising from communal access to DNA samples and profiles reduces the net social benefit of their use and, accordingly, suggests that private property interest in both samples and profiles would secure the greatest social benefit.

The paradigm of societal benefit also supports a proprietary distinction between the sample and the profile. Once a profile has been created from a sample, only that profile remains necessary for the DNA matching techniques that benefit society. Moreover, public gain is maximized by vesting private ownership of the profile in the party who can most effectively use it for the public interest; public service agencies, such as law enforcement, comprise the ideal candidates for this role. By contrast, no additional law enforcement benefits derive from the retention of the physical sample.¹¹⁷ Because

115. See Nakashima, *supra* note 29, at 447–50 (discussing the process of DNA analysis).

116. Gerstenblith, *supra* note 113, at 568.

117. See *supra* notes 55–57 and accompanying text (explaining that the profile, and not the sample, is used in law enforcement investigation and prosecution).

retention risks engendering discrimination against individuals who provide samples—by exposing their genetic predispositions to physical disease, mental illness, or criminality¹¹⁸—utilitarian theory counsels the vesting of sample ownership in the individual donors.

Finally, the personality theory posits that personal property is property that is “particularly important to the self-realization and fulfillment of an individual’s personality.”¹¹⁹ Personality theory demands the recognition of DNA property rights and further necessitates the distinction between the rights vested in the sample and those pertaining to the profile. The sample, at the most basic level of abstraction, *is* the “self-realization and fulfillment of an individual’s personality.”¹²⁰ Two distinct rationales require this conclusion. First, the genetic material itself is the sole coding mechanism for the human traits expressed in every individual.¹²¹ Second, the sample, even once extracted, has the potential to impact dramatically an individual’s self-realization. The physical sample contains a wealth of personal, sensitive information,¹²² which, if released, could induce discrimination threatening individuals’ ability to fulfill the dictates of their personality, such as the desire to pursue employment in a particular field.¹²³ Identical arguments do not, however, apply to the DNA profile; as a numerical code, it contains neither the genetic material essential for human development nor the genetic information necessary to engender discrimination. Thus, personality theory’s focus on individual self-realization requires recognizing property rights in samples but does not support a proprietary interest in profiles.

In its effect, personality theory departs significantly from labor and utilitarian approaches. Whereas personality theory recognizes a property right only in the physical sample, labor and utilitarian theories not only support property interests in both the sample and the profile, but also confirm that the property interest in the sample vests in the individual from whom it was extracted while the proprietary right to the profile inheres in the scientists who created it.

118. See *supra* notes 57–58 and accompanying text.

119. Gerstenblith, *supra* note 113, at 568.

120. *Id.*

121. Rosenthal, *supra* note 35, at 198.

122. Kimmelman, *supra* note 57, at 211.

123. See Pagnattaro, *supra* note 21, at 154–55 (noting the potential employment discrimination that might result from the release of sensitive genetic information).

C. *Surviving Judicial and Policy-Based Challenges to the Property Paradigm: Distinguishing Moore v. Regents of the University of California*

Despite the congruity of traditional property theory and the acknowledgment of DNA as property, many scholars continue to assert that common law jurisprudence undermines the recognition of property rights in DNA. A significant number of academics addressing ownership of genetic material predicate their arguments¹²⁴ on the seminal case of *Moore v. Regents of the University of California*.¹²⁵

In *Moore*, the California Supreme Court rejected, *inter alia*, the conversion claim of John Moore, a patient whose cells were used to create a patented cell line.¹²⁶ The court reasoned that any successful conversion claim must arise from Moore's retention of an ownership interest in his cells following their removal from his body.¹²⁷ The court's identification of "several reasons to doubt that he did retain any such interest"¹²⁸ has provided opponents of a recognized property interest in DNA with substantial fodder for their arguments.

Closer analysis, however, reveals that *Moore* is not directly applicable when a DNA sample is procured from an innocent individual for law enforcement purposes. Not only does *Moore* fail to defeat the conceptualization of a DNA sample as property, but the court's analysis of the "reasons to doubt" Moore's ongoing property interest instead reinforces the argument that a DNA sample, in the limited situation addressed in this Note, deserves property right recognition.

1. *Recognizing the Applicability of Favorable Judicial Precedent.* In denying Moore's conversion claim, the court first focused on the absence of judicial decisions holding that an individual's interest in excised cells was sufficient to support a conversion cause of action.¹²⁹

124. E.g., Catherine M. Valerio Barrad, *Genetic Information and Property Theory*, 87 NW. U. L. REV. 1037, 1064–68 (1993); Laura J. Hilmert, *Cloning Human Organs: Potential Sources and Property Implications*, 77 IND. L.J. 363, 375–77 (2002); Rao, *supra* note 109, at 373–75; Michael S. Yesley, *Protecting Genetic Difference*, 13 BERKELEY TECH. L.J. 653, 664 (1998).

125. 793 P.2d 479 (Cal. 1990).

126. *Id.* at 481–82, 493.

127. *Id.* at 489.

128. *Id.*

129. *Id.* at 489 n.28.

