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HARMONIZING 18TH CENTURY CONSTITUTIONAL PERSPECTIVES WITH 21ST CENTURY DNA TECHNOLOGY UNDER THE FOURTH AMENDMENT

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INTRODUCTION

Does the Fourth Amendment provide a shield against the collection of DNA from individuals before they have been convicted? In the two centuries since drafted, the Amendment has been construed, in certain instances, more liberally to facilitate and account for advancing technology and changes in society.¹ Today, deoxyribonucleic acid (“DNA”)² evidence has been used with greater frequency in the criminal justice system. The expanding use of DNA evidence and, conjunctively, its collection and storage, has raised issues similarly encountered with other biological samples, although advancing technology and the nature of DNA renders complete parallel treatment difficult.

While the United States Supreme Court has yet to consider constitutional challenges pertaining to any form of DNA collection, circuit courts nonetheless have been unanimous in their conclusions that collecting DNA evidence from convicted felons and parolees, pursuant to both federal and state statutes, is permissible under the Fourth Amendment.³ Recent federal and state legislation expanded DNA collection to include individuals who have yet to be convicted.⁴ Whether DNA identification techniques comport

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¹ See *Kyllo v. United States*, 533 U.S. 27, 33–34 (2001) (“It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology . . . [we consider] what limits there are upon this power of technology to shrink the realm of guaranteed privacy.”).

² See *infra* Part II.

³ See *infra* note 93.

⁴ Initially, DNA collection was restricted to individuals convicted of certain eligible federal offenses. The passage of the Adam Walsh Child Protection and Safety Act of 2006, Pub. L. No. 109-248, §155, 120 Stat. 587, 588 (2006); and Violence Against Women and Department of Justice Reauthorization Act of 2005, Pub. L. No. 109-62, § 1004, 119 Stat. 2960, 2962 (2006), *amended by* 42 U.S.C. §

with the requirements set forth in the Fourth Amendment is presently considered.⁵ Collection of DNA before conviction implicates Fourth Amendment concerns more strongly than collection from convicted felons and parolees. While circuit courts are unanimous in finding post-conviction collection to be permissible, the analyses employed are divergent, thereby reinforcing the illation that DNA collection is still unsettled and developing law. Nevertheless, the only two circuit court cases that directly considered pre-conviction collection employed the same mode of analysis and concluded it to be constitutional.⁶

The United Kingdom has employed DNA collection with greater enthusiasm than the rest of Europe and United States; as a result, its experience better apprises how DNA collection laws influence the balance in maintaining law and order yet safeguarding privacy rights in a democratic society.⁷ The successes, failures, and incurred externalities, which are a product of Britain's DNA collection system offers a valuable paradigm to the United States in constructing a constitutional collection regime. Drawing on the British experience, along with present Fourth Amendment doctrine, presented hereunder, is a proposed mode of analysis by which the collection of DNA before conviction should be evaluated so to pass Fourth Amendment scrutiny.⁸

Section II provides a general summary regarding the nature and use of DNA. Section III delineates the existing standards considered during a Fourth Amendment inquiry. Section IV evaluates the progeny of Fourth Amendment cases concerning searching and seizing biological samples. Section V emphasizes the present statutory enactment regarding pre-

14135(a), to extend DNA collection to all persons arrested/detained. See ANNA C. HENNING, CONG. RESEARCH SERV., RL 40077, COMPULSORY DNA COLLECTION: A FOURTH AMENDMENT ANALYSIS (Feb 16, 2010) 1 [hereinafter Henning, *CRS Report*].

⁵ While this note restricts its analysis to the Fourth Amendment, there have been multiple unsuccessful challenges to DNA collection, particularly post-conviction challenges, at both the federal and state level, pursuant to the: Fifth Amendment, Self Incrimination Clause; Fourteenth Amendment, Equal Protection and Due Process Clause (substantive and procedural); Eighth Amendment, Cruel and Unusual Clause; Ex Post Facto Clause of Article I, Section 10, Clause 1 of the Constitution; and Separation of Powers Theory. See D.H. Kaye, *The Constitutionality of DNA Sampling in Arrest*, 10 CORNELL J.L. & PUB. POL'Y 455, 463-64 (2001); Mark A. Rothstein & Sandra Camahan, *Legal and Policy Issue in Expanding the Scope of Law Enforcement DNA Data Banks*, 67 BROOK. L. REV. 127, 146-51 (2001).

⁶ See *infra* part VI.

⁷ R. (on the application of S) v. Chief Constable of South Yorkshire, [2002] EWCA (Civ) 1275, *aff'd*, [2004] UKHL 39 ("The power of this technique [DNA identification] to eliminate those suspected or to incriminate others is enormous."). See *Kyllo v. United States*, 533 U.S. 27, 40 (2001) ("The Fourth Amendment is to be construed in the light of what was deemed an unreasonable search and seizure when it was adopted, and in a manner which will conserve public interests as well as the interests and rights of individual citizens." (quoting *Carroll v. United States*, 267 U.S. 132, 149 (1925))).

⁸ See *infra* part VIII.

conviction DNA collection. Section VI examines *United States v. Mitchell*⁹ and *United States v. Pool*,¹⁰ which are currently the only precedents relating to pre-conviction DNA collection. Section VII briefly outlines the position and analysis undertaken in the United Kingdom apropos of DNA collection before conviction, with compendary exploration of the European Court of Human Right's treatment of the British standard. Section VIII proposes a framework by which the curbed collection of DNA before conviction may be considered permissible under the Fourth Amendment by incorporating: existing Fourth Amendment doctrines; present Fourth Amendment treatment relating to biological samples; and some of the standards enacted in the United Kingdom.

I. DNA'S DEFINITION AND ITS USE AND ANALYSIS IN THE CRIMINAL JUSTICE SYSTEM:

All animals, including humans, are composed of cells and the nucleus controls the activities of the cell, serving as the "command center."¹¹ The nucleus contains deoxyribonucleic acid ("DNA"), which is a living creature's hereditary material and is present in nearly every cell.¹² DNA¹³ provides the blueprint for each and every living creature's genetic makeup.¹⁴

⁹ 681 F. Supp. 2d. 597 (W.D.Pa. 2009), *rev'd en banc*, 652 F.3d 387 (3d Cir. 2011).

¹⁰ 645 F. Supp. 2d. 903 (E.D.Cal. 2009), *aff'd*, 621 F.3d 1213 (9th Cir. 2010), *petition for en banc granted*, 646 F.3d 659 (9th Cir. 2011), *vacated as moot*, 659 F.3d 761 (9th Cir. 2011) (holding vacatur on account of defendant Pool's plea of guilty, which rendered case moot and necessitating dismissal because of absence of a live controversy). *See infra* notes 145–51 and accompanying text.

¹¹ *See* JEFFREY L. WITHERLY ET AL., AN A TO Z OF DNA SCIENCE 21 (Cold Spring Harbor Laboratory Press) (2001); *See also* Alec Rice, *Brave New Circuit: Creeping Towards DNA Database Dystopia in U.S. v. Weikert*, 14 ROGER WILLIAMS U. L. REV. 691, 693 (2009); U.S. National Library of Medicine, GENETICS HOME REFERENCE, at 5 (2012), available at <http://ghr.nlm.nih.gov/handbook.pdf> [hereinafter U.S. Library of Medicine: *Genetics*].

¹² Witherly, *supra* note 11, at 34; DNA Initiative, Forensic DNA of Officers of the Court 5 (Mar. 16, 2009) (course outline (pdf), available <http://nij.gov/training/courses/dna-officers-court.htm>) [hereinafter *DNA Pamphlet for Officers of the Court*].

¹³ DNA is comprised of nucleotide chains in a double helix formation. *See* Witherly, *supra* note 11, at 12. Nucleotides are composed of a nitrogen base, sugar and phosphate, where the nitrogen bases couple to form base pairs, (bases Adenine and Thymine and bases Cytosine and Guanine), and the base pairs bond to alternating sugar and phosphate molecules. *Id.* "The structure of DNA is like a ladder with the base pairs forming the rungs of the ladder. The entire ladder is twisted upon itself like a spiral staircase to form the double helix[.]" *Pamphlet for Officers of the Court*, *supra* note 12, at 7. The precise order and sequence of bases instructs as to specific biological characteristics or processes, which is "similar to the way in which letters of the alphabet appear in a certain order to form words and sentences." U.S. Library of Medicine: *Genetics*, *supra* note 11, at 9; *see also* American Prosecutors Research Institute, *Forensic DNA Fundamentals for the Prosecutor*, 3–4, (2003), available at http://www.ndaa.org/pdf/forensic_dna_fundamentals.pdf [hereinafter APRI].

¹⁴ *See* Witherly, *supra* note 11, at 37; *see also* NATHAN JAMES, CONG. RESEARCH SERV., RL 32247, DNA TESTING FOR LAW ENFORCEMENT: LEGISLATIVE ISSUES FOR CONGRESS 1 [hereinafter James, *CRS Report*]; COLLEEN FITZPATRICK & ANDREW YEISER, DNA & GENEALOGY 1 (Rice Book Press) (2005).

Within DNA there exists two general types of regions: coding and non-coding.¹⁵ Coding regions, identified as genes,¹⁶ provide direction for the creation of proteins, which bestow a specific biological function or characteristic.¹⁷ Non-coding regions, commonly identified as “junk DNA,” are segments of DNA that do not instruct as to the creation of specific proteins.¹⁸ “Junk DNA” does not produce, regulate, or impart identifying characteristics, predispositions, or features of a particular individual.¹⁹ This is not to suggest that “junk DNA” is useless; research suggests that “‘junk DNA’ may play a role in proper embryonic development.”²⁰ In humans, approximately 97% of DNA is considered “junk DNA.”²¹

An “organism’s complete set of DNA is called its genome.”²² The DNA across humans is approximately 99.90% identical,²³ although in the remaining 0.10% exists small variations known as polymorphisms,²⁴ which account for the differences among different humans and are entirely unique to each person.²⁵ “DNA analysis”²⁶ exploits these differences by using these unique variations as a signature by which to identify individuals.²⁷

¹⁵ *Pamphlet for Officers of the Court*, *supra* note 12, at 8. *See* Rice, *supra* note 11, at 694.

¹⁶ Strands of particular nucleotide base sequences are known as genes and groups of genes are known as chromosomes. *See* Witherly, *supra* note 11, at 24, 45. A human has twenty-three pairs of chromosomes (total of forty-six), between 20,000 to 25,000 genes, and 3,147 million nucleotides pairs. *Id.* at 24. Fitzpatrick & Yeiser, *supra* note 14, at 7-8.

¹⁷ *See* U.S. Library of Medicine: *Genetics*, *supra* note 11, at 23; *Pamphlet for Officers of the Court*, *supra* note 12, at 8; Witherly, *supra* note 11, at 45.

¹⁸ Fitzpatrick & Yeiser, *supra* note 14, at 3-4. *See Pamphlet for Officers of the Court*, *supra* note 12, at 8.

¹⁹ Fitzpatrick & Yeiser, *supra* note 14, at 3-4; *See Pamphlet for Officers of the Court*, *supra* note 12, at 8.

²⁰ FITZPATRICK & YEISER, *supra* note 14, at 3-4.

²¹ *Id.* at 3; FORENSIC SCIENCE: AN INTRODUCTION TO SCIENTIFIC AND INVESTIGATIVE TECHNIQUES 711 (Stuart H. James & Jon J. Nordby eds., CRC Press 3d ed. 2009).

²² Nat’l Human Research Inst., Nat’l Insts. of Health, U.S. Dep’t of Health & Human Servs. (Oct. 19, 2011), *A Brief Guide to Genomics*, <http://www.genome.gov/pfv.cfm?pageID=18016863>; STEDMAN’S MEDICAL DICTIONARY 800 (28th ed. 2006) (“The total gene complement of a set of chromosomes found in higher life forms.”) (emphasis added).

²³ APRI, *supra* note 13, at 3; Tracey Maclin, *Part I: Is Obtaining an Arrestee’s DNA a Valid Special Needs Search Under the Fourth Amendment? What Should (and Will) the Supreme Court Do?*, 34 J.L. MED. & ETHICS 165, 165 n.7 (2006); FITZPATRICK & YEISER, *supra* note 14, at 8.

²⁴ JEFFREY L. WITHERLY ET AL., AN A TO Z OF DNA SCIENCE 99 (Cold Spring Harbor Laboratory Press 2001) (“A common variation is the sequence of DNA among individuals . . . a gene that exists in more than one version”). *See* APRI, *supra* note 13, at 34 (“The existence of more than one possible allele at a given locus; genetic variance.”).

²⁵ Maclin, *supra* note 23, at 165 n7; MICHAEL D. CALDWELL ET AL., PHARMACOGENETICS & PHARMACOGENOMICS 3 (Russ D. Altman et al. eds., Cambridge Univ. Press 2012).

²⁶ Defined per 42 U.S.C. § 14135a(c)(2) (2006) as the “analysis of the deoxyribonucleic acid (DNA) identification information in a bodily sample.”

²⁷ Maclin, *supra* note 23, at 166; FORENSIC SCIENCE: AN INTRODUCTION TO SCIENTIFIC AND INVESTIGATIVE TECHNIQUES 705 (Stuart H. James & Jon J. Nordby eds., CRC Press 3d ed. 2009).

As used in the criminal justice system,²⁸ DNA comes from four main sources: (1) crime scene samples;²⁹ (2) samples from unidentified bodies/homicide victims;³⁰ (3) samples from known individuals;³¹ and (4) “abandoned” public samples.³² As DNA is found in almost every cell, a “DNA sample”³³ can be readily obtained from most cells.³⁴ Once a sample is collected and analyzed, the information, known as a profile, is loaded into a DNA database.

DNA profiles are entered into the National DNA Index System (NDIS), which is a part of the Combined DNA Index System (CODIS).³⁵ NDIS is the federal DNA database and contains profiles collected by federal, state, and local law enforcement.³⁶ As a result, investigators in multiple jurisdictions can integrate “their respective investigations and share leads[.]”³⁷ A

²⁸ Nat’l Inst. of Justice, *DNA Evidence Basics* (Aug. 9, 2012), <http://www.nij.gov/nij/topics/forensics/evidence/dna/basics/welcome.htm>; Nat’l Comm’n on the Future of DNA Evidence, Nat’l Inst. of Justice, *What Every Law Enforcement Officer Should Know About DNA Evidence*, at 2 <https://www.ncjrs.gov/pdffiles1/nij/bc000614.pdf> (last visited Oct. 6, 2012).

