

No. 12-207

IN THE
Supreme Court of the United States

STATE OF MARYLAND,

Petitioner,

v.

ALONZO JAY KING, JR.,

Respondents.

**On Writ of Certiorari to
The Court of Appeals of Maryland**

**BRIEF OF *AMICI CURIAE* ELECTRONIC
PRIVACY INFORMATION CENTER AND
TWENTY-SIX TECHNICAL EXPERTS AND
LEGAL SCHOLARS IN SUPPORT OF
RESPONDENT**

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INTEREST OF THE *AMICI CURIAE*

The Electronic Privacy Information Center (EPIC)¹ is a public interest research center in Washington, D.C. EPIC was established in 1994 to focus public attention on emerging civil liberties issues and to protect privacy, the First Amendment, and other constitutional values.

EPIC has participated as *amicus curiae* before this Court and other courts in cases concerning privacy issues, new technologies, and Constitutional interests. *See, e.g., United States v. Jones*, 132 S. Ct. 945 (2012); *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653 (2011); *NASA v. Nelson*, 131 S. Ct. 746 (2011), *Doe v. Reed*, 130 S. Ct. 2811 (2010); *Quon v. City of Ontario*, 130 S. Ct. 2619 (2010); *Herring v. United States*, 129 S. Ct. 695 (2009); *Hiibel v. Sixth Judicial Dist. Ct. of Nevada, Humboldt County*, 547 U.S. 177 (2004); *Smith v. Doe*, 538 U.S. 84 (2003); *Reno v. Condon*, 528 U.S. 141 (2000).

EPIC has a particular interest in matters involving searches and seizures of DNA samples, and maintains an extensive web page on this topic. EPIC, *Genetic Privacy*.² EPIC has also sought to limit

¹ Letters of consent have not been lodged with the Clerk of the Court because on November 27, 2012, Respondent lodged with the Court their “consent to the filing of amicus curiae briefs, in support of either party or of neither party,” and on December 4, 2012, Petitioner lodged with the Court their “consent to the filing of amicus curiae briefs, in support of either party or of neither party.” In accordance with Rule 37.6, the undersigned states that no monetary contributions were made for the preparation or submission of this brief, and this brief was not authored, in whole or in part, by counsel for a party.

² <http://epic.org/privacy/genetic/>.

unreasonable governmental collection of personal genetic material. *See, e.g., United States v. Pool*, 659 F.3d 761 (9th Cir. 2010); *Kohler v. Englade*, 470 F.3d 1104 (5th Cir. 2006); *United States v. Kincade*, 379 F.3d 813 (9th Cir. 2004), *cert. denied* 544 U.S. 924 (2005).

EPIC is particularly concerned about the continued expansion of DNA collection for criminal justice purposes. The CODIS database, which once included the DNA profiles of only convicted sex offenders now contains more than eleven million profiles. Furthermore, access to CODIS is not strictly limited, as all law enforcement agencies in the country, at the federal, state, and local levels, have access for purposes of DNA matching. As CODIS expands, individual privacy rights are implicated, and not just for the individuals whose DNA is collected; the ability to search for partial matches also implicates the privacy rights of family members whose DNA is a close enough match that the person is flagged in a CODIS DNA search.

EPIC is acutely concerned the way new scientific discoveries can further impact privacy rights. Given that there is no statutory requirement for the government to discard the full DNA sample from which the DNA profile is obtained, the government indefinitely remains in possession of a person's full genetic makeup. As science reveals new ways in which DNA may be used, the potential for misuse by government entities presents a risk to individual privacy. Already, state governments have authorized law enforcement DNA samples to be used for non-law enforcement purposes

EPIC is joined in this *amicus* brief by members of its Advisory Board, leading experts in law, technology, and privacy.

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SUMMARY OF THE ARGUMENT

The collection of a DNA sample from an individual raises a profound and far-reaching privacy concern. Genetic traits can identify family members and reveal predispositions to disease and mental illness. DNA is a robust descriptor of an individual's entire physiological identity. DNA testing can also result in "social stigma, discrimination in employment, barriers to health insurance, and other problems."³ As the Combined DNA Indexing System (CODIS) system has expanded, so too has the collection of this particularly sensitive personal information. Even after analyzing the sample to extract a CODIS profile, the government does not destroy it. Maryland, the Federal Government, and the majority of other States indefinitely retain entire DNA samples after CODIS analysis is complete.

Further, the dramatic expansion of CODIS underscores the likelihood that an increasing number of individuals will be subject to the collection of their DNA sample and its maintenance within the criminal justice system. The Presidential Commission for the Study of Bioethics recently warned about the collection of whole genome sequence data by law enforcement agencies and urged the adoption of a consistent floor of privacy protection.

The Fourth Amendment establishes the essential safeguard that limits the otherwise unbounded collection and use of the individual's DNA sample by government.

³ Anita LaFrance Allen, *Genetic Testing, Nature, and Trust*, 27 Seton Hall L. Rev. 887 (1997).

ARGUMENT

This case addresses the privacy interest of an arrestee subjected to warrantless, suspicionless DNA collection and analysis by law enforcement. This privacy interest is substantial. The routine CODIS profiling of arrestees is an unreasonable search and seizure under the Fourth Amendment. The collection and retention of DNA samples also constitutes an unreasonable search and seizure under the Fourth Amendment because it poses unnecessary and ongoing risks to privacy without serving any legitimate government interest.

I. CODIS Has Grown Dramatically and Unpredictably Over Time

In 2000, CODIS contained 441,181 offender profiles. Laboratory Services, Fed. Bureau of Investigation, *CODIS: Combined DNA Index System* 4 (2010).⁴ As of December 2012, CODIS contains 11,419,100 offender and arrestee profiles. Laboratory Services, Fed. Bureau of Investigation, *CODIS-NDIS Statistics* (Dec. 2012).⁵ The history of CODIS illustrates how the collection of genetic information has grown far beyond its narrow, targeted purpose and currently lacks a constitutionally necessary limiting principle.