The sole case supporting this proposition—cited in the California Court of Appeal decision and discussed in the California Supreme Court’s decision¹³⁰—was *Venner v. State*,¹³¹ decided by the Maryland Court of Special Appeals. The *Venner* court, considering a challenge to the suppression of evidence in a criminal procedure matter, weighed the possibility that the defendants could retain property rights in biological products removed from the body.¹³² In its analysis, the court reasoned that it was “not unknown for a person to assert a continuing right of ownership, dominion, or control, for good reason or for no reason, over such things as excrement, fluid waste, secretions, hair, fingernails, toenails, blood, and organs or other parts of the body.”¹³³ This rationale provided the California Court of Appeal in *Moore* with support for its conclusion that property rights inhere in excised cellular material.¹³⁴

The California Supreme Court, however, declined to adopt the *Venner* reasoning in *Moore*, distinguishing the cases on the ground that *Venner* “involved a criminal-procedure dispute . . . and not a civil dispute over who was entitled to the economic benefit of property.”¹³⁵ Notably, a DNA sample obtained and retained by law enforcement as a function of an investigative dragnet involves, by its nature, “a criminal-procedure dispute” and not merely a debate over the economic value of a sample. The *Moore* decision, therefore, in no way casts doubt on the *Venner* reasoning in a criminal law enforcement context; rather, the *Venner* rationale likely remains sufficient to justify a “continuing right of ownership” over the DNA samples at issue in this Note.

2. *Overcoming Statutory Hurdles to Proprietary Rights.* After addressing the absence of jurisprudence supporting a conversion claim, the *Moore* court next acknowledged that specialized statutes regulating the disposition of a body and its parts provide greater guidance in efforts to decipher ownership of biological materials than

130. *Id.*

131. 354 A.2d 483 (Md. Ct. Spec. App. 1976).

132. *See id.* at 498–99 (holding that law enforcement officers could constitutionally seize a defendant’s abandoned feces for narcotics testing).

133. *Id.* at 498 (footnote omitted).

134. 793 P.2d at 489 n.28.

135. *Id.* The court further noted that the disparate nature of criminal-procedure disputes and civil disputes required the conclusion that the *Venner* opinion was “grounded in markedly different policies” and so had “little relevance” to the *Moore* case. *Id.*

does the law of conversion.¹³⁶ However, the conclusion that statutory regulation of disposition either evidences the absence of a proprietary right or eradicates a property interest is both shortsighted and far-reaching.

Indeed, the very existence of regulatory statutes implies the presence of a proprietary right in biological materials: if individuals possessed no proprietary interest in their biological materials, such statutes would prove superfluous. Furthermore, it cannot reasonably be asserted that laws regulating the use and disposition of material items eradicate a property interest in those items. Much to the contrary, regulation acknowledges a proprietary right and merely limits property use and disposition in an effort to advance a greater societal benefit. Surely, it is not defensible to assert that an individual who possesses title to an automobile, but is constrained by laws prohibiting speeding, has therefore lost property rights in the automobile. With respect to laws governing disposition, it is no more defensible to assert that merchants who purchase alcohol for resale possess no property interest in the purchased product merely because they cannot sell it to minors. By analogy, laws regulating the use or prohibiting the disposition of bodily materials should not be dispositive in a decision to deny property rights in such materials.

Two acts commonly cited in opposition to the recognition of property rights in biological materials are the National Organ Transplant Act (NOTA)¹³⁷ and the Uniform Anatomical Gift Act (UAGA).¹³⁸ Both acts prohibit individuals from selling organs, prompting opponents of biological property rights to argue that these limits on alienation eradicate such property rights. Undermining this claim, however, is the legislative history of at least one of these acts.

136. *Id.* at 489.

137. 42 U.S.C. § 274e (2000); *see, e.g.*, Theodore Silver, *The Case for a Post-Mortem Organ Draft and a Proposed Model Organ Draft Act*, 68 B.U. L. REV. 681, 715 (1988) (explaining that NOTA's restrictions on organ sales preempt a property interest in post-mortem human organs).

138. Unif. Anatomical Gift Act (amended 1987), 8A U.L.A. 17 (2003); *see, e.g.*, Melissa A.W. Stickney, Note, *Property Interests in Cadaverous Organs: Changes to Ohio Anatomical Gift Law and the Erosion of Family Rights*, 17 J.L. & HEALTH 37, 54 (2002) (recognizing Ohio's adoption of the 1987 UAGA's prohibition on the sale of body parts as "[t]he single most important provision curtailing the possibility . . . [of] property rights in . . . body parts"). The original UAGA, promulgated in 1968, was adopted by all fifty states and the District of Columbia by 1973. In 2000, twenty-three states had adopted the 1987 amended version. Leonard H. Bucklin, *Woe unto Those Who Request Consent: Ethical and Legal Considerations in Rejecting a Deceased's Anatomical Gift Because There is No Consent by the Survivors*, 78 N.D. L. REV. 323, 331 (2002).

The animating principle of NOTA was not to expressly define property rights in biological materials, but merely to clarify that “human body parts should not be viewed as commodities.”¹³⁹

Even if UAGA’s and NOTA’s alienation restrictions were sufficient to eradicate a property right in some biological materials, the acts fail to abolish such a right in all biological materials. Instead, the acts grant full rights of alienation for certain cellular products, including sperm cells and plasma-based blood cells.¹⁴⁰ Two rationales justify the distinction between the alienability of these specific cellular products and that of other tissue and organ systems.

First, courts have distinguished between the alienability of regenerative and nonregenerative body parts.¹⁴¹ A decision to donate or sell a regenerative body part does not implicate concerns about a transferor’s physical health, as would the alienation of a nonrenewable organ.¹⁴² Thus, courts and legislatures traditionally have recognized renewable tissues, including hair, blood, and sperm, as property.¹⁴³ DNA is akin to these renewable body parts because it is also capable of replicating without end.¹⁴⁴ A donation or sale of DNA, therefore, does not invite concern about the compromised physical health of an individual from whom DNA was extracted. In fact, DNA is unintentionally shed by every individual in society on a virtually nonstop basis.¹⁴⁵ Furthermore, DNA’s existence in every nucleated cell in the body assures an ever-present supply of DNA for replication throughout the life of an individual.¹⁴⁶ By analogy to hair,

139. S. REP. NO. 98-382, at 16 (1984), *reprinted in* 1984 U.S.C.C.A.N. 3975, 3982.

140. Phillippe Ducor, *The Legal Status of Human Materials*, 44 *DRAKE L. REV.* 195, 254 (1996). The legislative history of NOTA evidences that Congress did not intend the Act to apply to replenishable tissues, such as sperm and blood. H.R. REP. NO. 98-1127, at 16, *reprinted in* 1984 U.S.C.C.A.N. 3989, 3992.