²⁹ DNA present at crime scenes may be collected from: bloodstains dried/liquid semen stains/residue, genital samples collected from rape victims, shed hairs, pieces of tissue/skin, or clothing. Nat’l Inst. of Justice, *DNA Evidence Basics: Types of Samples Suitable for DNA Testing* (Aug. 9, 2012), <http://www.nij.gov/nij/topics/forensics/evidence/dna/basics/types-of-samples.htm> [hereinafter *DNA Evidence Basics*]. See also *What Every Law Enforcement Officer Should Know About DNA Evidence*, *supra* note 28, at 3.

³⁰ DNA samples from unidentified bodies/homicide victims and samples from known individuals typically involve collection directly from the person’s body. The collected biological sample may be from: blood, saliva (oral epithelial cells), or skin (plucked hairs). *Id.* A sample when taken from a deceased individual may also include for example: teeth, tissue from internal organs, or fingernails. *Id.* See also *What Every Law Enforcement Officer Should Know About DNA Evidence*, *supra* note 28, at 3.

³¹ A standard form of DNA collection directly from a person’s body is through a buccal swab. *DNA Evidence Basics*. A buccal swab consists of a “[s]terile swabs or other buccal collection devices [...] rubbed against the inside cheek of the individual’s mouth to collect epithelial cells for analysis.” Nat’l Forensic Science Tech. Ctr., *Reference Sample Collection* (last visited Sept. 1, 2012), http://www.nfstc.org/pdi/Subject01/pdi_s01_m01_05_a.htm. See also *What Every Law Enforcement Officer Should Know About DNA Evidence*, *supra* note 28, at 3.

³² “Abandoned” public samples are items where biological material may have been deposited. Such items include: cigarette butts, facial tissues, condoms, gum, or fingernail clippings. Moreover, such items may have been “abandoned” at crime scenes. *DNA Evidence Basics*, *supra* note 29. See also *What Every Law Enforcement Officer Should Know About DNA Evidence*, *supra* note 28, at 3.

³³ Defined per 42 U.S.C. § 14135a(c)(1) (2006) as “a tissue, fluid, or other bodily sample of an individual on which a DNA analysis can be carried out.”

³⁴ *DNA Evidence Basics*, *supra* note 29. *CRS Report James*, *supra* note 14, at 1.

³⁵ James, *CRS Report*, *supra* note 14, at 1-2. See *Frequently Asked Questions (FAQs) on the CODIS Program and the National DNA Index System*, <http://www.fbi.gov/about-us/lab/codis> (last visited Sept. 1, 2012) [hereinafter *CODIS & NDIS*]. CODIS is the federal umbrella program that directs the application of DNA in the criminal justice system and organizes the databases and software that are part of the DNA system. As of July 2012, NDIS “contains over 9,812,000 offender profiles, 1,181,300 arrestee profiles and 441,200 forensic profiles . . . [and] “has produced over 185,500 hits [thus] assisting in more than 177,500 investigations.” *CODIS—NDIS Statistics* (last visited Sept. 1, 2012), <http://www.fbi.gov/about-us/lab/codis/ndis-statistics>.

³⁶ *CODIS & NDIS*, *supra* note 35; *DNA Evidence Basics*, *supra* note 28. See *Maclin*, *supra* note 23, at 166.

³⁷ *CODIS & NDIS Statistics*, *supra* note 31.

profile does not contain any identifying information; the only information stored is the: (1) DNA profile; (2) agency that submitted the DNA sample; (3) sample identification number; and (4) laboratory responsible for analyzing the sample.³⁸ Ultimately, the profile derived from analyzing DNA is “expressed as a set of numbers,” not a textual description about an individual.³⁹

DNA is analyzed by examining particular areas of DNA, known as loci, which are specific locations at one of the two pairs of twenty-three chromosomes (forty-six total), which comprise human DNA.⁴⁰ DNA analysis examines specific loci to identify polymorphisms, which is a variant form of a gene’s sequence of nucleotides at a specific locus.⁴¹ A person’s unique genetic signature arises from the existence polymorphisms at particular loci.⁴² A DNA profile is a scientific determination, expressed as a probability ratio, derived from evaluating thirteen loci and noting the frequency of individualized polymorphisms found at each of the analyzed loci.⁴³

The CODIS system employs thirteen core loci for DNA analysis.⁴⁴ The strength of the identification is strong because the probability of two unrelated people having the same profile, after analyzing the standard thirteen loci, yields a probability of “one in 180 trillion.”⁴⁵ By comparing DNA collected from a suspect, to DNA found on evidence at a crime scene, law enforcement can potentially identify the perpetrator⁴⁶ because of the infinitesimal probability of the DNA profile being duplicated by another randomly selected individual in society.

Importantly, the thirteen standard loci used by CODIS are considered “junk DNA.”⁴⁷ These thirteen loci do not correspond to DNA sequences that impart identifying characteristics or features of a particular individual.

³⁸ *CODIS & NDIS*, *supra* note 35; *see also* United States v. Weikert, 504 F.3d 1, 4 (1st Cir. 2007) (describing the limited information contained in each DNA profile on CODIS).

³⁹ *Kaye*, *supra* note 5, at 462; *see also* *Rice* *supra* note 11, at 695.

⁴⁰ *Pamphlet for Officers of the Court*, *supra* note 12, at 8-11 *see also* *APRI*, *supra* note 13, at 11; *Rice* *supra* note 11, at 695.

⁴¹ *APRI*, *supra* note 13, at 5 (“A gene’s position on a chromosome is its locus. The possible sequences or variations of a gene are called ‘alleles.’ . . . Genes may be “polymorphic,” meaning they may take different forms or contain different sequences of base pairs.”). *See Pamphlet for Officers of the Court*, *supra* note 12, at 9; *DNA Evidence Basics*, *supra* note 28.

⁴² *See Pamphlet for Officers of the Court*, *supra* note 12, at 10; *see also* *Maclin*, *supra* note 23, at 166 (noting that a DNA profiles loci are used to identify a match in CODIS).

⁴³ *Pamphlet for Officers of the Court*, *supra* note 12, at 11. *See DNA Evidence Basics*, *supra* note 28; *Rice* *supra* note 11, at 695; *APRI*, *supra* note 13, at 9.

⁴⁴ *APRI*, *supra* note 13, at 9; *see Maclin*, *supra* note 23, at 166.

⁴⁵ *Kaye*, *supra* note 5, at 461 n.20.

⁴⁶ *Id.* at 462; *see also* United States v. Weikert, 504 F.3d 1, 4 (1st Cir. 2007).

⁴⁷ *See CODIS & NDIS*, *supra* note 35; *Kaye*, *supra* note 5, at 462 (stating that the DNA information stored in databases does not disclose many types of information about individuals).

For example, they do not reveal an individual's predisposition to diseases, conditions, or mental functioning.⁴⁸ By using "junk DNA," law enforcement ensures that collected DNA is used for identification purposes in the least invasive manner.

II. PRESENT FOURTH AMENDMENT DOCTRINES:

The Fourth Amendment prohibits unreasonable searches and seizures unless supported by a warrant based on probable cause.⁴⁹ Drafted when the abuses of the crown were still fresh in the minds of the founding fathers, the Fourth Amendment was designed to serve as a guarantee against arbitrary and invasive acts taken by the government and associates acting at the behest of the government.⁵⁰ Its intention is to protect individuals against unreasonable government searches,⁵¹ which is presumed when an individual has an expectation of privacy and society concedes that such an expectation of privacy is reasonable.⁵² Conjunctively, a seizure pertains to the meaningful restriction on the possessory interest or free movement of property.⁵³ Searches interfere with privacy rights whereas seizures implicate property rights.⁵⁴ Accordingly, the "Fourth Amendment does not proscribe all searches and seizures, but only those that are unreasonable."⁵⁵ As such, the touchstone of the court's Fourth Amendment analysis is "'the reasonableness in all the circumstances of the particular governmental invasion of a citizen's personal security.'"⁵⁶ Searches and seizures are evaluated under one of three categories of analysis:⁵⁷ (1) probable cause, (2) reasonable

⁴⁸ See *CODIS & NDIS*, *supra* note 35; *Kaye*, *supra* note 5, at 462.

⁴⁹ U.S. CONST. amend. IV.

⁵⁰ *Skinner v. Ry. Labor Execs.' Ass'n.*, 489 U.S. 602, 614 (1989); see also John D. Biancamano, *Arresting DNA: The Evolving Nature of DNA Collection Statutes and their Fourth Amendment Justifications*, 70 OHIO ST. L.J. 619, 630 (2009) (outlining the Supreme Court's longstanding treatment of the Fourth Amendment's protection of society's reasonable expectation of privacy).

⁵¹ See *Katz v. United States*, 389 U.S. 347, 351 (1967); *Rios v. United States*, 364 U.S. 253, 255 (1960).

⁵² *Katz*, 389 U.S. at 361 (Harlan, J., concurring); *Kyllo v. United States*, 533 U.S. 27, 33 (2001). The reasonableness of the privacy expectation implicates the type of evidence, the circumstances under which it was gathered, and the person from who it was gathered. Henning, *CRS Report*, *supra* note 4, at 6.

⁵³ Henning, *CRS Report*, *supra* note 4, at 5; see *Michigan v. Summers*, 452 U.S. 692, 696 (1981).

⁵⁴ Henning, *CRS Report*, *supra* note 4, at 5.

⁵⁵ *Skinner*, 489 U.S. at 619; see also Rothstein & Carnahan, *supra* note 5, at 133 ("[while] nonconsensual searches conducted outside the judicial process are *per se* unreasonable, nothing in the Fourth Amendment expressly prohibits government searches without a warrant.").

⁵⁶ *United States v. Kincade*, 379 F.3d 813, 821 (9th Cir. 2004) (quoting *Pennsylvania v. Mimms*, 434 U.S. 106, 108–09 (1977) (quoting *Terry v. Ohio*, 392 U.S. 1, 19 (1968)); see also *United States v. Weikert*, 504 F.3d 1, 6 (1st Cir. 2007).

⁵⁷ Henning, *CRS Report*, *supra* note 4, at 6–7.

suspicion, or (3) suspicionless searches.⁵⁸ The reasonableness and constitutionality of pre-conviction DNA collection are assessed under a suspicionless search regime.

Suspicionless searches are “general search regimes free from the usual warrant and probable-cause requirements,”⁵⁹ and are applicable when “the burden of obtaining a warrant is likely to frustrate the government’s purpose behind the search.”⁶⁰ Suspicionless search regimes have been epitomized by several key categories: excepted areas,⁶¹ administrative searches, “special needs” searches, and “totality-of-the-circumstances” searches.⁶²

The “special needs” exception permits a search without a warrant if it involves circumstances beyond normal law enforcement that “make the warrant and probable-cause requirement impracticable.”⁶³ This involves balancing competing private and public interests.⁶⁴ The special needs exception has generally been reserved for search regimes “designed to serve ‘special needs, beyond the normal need for law enforcement.’”⁶⁵

Recently in *United States v. Knights*⁶⁶ and *Samson v. California*,⁶⁷ the United States Supreme Court considered the “totality-of-the-circumstances” search regime, emphasizing the status of the person searched.⁶⁸ Both found reasonable, under the Fourth Amendment, the warrantless search of a probationer and parolee respectively.⁶⁹ Analysis under

⁵⁸ *Id.*

⁵⁹ *Kincade*, 379 F.3d at 822.

⁶⁰ *Skinner*, 489 U.S. at 623 (quoting *Camara v. Municipal Court of San Francisco*, 387 U.S. 523, 533 (1967)).

⁶¹ Certain areas, *inter alia*, airports, see *United States v. Edwards*, 498 F.2d 496, 500–01 (2d Cir. 1974), border interfaces, see *United States v. Ramsey*, 431 U.S. 606, 617–19 (1972) and prisons, see *Hudson v. Palmer*, 468 U.S. 517, 525–26 (1983), are considered beyond the typical probable-cause requirements of the Fourth Amendment.

⁶² *Kincade*, 379 F.3d at 822–24.

⁶³ *MacWade v. Kelly*, 460 F.3d 260, 267–68 (2d Cir. 2006) (considering whether the government could implement a random, suspicionless search program to guard against a terrorist attack on mass transportation facilities).

⁶⁴ *Cassidy v. Chertoff*, 471 F.3d 67, 75 (2d Cir. 2006). The exception has four parts: (i) the character and degree of the government intrusion, (ii) the nature of the privacy interests involved, (iii) the nature and immediacy of the government interest, and (iv) the effectiveness of the policy in advancing the government interest. *Id.* at 78; see *Lynch v. City of New York*, 589 F.3d 94, 100 (2d Cir. 2009).

⁶⁵ *City of Indianapolis v. Edmond*, 531 U.S. 32, 37–38, 41 (2000); see also *Rice*, *supra* note 11, at 704 (acknowledging that the special needs doctrine is to be applied only when the activity at issues has a “primary purpose other than catching or deterring offenders”).

⁶⁶ 534 U.S. 112 (2001).

⁶⁷ 547 U.S. 843 (2006).

⁶⁸ See *Samson*, 547 U.S. at 848–49; *Knights*, 534 U.S. at 119; see also Henning, *CRS Report*, *supra* note 4, at 6–7.

⁶⁹ *Knights*, 534 U.S. at 119; *Samson*, 547 U.S. at 847, 850 (“a condition of release can so diminish or eliminate a released prisoner’s reasonable expectation of privacy that a suspicionless search by a law enforcement officer would not offend the Fourth Amendment.”).

the “totality-of-the-circumstances” test requires balancing the extent to which an individual’s privacy interests are breached, against the extent to which this intrusion is necessary to advance a legitimate government interest.⁷⁰ The balancing of these “considerations requires no more than reasonable suspicion to conduct a search . . . The degree of individualized suspicion required of a search is a determination of when there is a sufficiently *high probability that criminal conduct is occurring* to make the *intrusion on the individual’s privacy interest reasonable*.”⁷¹

III. THE FOURTH AMENDMENT AS APPLIED TO BIOLOGICAL SAMPLES

During the twentieth century, cases developed concerning whether and to what extent Fourth Amendment protections are triggered in the search and seizure of biological samples. The opening clause of the Fourth Amendment, “[t]he right of the people to be secure in *their person, houses, papers, and effects*,”⁷² prefaces what is to be protected “against unreasonable searches and seizures.”⁷³ There existed in English common law seldom if any cases concerning searches and seizures of biological samples,⁷⁴ although the spirit and intent of the Amendment, along with the words, “secure in their persons,”⁷⁵ evinces that biological samples are to be afforded Fourth Amendment protection. Applying *Katz*⁷⁶ requires considering, most prominently, whether society would recognize an expectation of privacy in the implicated biological sample.⁷⁷ Implicit in this threshold inquiry, it is necessary to evaluate: “(1) the extent to which the material is displayed to the public, (2) the extent of the bodily invasion caused by the sampling procedure, and (3) the nature of the information that can be extracted from the sample.”⁷⁸ This framework informs how DNA collection is to be analyzed in relation to the Fourth Amendment. Applying existing precedent on

⁷⁰ *Knights*, 534 U.S. at 118–19; *Samson*, 547 U.S. at 848.