⁴ Available at <https://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis-brochure-2010>.

⁵ <https://www.fbi.gov/about-us/lab/biometric-analysis/codis/ndis-statistics>.

A. The Dramatic Expansion of CODIS was Unanticipated and Unplanned

CODIS began in 1994 as an effort to catalogue DNA profiles from crime scenes and compare them to profiles of convicted sex offenders. However, over time the government has continuously and incrementally broadened CODIS' reach, allowing law enforcement to collect and retain DNA samples from many new categories of individuals. When a program like CODIS develops in this statutory step-by-step fashion, it is difficult to divine a limiting principle.

In 1994, Congress passed the DNA Identification Act, which authorized the FBI to create the CODIS database. Pub. L. No. 103-322, 108 Stat. 2065. The Act was meant to "help state and local governments develop and improve their ability to analyze DNA evidence." Eric Fischer, Cong. Research Serv., RL 303694, *DNA Evidence: Legislative Initiatives of the 106th Congress 2* (2001).⁶ Initially, CODIS included only DNA profiles from state convicts "because the language of the 1994 act only authorized the creation of the CODIS system, and not the taking of samples from persons convicted of Federal crimes." H.R. Rep. No. 106-900, pt. 1, at 8 (2000).⁷ The Act "did not specify the crimes covered and did not specifically authorize *collection* of DNA from convicted persons." Fischer at 2 (emphasis in original).

Congress later expanded CODIS to include profiles of individuals convicted of Federal crimes in

⁶ Available at http://assets.opencrs.com/rpts/RL30694_20010126.pdf.

⁷ Available at <http://www.gpo.gov/fdsys/pkg/CRPT-106hrpt900/pdf/CRPT-106hrpt900-pt1.pdf>.

the Antiterrorism and Effective Death Penalty Act of 1996. Pub. L. No. 104-132, § 811(a)(2), 110 Stat. 1214. However, Congress refrained, at this point, from granting the FBI authority to collect DNA samples from federal offenders. H.R. Rep. No. 106-900, pt. 1, at 9.

In 1997, Congress asked the FBI to develop an implementation plan for federal collection of DNA samples from sex offenders. *Id.* In 1998, the FBI's report requested that Congress grant the agency statutory authority to collect DNA from persons convicted of "crimes of violence, robbery, and burglary." *Id.*

At the FBI's request, in 2000 Congress passed the DNA Analysis Backlog Elimination Act. Pub. L. No. 106-546, 114 Stat. 2726. The Act authorized the collection of DNA from felons and parolees convicted of a narrow subset of federal crimes. *Id.* at § 3(a). The enumerated offenses included murder, sex crimes, kidnapping, and burglary. *Id.* at § 3(d). When Congress debated the law, it was concerned with two main issues: what offenses should qualify a convict for inclusion in CODIS, and whether federal law enforcement agencies should have authority to collect DNA samples. Fischer at 7-10. At the time, congressional researchers recognized that "unlike fingerprints, a DNA sample. . . contains a person's entire genetic code, and much of that code will be identical in close blood relatives." *Id.* at 8.

The FBI objected to allowing DNA collection for only specific enumerated offenses. The Justice Department testified they preferred that "the pertinent categories would be specified in FBI regulations without pre-set [statutory] limitations." *Violent Offender DNA Identification Act of 1999, DNA*

Backlog Elimination Act and Convicted Offender DNA Index System Support Act: Hearing Before the Subcomm. on Crime of the H. Comm. on the Judiciary, 106th Cong. 113-115 (2000) (statement of David G. Boyd, Director, Office of Sci. and Tech., Nat'l Inst. of Justice, U.S. Dept. of Justice, Washington, DC).⁸ The Justice Department represented that they would focus primarily on sex offenders and violent felons, but would then consider expanding their scope to other offenses. *Id.* The Justice Department expressed disappointment that some proposed versions of the legislation would omit collection from juvenile delinquents. *Id.* Ultimately, Congress chose to impose limits on DNA collection instead of deferring to the FBI.

In 2005, Congress amended the statute and expanded DNA collection to federal arrestees in a rider to the reauthorization of the Violence Against Women Act. Pub. L. No. 109-162 § 1004, 119 Stat. 3086 (2005). The provision received little public debate or Congressional consideration. No one discussed CODIS or arrestee DNA collection at a hearing on the Act. *See Reauthorization of the Violence Against Women Act: Hearing Before the S. Comm. on the Judiciary*, 109th Cong. (2005).⁹ Rather, the provisions were added as an amendment to the reauthorization bill by a voice vote during a Senate committee mark-up. ACLU, Press Release, *Amendment Attached to the Violence Against Women Act Would Invade the Privacy of Innocent Americans*

⁸ Available at http://commdocs.house.gov/committees/judiciary/hju65302.000/hju65302_0.HTM#115.

⁹ Available at <http://www.gpo.gov/fdsys/pkg/CHRG-109shrg46016/pdf/CHRG-109shrg46016.pdf>.

by *Collecting and Storing their DNA* (Sept. 29, 2005).¹⁰ This small amendment did not obstruct the passage of the large, popular omnibus crime law. However, the impact of arrestee DNA collection did not go entirely unnoticed:

This adds little or no value for law enforcement, while intruding on the privacy rights of people who are, in our system, presumed innocent. It could also provide an incentive for pretextual and race-based stops and arrests for the purpose of DNA sampling.

Cong. Rec. S11122 (daily ed. Oct. 5, 2005) (statement of Sen. Patrick Leahy). Following the enactment of this new authority, the Department of Justice promulgated final rules requiring federal law enforcement agencies to collect DNA samples from every person arrested under federal authority. 73 Fed. Reg. 74,932, 74,935 (Dec. 10, 2008).