141. Hilmert, *supra* note 124, at 378; *see* Banks, *supra* note 106, at 79 (discussing a proposal that “would expand existing laws, which permit the sale of human blood, semen, and other regenerative body tissue and by-products, to include nonregenerative . . . organs”).

142. Banks, *supra* note 106, at 79.

143. *Id.* at 47; Hilmert, *supra* note 124, at 378; *see* Hecht v. Superior Court, 20 Cal. Rptr. 2d 275 (Ct. App. 1993) (recognizing a property interest in sperm removed from the body); *see also* H.R. REP. NO. 98-1127, at 16 (exempting renewable tissues from the provisions of NOTA).

144. Milby, *supra* note 34, at 34.

145. DNA is deposited when an individual drinks, sneezes, or sheds hair, dandruff, or skin cells. *See* Imwinkelried & Kaye, *supra* note 8, at 437–38 (“The deposition of DNA in public places cannot be avoided unless one is a hermit or is fanatical in using extraordinary containment measures.”); Lombardo, *supra* note 20, at 601 (“A resourceful technician could probably lift DNA from a licked stamp or abrasive doorknob . . .”).

146. Nakashima, *supra* note 29, at 445.

blood, and sperm, the renewable nature of DNA should similarly shelter it from alienability restrictions and support its designation as property.

The second distinction between biological materials that have been statutorily recognized as property and those that have not is premised on the unique functions of certain cells. Courts have provided special property recognition to gametic materials commensurate with their significant role in the creation of human life.¹⁴⁷ DNA serves a similarly necessary and irreplaceable role in the creation of life. With the advent of cloning technologies, particularly somatic cell nuclear transfer procedures, individual pieces of DNA can be used to create new organisms.¹⁴⁸ There is little doubt that these scientific advances will eventually—if only from the perspective of technological certainty—result in the ability to clone humans.¹⁴⁹ Thus, consistent with the special property recognition provided to gametic materials, courts should acknowledge such property rights in DNA samples.

DNA's regenerative ability and its essential role in creating life remove it from the ambit of statutes prohibiting the alienation of biological materials; thus, even if statutory alienability restrictions were per se sufficient to eradicate property rights, the classification of DNA as property would survive such statute-based arguments. Moreover, the general analysis suggesting that property rights are precluded by the very existence of biological regulatory statutes misconceives the nature of regulation and should not undermine a property interest in DNA.

3. *Recognizing the Inherent Personality Attributes of DNA.* The third approach of the California Supreme Court in refusing to acknowledge Moore's property right was to find inapplicable the lower court's argument that property rights in genetic material stem

147. See *Hecht*, 20 Cal. Rptr. 2d at 283 (citing *Davis v. Davis*, 842 S.W.2d 588, 597 (Tenn. 1992)) (holding that an individual's cryogenically preserved sperm were his property); see also *York v. Jones*, 717 F. Supp. 421, 426–27 (E.D. Va. 1989) (recognizing a property interest in a cryopreserved pre-zygote).

148. See Stephanie J. Hong, Note, *And "Cloning" Makes Three: A Constitutional Comparison Between Cloning and Other Assisted Reproductive Technologies*, 26 HASTINGS CONST. L.Q. 741, 746–47 (1999) (describing somatic cell nuclear transfer procedures, in which genetic material is extracted from the cells of an adult and inserted into an unfertilized egg that is then implanted in an adult female for gestation).

149. Kathryn D. Katz, *The Clonal Child: Procreative Liberty and Asexual Reproduction*, 8 ALB. L.J. SCI. & TECH. 1, 3 (1997).

from a “proprietary interest in one’s persona.”¹⁵⁰ In rejecting the lower court’s argument, the California Supreme Court reasoned that the genetic material at issue was not unique to Moore but rather was identical in every person, thereby eradicating any connection between biological material and a proprietary interest in a persona.¹⁵¹

The persona definition of property gathers its animating principles from personality theory, which postulates that personal property comprises those items “particularly important to the self-realization and fulfillment of an individual’s personality.”¹⁵² However, “[o]nly by establishing a connection between the individual and a unique piece of genetic information (and not all genetic information is unique) will there be an impact on identity.”¹⁵³ In contrast to the cell lines at issue in *Moore*, the DNA samples retained by law enforcement do not escape the reach of a personality theory of property. Rather, because DNA, by definition, is unique in all individuals except identical twins,¹⁵⁴ there is necessarily “a connection between the individual and a unique piece of genetic information” that satisfies the *Moore* court’s standard for a proprietary interest in one’s persona.

4. *Comporting with Libertarian Justifications for DNA Property Rights.* Finally, the *Moore* court refused to recognize a property interest in Moore’s biological materials because the patented cell line was “factually and legally distinct” from the cells collected from Moore.¹⁵⁵ The patented cells were “more the product of the work done by the researchers than the raw materials (cells) taken from Moore.”¹⁵⁶

This analysis, which is consistent with a labor theory of property, lacks substance when applied to the retention of DNA samples by law enforcement agencies. Just as the disputed cells in *Moore* necessitated a “distinction between primary cells (cells taken directly from the body) and patented cell lines,”¹⁵⁷ the cellular DNA samples discussed

150. *Moore v. Regents of the Univ. of Cal.*, 793 P.2d 479, 490 (Cal. 1990).