⁷¹ *Knights*, 534 U.S. at 121 (emphasis added) (“Although the Fourth Amendment ordinarily requires the degree of probability embodied in the term ‘probable cause,’ a lesser degree satisfies the Constitution when the balance of governmental and private interests makes such a standard reasonable.”).

⁷² U.S. CONST. amend. IV (emphasis added).

⁷³ *Id.*

⁷⁴ Rice, *supra* note 11, at 701 (“[T]he practice of taking, measuring, and comparing human DNA samples is not clearly analogous to any of the searches and seizures contemplated by the Founders at the time of the Constitution was drafted.”).

⁷⁵ U.S. CONST. amend. IV.

⁷⁶ See *Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

⁷⁷ *United States v. Davis*, 932 F.2d 752, 756 (9th Cir. 1991); see Kaye, *supra* note 5, at 473.

⁷⁸ Kaye, *supra* note 5, at 473.

biological samples relating to fingerprints,⁷⁹ blood,⁸⁰ saliva, skin, voice exemplars,⁸¹ and handwriting exemplars,⁸² without reference to an exception or amended standard of permissibility, the collection of DNA has been held to be a search and seizure.⁸³

In determining the appropriateness of collecting a biological sample, courts consider the invasiveness of the procedure needed to obtain the sample. Invasiveness is measured by the extent to which the sought biological samples are otherwise displayed to the public. For example, fluids that flow in the body, such as blood, urine, and saliva, which require piercing bodily tissue or entering a bodily cavity, imbue an expectation of privacy and cannot be inspected or extracted absent implicating the protections of the Fourth Amendment.⁸⁴ Conversely, voice and handwriting exemplars are not afforded an expectation of privacy because the tone and manner of a voice are continuously produced for the public to hear.⁸⁵ Fingerprints, while technically displayed to the public and not requiring invasive procedure to obtain,⁸⁶ still are afforded minimal Fourth Amendment protections

⁷⁹ *Davis v. Mississippi*, 394 U.S. 721, 726 (1969); *see also Hayes v. Florida*, 470 U.S. 811, 816–17 (1985) (“[T]he Fourth Amendment would permit seizures for the purpose of fingerprinting, if there is reasonable suspicion that the suspect has committed a criminal act, if there is a reasonable basis for believing that fingerprinting will establish or negate the suspect’s connection with that crime, and if the procedure is carried out with dispatch.”); *United States v. Dionisio*, 410 U.S. 1, 11 (1973) (“For in *Davis* it was the initial seizure—the lawless dragnet detention—that violated the Fourth and Fourteenth Amendments, not the taking of the fingerprints.”).

⁸⁰ *Schmerber v. California*, 384 U.S. 757, 771 (1966) (holding that a physician may extract blood, absent consent, from a suspect at a hospital believed to be involved in drunk driving).

⁸¹ *Dionisio*, 410 U.S. at 14 (“The physical characteristics of a person’s voice, its tone and manner, as opposed to the content of a specific conversation, are constantly exposed to the public. Like a man’s facial characteristics, or handwriting, his voice is repeatedly produced for others to hear. No person can have a reasonable expectation that others will not know the sound of his voice, any more than he can reasonably expect that his face will be a mystery to the world.”).

⁸² *United States v. Mara*, 410 U.S. 19, 21 (1973) (“Handwriting, like speech, is repeatedly shown to the public, and there is no more expectation of privacy in the physical characteristics of a person’s script than there is in the tone of his voice.”).

⁸³ *See Skinner v. Railway Labor Executives’ Association*, 489 U.S. 602, 616 (1989) (“We have long recognized that a compelled intrusion into the body for blood to be analyzed for alcohol content must be deemed a Fourth Amendment search.”); *Winston v. Lee*, 470 U.S. 753, 760 (1985) (“The reasonableness of surgical intrusions beneath the skin depends on a case-by-case approach, in which the individual’s interests in privacy and security are weighed against society’s interests in conducting the procedure.”); *Schmerber*, 384 U.S. at 767–68; *see also United States v. Mitchell*, 652 F.3d 387, 406 (3d Cir. 2011) (“Neither party disputes that the collection of a DNA sample constitutes an invasion of privacy that is subject to the strictures of the Fourth Amendment, and we have so held.”); *Nicolas v. Goord*, 430 F.3d 652, 658 (2d Cir. 2005).

⁸⁴ *Kaye*, *supra* note 5, at 477 (“An inspection or extraction that penetrates the body or enters its cavities usually is regarded as infringing a reasonable expectation of privacy and hence falling within the zone of the Fourth Amendment.”); *see Rothstein & Carnahan*, *supra* note 5, at 135.

⁸⁵ *Gilbert v. California*, 388 U.S. 263, 266–67 (1967); *Kaye*, *supra* note 5, at 475.

⁸⁶ *Davis v. Mississippi*, 394 U.S. 721, 727 (1969) (noting that fingerprints do not gravely intrude on an individual’s personal privacy and when secured are more reliable and accurate at assisting in criminal investigations); *United States v. Kelly*, 55 F.2d 67, 70 (2d Cir. 1932) (“We prefer, however, to rest our decision upon the general right of the authorities charged with the enforcement of the criminal

and may not be obtained absent some level of suspicion.⁸⁷

The Court in *Winston v. Lee*,⁸⁸ memorialized that a case-by case approach is warranted to evaluate the reasonableness of procedures that extract internal biological samples, by considering an “individual’s interests in privacy and security” balanced “against society’s interests in conducting the procedure.”⁸⁹ Factors illuminating this balancing include: (1) the extent to which the proposed course of action may place in jeopardy the safety or health of the individual,⁹⁰ (2) the “extent of intrusion upon the individual’s dignitary interests in personal privacy and bodily integrity,” (3) the “community’s interest in fairly and accurately determining guilt or innocence.”⁹¹

Recent treatment as to the constitutionality of DNA collection has focused on its collection post-conviction.⁹² All United States Circuit Courts that have considered collection post-conviction have “arrived at the same conclusion: that the federal DNA Act and its State law analogues survive Fourth Amendment scrutiny.”⁹³

law to employ finger printing as an appropriate means to identify criminals and detect crime.”)

⁸⁷ *Hayes v. Florida*, 470 U.S. 811, 816–17 (1985); *United States v. Dionisio*, 410 U.S. 1, 4 (1973).

⁸⁸ 470 U.S. 753 (1985) (finding that requiring an individual to undergo a surgical procedure under general anesthesia would be unreasonable under the Fourth Amendment).

⁸⁹ *Id.* at 760.

⁹⁰ *Winston*, 470 U.S. at 761–62. Substantial weight in opposition was accorded to a procedure that carried an unjustifiable risk of endangering an individual’s life and health, when finding it unreasonable under the Fourth Amendment for the petitioner to undergo a surgical procedure. This was juxtaposed against *Schmerber* where it was noted that a blood test was a typical and common procedure and therefore “*Schmerber* recognized society’s judgment that blood tests do not constitute an unduly extensive imposition on an individual’s personal privacy and bodily integrity.” *Id.* at 762.

⁹¹ *Id.*

⁹² Extensive discussion of collection post-conviction implicates various similar and differing concerns that ultimately are beyond the scope of this note.

⁹³ See *Banks v. United States*, 490 F.3d 1178, 1183 (10th Cir. 2007); see also *United States v. Weikert*, 504 F.3d 1, 9 (1st Cir. 2007). Despite finding the post-conviction DNA collection constitutional under the Fourth Amendment, there is a split in the circuits as to which is the appropriate standard. The Third, Fourth, Fifth, Eighth, Ninth, Eleventh, and District of Columbia Circuits have applied the “totality-of-circumstances” test, see *United States v. Kraklio*, 451 F.3d 922, 924–25 (8th Cir. 2006); *Johnson v. Quander*, 440 F.3d 489, 496 (D.C. Cir. 2006); *United States v. Sczubelek*, 402 F.3d 175, 184 (3d Cir. 2005); *Padgett v. Donald*, 401 F.3d 1273, 1280 (11th Cir. 2005); *United States v. Kincade*, 379 F.3d 813, 830-31 (9th Cir. 2004); *Grocceman v. U.S. Dep’t of Justice*, 354 F.3d 411, 413–14 (5th Cir. 2004); *Jones v. Murray*, 962 F.2d 302, 305–07 (4th Cir. 1992), whereas the Second, Seventh, and Tenth Circuits have applied the “special-needs” test, see *United States v. Amerson*, 483 F.3d 73 (2d Cir. 2007), *United States v. Hook*, 471 F.3d 766, 773 (7th Cir. 2006); *United States v. Kimler*, 335 F.3d 1132, 1146 (10th Cir. 2003), *Green v. Berge*, 354 F.3d 675 (7th Cir. 2004); *Roe v. Marcotte*, 193 F.3d 72 (2d Cir. 1999). Moreover, the Sixth Circuit has abstained from adopting either the “totality-of-circumstances” test or the “special-needs” test, instead merely holding the DNA Act constitutional under the Fourth Amendment, see *United States v. Conley*, 453 F.3d 674, 679–81 (6th Cir. 2006).

IV. PRESENTLY ENACTED UNITED STATES STATUTES CONCERNING THE COLLECTION OF DNA

The federal statutory scheme apropos of DNA collection and use is promulgated at 42 U.S.C. § 14131-14136.⁹⁴ Moreover, pursuant to 42 U.S.C. § 14135a(a)(1),⁹⁵ the Department of Justice (“DOJ”) has the authority to implement regulations that require federal agencies to “collect DNA samples from individuals who are arrested, facing charges, or convicted”⁹⁶

The federal DNA system, pursuant to 42 U.S.C. § 14132(a), provides that a DNA index may be established to keep “identification records” of “persons convicted of crimes” and “persons who have been charged in an indictment or information with a crime.”⁹⁷ Additionally, the same provision also proscribes that the index may include DNA samples recovered from crime scenes, unidentified human remains, and samples voluntarily contributed from relatives of missing persons.⁹⁸ Furthermore, DNA records may be expunged provided that evidence is imparted that the offense which triggered the collection was overturned, dismissed, resulted in an acquittal, or that no charges were filed against the individual within the appropriate time period.⁹⁹ Privacy protections are delineated at 42 U.S.C. § 14133(b-c), which specifically curtails to whom the information stored in the DNA index may be disclosed and provides for criminal penalties for wrongful disclosure. The “results of DNA tests performed for a Federal law enforcement agency for law enforcement purpose,”¹⁰⁰ may only be disclosed to three exclusive destinations: criminal justice agencies, judicial proceeding, and criminal defense purposes.¹⁰¹ The statute sets forth strict penalties, including incarceration and fines of up \$250,000 for unlawful disclosure and acquirement of DNA samples or information.¹⁰²

The section concerning pre-conviction DNA collection is codified at 42 U.S.C. § 14135a, memorializing that “DNA samples [may be collected]

⁹⁴ 42 U.S.C. § 14131-14136.

⁹⁵ Adam Walsh Child Protection and Safety Act of 2006, Pub. L. No. 109-248, §155, 120 Stat. 587, 588 (2006), and DNA Fingerprinting Act of 2005, Pub. L. No. 109-162 § 1004 (2005), are codified at 42 U.S.C. § 14135a(a)(1).

⁹⁶ Collection of DNA Samples, 28 C.F.R. § 28.12 (2009); DNA-Sample Collection and Biological Evidence Preservation in the Federal Jurisdiction, 28 C.F.R. § 28.12 (2009).

⁹⁷ 42 U.S.C. § 14132(a)(1) (2006).

⁹⁸ 42 U.S.C. § 14132(a)(2-4) (2006).

⁹⁹ 42 U.S.C. § 14132(d) (2006).

¹⁰⁰ 42 U.S.C. § 14133(b)(1) (2006).

¹⁰¹ 42 U.S.C. § 14133(b)(1)(A-C) (2006).

¹⁰² 42 U.S.C. § 14133(c)(2) (2006).

from individuals who are *arrested, facing charges, or convicted . . .*”¹⁰³ This is buttressed by an administrative regulation compiled by the DOJ prescribing that: “[a]ny agency of the United States that arrests or detains individuals or supervises individuals facing charges *shall collect* DNA samples from individuals who are *arrested, facing charges, or convicted . . .*”¹⁰⁴ Failure to comply with this provision is itself a crime.¹⁰⁵ The collection of DNA is authorized from uncooperative people by “such means as are reasonably necessary to detain, restrain, and collect a DNA sample”¹⁰⁶

V. THE MINIMAL JUDICIAL TREATMENT THUS FAR CONCERNING THE CONSTITUTIONALITY OF DNA COLLECTION BEFORE CONVICTION

While the jurisprudence concerning the constitutionality of DNA collection has until recently been confined to post-conviction and probationary release, two circuit court cases¹⁰⁷ in 2009-2011, *United States v. Mitchell*¹⁰⁸ and *United States v. Pool*,¹⁰⁹ addressed the issue of pre-conviction DNA collection¹¹⁰ and reached homogeneous conclusions. Both courts

¹⁰³ 42 U.S.C. § 14135a(a)(1)(A) (2006) (emphasis added).

¹⁰⁴ 28 C.F.R. § 28.12(b) (2012) (emphasis added). This DOJ regulations delineate that DNA samples are to be collected “utilizing sample collection kits . . . including approved methods of blood draws or buccal swabs.” 28 C.F.R. § 28.12(f)(1) (2012). Moreover, 42 U.S.C. § 14135a(d) (2006) outlines that any felony, crime of violence, or attempt or conspiracy to commit a felony or crime of violence, qualifies to require the collection of DNA.

¹⁰⁵ 42 U.S.C. § 14135a(a)(5) (2006).

¹⁰⁶ 42 U.S.C. § 14135a(a)(4)(A) (2006). 28 C.F.R. § 28.12(d) (2012) parallels with identical language concerning the attainment of DNA samples for uncooperative individuals.