B. The Expansion of CODIS has Continued Without Necessary Legal Safeguards

Congress has repeatedly broadened the DNA collection program to the point where it affects even innocent citizens arrested under federal authority. As the system changes, DNA samples collected under past statutory regimes are retained and subjected to current and future statutory standards. Initially, CODIS was only used for sex offenders. Then it was expanded to all convicts and parolees. Today, state law enforcement agencies collect and retain DNA samples from felony arrestees. Under the Justice

¹⁰ http://www.aclu.org/racial-justice_prisoners-rights_drug-law-reform_immigrants-rights/amendment-attached-violence-against.

Department's regulations, federal law enforcement agencies now collect DNA from all individuals arrested under federal law. *Id.*

State and federal agencies collect and use DNA samples in other contexts as well. Law enforcement has used "DNA dragnets" to sweep up DNA samples from large populations without individualized probable cause. *See, e.g., Kohler v. Englade*, 470 F.3d 1104 (5th Cir. 2006). In *Kohler*, police collected DNA samples from 600 men to try to find a serial rapist-murderer. When Shannon Kohler declined to disclose his DNA, he became a target of the investigation and was publicized in the media. He was later cleared of all suspicion. *Id.* at 1107-08. Dragnets are particularly problematic because individuals may not know they can refuse to participate and may fear reprisals if they do refuse.

The Department of Homeland Security (DHS) uses DNA collection and CODIS data for immigration purposes. The United States Citizenship and Immigration Services (USCIS) uses CODIS to investigate familial relationships between immigrants and U.S. citizens. U.S. Dep't of Homeland Sec., *Teleconference on Biological Relationship Testing: Opportunities and Challenges* (Oct. 30, 2008).¹¹ DHS also plans to use DNA to identify immigrants seeking to enter the country. U.S. Dep't of Homeland Sec., *Under Secretary Tara O'Toole, Science and Technology Directorate, Before the H. Comm. on Appropriations, Subcomm. on Homeland Sec., "S&T Fiscal Year 2012 Budget*

¹¹ Available at http://www.dhs.gov/xfoia/gc_1227730679187.shtm.

Request" (Mar. 30, 2011).¹² DHS is developing small, portable DNA analysis equipment capable of identifying individuals and their familial relations in under an hour. Because the technology is still under development, only USCIS is using it for now. *Id.*¹³

Many states have broad statutes that explicitly permit DNA databases to be used for purposes other than law enforcement, even though DNA is collected to be added to CODIS. Seventeen states allow the use of DNA for non law enforcement purposes including population statistical databases.¹⁴ Seven states allow the use of DNA for non-law enforcement purposes beyond population statistical databases, including research purposes.¹⁵ For example, Maryland allows

¹² Available at

http://www.dhs.gov/ynews/testimony/testimony_1301519363336.shtm.

¹³ A new study shows that it is increasingly possible to identify individuals and their family members from anonymized DNA samples using other widely available demographic information. Gina Kolata, *Online Hunt for DNA Sequences Leaves Privacy Compromised*, N.Y. Times A15 (Jan. 18, 2013). While CODIS profiles are not anonymized, the new research illustrates the importance of safeguarding genetic privacy at all levels.

¹⁴ Ala. Code 975 § 36-18-20 (2012); Ark. Code. Ann. § 12-12-1018 (2012); Iowa Code § 81.3 (2012); La. Rev. Stat. Ann. § 15:612 (2012); Me. Rev. Stat. Ann. tit., 25 § 1577 (2012); Md. Code Ann., Pub. Safety § 2-505 (2012); Mass. Gen Laws. ch. 22E. § 10 (2012); Mich. Comp. Laws § 28.176 (2012); Mo. Rev. Stat. § 650.052 (2012); Mont. Code Ann. § 44-6-102 (2012); Neb. Rev. Stat. § 29-4105 (2012); N.J. Stat. Ann. § 53:1-20.24 (2012); N.M. Stat. § 29-16-8 (2012); N.C. Gen. Stat. § 15A-266.8 (2012); 44 Pa. Cons. Stat. § 2319 (2012); S.C. Code Ann. § 23-3-640 (2012); Wyo. Stat. Ann. § 7-19-402 (2012).

¹⁵ Ala. Code 975 § 36-18-20 (2012); Md. Code Ann., Pub. Safety § 2-505 (2012); Mass. Gen Laws. ch. 22E. § 10 (2012); Mich. Comp. Laws § 28.176 (2012); Neb. Rev. Stat. § 29-4105 (2012);

testing of collected genetic samples for research purposes. Md. Code Ann., Pub. Safety § 2-505 (2012).

Without the application of a clear Fourth Amendment standard protecting genetic material, there is no limiting principle to prevent ongoing expansions in the collection, retention, or use of private genetic information.

II. CODIS Profiles Contain Sensitive Personal Information

DNA identification is not analogous to fingerprint identification because unlike a fingerprint, a DNA sample contains personal information beyond the mere identity of an individual. The government collects and stores this personal information. When the government takes a DNA sample for CODIS, it uses the sample to create a DNA profile of thirteen noncoding loci, and it stores that profile alongside the person's entire genetic sample. Sheldon Krinsky & Tania Simoncelli, *Genetic Justice* 234-35 (2011). For the reasons explained below, neither the CODIS profile nor the full DNA sample is comparable to a fingerprint because CODIS profiles and DNA samples contain substantially more information than is necessary for identification purposes. Unlike fingerprints, DNA is useful for more than identification because it can provide insights into a person's family, "susceptibility to particular diseases, legitimacy of birth, and perhaps predispositions to certain behaviors and sexual orientation." Biological and Env'tl. Research Info. Sys. (BERIS), Genome Program, U.S. Dep't of Energy, *Human Genome Project Information: DNA*

S.C. Code Ann. § 23-3-640 (2012); Wyo. Stat. Ann. § 7-19-402 (2012).