151. *Id.*

152. Gerstenblith, *supra* note 113, at 568; *see also supra* notes 119–20 and accompanying text.

153. Gatter, *supra* note 83, at 458.

154. Nakashima, *supra* note 29, at 446.

155. *Moore*, 793 P.2d at 492.

156. Hilmert, *supra* note 124, at 376.

157. *Moore*, 793 P.2d at 492 n.35.

in this Note require a distinction between primary cells and created DNA profiles. DNA samples are composed only of cells taken directly from the body and, unlike the cell lines in *Moore*, are not “the product of ‘human ingenuity.’”¹⁵⁸ DNA profiles, however, are solely a product of human invention and labor. This distinction not only reinforces the notion of a DNA sample as the property of the individual from whom it is procured, but it also supports the concept that a DNA profile is the product of the law enforcement agency that created it.¹⁵⁹

5. *Employing Legislative Solutions to Policy-Based Problems.* In addition to the four legal arguments discussed above, the *Moore* court provided a significant policy justification for its refusal to recognize an ownership interest in Moore’s cells.¹⁶⁰ “Research on human cells plays a critical role in medical research. . . . The extension of conversion law into this area will hinder research by restricting access to the necessary raw materials.”¹⁶¹ The concern of the *Moore* court is significant; however, it should not eclipse the recognition of property rights in DNA samples retained for law enforcement purposes. There are, instead, less restrictive alternatives that balance the court’s interest in facilitating research with the recognition of a property right in DNA.

One such alternative approach was embodied in a piece of model legislation known as the Genetic Privacy Act (GPA).¹⁶² In 1995, a committee funded by the Ethical, Legal and Social Implications program of the Human Genome Project, the Office of Energy Research, the U.S. Department of Energy, and the Boston University School of Public Health released a proposal for federal legislation that would have dramatically changed the legal landscape concerning property rights in DNA.¹⁶³ The proposed GPA explicitly mandated that DNA remain the property of the individual from whom it was

158. *Id.* at 492 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)).

159. *See supra* notes 114–15 and accompanying text.

160. *Moore*, 793 P.2d at 493.

161. *Id.* at 494.

162. GEORGE J. ANNAS ET AL., *THE GENETIC PRIVACY ACT AND COMMENTARY* (1995), available at <http://www.ornl.gov/hgmis/resource/privacy/privacy1.html>.

163. *Id.*

obtained—so long as the DNA sample was linked to information that identified the individual.¹⁶⁴

Although the GPA was introduced in Congress in 1995,¹⁶⁵ it was never enacted.¹⁶⁶ Nonetheless, it provides an important example of a means by which a DNA property interest could be recognized without imposing a chill on research. Because any DNA used in criminal investigation or prosecution must necessarily be linked to a specific, named individual, a DNA sample retained by law enforcement must remain the property of the individual from whom it was obtained.¹⁶⁷ This conclusion does not, however, retain its veracity in the laboratory setting. Rather, in a research setting, samples could be collected, retained, and tested anonymously.¹⁶⁸ Researchers could even group together samples from a given individual by assigning that individual a fictitious identifier that would not reveal the individual's actual identity. Under the GPA, the anonymous nature of a DNA sample used in research would prevent its classification as the private property of its source. Legislation such as the GPA, therefore, would mitigate the *Moore* court's concern by recognizing property rights in DNA samples obtained for law enforcement without imposing restraints on scientific research.

The preceding analysis of the theoretical, jurisprudential, and policy-based foundations of property supports the recognition of property rights in DNA samples collected for law enforcement purposes. Even if this recognition must be limited specifically to the class of DNA samples at issue in this Note, such recognition remains a substantial victory for those individuals whose DNA samples have been procured for law enforcement purposes. Under the diminishing

164. *Id.* § 104(a); Patricia (Winnie) Roche et al., *The Genetic Privacy Act: A Proposal for National Legislation*, 37 JURIMETRICS J. 1, 4–5 (1996).

165. In 1995, Senator Mark Hatfield of Oregon introduced the Genetic Privacy and Nondiscrimination Act of 1995 in the Senate. S. 1416, 104th Cong. (1995). The Senate subsequently referred it to the Senate Labor and Human Resources Committee. *Id.* Then, on November 29, 1995, Representative Clifford B. Stenness of Florida introduced the same bill in the House of Representatives, which referred the bill to the House Committee on Commerce, Economic and Educational Opportunities, and Government Reform and Oversight. H.R. 2690, 104th Cong. (1995).

166. Ito, *supra* note 6, at 467.

167. See Roche et al., *supra* note 164, at 4–5 (noting that the GPA, which would apply only to genetic samples linked to identifiable individuals, would mandate that DNA remain the property of the individual from whom it was obtained).

168. In the majority of genetic research, DNA samples are not traceable to a specific individual. Schneider et al., *supra* note 102, at 413.

protection of privacy discussed in Part II, this property interest—and the legal rights that arise from its recognition—provide a critical safeguard enabling constitutional protection.

Part IV proceeds with just one example of the manner in which a recognized property interest could, in practice, provide individuals with the protection that they deserve. Additional consideration of the following example—and the range of statutory, common law, and constitutional causes of action arising from the recognized property interest—is warranted.