¹⁰⁷ Recently in *United States v. Thomas*, 2011 WL 1599641, at *13 (W.D.N.Y. Feb. 14, 2011), the District Court for the Western District of New York found the collection of DNA before conviction to be constitutional under the Fourth Amendment, albeit under the special needs doctrine. Importantly, the court noted the “dearth of authority” on pre-conviction DNA collection. *Id.* First, the court found that DNA collection for identification served a special need. *Id.* at *18. Next the court proceeded by applying the prongs of the special needs doctrine, in which the ensuing analysis mirrored the totality-of-the-circumstances analysis that found pre-conviction DNA collection constitutional under the Fourth Amendment. *Id.*

¹⁰⁸ 681 F. Supp. 2d 597 (W.D. Pa. 2009), *rev’d en banc*, 652 F.3d 387 (3d Cir. 2011).

¹⁰⁹ 645 F. Supp. 2d 903 (W.D. Tex. 2009), *aff’d* 621 F.3d 1213 (9th Cir. 2010), *petition for en banc granted*, 646 F.3d 659 (9th Cir. 2011), *vacated as moot*, 659 F.3d 761 (9th Cir. 2011) (holding vacatur on account of defendant Pool’s plea of guilty, which rendered case moot and necessitating dismissal because of the absence of “live controversy”); *see infra* notes 145-151 and accompanying text.

¹¹⁰ Both *Mitchell* and *Pool* were arrested *and* indicted by a grand jury. When arraigned, after pleading not guilty, they were released on bond, but ordered to obey certain pre-trial conditions, including providing a DNA sample. *Pool* challenged provisions of the Bail Reform Act, 18 U.S.C. § 3142(b) (2006) and 18 U.S.C. § 3142(c)(1)(A) (2006). *Pool*, 621 F.3d at 1215. This statute prescribes “that [a] person cooperate in the collection of a DNA sample . . . if the collection of such a sample is authorized pursuant to [42 U.S.C. 14135a (2006)].” 18 U.S.C. § 3142(c)(1)(A) (2006). Therefore, *Pool* derivatively challenged 42 U.S.C. § 14135a (2006) considered herein. In contrast, *Mitchell* directly challenged 42 U.S.C. § 14135a (2006). *Mitchell*, 681 F. Supp. 2d. at 599–600.

subscribed to the application of the “totality-of-the-circumstances” test when considering the constitutionality of post-arrest-pre-conviction DNA collection.¹¹¹

In *Mitchell*, the Third Circuit sitting *en banc*, reversed the District Court for the Western District of Pennsylvania,¹¹² finding that DNA collection from arrestees is reasonable and does not violate the Fourth Amendment on account of arrestees’ “diminished expectation of privacy in their identities, and [that] DNA collection from arrestees serves important law enforcement interests.”¹¹³ *Mitchell* was indicted for attempting to possess with intent to distribute cocaine and challenged the pretrial collection of DNA after the Government made a request pursuant to 42 U.S.C. § 14135a and 28 C.F.R. § 28.12.¹¹⁴

Evaluating the scope of intrusion occasioned by DNA collection, under the “totality-of-the-circumstances” test, the court found that physical collection of DNA—via a buccal swab—amounted to a minimal invasion of privacy.¹¹⁵ In light of past precedent sanctioning collection of biological samples such as blood, the court did not view DNA collection to be a significant intrusion on privacy.¹¹⁶ The court expressly noted how society is accustomed to blood tests, how the quantity of blood drawn is minimal, and how drawing blood involves no risk to health or life—resulting in little or no pain.¹¹⁷ Thus, in contrast, DNA collection is less invasive than venipuncture because buccal swabs, the typical means of collecting DNA, do not require puncturing flesh and instead merely require swabbing the inside of a subject’s mouth—a natural bodily cavity.¹¹⁸

Next, with regard to the search that arises from analyzing collected DNA samples in order to render a DNA profile, the court opined that the “amount and type of personal information to be contained in the DNA pro-

¹¹¹ *Mitchell*, 652 F.3d at 390 (“[W]e apply a ‘totality of the circumstances’ test, balancing the intrusion on *Mitchell*’s privacy against the Government’s interest in the collection and testing of his DNA.”); *Pool*, 621 F.3d at 1218 (“[The special needs test was] developed in cases outside of the law enforcement context and the Supreme Court has been leery of applying it to criminal cases . . . [and] precedent directs [the court] to apply the totality of the circumstances test.”).

¹¹² *Mitchell*, 681 F. Supp. 2d at 610 (“In assessing the totality of the circumstances and weighing the legitimate governmental interests against *Mitchell*’s expectation of privacy . . . the Court finds that a universal requirement that a charged defendant submit a DNA sample for analysis and inclusion in a law enforcement databank . . . is unreasonable under, and therefore in violation of, the Fourth Amendment.”).

¹¹³ *Mitchell*, 652 F.3d at 390.

¹¹⁴ *Id.*; *Mitchell*, 681 F. Supp. 2d at 610.

¹¹⁵ *Mitchell*, 652 F.3d at 390.

¹¹⁶ *Id.* at 406–07 (“[Buccal swabs are] less invasive than venipuncture . . . [and thus the] act of collecting a DNA sample is neither a significant nor an unusual intrusion.”).

¹¹⁷ *Id.* at 406.

¹¹⁸ *Id.*

file to be nominal.”¹¹⁹ The Third Circuit majority rejected defendant Mitchell’s contention regarding the potential misuse of information contained in DNA samples.¹²⁰ While acknowledging an individual’s privacy interests in the extensive information contained in DNA, the court parried defendant Mitchell’s concerns, concluding that the criminal penalties for impermissible use of DNA samples/profiles, the limited statutory mandate for DNA collection, along with the use of “junk DNA” for analysis, offered sufficient safeguards.¹²¹

Furthermore, the *Mitchell* Court’s majority ruling, in contrast to their dissenting brethren and the District Court, rested heavily on equating DNA collection with fingerprinting.¹²² The court concluded that DNA profiles are twenty-first century fingerprints¹²³ because they are “used solely as an accurate, unique, identifying marker.”¹²⁴ Particularly, DNA profiles, like fingerprints, only provide a record of an individual’s identity, and “CODIS operates much like an old-fashioned fingerprint database (albeit more efficiently)”¹²⁵ in providing information exclusively for identification.¹²⁶ Moreover, it expressly recognized how DNA profiles are derived from “junk DNA,” which do not reveal any private medical and genealogical information with which an individual—like defendant Mitchell—is concerned.¹²⁷

The Court explicitly noted that an individual does not have an expectation of privacy in their identity, particularly after a finding of probable cause.¹²⁸ Continually, it acknowledged that the complete ambit of rights and unrestricted liberty, recognized by the general public, is circumscribed well before conviction.¹²⁹ Upon arrest and until disposition, a defendant’s

¹¹⁹ *Id.* at 409.

¹²⁰ *Id.* at 408.

¹²¹ *Id.* at 407–08 (“[E]very one of our sister circuits to have considered the concerns raised by Mitchell has rejected them given their speculative nature and the safeguards attendant to DNA collection and analysis The mere possibility of such misuse can be accorded only limited weight in a balancing analysis that focuses on present circumstances These criminal penalties offer a ‘substantial deterrent to such hypothetical abuse’ of the kind advanced by Mitchell.”).

¹²² *See id.* at 425 (Rendell, J., dissenting).

¹²³ *Id.* at 410 (“DNA profiles as sanitized ‘genetic fingerprints’ that can be used to identify an individual uniquely, but do not disclose an individual’s traits, disorders, or dispositions.”).

¹²⁴ *Id.* at 410.

¹²⁵ *Id.* at 409.

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ *Id.* at 411–12.

¹²⁹ *See id.* at 411 (“[P]robable cause had already supplied the basis for bringing the person within the criminal justice system. With the person’s loss of liberty upon arrest comes the loss of at least some, if not all, rights to personal privacy otherwise protected by the Fourth Amendment.”) (quoting *Jones v. Murray*, 962 F.2d 302, 306 (4th Cir. 1992)); *see also* *United States v. Pool*, 621 F.3d 1213, 1219 (9th

liberty is curtailed; it is either rescinded completely or made conditional upon the defendant satisfying certain pretrial conditions.¹³⁰ Entry into the criminal justice system terminates the right of privacy in one's identity, which becomes a legitimate government interest.¹³¹

In contrast, despite accepting the constitutional permissibility of identifying arrestees,¹³² the *Mitchell* Court's dissenting judges and the District Court at great length distinguish fingerprint and DNA collection.¹³³ Critically, they viewed the information gleaned from DNA as more expansive and a breach of the presumption of innocence.¹³⁴ Thus, a permissible intrusion on an individual's privacy before conviction must relate to matters of "legitimate penological interests."¹³⁵ As such, DNA analysis was viewed differently because (1) the information *potentially* gleaned is more comprehensive than the information acquired from fingerprinting, and (2) DNA analysis is used beyond mere identification, accrediting the actual purpose as "solely for criminal investigative purposes."¹³⁶

Turning to the second part of the "totality-of-the-circumstances" test, the court determined that DNA collection from arrestees was necessary to promote a legitimate government interest, outweighing any minimal intrusion on privacy. "Most compelling is the Government's strong interest in identifying arrestees. [W]hen a suspect is arrested upon probable cause, his identification becomes a matter of legitimate state interest."¹³⁷ While equating DNA collection with fingerprint collection, the court noted the greater precision afforded by DNA analysis for identification, and how

Cir. 2010).

¹³⁰ See *Bell v. Wolfish*, 441 U.S. 520, 545-46 (1979) ("[P]retrial detainees, who have not been convicted of any crimes, retain at least those constitutional rights that we have held are enjoyed by convicted prisoners . . . simply because prison inmates retain certain constitutional rights does not mean that these rights are not subject to restrictions and limitations . . . This principle applies equally to *pre-trial detainees and convicted prisoners*." (emphasis added)); *Price v. Johnston*, 334 U.S. 266, 285 (1948).

¹³¹ See *Mitchell*, 652 F.3d at 411. See also *Jones*, 962 F.2d at 306; *Smith v. United States*, 324 F.2d 879, 882 (D.C. Cir. 1963) ("[I]t is elementary that a person in lawful custody may be required to submit to photographing, and fingerprinting, as part of routine identification processes.").

¹³² There is a "diminished expectation of privacy" in a defendant's identity following arrest. *United States v. Mitchell*, 681 F. Supp. 2d 597, 608 (2009).

¹³³ *Id.* ("Mitchell has a diminished expectation of privacy in his identity, but to compare the fingerprinting process and the resulting identification information obtained therefrom with DNA profiling is pure folly.").

¹³⁴ *Mitchell*, 652 F.3d at 423 (Rendell, J., dissenting) ("DNA sample contains a vast amount of sensitive information beyond the individual's identity . . ."). *Mitchell*, 681 F. Supp. 2d at 609. ("The identification issue in this instance is a red herring, as there is no compelling reason to require a DNA sample in order to 'identify' and arrestee.").

¹³⁵ *Mitchell*, 681 F. Supp. 2d at 607.

¹³⁶ *Id.* at 610.

¹³⁷ *Mitchell*, 652 F.3d at 413 (citations omitted).

“DNA may permit identification in cases without fingerprint or eyewitness evidence.”¹³⁸ Simply, DNA aids the government in identifying suspects with certainty, notwithstanding changes to their appearance to avoid detection.¹³⁹ Furthermore, it expressly stated how a DNA identifications’ potential to implicate a suspect’s other/past crimes was critical in setting appropriate pre-trial conditions.¹⁴⁰ Finally, the expeditious and accurate identification of suspects was critical to the timely investigating and prosecuting of present and past crimes.¹⁴¹

In contrast, by rejecting the necessity for DNA collection for identification purposes,¹⁴² the dissenting judges and the District Court avoided genuine and good faith consideration of the government’s interest in DNA collection.¹⁴³ Instead, in particular, the District Court’s holding rested primarily on the presumption of innocence and that any interest in collecting DNA samples could be realized through post-conviction DNA collection.¹⁴⁴

Similarly in *Pool*, a three-judge panel of the Ninth Circuit affirmed the district court’s finding that the collection of DNA from arrestees is constitutionally acceptable.¹⁴⁵ *Pool* had been indicted for possessing and receiving child pornography.¹⁴⁶ After pleading not guilty, *Pool* was released sub-

¹³⁸ *Id.* at 413–14.

¹³⁹ *Id.*

¹⁴⁰ *Id.* at 414; *infra* note 170–171.

¹⁴¹ *Id.* at 414–15.

¹⁴² The District Court considered salient how a DNA sample “reveals the most intimate details of an individual’s genetic condition, implicating compelling and fundamental ‘interests in human dignity and privacy.’” *United States v. Mitchell*, 681 F. Supp. 3d 597, 606 (W.D. Pa. 2009). While acknowledging that Mitchell had a “diminished expectation of privacy in his identity,” it declined to equate DNA profiling with fingerprinting, asserting that a defendant, “maintains the highest expectation of privacy, even though incarcerated, in his genetic code.” *Id.* at 608. Likewise, the court rejected the Government’s assertion that DNA collection was for identification, finding that it was taken for an investigative purpose and thus pre-conviction DNA collection did not present a “compelling reason to unduly burden a legitimate expectation of privacy . . . [to] members of society who have not been convicted, are presumed innocent, but have been arrested and are awaiting proper trial.” *Id.* at 609–10. *See United States v. Mitchell*, 652 F.3d 387, 416 (Rendell, J., dissenting).

¹⁴³ *See Mitchell*, 652 F.3d at 422–23 (Rendell, J., dissenting) (“The real purpose of collecting . . . pretrial detainees’ DNA samples . . . is not to ‘identify’ the arrestee . . . but to use those profiles and the information they provide as evidence in the prosecution and to solve additional past and future crimes . . .”). *Mitchell*, 681 F. Supp. 2d at 608–09.

¹⁴⁴ *See Mitchell*, 652 F.3d at 422 (Rendell, J., dissenting) (“The Government’s interests in this case are limited by the fact that, unlike convicts, arrestees and pretrial detainees are entitled to a presumption of innocence”); *Mitchell*, 681 F. Supp. 2d at 606–09.

¹⁴⁵ The District court ruled that “after a judicial or grand jury determination of probable cause has been made for felony criminal charges against a defendant, no Fourth Amendment or other Constitutional violation is caused by a universal requirement that a charged defendant undergo a ‘swab test’ or blood test when necessary, for the purposes of DNA analysis to be used solely for criminal law enforcement, identification purposes.” *Pool*, 645 F. Supp. 2d. at 906 (emphasis added). The Ninth Circuit affirmed both the result and rationale of this holding. *See infra* notes 146–151.