Forensics (2009) [hereinafter *DOE DNA Forensics*].¹⁶ Experts have noted that DNA testing can result in "the potential for social stigma, discrimination in employment, barriers to health insurance, and other problems." Anita LaFrance Allen, Genetic Testing, Nature, and Trust, 27 Seton Hall L. Rev. 887 (1997). Congress recognized the importance of these issues when it passed the Genetic Information Nondiscrimination Act of 2008, Pub. L. 110-233, 122 Stat. 861 (2008) (prohibiting use of genetic information for discriminatory purposes). Industry leaders have also taken steps to protect their employees' genetic privacy.¹⁷

The thirteen noncoding loci the government stores in CODIS contain more information than fingerprints do. The government frequently refers to the noncoding loci stored in CODIS as "junk DNA." However, "no serious scientist refers to noncoding regions of DNA any longer as 'junk.'" Krimsky at 236. Noncoding DNA is genetically significant – that is, it plays an active role in DNA replication and cell division. Noncoding DNA can be used to determine traits such as race and gender. Noncoding DNA can also be used to identify people other than the person from whom it was collected, like their family members.

A. Noncoding DNA is Not "Junk DNA"

Noncoding DNA performs significant genetic functions – it aids in DNA replication and cell

¹⁶http://ornl.gov/sci/techresources/Human_Genome/elsi/forensics.shtml (last modified June 16, 2009).

¹⁷ See, e.g., IBM, *Pioneering Genetic Privacy*, <http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/geneticprivacy/> (last visited Jan. 30, 2013).

division. The ENCODE Project Consortium, Nat'l Insts. of Health, *Identification and Analysis of Functional Elements in 1% of the Human Genome by the ENCODE Pilot Project*, 447 *Nature* 799 (2007).¹⁸ This finding challenged the "long-standing view that the human genome consists of . . . a vast amount of so-called junk DNA that is not biologically active." Nat'l Human Genome Research Inst., Nat'l Insts. Of Health, *New Findings Challenge Established Views on Human Genome* (June 2007).¹⁹ Furthermore, according to the Human Genome Project, "there is a chance that a person's entire genome may be available—regardless of whether they were convicted or not. Although the DNA used is considered 'junk DNA' . . . in the future this information may be found to reveal personal information such as susceptibilities to disease and certain behaviors." *DOE DNA Forensics*.

Scientists and legal scholars recognize that the analogy between fingerprints and DNA profiles is fundamentally flawed because fingerprints are "two-dimensional representations of the physical attributes of our fingertips" that are "useful only for identification," while DNA contains much more personal information. Krimsky at 235; *DOE DNA Forensics*. Unlike DNA profiles

[f]ingerprints cannot be analyzed to determine whether two individuals are related. They cannot tell you your likelihood of developing Alzheimer's

¹⁸ Available at <http://www.genome.gov/Pages/Research/ENCODE/nature05874.pdf>.

¹⁹ <http://www.genome.gov/25521554> (last updated July 7, 2011).

disease or breast cancer or whether you are a carrier for cystic fibrosis There is no exponentially growing list of conditions that can be read from a fingerprint, or even significant research in this area.

Krimsky at 235.

By definition, noncoding DNA does not direct the creation of proteins like coding DNA does, but it is active in directing biological functions and influences genetic markers. For example, variations in noncoding DNA can indicate an increased risk of heart disease. A study funded by the National Institutes of Health found that a noncoding DNA sequence reveals the risk of heart disease because "when something goes awry in variants of this interval, [it causes] vascular cells to divide and multiply more quickly than usual." Harrison Wein, *How Junk DNA Affects Heart Disease*, NIH Research Matters (Mar. 1 2010).²⁰ There is also evidence that noncoding DNA contains biological markers for particular traits, such as hair color and diabetes. For example, researchers identified a marker for red hair in a locus that, like the thirteen used in CODIS, was thought to be non-coding. Grimes E.A., Noake P.J., Dixon L, et al., *Sequence Polyrphism in the Human Melanocortin 1 Receptor Gene as an Indicator of the Red Hair Phenotype*, 122 *Forensic Sci. Int'l* 124 (2001).

The CODIS loci are presently capable of revealing personal medical information, and such

²⁰ Available at

<http://www.nih.gov/researchmatters/march2010/03012010heart.htm>.

noncoding DNA is predicted to reveal more information as analytic methods steadily progress. CODIS loci can convey medical information "where one or more short tandem repeats (STRs) are found to correlate with another genetic marker whose function is known, . . . the presence of the seemingly innocuous STR serves as a 'flag' for that genetic predisposition or trait." Krimsky at 235. In fact, researchers found that one of the CODIS loci is closely related to the gene that codes for insulin, which is connected to diabetes. John D. H. Stead, Jerome Buard, *et al.*, *Influence of Allele Lineage on the Role of the Insulin Minisatellite in Susceptibility to Type 1 Diabetes*, 9 *Hum. Molecular Genetics* 2929 (2000).

The extent of correlations between noncoding DNA and biological or medical indicia is predicted to increase in the future. Ninety-eight percent of DNA is considered noncoding and is actively being explored because it could have "huge dividends for understanding and treating disease." Harrison Wein, *How Junk DNA Affects Heart Disease*, NIH Research Matters (Mar. 1 2010). A recently developed technique for examining the three dimensional structure of DNA is advancing the understanding of non-coding DNA's impact on human biological functions, and it has detected cross-species similarities that "will speed researchers' efforts to identify functional elements in the human genome and understand how they affect human health." Nat'l Insts. of Health, *DNA Terrain Affects Function in Human Genome*, NIH Research Matters (Mar. 23, 2009).²¹ The FBI intends to exploit scientific

²¹<http://www.nih.gov/researchmatters/march2009/03232009genome.htm> (last reviewed Dec. 3, 2012).

advances in DNA analysis by adopting techniques to allow it to expand the amount of data it can extract from CODIS profiles. See Fed. Bureau of Investigation, *CODIS – The Future*.²²