IV. BY INVOKING A PROPERTY PARADIGM, COURTS CAN UTILIZE THE FIFTH AMENDMENT TO PROTECT AGAINST THE RETENTION OF INNOCENTS' DNA SAMPLES

At a fundamental level, the Fifth Amendment to the Constitution protects citizens' rights to their life, liberty, or property.¹⁶⁹ The Fourteenth Amendment further precludes states from abridging these rights¹⁷⁰ and also incorporates the Takings Clause of the Fifth Amendment, rendering it applicable to the states.¹⁷¹ The scope of this constitutional protection, however, necessarily includes only those items appropriately characterized as life, liberty, or property. Thus, the conclusion reached in Part III of this Note—that the DNA samples at issue herein are the subject of property rights—provides an indispensable foundation for Fifth and Fourteenth Amendment arguments that prohibit the government from retaining the DNA samples of innocent individuals.¹⁷² The Amendments provide these protections through two distinct mechanisms.

First, the Due Process Clauses of the Fifth and Fourteenth Amendments prohibit governments from depriving a citizen of property without providing due process of law.¹⁷³ Second, under the

169. U.S. CONST. amend. V.

170. U.S. CONST. amend. XIV.

171. *Chi., Burlington & Quincy R.R. Co. v. City of Chi.*, 166 U.S. 226, 239 (1897).

172. Arguably, a sample provided consensually cannot constitute an unconstitutional deprivation; however, the consensual provision of a sample does not necessarily extend to consent to retain the sample. *See supra* notes 80–83 and accompanying text. Part IV of this Note assumes that the consent or court order sufficient to procure the initial sample does not extend to the subsequent retention of the sample.

173. U.S. CONST. amend. V; *id.* amend. XIV, § 1.

Fifth Amendment's Takings Clause, "private property [may not] be taken for public use, without just compensation."¹⁷⁴

A. *The Due Process Clause Affords Greater Security to Innocents Desiring Sample Expungement*

The protective duties of the Due Process Clause are binary. Procedural due process is "a guarantee of fair procedure"¹⁷⁵ whereby a state may not "take property without providing appropriate procedural safeguards"¹⁷⁶ to the individual possessing the relevant property interest. In contrast, substantive due process "bars certain arbitrary government actions 'regardless of the fairness of the procedures used to implement them.'"¹⁷⁷

The initial inquiry in a procedural due process analysis seeks to identify a particular government action that causes a deprivation of property.¹⁷⁸ In application, this inquiry requires consideration of three separate issues: whether a party responsible for a deprivation is acting on behalf of a governmental body; whether an item allegedly being deprived is, in fact, property; and whether a deprivation of that item has occurred.

Local, state, and federal law enforcement agencies are, without exception, public bodies created and regulated by governments; thus, the retention of a DNA sample by law enforcement is a government action. That the samples being retained are the property of the individuals from whom they were extracted is demonstrated in Part III. Finally, courts have consistently found deprivations of property when "a government official participated in the physical deprivation of what had concededly been the constitutional plaintiff's property under state law before the deprivation occurred."¹⁷⁹ If a DNA sample

174. *Id.* amend. V.

175. *Daniels v. Williams*, 474 U.S. 327, 337 (1985) (Stevens, J., concurring).

176. *Id.* (Stevens, J., concurring).

177. *Id.* (Stevens, J., concurring) (quoting the majority opinion, 474 U.S. at 331).

178. *Lujan v. G & G Fire Sprinklers, Inc.*, 532 U.S. 189, 195 (2001).

179. *Sniadach v. Family Fin. Corp.*, 395 U.S. 337 (1969) (invalidating a statute allowing wage garnishment without notice or an opportunity for a hearing); Alan R. Madry, *State Action and the Due Process of Self-Help*, 62 U. PITT. L. REV. 1, 19 (2000); *see also* *N. Ga. Finishing, Inc. v. Di-Chem Inc.*, 419 U.S. 601 (1975) (holding unconstitutional a statute that failed to provide for due process in permitting garnishment of a bank account); BERNARD SIEGAN, *PROPERTY AND FREEDOM: THE CONSTITUTION, THE COURTS, AND LAND-USE REGULATIONS* 27 (1997) (noting that a regulation that interferes with the "prerogatives of ownership . . . comes under the prohibition of the due process clause").

is property, a law enforcement agency is a government actor, and the agency physically and permanently removed a sample from an individual, a deprivation has occurred.

The deprivation itself, however, is not the “wrong” targeted by the procedural due process claim. Indeed, “[i]n a procedural due process claim, it is not the deprivation of property or liberty that is unconstitutional; it is the deprivation of property or liberty *without due process of law*—without adequate procedures.”¹⁸⁰ The Court has generally recognized that adequate procedures provide individuals with sufficient notice of a forthcoming deprivation and an opportunity to present their concerns in an effort to prevent the deprivation.¹⁸¹ Although twenty-nine states¹⁸² statutorily approve or mandate sample retention, it is unlikely that the mere existence of such public laws constitutes sufficient notice of deprivation.¹⁸³ Nonetheless, even if such notice were sufficient, there is—in the rather comprehensive literature discussing DNA dragnets—no intimation that individuals targeted by dragnets received an opportunity to oppose the retention of their samples.

The Court has, however, declined to create a *per se* rule that a full evidentiary hearing is required before any deprivation.¹⁸⁴ Rather, the Court determines the exact extent of procedure owed to individuals with a three-part balancing test first enunciated in *Mathews v. Eldridge*:

[I]dentification of the specific dictates of due process generally requires consideration of three distinct factors: First, the private interest that will be affected by the official action; second, the risk of an erroneous deprivation of such interest through the procedures used, and the probable value, if any, of additional or substitute procedural safeguards; and finally, the Government’s interest, including the function involved and the fiscal and administrative

180. *Daniels*, 474 U.S. at 339 (Stevens, J., concurring).