¹⁴⁶ *Pool*, 645 F. Supp. 2d at 905.

ject to multiple pre-trial release conditions, including providing a DNA sample, a condition subsequently challenged by Pool in the ensuing litigation.¹⁴⁷

On June 2, 2011, the Ninth Circuit ordered that *Pool* “be reheard en banc . . . [and] [t]he three-judge panel opinion not be cited as precedent.”¹⁴⁸ The case was calendared for September 20, 2011. However, the day before, on account of defendant Pool entering a guilty plea, the case was declared moot and the action dismissed.¹⁴⁹ In its order, the court “dismiss[ed] the appeal, vacate[d] the panel’s opinion, vacate[d] the district court’s and magistrate judge’s orders and remand[ed] with instruction to dismiss the action.”¹⁵⁰

Both the district court’s and three-judge panel’s opinion, although not binding precedent, will be considered persuasive on the issue of pre-conviction DNA collection. Firstly, the three-judge panel’s opinion was not reversed, but vacated—not on the merits—but on procedural grounds. Secondly, the three-judge panel’s ruling is salient on the considered issue because it is the only analysis rendered by the Ninth Circuit and is one of only two Circuit Courts ever to have considered this inquiry. Finally, *Mitchell*, the other case to directly consider this issue and which reached the same conclusion, noted the holding and vacatur of *Pool*.¹⁵¹

In applying the “totality-of-the-circumstances” test, the *Pool* court reaffirmed that the test requires balancing the “intrusion upon the individual’s privacy with the government’s legitimate interests.”¹⁵² However, the court began by noting that a prerequisite for applying the “totality-of-the-circumstances” test was that there needed to be some basis for the individual to be considered “having less than the full rights of a citizen.”¹⁵³ Agreeing with the Government, the court affirmed the district court’s position that a grand jury finding of probable cause was dispositive and that an indicted individual is in an altered status than a common citizen.¹⁵⁴ Despite a presumption of innocence, the Ninth Circuit recognized that an indicted individual is not afforded the full gamut of rights and unrestricted liberty,

¹⁴⁷ *Id.* The District Court for the Eastern District of California stayed the initial DNA collection, permitting the prosecution and defense to submit briefs on the issue, and again extended the stay pending the resolution of Pool’s appeal before the Ninth Circuit. *See also Pool*, 621 F.3d at 1215, 1217.

¹⁴⁸ *Pool*, 646 F.3d 659, 659 (9th Cir. 2011).

¹⁴⁹ *United States v. Pool*, 659 F.3d 761, 761 (9th Cir. 2011).

¹⁵⁰ *Id.*

¹⁵¹ *Mitchell*, 652 F.3d at 402, 425, 426.

¹⁵² *Pool*, 621 F.3d at 1218.

¹⁵³ *Id.* at 1219.

¹⁵⁴ *Id.*

owing to various pretrial conditions that may be imposed.¹⁵⁵ For example, the court found that a defendant “may be deprived of his very liberty . . . be subject to electronic monitoring . . . be ordered to obey a mandatory monitoring . . . [and] be ordered to obey a mandatory curfew.”¹⁵⁶ As a result, indicted individuals are not similarly situated to typical citizens of the general public.

The court concluded that any intrusion on Pool’s privacy was minimal because the information revealed from DNA collection was for identification and, with respect to identity, an indicted defendant has “little or no right to hide his identity from the government.”¹⁵⁷ Further, in reference to the collection procedure, the court asserted that the actual physical intrusion was slight. The court accepted that the purpose of DNA collection was not designed “to reveal genetic traits such as physical and medical characteristics.”¹⁵⁸ Decisively, it echoed *Kincade*, emphasizing that, “[a]s currently structured and implemented, . . . the DNA Act’s compulsory profiling of qualified federal offenders can only be described as minimally invasive—both in terms of the bodily intrusion it occasions, and the information it lawfully produces.”¹⁵⁹

Turning to the government’s interests, the court acknowledged that use of DNA was the “most accurate means of identification available,” and therefore, the government had a “legitimate” interest in “knowing the identity” of a person indicted, but released into the public population before conviction.¹⁶⁰ In so holding, the *Pool* court expressed concern that there existed an expansive period of time until the final disposition of a defendant’s case, when during such time, it was pertinent to know and confirm the precise identity of an indicted defendant.¹⁶¹ In addition, the court noted that, just like with fingerprints, “a DNA sample allows the government to ensure that the defendant did not commit *some other crime and* discourages a defendant from *violating* any condition of his or her pretrial release.”¹⁶²

The main point of divergence from the majority holdings in *Mitchell* and *Pool* and their dissenting counterparts was the extent to which the presumption of innocence permitted the burdening of select privacy interests before conviction, balanced against the government’s interest in collecting DNA,

¹⁵⁵ *Id.* at 1219–20.

¹⁵⁶ *Id.*

¹⁵⁷ *Pool*, 621 F.3d at 1222.

¹⁵⁸ *Id.* at 1221.

¹⁵⁹ *Id.* at 1222 (quoting *United States v. Kincade*, 379 F.3d 813, 837–38 (9th Cir. 2004)).

¹⁶⁰ *Pool*, 621 F.3d at 1222–23.

¹⁶¹ *Id.* at 1223.

¹⁶² *Id.* (emphasis added).

which was analogized to fingerprint collection in particular. Nevertheless, the presumption of innocence does not function as an impermeable shield against any *temporary* curtailment of certain rights; instead, more precisely it parries any *permanent* adjustment to an individual's status, from society's outlook, on the sole basis of the indictment.¹⁶³ As acknowledged in both *Mitchell* and *Pool*, portions of an individual's set of rights and their liberty may be curtailed before conviction.¹⁶⁴ An individual's entrance into the criminal justice system—upon a finding of probable cause that the individual committed an illegal act—modifies that individual's rights and status in society; they are situated differently from both convicted criminals and other members of society.

Objection to analogizing DNA and fingerprint collection is misplaced and misconstrues the science of DNA collection and the information that it furnishes law enforcement.¹⁶⁵ Insofar that DNA does have the *potential* to "reveal the most intimate details of an individual's genetic condition. . ."¹⁶⁶ it simply does not reveal to the world, by *sole virtue of its collection* the entirety of a person's private information, with regard to conditions, predispositions and features. Moreover, an individual, at their own desire, cannot change or hide their DNA and therefore it presents the prime means of identifying individuals.¹⁶⁷ The fact that it contains the *potential* to reveal more information about an individual does not alone render it unconstitutional, but it merely requires careful consideration of the constructed safeguards to ensure its proper application.¹⁶⁸ Furthermore, fingerprints and photographs are used jointly for identification and investigation purposes,

¹⁶³ See *Jones v. Murray*, 962 F.2d 302, 306 (4th Cir. 1992) ("With the person's loss of liberty upon arrest comes the loss of at least some, if not all, rights to personal privacy otherwise protected by the Fourth Amendment. Thus, persons lawfully arrested on probable cause and detained lose a right of privacy . . ."); see also *Haskell v. Harris*, 669 F.3d 1049, 1058 (9th Cir. 2012) ("Even critics of mandatory DNA sampling concede that a felony arrestee has a diminished expectation of privacy."); *infra* Part VIII.ii.

¹⁶⁴ *United States v. Mitchell*, 652 F.3d 387, 411 (3d Cir. 2011) ("[P]robable cause had already supplied the basis or bringing the person within the criminal justice system. With the person's loss of liberty upon arrest comes the loss of at least some, if not all, rights to personal privacy otherwise protected by the Fourth Amendment." (quoting *Jones*, 962 F.2d at 306)); *Pool*, 621 F.3d at 1219.

¹⁶⁵ See *Mitchell*, 652 F.3d at 410. *Contra Mitchell*, 681 F. Supp. 2d at 608 ("[T]o compare the fingerprinting process and the resulting identification information obtained therefrom with DNA profiling is pure folly."); see also *Haskell*, 669 F.3d at 1079 (Fletcher, J., dissenting) ("Even with today's technology, however, DNA reveals more information than a fingerprint.").

¹⁶⁶ *Mitchell*, 681 F. Supp. 2d at 606.

¹⁶⁷ See *Mitchell*, 652 F.3d at 414; see also *Haskell*, 669 F.3d at 1063 ("Criminals can easily hide their fingerprints by wearing gloves, but they cannot mask their DNA.").

¹⁶⁸ See *Mitchell*, 652 F.3d at 415 ("[T]here is no room for law enforcement officials to exercise (or abuse) discretion by deciding whether or not to collect a DNA sample . . . [there are statutory] safeguards to prevent the improper use of DNA profiles and to ensure the removal of DNA records from CODIS following a dismissal or an acquittal.").

after being taken from an individual lawfully in custody, irrespective of whether the crime at issue implicates the need for any form of forensics.¹⁶⁹ Hence, a defendant has no valid basis to object to use of DNA for identification since, because of its accuracy, it may link the said defendant to past crimes.¹⁷⁰ An individual has no right to privacy in past crimes and, once in custody, it is constitutionally permissible to ensure accurate identification of the defendant in connection with the underlying crime and any past crimes.¹⁷¹

VI. THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND'S PRE-CONVICTION DNA COLLECTION SYSTEM¹⁷²

The United Kingdom is the origin of the common law system present in the United States.¹⁷³ Despite not being bound by the Fourth Amendment, the United Kingdom, like the United States, struggles to balance the use of advantageous technology in law enforcement, while maintaining individual privacy interests.¹⁷⁴ Therefore, with a shared legal heritage, the United

¹⁶⁹ *Mitchell*, 652 F.3d at 412 (“DNA collection occurs only after it has been determined that there is probable cause to believe that the arrestee committed a crime . . . arrestees possess a diminished expectation of privacy in their own identity, which has traditionally justified taking their fingerprints and photographs . . . [DNA profiles] . . . function as ‘genetic fingerprints’ used only for identification purposes, arrestees and pretrial detainees have reduced privacy interests in the information derived from a DNA sample.”); *Jones*, 962 F.2d at 306 (“[C]onsider the universal approbation of ‘booking’ procedures that are followed for every suspect arrested for a felony, whether or not the proof of a particular suspect’s crime will involve the use of fingerprint identification. Thus a tax evader is fingerprinted just the same as is a burglar.”).

¹⁷⁰ *Mitchell*, 652 F.3d at 414 (“Running an arrestee’s DNA profile through CODIS could reveal matches to crime-scene DNA samples from unsolved cases. Whether an arrestee is possibly implicated in other crimes is critical to the determination of whether or not to order detention pending trial.”); *United States v. Pool*, 621 F.3d 1213, 1222 (9th Cir. 2010) (“The government’s interests in DNA samples for law enforcement purposes are well established. It is the *most accurate means of identification available*. Furthermore, unlike fingerprint evidence that requires that the perpetrator leave a discernable fingerprint at the scene of a crime, it is much more difficult for a perpetrator not to leave some DNA evidence at the scene of a crime.” (emphasis added)).

¹⁷¹ *Jones*, 962 F.2d at 306 (“[W]hen a suspect is arrested upon probable cause, his identification becomes a matter of legitimate state interest and he can hardly claim privacy in it . . . the identification of suspects is relevant not only to solving the crime for which the suspect is arrested, but *also for maintaining a permanent record to solve other past and future crimes*.” (emphasis added)); *Haskell*, 669 F.3d at 1063 (“DNA’s remarkable ability to accurately identify arrestees is a sufficiently compelling interest to justify the 2004 Amendment . . . By accurately identifying arrestees, the DNA database also helps solve past crimes.”).

¹⁷² Throughout the entirety of the note, reference to the United Kingdom of Great Britain and Northern Ireland (United Kingdom) refers to England, Wales, Scotland and Northern Ireland. Only in Section VII (ii), (iii) does reference to the United Kingdom exclude Scotland, which is discussed separately.

¹⁷³ Alton B. Parker, *The Common Law Jurisdiction of the United States*, 17 YALE L. J. 1, 2, 12 (1907); see Herbert Pope, *The English Common Law in the United States*, 24 HARV. L. REV. 1, 11–12 (1910).

¹⁷⁴ *R (In re S) v. Chief Constable of S. Yorkshire*, [2002] EWCA (Civ) 1275, [2], [2003] 1 All E.R. 148 (Eng.), *aff’d on other grounds*, [2004] UKHL 39, [2004] All E.R. 193 (appeal taken from

Kingdom informs as to successes and problems that the United States is likely to encounter when crafting similar legal standards.

A. European Union Conventions Bestowing Protections Similar to the Fourth Amendment and are Presumptively Binding on European Union Members.

The United Kingdom is subject to numerous European Union provisions that are analogous to the spirit and effect that the Fourth Amendment should have on DNA collections in the United States. First, the Convention for the Protection of Human Rights and Fundamental Freedoms, Article 8 memorializes a general right to privacy that may only be disturbed, as “necessary in a democratic society in the interests of . . . public safety or . . . for the prevention of disorder or crime”¹⁷⁵ Secondly, the Charter of Fundamental Rights of the European Union, Article 48 guarantees the presumption of innocence until proven guilty.¹⁷⁶ These protections are similar to those offered by the Fourth Amendment, and hence provide a framework by which the judicial treatment of DNA collection may be considered as persuasive guide for the United States.

B. Statutory Scheme for DNA Collection in the United Kingdom of Great Britain and Northern Ireland

The statutory scheme providing for the collection of biological samples in England, Wales, and Northern Ireland (“United Kingdom”) is separate from Scotland. Recently, the European Court of Human Rights (“ECHR”) condemned the DNA collection system in the United Kingdom, although praised the model adopted in Scotland.¹⁷⁷ The differences and similarities between the two systems, the yielded results, and the ensuing treatment by the ECHR, offers a guide to the United States on how to avoid the existing hazards prevalent in the United Kingdom’s system, yet maintain the successful components of both the United Kingdom’s and Scotland’s system. The United Kingdom’s statute is promulgated in the Police and Criminal

Eng.) (“[C]ourts are now required to perform [the role] . . . of holding the balance between the rights of the individual and the rights of the state.”). See Craig Nydick, Comment, *The British Invasion (of Privacy): DNA Databases in the United Kingdom and United States in the Wake of the Marper Case*, 23 EMORY INT’L L. REV. 609, 613 (2009) (suggesting that the United States and the United Kingdom follow the guidelines set out by the European Court to help balance law enforcement interests and privacy interests).

¹⁷⁵ Convention for the Protection of Human Rights and Fundamental Freedoms art. 8, Nov. 4, 1950, C.E.T.S. No. 5.

¹⁷⁶ Charter of Fundamental Rights of the European Union art. 48, 2010 O.J. (C 83) 389, 401.

¹⁷⁷ See *infra* note 194.