B. The Thirteen CODIS Loci Can Identify an Individual's Race, Ethnicity, and Heritage

It is also possible for researchers to use the thirteen CODIS loci to identify an individual's race, ethnicity, and heritage because different ethnic groups have distinct genetic patterns in these loci. For example, some Chinese populations have enough variation in their thirteen CODIS loci to differentiate the groups consistently by their "geographic location, languages and eating habits." Xing-bo Song, Yi Zhou, et al., *Short-tandem Repeat Analysis in Seven Chinese Regional Populations*, 33 *Genetics and Molecular Biology* 605 (2010).²³ A Russian population can also be distinguished from Poles, Slovaks, Serbs, and Bosnians because of their higher or lower frequencies of certain CODIS alleles. B. A. Malyarchuk, M. Wozniak, et al., *Variation of 15 Autosomal Microsatellite DNA Loci in the Russian Population*, 41 *Molecular Biology* 1 (2007).²⁴

There are similar studies for virtually every ethnic and geographic population in the world. One study used much of this data as a base to predict ethnicity using STRs. The study "performed best for ethnic groups with distinctly different physical

²² http://www.fbi.gov/about-us/lab/codis/codis_future (last visited Jan. 30, 2013).

²³ Available at <http://www.scielo.br/pdf/gmb/v33n4/02.pdf>.

²⁴ Available at <http://www.zgms.cm.umk.pl/prace/1-4.pdf>.

traits." The researchers concluded that this result could "be taken as an indication that STRs, commonly referred to as 'junk' DNA, may have an effect on phenotype." Matthew Graydon, François Cholette, et al., *Inferring Ethnicity Using 15 Autosomal STR Loci—Comparisons Among Populations of Similar and Distinctly Different Physical Traits*, 3 *Forensic Sci. Int'l: Genetics* 251 (2009).²⁵ Another study used the thirteen CODIS loci to determine individual ancestry for each member in its sample and found that the method provided "a better measure of ancestral background than self-reported race." Jill S. Barnholtz-Sloan, Ranajit Chakraborty, et al., *Examining Population Stratification via Individual Ancestry Estimates versus Self-Reported Race*, 14 *Cancer Epidemiology Biomarkers and Prevention* 1545 (2005).²⁶ They chose to use the CODIS loci to measure ancestry because those "markers show considerable allele frequency variation among racial and ancestral groups from around the world." *Id.* The European Court of Human Rights found that the DNA profiles created by the United Kingdom could be used to distinguish ethnicity, as well as determine family members, and the government did not dispute either finding. *S. & Marper v. United Kingdom*, App. No. 30562/04, paras. 75, 76 (Eur. Ct. H.R. Dec. 4, 2008).²⁷

²⁵ Available at <https://www.ncjrs.gov/App/publications/Abstract.aspx?id=250362>.

²⁶ Available at <http://cebp.aacrjournals.org/content/14/6/1545>.

²⁷ Available at <http://www.echr.coe.int/echr/en/hudoc> (follow "HUDOC database" hyperlink; search Application Number for "30562/04").

C. Government DNA Profiles Enable Familial Searches and Result in the Identification of Family Members

While fingerprints can only be used to identify the individual from whom they are taken, a CODIS DNA profile may be used to identify the individual's family members and to implicate the individual's family members in investigations in which they would not otherwise be involved. The CODIS loci are frequently used for paternity tests, and "with 13 STR loci it is quite likely that a search of a database will identify a person who is a relative of the person contributing the evidence sample." *DOE DNA Forensics; accord* Austl. Law Reform Comm'n, *Essentially Yours: The Protection of Human Genetic Information in Australia* (2003).²⁸

Familial searching using the thirteen CODIS loci has proven extremely effective. A study of California's familial searching protocol found that 93% of fathers and 61% of full siblings were identified by using the thirteen CODIS loci in California's database of approximately one million DNA profiles. S.P. Myers, et al., *Searching for First-degree Familial Relationships in California's Offender DNA Database: Validation of a Likelihood Ratio-based Approach*, 5 *Forensic Sci. Int'l: Genetics* 493 (2010).²⁹

Though the FBI states that familial DNA searching is not performed through CODIS in NDIS, this is based on a selective definition of familial searching, and familial matching does in fact occur. Laboratory Services, Fed. Bureau of Investigation,

²⁸ Available at <http://www.austlii.edu.au/au/other/alrc/publications/reports/96/>.

²⁹ Available at <http://projects.nfstc.org/fse/pdfs/familial.pdf>.

Familial Searching (2011).³⁰ The FBI defines familial searching as a "deliberate search of a DNA database conducted for the intended purpose of potentially identifying close biological relatives." *Id.* However, the FBI will allow disclosure of partial DNA matches that may indicate familial relationships. *Id.*

Forensic laboratories conduct DNA database searches with varying degrees of stringency: high stringency searches are discriminating searches intended to produce only direct matches, requiring exact matches at all thirteen loci; crime laboratories also conduct low and moderate stringency searches in which search standards are less discriminating and can generate partial matches. Partial matches contain insufficient common DNA alleles to indicate a definite match, or may indicate that the sample definitely does not match, but may be sufficient to indicate a familial link. Erin E. Murphy, *Relative Doubt: Familial Searches of DNA Databases*, 109 Mich. L. Rev. 291 (2010). A single search in forensic DNA software can return both direct matches as well as partial matches that indicate potential familial relationships. *Id.* See also Emily C. Barbour, Cong. Research Serv., No. R41847, *DNA Databanking: Selected Fourth Amendment Issues and Analysis* (June 6, 2011).³¹

Crime laboratories conduct these lower stringency searches that produce partial matches in several circumstances, including when processing degraded DNA samples. DNA samples are easily degraded both before reaching a lab and once in a lab

³⁰ Available at <http://www.fbi.gov/about-us/lab/codis/familial-searching> (last visited Jan. 30, 2013).