181. *Allen v. Leis*, 154 F. Supp. 2d 1240, 1266 (S.D. Ohio 2001); *see Fuentes v. Shevin*, 407 U.S. 67, 80 (1972) (“For more than a century the central meaning of procedural due process has been clear: ‘Parties whose rights are to be affected are entitled to be heard; and in order that they may enjoy that right they must first be notified.’”)(quoting *Baldwin v. Hale*, 68 U.S. 223, 233 (1864)).

182. *See supra* note 68 and accompanying text.

183. *See Menefee & Son v. Dep’t of Food & Agric.*, 245 Cal. Rptr. 166, 170–71 (Ct. App. 1988) (holding that an agriculture statute mandating crop seizure under certain specified conditions failed to provide sufficient notice of deprivation when such conditions were met and thus did not comport with the requirements of due process).

184. *Mathews v. Eldridge*, 424 U.S. 319, 347–49 (1976).

burdens that the additional or substitute procedural requirement would entail.¹⁸⁵

Applying the tripartite analysis announced in *Mathews*, it becomes evident that the state's retention of DNA samples is constitutionally deserving of greater procedural safeguards. First, the private interest affected by the retention of an innocent individual's DNA sample is significant. Most notably, a sample contains a vast array of personal and sensitive information¹⁸⁶ that could engender discriminatory treatment of an individual.¹⁸⁷ Constitutional jurisprudence has traditionally placed great significance on preventing discrimination based on an individual's immutable traits.¹⁸⁸ Just as an individual's race and gender are immutable,¹⁸⁹ so too is the individual's genetic composition. Indeed, not only is genetic composition, in itself, unalterable, but it also directly determines such traits as race and gender. It follows that courts would recognize the protection of sensitive genetic information as a significant private interest.

Secondly, there is a substantial risk that the privacy interest will be erroneously deprived. In states that have failed to enact laws either mandating or prohibiting sample retention,¹⁹⁰ there exists no definitive standard for determining if or when retention is appropriate. Furthermore, the possibility of wrongful deprivation has been evidenced even in states whose statutes provide explicit guidance. For example, Wisconsin has failed to destroy a single DNA sample and, accordingly, has consistently violated its own law prohibiting sample

185. *Id.* at 335.

186. Kimmelman, *supra* note 57, at 209.

187. Lombardo, *supra* note 20, at 589.

188. See Heather Hodges, Dean v. The District of Columbia: *Goin' to the Chapel and We're Gonna Get Married*, 5 AM. U. J. GENDER & L. 93, 126 (1996) (noting that the Court has conducted more exacting reviews of policies that discriminate on the basis of immutable traits with a "genetic origin"); see also *Frontiero v. Richardson*, 411 U.S. 677, 686 (1973):

[S]ince sex, like race and national origin, is an immutable characteristic determined solely by the accident of birth, the imposition of special disabilities upon the members of a particular sex because of their sex would seem to violate "the basic concept of our system that legal burdens should bear some relationship to individual responsibility."

(quoting *Weber v. Aetna Cas. & Sur. Co.*, 406 U.S. 164, 175 (1972)); *Dean v. District of Columbia*, 653 A.2d 307, 346 (D.C. Cir. 1995) ("If homosexuality has a genetic origin, like race or gender, any court . . . would have to be sympathetic to arguments that any statute forbidding same-sex marriage should be subject to 'strict,' or at least 'intermediate,' scrutiny.").

189. Hodges, *supra* note 188, at 126.

190. See *supra* note 70 and accompanying text.

retention.¹⁹¹ The continued retention of these samples wrongfully deprives individuals of their statutory right to have the samples destroyed. It also evidences the risk of future erroneous deprivations.

Finally, courts have recognized that the government's interest includes both its substantive interest in the property that it seeks and its interest in avoiding potential administrative burdens related to implementation of predeprivation procedures.¹⁹² In the situation at issue in this Note, there is little "substance" to the government's substantive interest. Once a DNA profile is created from a DNA sample, the sample has no further use in criminal investigation or prosecution.¹⁹³ Thus, the government's interest in law enforcement depends only on retaining the profile. Absent sufficiently justifiable governmental interests, an innocent individual's right to due process survives even if predeprivation proceedings are "impracticable, unrealistic, and . . . burden[some]" for the government.¹⁹⁴

Although due process may be flexible and require only those procedural protections that a particular situation demands,¹⁹⁵ the *Mathews* test confirms that the government must provide some measure of procedural protection before depriving individuals of their DNA samples. The exact determination of the parameters of such procedures is more appropriately left to future in-depth analysis.

An analysis invoking the second protective mechanism of the Due Process Clause—the substantive due process component—is perhaps more simple conceptually but, in its result, no more advantageous to the government. When the government has deprived individuals of their physical property, a substantive due process claim rests on evidence that the government's decision to deprive the individuals of that property does not serve legitimate government interests.¹⁹⁶ "The purpose of this requirement . . . is to protect [an

191. Kimmelman, *supra* note 57, at 210.

192. See *United States v. Real Property Known and Numbered as 429 S. Main St., New Lexington, Ohio*, 52 F.3d 1416, 1420 (6th Cir. 1995) (noting that, in part, the *Mathews* test considers "the Government's interest, including the fiscal and administrative burdens that additional procedural requirements would impose").