Evidence Act of 1984 (“PCEA”), Chapter 60, Part V, Sections 61–64.¹⁷⁸ Scotland’s statute is promulgated in the Criminal Procedure (Scotland) Act of 1995, Chapter 46, Part II, Sections 18–20.¹⁷⁹

Both the United Kingdom’s and Scotland’s statutes permit DNA collection before conviction. Indeed, in the United Kingdom, the dominant method of DNA collection before conviction is when an individual is “in police detention in consequence of his arrest for a recordable offense;”¹⁸⁰ or “charged with a recordable offense . . .”¹⁸¹ Similarly, in Scotland, the collection of samples may occur when “a person has been arrested and is in custody or is detained,”¹⁸² during which time, law enforcement may “require the person to provide . . . such relevant physical data.”¹⁸³ Thus, in both the United Kingdom and Scotland, DNA samples are collected when a suspect is arrested or otherwise taken into custody, thereby well in advance of conviction.

Both the United Kingdom and Scotland distinguish between “intimate” and “non-intimate” samples and searches. In the United Kingdom, an “intimate sample” includes all internal bodily fluids¹⁸⁴ and “a swab taken from . . . a person’s body orifice *other than the mouth*.”¹⁸⁵ In contrast, a “non-intimate sample” includes all non-pubic hairs, saliva, and “a swab taken from any part of a person’s body other than a part from which . . . would be an intimate sample.”¹⁸⁶ Hence samples derived from buccal swabs are non-intimate samples.¹⁸⁷ In Scotland, the “intimate” and “non-intimate” distinction is similar, primarily collecting DNA via, non-pubic hairs, finger/toenails, or “[a biological sample] from the inside of the person’s mouth, by means of swabbing, a sample of saliva or other material.”¹⁸⁸

DNA retention is the main distinction between the United Kingdom’s

¹⁷⁸ Police and Criminal Evidence Act, 1984, c. 60, §§ 61–64.

¹⁷⁹ Criminal Procedure (Scotland) Act, 1995, c. 46, §§ 18–20.

¹⁸⁰ Police and Criminal Evidence Act, c. 60, § 63(2B).

¹⁸¹ *Id.* § 63(3A).

¹⁸² Criminal Procedure (Scotland) Act, c. 46, § 18(1).

¹⁸³ *Id.* § 18(2).

¹⁸⁴ See Police and Criminal Evidence Act, 1984, c. 60 § 65 (“[‘Intimate sample’ means . . . a sample of blood, semen or any other tissue fluid, urine or pubic hair.”).

¹⁸⁵ *Id.* (emphasis added).

¹⁸⁶ *Id.* An amendment by the Serious Organised Crime and Police Act of 2005, chapter 15, section 119(3) classified swabs taken from the mouth (buccal swabs) as not intimate samples.

¹⁸⁷ Most of the DNA samples that form the United Kingdom’s DNA database are usually collected by means of a buccal swab (swabbing the inside of the cheek for epithelial cells). *Europe Court Nixes U.K. DNA Databases*, CBS NEWS, Feb. 11, 2009, <http://www.cbsnews.com/stories/2008/12/04/world/main4648536.shtml?tag=mncol;lst;1>.

¹⁸⁸ Criminal Procedure (Scotland) Act, c. 46 § 18(6), (6A).

and Scotland's DNA collection systems. The United Kingdom permits virtually indefinite retention when DNA is collected "in connection with investigation of an offense,"¹⁸⁹ provided the samples are used for law enforcement purposes.¹⁹⁰ In contrast, Scotland operates a dual retention system for DNA collected from individuals who are not ultimately convicted of the underlying offense. Where the underlying charges involve certain violent or sexual offenses, yet conclude without a conviction, the sample/profile may be retained for three years.¹⁹¹ All other offenses require that upon dismissal or acquittal, all samples/profiles be destroyed.¹⁹² Significantly, both systems necessitate DNA collection prior to conviction and thus these retention provisions have proved central in the ongoing debate in Europe about the use of DNA in the criminal justice system.

C. The Judicial Treatment Of The United Kingdom's DNA Collection System

Much of the controversy in the United Kingdom and Europe regarding DNA collection concerns how long a profile/sample may be retained and whether and when it must be destroyed if the defendant is not ultimately convicted of the underlying offense.¹⁹³ There has been little focused litigation on DNA collection from arrestees, but a recent ruling by the ECHR,¹⁹⁴ set precedent *sub silentio*,¹⁹⁵ sanctioning the collection of DNA from arrestees, by praising Scotland's DNA system, though casting doubt on portions of the United Kingdom's DNA system.

In *S. and Marper v. the United Kingdom*, in ruling on a case appealed from the House of Lords,¹⁹⁶ the ECHR held that the indefinite retention of

¹⁸⁹ Police and Criminal Evidence Act, c. 60, § 64(1A).

¹⁹⁰ *See id.*

¹⁹¹ Criminal Procedure (Scotland) Act, c. 46, § 18A(2), (4)(a).

¹⁹² *Id.* § 18 (1995).

¹⁹³ Kate Beattie, *S and Marper v. UK: privacy, DNA, and crime prevention*, 2 EUR. HUM. L. REV. 229, 229-30 (2009); Jason M. Swergold, *To Have and to Hold: The Future of DNA Retention in the United Kingdom*, 33 B.C. INT'L & COMP L.REV. 179, 200 (2010).

¹⁹⁴ *S. & Marper v. the United Kingdom*, 48 Eur. Ct. H.R. 50 (2008).

¹⁹⁵ *See* BLACK'S LAW DICTIONARY 1469 (Brian A. Garner, ed., 8th ed. 1999) ("Under silence; without notice being taken; without being expressly mentioned.").

¹⁹⁶ Chief Constable of South Yorkshire, [2004] UKHL 39, [2002] EWCA (Civ) 1275 (appeal taken from Eng.). Two applicants, S and Mr. Marper, were arrested for separate, non-violent offenses. Upon arrest, their fingerprints and a DNA sample were taken. The former applicant was acquitted; charges were dropped against the latter applicant. As a result, both requested that their fingerprints and DNA samples be destroyed. The Crown Prosecution Services refused, and triggered the resulting litigation. *Id.*; *see* *DNA and Human Rights: Throw it Out*, ECONOMIST, 2008 WLNR 23421838, December 6th, 2008 [Hereinafter ECONOMIST: *DNA*].

DNA profiles violated a right to privacy.¹⁹⁷ “The core complaint to the European [C]ourt [of Human Rights] centered on retaining DNA, not collecting it to solve crimes.”¹⁹⁸ The ECHR emphasized that retaining DNA samples/profiles indefinitely *after* judicial proceedings have ceased, particularly if an individual was acquitted or the charges dropped, was inconsistent with European Union conventions.¹⁹⁹ In particular, the United Kingdom was condemned for its retention policy,²⁰⁰ yet the ECHR favorably noted the collection/retention policies of other European countries, and praised the Scottish model as a “fair and proportionate system.”²⁰¹ Set forth under the provision titled “The Court’s Assessment,” the ECHR asserted that the “position of Scotland, as a part of the United Kingdom itself, is of particular significance in this regard.”²⁰² That is in Scotland, the “biological samples and profiles may be retained for three years, if the *arrestee* is suspected of certain sexual or violent offenses even *if a person is not convicted*.”²⁰³ Though the ECHR merely acknowledged a segment of Scotland’s retention system, the entirety of Scotland’s DNA collection system is contingent on collection well before conviction.²⁰⁴

The variance between the United Kingdom and the European Union/Scotland was not the actual collection of DNA, but rather the blanket retention of such samples irrespective of whether the person was actually convicted.²⁰⁵ Issues of retention may take two forms: (1) the retention of a sample/profile after the judicial role has ceased, but the defendant not be convicted of the underlying offense; or (2) the retention of a sample/profile after conviction. The decision in *S. and Marper* addressed the former. Accordingly, concerns over indefinite retention of DNA only emerge where DNA is taken *before the defendant is convicted* of the underlying offense.

¹⁹⁷ *S. & Marper*, 48 Eur. Ct. H.R. at 77; *European Court Nixes U.K. DNA Database*, CBS NEWS, (February 11, 2009 1:55PM), http://www.cbsnews.com/2102-202_162-4648536.html; see ECONOMIST: *DNA*, *supra* note 196.

¹⁹⁸ CBS NEWS, *supra* note 197 (emphasis added); see *S. & Marper*, 48 Eur. Ct. H.R. at 106.

¹⁹⁹ *S. & Marper*, 48 Eur. Ct. H.R. at 125.

²⁰⁰ “[T]he Court is struck by the blanket and indiscriminate nature of the power of retention in England and Wales. The material may be retained *irrespective of the nature or gravity of the offence* with which the individual was originally *suspected* ... samples may be taken—and retained—from a person of any age, arrested in connection with a recordable offence, which *includes minor or non-imprisonable offences*.” *Id.* at 119 (emphasis added).

²⁰¹ *Time Limits on Innocent DNA Data*, BBC NEWS (May 7, 2009 11:24 AM), http://www.news.bbc.co.uk/2/hi/uk_news/8037042.htm.

²⁰² *S. & Marper*, 48 Eur. Ct. H.R. at 109.

²⁰³ *Id.* at 36.

²⁰⁴ *Supra* Part VII.ii.

²⁰⁵ *S. & Marper*, 48 Eur. Ct. H.R. at 110 (“England, Wales and Northern Ireland appear to be the only jurisdictions within the Council of Europe to allow the indefinite retention of fingerprints and DNA material... *suspected* of any recordable offense.” (emphasis added)).

By limiting its consideration to the retention of DNA in the absence of conviction, the ECHR implicitly sanctioned pre-conviction DNA collection, though circumscribed the scope of retention if the defendant is not convicted.

In finding the pre-conviction collection of DNA appropriate, the ECHR noted that a “majority of the Council of Europe member States allow the *compulsory taking* of fingerprints and *cellular samples in the context of criminal proceeding . . .*”²⁰⁶ Later it acknowledged that the “strong consensus existing among the contracting states in this respect is of considerable importance . . . in the assessment of the permissible limits of the interference with private life . . .”²⁰⁷ The “balancing [of] the potential benefits of the extensive use of . . . [modern scientific techniques in the criminal-justice system] against important private-life interests,”²⁰⁸ specifically retention policies, offered the basis under which to view the DNA policies of European countries—including Scotland’s—favorably.

VII. PROPOSED CONSTITUTIONAL ANALYSIS FOR PRE-CONVICTIONS DNA COLLECTION IN THE UNITED STATES OF AMERICA

In the two centuries since the drafting of the Fourth Amendment, to account for advancing technologies, courts have developed extensive jurisprudence that construes the Amendment more flexibly than its strict text provides.²⁰⁹ The expanding use of DNA in the criminal justice system is among the most recent challenges to the Fourth Amendment. The use of DNA offers law enforcement the opportunity to: (1) establish identification records of convicted individuals, which may be used to assist in solving past and future crimes by putting law enforcement at large on notice; (2) deter future criminal conduct of released individuals; (3) assist in exculpating individuals who were wrongfully convicted.²¹⁰ In furtherance of these objectives, “[i]t is of paramount importance that law enforcement agencies . . . take full advantage of available techniques of modern technology and forensic science.”²¹¹ To do so, it is imperative that the Fourth Amendment not tether modern society to the 18th century such that the application

²⁰⁶ *Id.* at 45 (emphasis added); *see id.* at 108.

²⁰⁷ *Id.* at 112.

²⁰⁸ *Id.*

²⁰⁹ *See supra* Parts III–IV.

²¹⁰ *See United States v. Conley*, 453 F.3d 674, 678 (6th Cir. 2006); *United States v. Pool*, 645 F. Supp. 2d 903, 910 (E.D. Cal. 2009).

²¹¹ *Regina v. Chief Constable of South Yorkshire*, [2004] UKHL 39.

of modern scientific advances is frustrated.²¹² It is equally important to not reduce the protections offered by the Fourth Amendment to a nullity by interpreting it too narrowly. Recently, circuit courts have struggled to select and apply existing Fourth Amendment tests to the collection of DNA.²¹³ The forgoing formulation presents a hybrid analysis by which to consider pre-conviction DNA collection by integrating both the “totality-of-circumstances” test and “special needs” doctrine.

Pre-conviction DNA collection should be evaluated under a quasi-totality of circumstances approach by balancing the government’s interest against an individual’s privacy interest.²¹⁴ However, the reasonableness of the search, should be weighed in favor of the government and therefore against the individual’s privacy interest provided that the following attributes of DNA collection are all preserved: (1) DNA may be collected only post-indictment for a felony, not post-arrest or for a non-felony; (2) collection be per the least intrusive means possible; (3) the scope of DNA analyzed be limited to what is sufficient for identification and only then in connection with law enforcement; (4) that in the event of dismissal or acquittal, the entirety of the DNA profile be automatically expunged. A defendant may overcome this presumption in favor of the government, if he is able to show: (1) failure by the government to uniformly adhere to these requirements; or (2) sustained abuses of DNA collection by the government; or (3) given further scientific advances, there is a less intrusive means to accomplish all the present objectives satisfied by present DNA collection.

A. Attribute #1 — DNA may only be Collected after a Defendant has been Indicted for a Felony

The appropriate balance is not collection post-arrest, but rather collection post-indictment.²¹⁵ Following indictment, the presumption of innocence is

²¹² See *Olmstead v. United States*, 277 U.S. 438, 472–73 (1928) (Brandeis, J., dissenting) (“[G]eneral limitations on the powers of government . . . do not forbid the United States or the states from meeting modern conditions . . . Clauses guaranteeing to the individual protection against specific abuses of power, must have a similar capacity of adaptation to a changing world . . . Time works changes, brings into existence new conditions and purposes. Therefore a principal to be vital must be capable of wider application than the mischief which gave it birth.”); *Euclid v. Amber Realty Co.*, 272 U.S. 365, 387 (1926).

²¹³ See *supra* note 93.

²¹⁴ *United States v. Knights*, 534 U.S. 112, 121 (2001) (“Although the Fourth Amendment ordinarily requires the degree of probability embodied in the term “probable cause,” a lesser degree satisfies the Constitution when the balance of governmental and private interests makes such a standard reasonable.”); *United States v. Brigoni-Ponce*, 422 U.S. 873, 881 (1975).

²¹⁵ The District Court for the Eastern District of California, in *Pool*, struck the appropriate balance

but a truism that merely reflects the declaration that, until proven guilty beyond a reasonable doubt, an individual is not yet equated with having committed the act charged in the indictment.²¹⁶ An indictment does not present an absolute bar to the restriction of a defendant's liberty and privacy interests.²¹⁷ The collection of DNA does not deny the presumption of innocence; more precisely, it is an early challenge to that presumption. Critically, when DNA is collected pursuant to an indictment²¹⁸ that collection is not an "unreasonable search and seizure,"²¹⁹ nor is it the speculative searching for criminality,²²⁰ but rather it is collected when there is probable cause to believe that the individual committed the charged act.²²¹ Therefore, DNA collected in conjunction with an indictment is reasonable, which is an essential component to passing constitutional muster.