³¹ Available at <http://www.fas.org/sgp/crs/misc/R41847.pdf>.

because DNA is very sensitive to environmental conditions and can "start to degrade depending on the sample's exposure to extreme temperatures, oxygen, water, sweat and breath." Donald E. Shelton, *Forensic Science in Court* 29 (2011).

Some forensic experts characterize searches generating partial matches as a type of familial searching, but the FBI does not. By limiting its definition of a familial search to only *deliberate* searches for potential relatives, the FBI excludes moderate stringency searches that happen to result in familial matches from its definition of familial searches for FBI purposes. Laboratory Services, Fed. Bureau of Investigation, *Frequently Asked Questions (FAQs) on the CODIS Program and the National DNA Index System* [hereinafter *FBI CODIS FAQ*].³² This allows the FBI to claim that CODIS and NDIS are not used for familial searches, though they still produce familial DNA matches and allow investigation of potential family members from the national and state databases. Jessica D. Gabel, *Probable Cause From Probable Bonds: A Genetic Tattle Tale Based on Familial DNA*, 21 *Hastings Women's L.J.* 3, 17-18 (2010).

The FBI has procedures for authorizing the release of partial match information to law enforcement. "For situations in which there is no other available investigative information," NDIS will release the personally identifiable information of partial match results upon written request from a Casework Laboratory, with concurrence of the prosecutor. *Interim Plan for the Release of*

³² <http://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis-and-ndis-fact-sheet> (last visited Jan. 30, 2013).

Information In the Event of a "Partial Match" at NDIS, CODIS Bulletin (July 20, 2006).³³ The written request should "include the statistical analysis used to conclude that there may be a potential familial relationship." *Id.*

The FBI's policy on releasing partial matches from NDIS applies only to the DNA samples collected by federal agencies from federal offenders that constitute NDIS; the procedures by which partial matches and familial matches are produced and released from state and local databases vary from state to state, and laboratory to laboratory.³⁴ E.g. Md. Code Ann., Pub. Safety § 2-506(d) (2010); 44 Pa. Cons. Stat. § 2319 (2010); Wyo. Stat. Ann. § 7-19-402; Colo. Bureau of Investigation, *DNA Familial Search Policy* (Oct. 22, 2009).³⁵

The FBI has suggested guidelines for laboratories releasing partial matches, but they are not binding or official regulations. In 2009, the FBI convened a working group to assess the CODIS partial match procedures; the working group recommended minimum standards of reliability for labs to use when assessing partial matches, but emphasized that decisions to release personal information in response to partial match requests from other labs and law

³³ Available at http://www.bioforensics.com/conference08/Familial_Searches/CODIS_Bulletin.pdf.

³⁴ State and local laboratory partial match release practices must meet the minimum requirements of state and federal mandated guidelines.

³⁵ Available at http://www.denverda.org/DNA_Documents/Familial_DNA/CBI%20DNA%20Familial%20Search%20Policy%20Oct%202009%20-%20Signed.pdf.

enforcement agencies are made by individual laboratories. Sci. Working Grp. on DNA Analysis Methods Ad Hoc Committee on Partial Matches, Laboratory Services, Fed. Bureau of Investigation, *SWGDM Recommendations to the FBI Director on the "Interim Plan for the Release of Information in the Event of a 'Partial Match' at NDIS,"* 11 Forensic Sci. Comm. 4 (Oct. 2009).³⁶ The Committee's recommendations were to be used "to guide a laboratory's decision making process regarding whether to release the name of the offender whose relative may be the source of the DNA profile." *Id.*

III. Law Enforcement Collects and Indefinitely Retains Entire DNA Samples, Not Just CODIS Profiles

To make DNA profiles, the government collects and retains an individual's full DNA sequence that, unlike a fingerprint, contains personal genetic information unnecessary for identification. The government retains the full DNA samples it collects and laboratories store them indefinitely, in addition to the derivative CODIS profiles. Laboratory Services, Fed. Bureau of Investigation, *Quality Assurance Standards for DNA Databasing Laboratories*, at 7.2 ("Where possible, the laboratory shall retain the database sample for retesting for quality assurance and sample confirmation purposes.").³⁷ Federal statutes do not set forth clear

³⁶ http://www.fbi.gov/about-us/lab/forensic-science-communications/fsc/archive/oct2009/standard_guidelines/swgdam.html (last visited Jan. 30, 2013).

³⁷ Available at http://www.fbi.gov/about-us/lab/biometric-analysis/codis/qas_databaselabs.pdf (last accessed Jan. 30, 2013).

guidelines for how the samples are handled after they are profiled: "[F]ederal law remains silent as to what must be done with the biological samples themselves." Elizabeth E. Joh, *Reclaiming 'Abandoned' DNA: The Fourth Amendment and Genetic Privacy*, 100 NW. U. L. Rev. 857, 871 (2006).³⁸ Some bioethics experts consider the "indefinite" retention of DNA samples to be "the most significant privacy concern associated with DNA data banking" because they "have the potential to reveal almost unlimited information about ourselves." Sheldon Krinsky & Tania Simoncelli, *Genetic Justice* 235-36 (2011).

The information contained in a DNA sample is far more extensive than that contained in fingerprints. It trivializes DNA data to compare it to a genetic fingerprint. Unlike a fingerprint, DNA samples can provide insights into the most personal family relationships and the most intimate workings of the human body, including the likelihood of the occurrence of thousands of genetic conditions and diseases. In fact, "genetic testing is currently available for over 2,200 diseases and abnormalities, with about 2,000 available in clinical settings, and this number continues to increase every year." Ctrs. for Disease Control and Prevention, *Genomic Testing* (May 3, 2011).³⁹ By testing for one variation in a single region of a particular gene, researchers were able to determine which abused or maltreated children were prone to elevated rates of suicidal

³⁸ Available at

<http://www.law.northwestern.edu/lawreview/v100/n2/857/LR100n2Joh.pdf>.