193. See *supra* note 117 and accompanying text.

194. *Allen v. Leis*, 154 F. Supp. 2d 1240, 1266 (S.D. Ohio 2001); see *id.* ("The Court answers this defense [that hearings are unduly burdensome] by . . . stating that, if the County Defendants are unwilling or unable to offer every pretrial detainee . . . due process . . . the County Defendants should wait until a conviction or plea of guilty is entered before assessing the Book-in-Fee.").

195. *Morrissey v. Brewer*, 408 U.S. 471, 481 (1972).

196. Daniel R. Mandelker, *Entitlement to Substantive Due Process: Old Versus New*

individual's] use and possession of property from arbitrary encroachment—to minimize substantively unfair or mistaken deprivations of property”¹⁹⁷ Related directly to the government's interest in crime investigation and prosecution is its decision to procure a sample, to retain the sample for a sufficiently lengthy time to create a profile, to create an actual profile, and to retain the profile. However, the decision to retain the sample after the creation of the profile in no way serves the government's law enforcement interests.¹⁹⁸ In this effect, the government's decision to deprive an individual of property with no associated governmental benefit is, at best, incapable of serving “legitimate government interests” and, at worst, entirely “arbitrary.”

Although the procedural and substantive analyses under the Due Process Clause likely provide sufficient grounds for preventing sample retention, the Fifth Amendment Takings Clause offers an additional avenue of relief.

B. The Takings Clause Affords Additional Protection against Sample Retention

In appearance, the Takings Clause provides a right to the government by “allow[ing] government confiscation of private property so long as it is taken for a public use and just compensation is paid.”¹⁹⁹ Conversely, of course, this constitutional mandate also protects the individual. To succeed on a takings claim, individuals must prevail in a three-part analysis that inquires whether a taking has occurred, whether property was taken for a public use, and whether just compensation was provided. Underlying these three steps, however, is the fundamental requirement that the item “taken” is the private property of an individual. Thus, the Takings Clause may be implicated as grounds for preventing DNA sample retention only by invoking the analysis presented in Part III of this Note.

1. *Identifying a Taking.* The first prong of inquiry evaluates whether a taking of property has actually occurred.²⁰⁰ Imbedded in the

Property in Land Use Regulation, 3 WASH. U. J.L. & POL'Y 61, 66 (2000).

197. *Fuentes v. Shevin*, 407 U.S. 67, 80–81 (1972).

198. *See supra* note 117 and accompanying text.

199. *City of Cuyahoga Falls v. Buckeye Cmty. Hope Found.*, 538 U.S. 188, 200 (2003) (Scalia, J., concurring).

200. *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 426–27 (1982).

consideration of this question is a distinction between regulatory takings and physical occupations. If a government action is properly justified as regulatory, such that the action merely restricts the use of property, then the takings analysis requires a multifactor balancing test weighing the government's interest, the scope of the restriction, and the resulting change in the property's economic value.²⁰¹ In contrast, a per se takings rule applies to situations involving the physical appropriation of property.²⁰² Given that the retention of a DNA sample by law enforcement operates as a physical deprivation of property,²⁰³ it is situated within the confines of the per se rule.

Despite the per se existence of a taking, the government action constituting that taking is nevertheless constitutional so long as the government effectuates the taking for public use²⁰⁴ and provides just compensation.²⁰⁵

2. *The Failure to Effectuate a Public Use.* When the government retains a DNA sample—either permanently or for an extended period beyond the creation of a DNA profile—its action cannot appropriately be characterized as having been premised on public use theory. Undoubtedly, *Hawaii Housing Authority v. Midkiff*,²⁰⁶ premising the constitutional exercise of eminent domain on its rational relation to a conceivable public purpose, failed to establish a significant hurdle for proving public use. The Court has long recognized the legislature's authority to define the public interest and, accordingly, to recognize a public purpose for a specific piece of legislation.²⁰⁷ It has further acknowledged that “the means of executing the project are for Congress and Congress alone to determine, once the public purpose has been established.”²⁰⁸ *Hawaii Housing Authority* granted identical deference to the decisions of a state legislature and recognized the “extremely narrow”²⁰⁹ “role for courts to play in reviewing . . . what constitutes a public use, even

201. Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124–26 (1978).

202. See *Loretto*, 458 U.S. at 435–36 (discussing the justifications underlying the traditional rule that a “permanent physical occupation of another’s property” constitutes a taking).

203. See *supra* notes 178–79 and accompanying text.

204. Haw. Hous. Auth. v. Midkiff, 467 U.S. 229, 241 (1984).

205. *Loretto*, 458 U.S. at 441.

206. 467 U.S. 229 (1984).

207. *Berman v. Parker*, 348 U.S. 26, 32 (1954).

208. *Id.* at 33.

209. 467 U.S. at 240 (quoting *Berman*, 348 U.S. at 32).

when the eminent domain power is equated with the police power.”²¹⁰

A narrow role nonetheless remains a role. The Court in *Hawaii Housing Authority* was quick to defer to Hawaii’s stated interest in regulating oligopoly and concluded that it could not “condemn as irrational the Act’s approach to correcting the land oligopoly problem.”²¹¹ It deemed the constitutional requirement satisfied so long as the state “[l]egislature *rationaly could have believed* that the [Act] would promote its objective.”²¹²

This approach demonstrates precisely why a state’s retention of a DNA sample does not meet the public use requirement of the Takings Clause. As just one example, the Alabama state legislature, in enacting a statute establishing a DNA database and identifying which genetic records could be retained in it, declared the database’s purposes to include “[a]ssisting federal, state, county, municipal, or local criminal justice and law enforcement officers or agencies in the putative identification, detection, or exclusion of persons who are the subjects of investigations or prosecutions.”²¹³

If the public purpose of DNA collection is to assist law enforcement investigation and prosecution, then the DNA sample is important only as the raw material from which a profile is created.²¹⁴ As discussed throughout this Note, the success of criminal investigation depends only on the profile; no additional law enforcement benefit derives from the retention of the physical sample. Law enforcement therefore effectuates a public use by retaining a sample until it can create a profile from that sample. After the creation of the profile, however, further retention of the sample in no way promotes the government’s stated interest.