As there is a preexisting distinction between felonies and misdemeanors, so too should that distinction exist with respect to DNA collection.²²² This

asserting that "after a judicial or grand jury determination of probable cause has been made for felony criminal charges ... no Fourth Amendment violation is caused by a universal requirement that a charged defendant, in a felony case undergo a 'swab test,' ... for the purposes of DNA analysis to be used solely from criminal law enforcement, identification purposes." *Pool*, 645 F. Supp. 2d at 913 (emphasis added).

²¹⁶ See *Bell v. Wolfish*, 441 U.S. 520, 533 (1979) ("The presumption of innocence is a doctrine that allocates the burden of proof in criminal trials; it also may serve as an admonishment to the jury to judge an accused's guilt or innocence solely on the evidence adduced at trial and not on the basis of suspicions that may arise from the fact of his arrest, indictment, or custody, or from other matters not introduced as proof at trial . . ." (internal citations omitted)). The Supreme Court in *Wolfish* "examine[d] the constitutional rights of pretrial detainees—those persons who have been charged with a crime but who have not yet been tried on the charge." *Id.* at 523.

²¹⁷ See *id.* at 533 ("The principle that there is a presumption of innocence in favor of the accused is the undoubted law, axiomatic and elementary, and its enforcement lies at the foundation of the administration of our criminal law. But it has no application to a determination of the rights of a pretrial detainee during confinement before his trial has even begun." (emphasis added)); see also *supra* Part VI, para. 7–8.

²¹⁸ See Fed. R. Crim. P. 7.

²¹⁹ U.S. CONST. amend. IV.

²²⁰ *Ferguson v. City of Charleston*, 532 U.S. 67 (2001) (holding that warrantless drug tests of pregnant women at a hospital, which turned over evidence of purported drug use in advance consensus with law enforcement, was a violation of the Fourth Amendment and did not satisfy the special needs exception); see *Pool*, 645 F. Supp. 2d at 909.

²²¹ *United States v. Sells Engineering, Inc.*, 463 U.S. 418, 423 (1983) ("The grand jury . . . serves the 'dual function of determining if there is probable cause to believe that a crime has been committed and of protecting citizens against unfounded criminal prosecutions." (emphasis added) (quoting *Branzburg v. Hayes*, 408 U.S. 665, 686–87 (1972)); see *Bracy v. United States*, 435 U.S. 1301, 1302 (1978) ("The grand jury . . . only sits to determine whether there is probable cause to believe them [the charges], so as to require him [the defendant] to stand his [or her] trial."); *Wood v. Georgia*, 370 U.S. 375, 390 (1962) ("[T]his body [the grand jury] has been regarded as a primary security to the innocent against hasty, malicious and oppressive persecution; it serves the invaluable function in our society of standing between the accuser and the accused . . . to determine whether a charge is founded upon reason or was dictated by an intimidating power or by malice and personal ill will."); *United States v. Ciambrone*, 601 F.2d 616, 622 (2d Cir. 1962) ("The grand jury has the equally important duty of protecting persons against unfounded or unsupported charges and, absent a finding probable cause, it may not file and indictment").

²²² As used herein, a felony in the federal criminal justice system refers to offenses requiring min-

is because the ramifications of a felony indictment and the seriousness of the alleged crime are significantly greater than for a misdemeanor. While felonies reflect a wide range of offenses, they typify offenses viewed grievously by society; in contrast, non-felonies usually implicate less serious or trivial offenses. Pretrial restrictions reveal the distinction between felonies and misdemeanors and bespeak differing privacy interests. For example, serious felonies may require that the defendant be remanded until trial, be restricted to the jurisdiction, wear a GPS tracker, or observe a curfew. In contrast, for significantly less serious crimes, particularly misdemeanors, an individual may be released on his own recognizance or be required to post a nominal bond until trial.²²³

Restricting DNA collection to individuals indicted for a felony better balances the reasonableness of the intrusion on privacy interests because of the seriousness and implications of the underlying charges. Presently, the United States code contains separate statutory sections regarding pre-conviction DNA collection.²²⁴ As a result of these differing sections, whether the current statutory scheme permits DNA collection post-arrest for a non-felony crime is unclear. This is not unlike the overly broad collection scheme in the United Kingdom, which before the ECHR's decision, permitted collection upon arrest or charge.²²⁵

The United Kingdom's DNA system hastily collected DNA with faint connection to the seriousness of the offense or the likelihood of a genuine prosecution. Consequently, a considerable portion of the British population had their DNA recorded and a great proportion of such individuals were not actually convicted of the triggering offense.²²⁶ The ECHR noted that among the faults present and exclusive to the United Kingdom's DNA system was that there was no floor on the severity of the crime required for DNA collection. This is especially problematic given that there exists an inverse relationship between the severity of the crimes committed and the amount of people committing such crimes. In the United Kingdom, "begging or being drunk and disorderly" illustrated the type of minor offenses for which an individual's DNA may be collected, but would unlikely result

imum of one-year one-days imprisonment.

²²³ *Pool*, 645 F.Supp.2d at 909.

²²⁴ *Supra* Part VI.

²²⁵ *Supra* note 196 and accompanying text.

²²⁶ The United Kingdom's DNA database contained approximately "5.3 m[illion] profiles, representing 9% of the population," in which 200,000 profiles were from individuals who were never convicted. *ECONOMIST: DNA, supra* note 171; Paisley Dodds, *European Court Strikes Down British Law on DNA*, *DESERET NEWS* (Dec. 5, 2008, 12:41 AM), <http://www.deseretnews.com/article/705268193/European-court-strikes-down-British-law-on-DNA.html?pg=all>.

in genuine prosecution.²²⁷ Restricting the proportion of individuals whose DNA is collected directly minimizes the intrusion on an individual's privacy.

The United States should heed the British experience to avoid undesired results that may construe the DNA regime as unreasonable under the Fourth Amendment. The United States should amend its statutory scheme to condition pre-conviction DNA collection on a felony indictment. Anything short of this, such as arrest or detainment, would be insufficient. This better correlates with the government's goal of resolving to prosecute offenses so to obtain jury verdicts or pleas. Setting a felony indictment as the minimum requirement for pre-conviction DNA collection would limit collection to those serious offenders that the Government intends to meaningfully prosecute.

B. Attribute #2 — DNA should be Collected from Individuals Employing the Least Intrusive Procedures Possible

The federal statutes 42 U.S.C. § 14131-14136e and its corresponding DOJ regulation §28.12, do not provide for *specific* methods of collection.²²⁸ The United Kingdom distinguishes between intimate and non-intimate samples/collections,²²⁹ and an analogous statutory scheme should similarly be adopted. Such a statutory revision places the public on notice of the procedures used, attempts to minimize intrusions on privacy, and serves as an approximate adoption of the progeny of cases balancing the Fourth Amendment and the taking of biological samples.²³⁰ While DNA collection, like that of other biological samples, is a search,²³¹ when taken in the least restrictive manner possible, it is a reasonable search passing constitutional muster.²³²

²²⁷ See ECONOMIST: DNA, *supra* note 196; Paisley Dodds, *European Court Strikes Down British Law on DNA*, DESERET NEWS (Dec. 5, 2008, 12:41 AM), <http://www.deseretnews.com/article/705268193/European-court-strikes-down-British-law-on-DNA.html?pg=all>.

²²⁸ The DOJ regulation codified at 28 C.F.R. §28.12 (2012) minimally and vaguely describes the method of collection; inadequate to ensure that the collection is conducted in the least intrusive means possible. See *supra* Part V.

²²⁹ See *supra* Part VII(ii).

²³⁰ See *supra* part IV.

²³¹ See *supra* note 83; *Schlicher v. Peters*, 103 F.3d 940, 942-43 (10th Cir. 1996) (“[T]he collection, analysis and storage of blood and saliva . . . is a search and seizure within the meaning of the Fourth Amendment.”).

²³² See *Winston v. Lee*, 470 U.S. 753, 762 (1985) (“In noting that a blood test was ‘commonplace in these days of periodic physical examinations,’ *Schmerber* recognized society’s judgment that blood tests do not constitute an unduly extensive imposition on an individual’s personal privacy and bodily integrity”). Such equivalence would suggest that buccal swabs, the swabbing of the inside of one’s cheek

Beginning with the *Katz* formulation, the primary question is whether society would recognize a reasonable expectation of privacy in the collection of DNA before conviction. Emerging Fourth Amendment doctrine focused on the “individual’s interest in privacy and security” balanced “against society’s interest in conducting the procedure.”²³³ Previous cases focused on the extent to which the sought biological sample was displayed to the public because it directly correlated with the degree of bodily invasion caused by collection, which could place the individual’s health and safety at risk, or severely compromise “interests in personal privacy and bodily integrity.”²³⁴ However, the actual collection of DNA is different from the collection of blood, fingerprints, tissue, or voice exemplars. Since DNA is omnipresent in nearly every cell of the human body, collection could easily be accomplished without placing the life and health of individual at risk by an invasive procedure that impairs the integrity of the individual’s body.²³⁵

Both the United Kingdom and Scotland list multiple non-intimate collection methods, although their chief procedure for DNA collection is a buccal swab.²³⁶ To obtain such a DNA sample, law enforcement rubs a sterile swab inside a person’s mouth for a couple of seconds to collect epithelial cells. Since, the mouth is a natural bodily cavity, accustomed as a natural pathway, such DNA collection does not raise concerns about risks to the individual’s health, life, and dignity, nor is it unduly invasive. DNA collec-

for a few seconds, are just as commonplace as blood tests and therefore do not amount to a great and overbearing intrusion on an individuals privacy.

²³³ *Id.* at 760; see *supra* Part IV.

²³⁴ *Id.*

²³⁵ While there has been considerable dispute about equating fingerprinting and DNA collection, it is submitted that they are analogous. Identification through DNA profiling is similar to fingerprinting, different only in that it reflects the latest scientific advances, which offer more complete coordination among law enforcement. Furthermore, though an individual cannot tamper with his or her DNA, a sophisticated criminal may tamper with his fingerprints. In addition, DNA profiling is not physically more significant than fingerprinting and not more embarrassing than being indicated for a felony. As stated in *United States v. Kelly*, 55 F.2d 67, 68–70 (2d. Cir. 1932), “the person arrested and thus humiliated may be entirely innocent . . . [Fingerprinting] is no more humiliating than other means of identification that have been universally held to infringe neither constitutional nor common-law rights. As a physical invasion it amounts to almost nothing, and as a humiliation it can never amount to as much as that caused by the publicity attending a sensational indictment to which innocent men may have to submit.” Ultimately, much of the objection to DNA supplementing existing identification methods rests on resistance to new technology and the uncertainty of its implications on a changing and evolving society. This is echoed in *United States v. Pool*, 645 F. Supp. 2d 903, 912 (E.D. Cal. 2009), where the court stated, “[o]ur modern technological society cannot function in an atmosphere of privacy paralysis occasioned by a parade of ‘what ifs.’ The court observes that the arguments, fears and concerns regarding DNA collection are nearly identical to those expressed about fingerprinting more than seventy years ago.”

²³⁶ Roberto Puch-Solis et. al., *Assessing the Probative Value of DNA Evidence: Guidance for Judges, Lawyers, Forensic Scientists and Expert Witnesses*, 2, 106, Feb. 2012, available at <http://www.maths.ed.ac.uk/~cgga/Guide-2-WEB.pdf>; *Europe Court Nixes U.K. DNA Database*, CBS News, Dec. 4, 2008, http://www.cbsnews.com/2100-202_162-4648536.html.

tion through buccal swabs greatly mitigates and minimizes intrusions on an individual's privacy interest,²³⁷ while permitting such collection to advance society's interest in collecting DNA from indicted individuals before conviction. When the privacy interest is reduced in this manner, so too is the reasonable expectation of privacy.

C. Attribute #3 — The Scope of DNA Analyzed is Limited to what is Sufficient for Identifying the Defendant and is Restricted to Law Enforcement

DNA analysis should be circumscribed to explore and profile only the extent necessary to accurately confirm an individual's identity. Limiting the analysis to what is sufficient for identification avoids revealing extensive portions of an individual's genome and therefore minimizes the intrusion on privacy by revealing identifying features or predispositions. Presently, and appropriately, DNA analysis utilizes two elements to eschew revelation of private information: (1) unitizing "junk DNA," which are DNA segments that do not correspond to DNA sequences related to expressing identifying characteristics or features; and (2) using thirteen standard loci as a uniform standard, thus restricting the analysis to only thirteen segments on different chromosomes that exist among 20,000 to 25,000 genes.²³⁸

A chief concern regarding DNA analysis is its potential to reveal an extensive and limitless amount of sensitive private information about an individual; however, use of "junk DNA" mitigates this concern. "Junk DNA" does not correspond to DNA regions responsible for specific biological functions or characteristics, and thereby its analysis is highly unlikely to reveal sensitive details. Moreover, the selected "junk DNA" used in DNA profiling, to wit, the thirteen loci, contains sufficient polymorphisms to permit identification, although the "junk DNA" itself is not necessarily exclusive to a particular person, only the polymorphisms. In fact, "identical 'junk DNA' appears in as genetically diverse species as humans, mice,

²³⁷ To the extent that *Friedman v. Boucher*, 580 F.3d 847, 852 (9th Cir. 2009) held that a "buccal swab constituted a search under the Fourth Amendment," this is distinguishable from what is advanced herein. The circumstances of collection in *Friedman* are different; DNA was forcibly collected under authority of a state statute, without a court order, without probable cause, absent an indictment, and for reasons outside identification purposes. *Id.* at 854, 859; *Pool*, 621 F.3d at 1224–25. Moreover, *Friedman* is inapposite to the present analysis because its conclusion was reached by applying a pure "special needs" analysis, which is divergent from the hybrid analysis undertaken herein and the "totality-of-circumstances" approach undertaken in *Kincade. Id.*

²³⁸ Fitzpatrick & Yeiser, *supra* note 14, at 8; U.S. Library of Medicine: *Genetics*, *supra* note 11.

dogs, and fish,”²³⁹ and thus the DNA selected for use in profiling is not reflective of private individual details, but are DNA segments found across humans and animals.²⁴⁰

Analyzing the thirteen loci, when isolated from among the 20,000 to 25,000 genes, does not necessarily convey revealing characteristics applicable to the person as a whole when considering all their genes. Simply, a part-whole fallacy is presented. When the constituent parts of a whole are disunited, in isolation, those parts do not express the characteristics of the undivided whole. Instead each part only expresses characteristics of itself. Only when reunited with all the parts can it again express the characteristics of the undivided whole.