³⁹ <http://www.cdc.gov/genomics/gtesting/>.

ideation. Dante Cicchetti, et. al., *Interaction of Child Maltreatment and 5-HTT Polymorphisms: Suicidal Ideation Among Children from low-SES Backgrounds*, 35 J. Pediatr. Psychol. 536, 543 (2010). An allele variation in this same gene creates a predisposition for susceptibility to affective disorders like depression in adults. Christopher G. Beevers, et al., *Association of the Serotonin Transporter Gene Promoter Region (5-HTTLPR) Polymorphism with Biased Attention for Emotional Stimuli*, 118 J. Abnormal Psychol. 431 (2009).

The extensive information DNA can reveal about an individual carries significant social and political implications that do not accompany fingerprints. The extent of these implications was recognized in the legislative history of the DNA Analysis Backlog Elimination Act, 42 U.S.C. § 14135a, emphasizing that the scope of information that can be obtained from a DNA sample is uniquely broad and invasive:

The information obtainable from DNA testing surpasses any previous types of testing available. The amount of personal and private data contained in a DNA specimen provides insights into the most personal family relationships and the most intimate workings of the human body, including the likelihood of the occurrence of over 4,000 types of genetic conditions and diseases. Genetic information pertains not only to the individual whose DNA is sampled, but also to anyone who shares that bloodline.

H.R. Rep. 106-900(I) at 52 (Sept. 26, 2001).

Studies of the relationship between certain genes and aggressiveness, mental illness, and anti-social behavior have revealed the potential for differential treatment based on genetic predispositions, with or without overt political action. Elisa Piere & Mairi Levitt, *Risky Individuals and the Politics of Genetic Research Into Aggressiveness and Violence*, 22 *Bioethics* 457, 509 (2008).

A. Maryland, the Federal Government, and Thirty-Seven Other States Require the Indefinite Retention of Complete DNA Samples

State and federal law enforcement agencies collect DNA samples in order to create CODIS profiles. For example, Maryland explicitly requires the indefinite retention of complete DNA samples. Md. Code Ann., Pub. Safety § 2-506 (West 2012). The FBI likewise requires its laboratories to retain samples indefinitely. FBI, *Quality Assurance Standards for DNA Databasing Laboratories*, at 7.2.⁴⁰ Additionally, thirty-seven other states affirmatively require retention of DNA samples.⁴¹

⁴⁰ http://www.fbi.gov/about-us/lab/codis/qas_databaselabs ("Where possible, the laboratory shall retain the database sample for retesting for quality assurance and sample confirmation purposes.").

⁴¹ Ala. Code § 36-18-22 (2012); Alaska Stat. § 44.41.035 (2012); Ariz. Rev. Stat. Ann. § 13-610 (2012); Ark. Code Ann. § 12-12-1019 (2012); Cal. Penal Code § 295.1 (West 2012); Colo. Rev. Stat. § 16-23-104 (2012); Conn. Gen. Stat. § 54-102i (2012); Ga. Code Ann. § 35-3-162 (2012); Haw. Rev. Stat. § 844D-23 (2012); Idaho Code Ann. § 19-5505 (2012); 730 Ill. Comp. Stat. 5 / 5-4-3 (h) (2012); Ind. Code § 10-13-6-9.5 (2012); Iowa Code § 81.4 (2013); Kan. Stat. Ann. § 21-2511 (2012); La. Rev. Stat. Ann. § 15:606 (2012); Me. Rev. Stat. tit. 25, § 1576 (2012); Minn. Stat. § 299C.155 (2012); Mont. Code Ann. § 44-6-103 (2012); Neb. Rev.

The remaining twelve states do not explicitly require indefinite retention, but the language of their statutes either is silent on the issue or does not foreclose it.⁴²

The ability of innocent arrestees to have their DNA records expunged is an insufficient and inconsistent protection of genetic privacy. Destruction of DNA samples and expungement of CODIS profiles under state and federal law, where available, imposes a substantial burden on innocent individuals. Most expungement procedures are complicated and costly. Federal law requires both state and federal law enforcement agencies to expunge CODIS profiles if an individual is acquitted, charges are dismissed, or a conviction is overturned.

Stat. § 29-4105(4) (2012); N.H. Rev. Stat. Ann. § 651-C:2 (2012); N.J. Stat. Ann. § 53:1-20.21 (West 2012); N.M. Stat. Ann. § 29-16-4 (2012); N.Y. Crim. Proc. Law § 995-C (McKinney 2012); N.C. Gen. Stat. § 15A-266.3 (2012); Ohio Rev. Code Ann. § 109.573 (LexisNexis 2012); Okla. Stat. tit. 74, § 150.27a (2012); 44 Pa. Cons. Stat. § 2313 (2012); R.I. Gen. Laws § 12-1.5-5 (2012); S.C. Code Ann. § 23-3-640 (2012); Tenn. Code Ann. § 38-6-113 (2012); Tex. Gov't Code Ann. § 411.142 (West 2012); Utah Code Ann. § 53-10-406 (2012); Va. Code Ann. § 19.2-310.4 (2012); Wash. Rev. Code § 43.43.754(4) (2012); W. Va. Code § 15-2B-8 (2012); Wyo. Stat. Ann. § 7-19-402 (2012).

⁴² Del. Code Ann. tit. 29, § 4713 (2012); Fla. Stat. § 943.325 (2012); Ky. Rev. Stat. Ann. § 17.175 (West 2012) (requiring destruction of all samples not entered into database); Mass. Gen. Laws ch. 22E § 6 (2012); Mich. Comp. Laws. § 28.176 (2012); Miss. Code Ann. § 45-33-37 (2012); Mo. Rev. Stat. §§ 650.050-060 (2012); Nev. Rev. Stat. § 176.0912 (2012) (requiring retention at least until criminal sentence is completed); N.D. Cent. Code § 31-13-05 (2012); Or. Rev. Stat. § 181.085(1)(e) (2012) (allowing state police to establish procedures for “storing and destroying” samples); Vt. Stat. Ann. tit. 20, § 1938 (2012); Wis. Stat. § 165.77 (2012).