Although it is feasible that, at the advent of DNA technology, legislatures were unaware of this important distinction between the utility of samples and profiles, the state of current technology and scientific understanding renders it unlikely that a legislature could

210. *Id.*

211. *Id.* at 242.

212. *Id.* (alteration in original) (quoting *W. & S. Life Ins. Co. v. State Bd. of Equalization*, 451 U.S. 648, 671–72 (1981)).

213. ALA. CODE § 36-18-24 (2001). The other purposes of the statute include human identification efforts and the development of forensic methods and DNA quality control standards. *Id.*

214. This conclusion applies with equal force to other purposes underlying DNA database statutes, such as those articulated by the Alabama state legislature. *See supra* note 213 and accompanying text.

“rationally . . . believe[] that [sample retention] would promote its objective”²¹⁵ of enhancing law enforcement efforts. Although significant in scope, this conclusion fits precisely within the “extremely narrow”²¹⁶ bounds of a court’s ability to reject a legislature’s proclamation of public use.

3. *A Final Missing Link: The Absence of Just Compensation.* If a court declines to find public use, the takings claim is successful and the government is prevented from securing the property. However, even if a court recognized a sufficient public use in sample retention, the government’s retention would remain unconstitutional unless the government provided “just compensation” to individuals.²¹⁷ To proffer just compensation as a constitutional requirement is not to surmise that law enforcement would pay individuals for the right to store samples; rather, the inherent unlikelihood of such action itself serves as a sufficient restraint on the retention of samples.

In its current approach, the government fails to issue just compensation to innocent individuals. The government has neither provided monetary remuneration²¹⁸ nor conferred upon these individuals any benefits in kind. Although courts have recognized the sufficiency of benefits in kind—through the doctrine of “average reciprocity of advantage”²¹⁹—arguments advocating such recognition with respect to the retention of innocents’ samples are inadequate.

Drawing a parallel to the retention of DNA samples in a clinical forum, the weaknesses of an average reciprocity of advantage argument become evident. Within the medical therapy setting, samples are retained for diagnosis and treatment.²²⁰ In those

215. 467 U.S. at 242 (emphasis omitted) (quoting *W. & S. Life Ins. Co. v. State Bd. of Equalization*, 451 U.S. 648, 671–72 (1981)).

216. *Id.* at 240 (quoting *Berman v. Parker*, 348 U.S. 26, 32 (1954)).

217. *City of Cuyahoga Falls v. Buckeye Cmty. Hope Found.*, 538 U.S. 188, 200 (2003) (Scalia, J., concurring).

218. There is little discussion of monetary compensation for sample donation; even sources outlining comprehensive methods of sample procurement fail to mention financial remuneration for donation. *See, e.g.*, Imwinkelried & Kaye, *supra* note 8, at 416 (“Officials can secure such samples in many ways. They can seek a court order . . . ; they can turn to a preexisting collection of DNA samples; they can take a sample with the consent of the individual; or they can try to locate a sample that the suspect has abandoned.”).

219. Blaine I. Green, *The Endangered Species Act and Fifth Amendment Takings: Constitutional Limits of Species Protection*, 15 YALE J. ON REG. 329, 345 n.80 (1998).

220. *See Gatter, supra* note 83, at 441 (“Tissue removed . . . as part of a therapeutic operative procedure . . . is used primarily for therapy and diagnosis.”).

situations, benefits flow directly, individually, and uniquely to the donors.²²¹ However, in the law enforcement realm, retained samples offer no direct, individual, or unique benefit to the individuals who provided them. Because individuals whose samples were collected through dragnet operations were never expressly suspected of having committed the crimes at issue, such innocent individuals fail to receive the benefit of exoneration from blame.²²²

The Fifth Amendment takings and due process analyses provide new ammunition in the battle to protect innocent individuals' DNA samples from government retention. Although the analyses outlined in this Note present only a partial review of the property-based protections offered by the Constitution, they serve as noteworthy examples of the protections made available by the recognition of a property interest in the DNA samples of innocent individuals.

CONCLUSION

Unique constitutional issues arise when law enforcement agencies retain DNA samples from innocent individuals targeted through dragnets. Traditional Fourth Amendment privacy analysis is no longer sufficient to protect the rights of these individuals; however, a property paradigm provides assurance of the Constitution's ability to protect individuals. The application of property theories and jurisprudential property doctrines supports the recognition of a property right in the limited category of DNA samples discussed in this Note. This approach recognizes a DNA sample as the property of the individual donor and distinguishes between the DNA sample and a DNA profile created from the sample.

The recognition of this limited property interest, and the resulting availability of constitutional protection, provides the most compelling defense against the retention of innocent individuals' sensitive genetic information. Preventing the discrimination that might result from the availability of this information is, in itself, a significant goal. Yet, creating such protections is also a necessity for a society steeped in privacy but strapped by current laws ill-equipped to address advances in the beneficial use of DNA.

221. *See id.* at 442–43 (noting that consent requirements differ depending on whether the extracted tissue was procured for therapeutic reasons or nontherapeutic research purposes).

222. *See Drobnier, supra* note 14, at 479–80 (explaining that dragnets are administered on the basis of class membership rather than individual suspicion).