The forgoing illustrates this proposition. A computer, denominated “Alpha,” contains a prodigious amount of saved private information on its hard drive and all of the saved information is unique to that particular computer. When the computer is functional, the information is easily explored, as all the data is “aggregated and whole.” However, if all the information contained on the computer is converted to binary form,²⁴¹ the saved information may still technically be explored, albeit with great difficulty. To wit, the totality of all the information expressed in binary form would total millions of pages. If thirteen pages are extracted from this totality of converted information, those thirteen pages would be unique to that computer, but by themselves would not reveal any private information in comprehensible form. Simply, the totality of the saved information would yield a unique binary sequence, in which the thirteen pages would be sufficient to

²³⁹ Fitzpatrick & Yeiser, *supra* note 14, at 3.

²⁴⁰ These limitations notwithstanding, critics of DNA profiling continue to raise concerns that future discoveries and understandings for “junk DNA” can one day impact privacy interests. However, this would nonetheless have a *de minimus* impact on privacy interests if in the future it was discovered that the thirteen standard loci are not really “junk DNA” and do serve *some* genetic purpose. Should such a discovery occur, in accordance with *Katz*, individuals would no longer have a reasonable expectation of privacy in those specific thirteen loci. This is because the thirteen existing loci: (1) were chosen well before their purported use and value was known; (2) consist of a small fraction of the total existing unique markers that an individual possesses, hence the extent of person’s genetic code that is revealed is restrained; and (3) are standard for all individuals, thereby treating everyone equally and reducing the privacy interests associated with the information revealed by those specific thirteen loci. Moreover, an individual generally possess a diminished privacy interest with respect to physical features displayed or discernable to the public, for instance, sex, race, eye color, and hair color. These features—and even those hidden from the public—do not in isolation identify a specific individual, but only when aggregated are able to identify and distinguish one individual from another. Thus, even if future discoveries reveal that one of the thirteen loci is associated with a single identifying characteristic, the exposure of that characteristic would not compromise an individual’s privacy. In fact, an individual does not hold a strong or sufficient privacy interest in a single characteristic viewed in isolation.

²⁴¹ See OXFORD ENGLISH DICTIONARY, <http://oxforddictionaries.com/definition/english/binary+code> (last visited Feb. 2, 2011) (“[A] coding system using the binary digits 0 and 1 to represent a letter, digit, or other character in a computer or other electronic device.”).

identify “computer Alpha,” as opposed to any other computer, but would be insufficient to reveal the computer’s hard drive without analyzing the millions of converted binary pages together.

Similarly, a person’s genome is the totality of their genetic structure and is therefore metaphorical to computer data expressed in binary form.²⁴² Only thirteen loci are examined out of a total potential of 20,000 to 25,000 genes that comprise the twenty-three pairs of human chromosomes. The rendered analysis produces a profile that is sufficient, like the thirteen binary pages of computer Alpha, to identify an individual, but is insufficient to express all of the information contained in a person’s genetic structure. A person’s genome displayed as the sequence of alternating nucleotide chains, is analogous to the binary expression of computer Alpha’s hard drive. Both technically permit the evaluation, albeit with incredible difficulty, of all of the contained information. Though the thirteen pages, (and by extension, the thirteen loci), may be used for identification, they are unable, without all the constituent pieces, to convey all of the stored information. When viewed separately from their constituent pieces, the thirteen pages and loci express themselves differently than when united with all the pieces of the undivided whole.

Fundamentally, that a DNA profile is expressed as a set of differing mathematical probabilities, as opposed to a summary of one’s complete medical history, mitigates potential privacy concerns. DNA analysis is the computation of the probability of “the likelihood that a given profile came from a particular individual and the likelihood that it came from a random unrelated person.”²⁴³ Simply, an identification derived from DNA analysis is a probability ratio.²⁴⁴ For instance, a “positive match” identifying and linking an individual to a sample left at a crime scene, is expressed by an infinitesimally small probability ratio, that is, the extremely small probability that the match of thirteen loci between the sample recovered at a crime scene and the sample of the defendant could have originated from alterna-

²⁴² This analogy is far from tenuous. Binary is a unique pattern of two variables (zero-one), whereas DNA is a unique pattern of multiple variables (nucleotides). Binary code reflects a unique pattern of zeros and ones, whereas DNA instructions reflect a unique pattern and sequence for alternating nucleotide chains. To wit, nucleotides are comprised of a nitrogen base, sugar and phosphate. The four nitrogen bases couple to form base pairs: bases Adenine and Thymine and bases Cytosine and Guanine, which bond to alternating sugar and phosphate molecules. See *supra* note 13.

²⁴³ *DNA Initiative* (Apr. 1, 2013), available at <http://www.dna.gov/glossary>.

²⁴⁴ APRI, *supra* note 13, at 14 (“[The] statistical formulae allow the analyst to demonstrate, using 13 loci . . . that an individual profile matching the profile generated from the crime evidence will not be found in any other unrelated person on earth.”); see generally Mark W. Perlin, EXPLAINING THE LIKELIHOOD RATIO IN DNA MIXTURE INTERPRETATION (Dec. 29, 2010), available at <http://www.promega.com/~media/files/resources/conference%20proceedings/isih%2021/oral%20presentations/perlin.pdf?la=en>.

tive sources.²⁴⁵ This can also be expressed by the relatively large probability that the two samples are derived from the same source.

While DNA collection provides many advantages in the effort to curb crime, access and use of DNA profiles should be tightly restricted to law enforcement purposes. When utilized narrowly, so as to coordinate the efforts of law enforcement in *fully* identifying individuals apprehended and *already indicted* with a crime, it is a reasonable burden on the privacy interests of the indicted individual.²⁴⁶ An indicted defendant does not have a right of privacy to past committed criminal acts.²⁴⁷ Identification is realized through the collection of DNA post-indictment by throwing open the door to any past criminal acts of a person who is already in custody and where a finding of probable cause determined that they committed the acts alleged in the indictment.²⁴⁸

Collecting DNA in this manner is not the siphoning of individuals off the street in the aimless search of hoping to detect possible criminal activity.²⁴⁹ Rather, DNA identification serves the purpose of alerting law enforcement at large to which individuals have recently been indicted, so as to obtain particularized information that may aid in evaluating whether such individuals poses a danger to the public pending trial. During a time when individuals may easily travel across the country and world, as well as radically modify their appearance, the use of DNA identification is necessary to accurately identify persons in custody, who have been indicted for a crime.²⁵⁰ It therefore provides the means for ascertaining whether the individual is

²⁴⁵ *McDaniel v. Brown*, 558 U.S. 120, 130 (2010) (“[T]he probability another person from the general population would share the same DNA (the ‘random match probability’) was only 1 in 3,000,000.”); APRI, *supra* note 13, at 14 (“The total *random match probability* is the probability of that exact genetic profile being found in someone, other than the suspect, within the human population.”).

²⁴⁶ *Kelly*, 55 F.2d at 68 (“Any restraint of the person may be burdensome. But some burdens must be borne for the good of the community. The slight interference with the person involved in finger printing seems to us one which must be borne in the common interest.”).

²⁴⁷ *Supra* note 171 and accompanying text.

²⁴⁸ *Supra* note 164, 170–71 and accompanying text.

²⁴⁹ *See supra* note 220 and accompanying text.

²⁵⁰ *Mitchell*, 652 F.3d at 414 (“[T]he perpetrator will take unusual steps to conceal not only his conduct, but also his identity. Disguises used while committing a crime may be supplemented or replaced by changed names, and even changed physical features. Traditional methods of identification by photographs, historical records, and fingerprints often prove inadequate Even a suspect with altered physical features cannot escape the match that his DNA might make with a sample contained in a DNA bank, or left at the scene of a crime within samples of blood, skin, semen or hair follicles.” (quoting *United States v. Sczubelek*, 402 F.3d 175, 185 (3d Cir. 2005)); *Kelly*, 55 F.2d at 69 (“Finger printing seems to be no more than an extension of methods of identification long used in dealing with persons *under arrest for real or supposed violations of the criminal laws*. It is known to be a very certain means devised by modern science to reach the desired end, and has become especially *important in a time when increased population and vast aggregations of people in urban centers have rendered the notoriety of the individual in the community no longer a ready means of identification.*” (emphasis added)).

under alias, using a stolen identity, has violent tendencies, or is a threat to witnesses and alleged victims.²⁵¹

Finally, access to DNA databases should be narrowly drawn, coupled with strict and clear penalties enforced against those who illegally or improperly acquire DNA profiles for an impermissible purpose. The protections currently outlined at 42 U.S.C. § 14133(b-c), which restrict to whom DNA profiles may be disclosed, and provide for harsh penalties for knowingly disclosing or wrongfully acquiring DNA profiles, are sufficient for any DNA collection system.²⁵²

D. Attribute #4 — Automatic Destruction of the DNA Profile should occur in the Event of Dismissal or Acquittal

A pre-conviction DNA profile should promptly and automatically be expunged if judicial proceedings terminate without a conviction.²⁵³ The chief concerns relating to DNA collection and profiles are more closely correlated with issues of retention, rather than collection. To avoid the United Kingdom's problematic retention system, a pre-conviction collection-retention policy²⁵⁴ must reasonably balance individual privacy concerns and guarantee that the status of individuals whose criminal proceedings end without conviction are treated equally to the status of individuals in the general public.

Presently, 42 U.S.C. § 14132(d) requires that individuals provide a certified "copy of a court order"²⁵⁵ reflecting dismissal or acquittal in order to have their profile removed. This is similar to the United Kingdom's prob-

²⁵¹ *Hiibel v. Sixth Judicial Dist. Court of Nev., Humboldt County*, 542 U.S. 177, 186 (2004) ("Knowledge of identity may inform an officer that a suspect is wanted for another offense, or has a record of violence or mental disorder."); *Jones*, 962 F.2d at 307 ("[P]erpetrator [of criminal conduct] will take unusual steps to conceal not only his conduct, but also his identity. Disguises used while committing a crime may be supplemented or replaced by changed names, and even changed physical features. Traditional methods of identification by photographs, historical records, and fingerprints often prove inadequate . . . The individuality of the DNA provides a dramatic new tool for the law enforcement effort to match suspects and criminal conduct. Even a suspect with altered physical features cannot escape the match that his DNA might make . . . [the] governmental justification for this form of identification, therefore, relies on no argument different in kind from that traditionally advanced for taking fingerprints and photographs, but with additional force because of the potentially greater precision of DNA sampling and matching methods.").

²⁵² See *supra* 102 and accompanying text.

²⁵³ The actual DNA sample, after being analyzed, should be destroyed forthright, although the generated profile should be held strictly for the duration of any ongoing criminal proceedings.

²⁵⁴ DNA retention policies for individuals who are convicted of a particular offense, versus individuals whose judicial proceedings terminate without a conviction, are not equivalent. Only the later is discussed herein, whereas the former implicates many issues and concerns that are beyond the scope of what is presently addressed.

²⁵⁵ 42 U.S.C. § 14132(d) (2006).

lematic policy, where many British citizens had their DNA collected and recorded, yet were not ultimately convicted of the underlying offense. The United Kingdom's DNA database by 2009 grew to over 5.3 million profiles, but approximately 200,000 profiles were from individuals who were never convicted.²⁵⁶ Without a clear retention-expungement policy, the United States similarly risks accumulating the profiles of many citizens who have exited the criminal justice system without a conviction.

The burden of removing DNA profiles should rest with the government, not with the individual, as the government collected the sample, indicted and prosecuted the individual, and yet failed to satisfy the burden of proving that the individual was guilty of the charged crime. Paralleling Scotland's "fair and proportionate" system,²⁵⁷ profiles should be preserved only for individuals indicted for a crime with no statute of limitation, provided investigatory and prosecutorial attempts remain active.

A narrow retention system is loyal to the holdings in *Knights* and *Samson*²⁵⁸ because this would tie DNA profiles to an individual's status as a defendant before conviction. An individual's entry into the criminal justice system eviscerates an equivalent privacy expectation from that of an individual in the general public.²⁵⁹ However, an individual's privacy expectation changes depending on how he exits the criminal justice system. Conviction further restricts privacy expectations. Anything less than conviction should restore privacy expectations to those enjoyed by the general public. Restricting the retention period and providing for automatic expungement, limits DNA collection-retention to the extent needed to advance the government objective, and, in doing so, reasonably balances individual privacy interests with government interests. This satisfies the goal of furthering government's law enforcement interests, while curtailing any potential government abuses, and, in doing so, is consistent with prevailing Fourth Amendment jurisprudence.

E. Required Showing to Overcome the Balance in Favor of the Government.

Three possible showings allow for the Government's presumption in favor of collecting DNA before conviction to be overcome. The first two possible means of overcoming this presumption are axiomatic: (1) the fail-

²⁵⁶ *Supra* note 187.

²⁵⁷ *Supra* note 201.

²⁵⁸ *Supra* notes 66–71 and accompanying text.

²⁵⁹ *Supra* note 164 and accompanying text.

ure by the government to consistently adhere to all the four attributes; or (2) the repeated and consistent abuses of DNA collection by the government.

The third possible means would be to challenge pre-conviction DNA collection on the basis that, given the advent of further scientific advances, there is a less intrusive means to accomplish all the objective satisfied by present DNA collection. This requirement ensures that DNA collection is not lightly cast aside and recognizes the legitimate and real benefits provided by a DNA system, and that in the future, like fingerprinting, society at large may recognize the circumscribed DNA collection regime as a *reasonable* intrusion on privacy. Nevertheless, it still permits any existing DNA collection system to be supplanted by a system that is equally effective, yet lessens the impact on individual privacy. This third option ensures that DNA collection always is amended to operate in the least intrusive means possible.

CONCLUSION

The value of DNA collection/profiling “lies as much, if not more, in its ability to exclude the innocent as in its ability to convict the guilty.”²⁶⁰ The widespread adoption of DNA collection/profiling testifies to its power and value within the criminal justice system. Nevertheless, like others scientific advances before it, DNA collection/profiling presents the challenge of balancing the greater needs of society at large, yet still safeguarding the rights of the individual. Pre-conviction DNA collection/profiling is just one the most recent scientific advances to challenge Fourth Amendment. The earlier described model of analysis offers a path by which to preserve Fourth Amendment protections, balancing individual privacy interests, yet still advancing the interests of society in the need to effectively curb crime. The methodology is constructed by building upon existing Fourth Amendment doctrines and learning from both the successes and failures of DNA collection as utilized in the United Kingdom.

²⁶⁰ *Chief Constable of South Yorkshire Police*, [2002] EWCA (Civ) 1275 (affirmed by [2004] UKHL 39) (internal citations omitted).