42 U.S.C. § 14132(d) (2012). But the statute does not require the destruction of DNA samples. *Id.* Current FBI policy is to destroy the sample, but the agency is not required to do so. Laboratory Services, Fed. Bureau of Investigation, *CODIS - Expungement Policy*.⁴³ The statute also does not allow expungement for convicts who have completed their sentences. 42 U.S.C. § 14132(d). Expungement is not automatic; qualified individuals must specifically request that their CODIS profiles be expunged. *Id.*

State law enforcement agencies store their collected DNA samples according to state guidelines and "many state laws do not require the destruction of a DNA record or sample after a conviction has been overturned." *DOE DNA Forensics*. Most states will only expunge DNA records if an individual petitions for expungement and satisfies the complicated procedural requirements.⁴⁴ Seven states do not

⁴³ http://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis_expungement (last visited Jan. 28, 2013)

⁴⁴ See Alaska Stat. § 44.41.035(i) (2012); Ark. Code Ann. § 12-12-1019 (2012); Cal. Penal Code § 299 (West 2012); Colo. Rev. Stat. § 16-23-105 (2012); Del. Code Ann. tit. 29, § 4713(i) (2012); Fla. Stat. § 943.325(16) (2012); Ga. Code Ann. § 35-3-165 (2012); Haw. Rev. Stat. § 844D-71 (2012) *et seq.*; Idaho Code Ann. § 19-5513 (2012); 730 Ill. Comp. Stat. 5 / 5-4-3 (f-1) (2012); Ind. Code § 10-13-6-18 (2012); Iowa Code § 81.9 (2013); Kan. Stat. Ann. § 21-2511 (2012); Ky. Rev. Stat. Ann. § 17.175(5) (West 2012); La. Rev. Stat. Ann. § 15:614 (2012); Me. Rev. Stat. tit. 25, § 1576 (2012); Mich. Comp. Laws. § 28.176 (10), (11) (2012); Mo. Rev. Stat. § 650.055(a) (2012); Neb. Rev. Stat. § 29-4109 (2012); N.H. Rev. Stat. Ann. § 651-C:5 (2012); N.J. Stat. Ann. § 53:1-20.25 (West 2012); N.M. Stat. Ann. § 29-16-10 (2012); N.Y. Crim. Proc. Law § 995-C(9) (McKinney 2012); Or. Rev. Stat. § 181.085(8)(a) (2012); 44 Pa. Cons. Stat. § 2321 (2012); R.I. Gen. Laws § 12-1.5-13 (2012); Utah Code Ann. § 53-10-40(6) (2012); Va. Code Ann. §

mandate expungement of DNA samples at all, only CODIS profiles.⁴⁵ Upon acquittal or dismissal of charges, seven other states, including Maryland, automatically expunge DNA samples and CODIS profiles.⁴⁶ However, in Maryland, records are not eligible for expungement if an individual receives probation, has his charges docketed, or receives a conditional pardon. Md. Code Ann., Pub. Safety § 2-511 (2012).

In addition, four states have no expungement rights at all.⁴⁷ Unless charges are dismissed, some jurisdictions will not expunge arrestee DNA until the statutes of limitations on all charged crimes have expired. *See, e.g., Haskell v. Harris*, 669 F.3d 1049, 1052 (2012). In Arizona, qualifying arrestees can expunge their DNA samples, but other offenders can only expunge their CODIS profiles. Ariz. Rev. Stat.

19.2-310.7 (2012); W. Va. Code § 15-2B-11 (2012); Wis. Stat. § 165.77(4) (2012).

⁴⁵ *See* Ala. Code § 36-18-26 (2012); Me. Rev. Stat. tit. 25, § 1577(4) (2012); Mass. Gen. Laws ch. 22E § 15 (2012); Mont. Code Ann. § 44-6-107 (2012); Okla. Admin. Code § 375:30-9-2 (2012); Tex. Gov't Code Ann. § 411.151 (West 2012); Wyo. Stat. Ann. § 7-19-405 (2012).

⁴⁶ Conn. Gen. Stat. § 54-102 (2012); Md. Code Ann., Pub. Safety § 2-511 (West 2012); Minn. Stat. § 299C.105(3) (2012); N.C. Gen. Stat. § 15A-266.3A (2012); S.C. Code Ann. § 23-3-660 (2012); Tenn. Code Ann. § 40-35-321 (2012); Vt. Stat. Ann. tit. 20, § 1940 (2012).

⁴⁷ Mississippi, Nevada, Ohio, and Washington. *See* Miss. Code Ann. § 45-33-37 (2012) (no related provisions on expungement found); Nev. Rev. Stat. § 176.0912 (2012) (no related provisions on expungement found); Wash. Admin. Code § 446.75.070 (2012) (stating that expungement is completely discretionary); *State v. Emerson*, 2012 Ohio 5047 (2012) (holding that Ohio law provides no right to expungement).

Ann. § 13-610 (J), (M) (2012). In Michigan, those with overturned convictions can only have their DNA samples and profiles expunged if they have no other convictions and a court finds that a "miscarriage of justice" occurred. Mich. Comp. Laws. § 28.176 (10) (2012). As a result of the complicated patchwork of expungement laws and procedures varying from state to state, individuals' complete DNA samples often stay in the government's possession even when those individuals are deemed innocent of any wrongdoing.

B. Retention of Complete DNA Samples is an Unnecessary and Broad Invasion of Genetic Privacy

More than two decades ago, the National Academy of Sciences recommended that DNA samples be destroyed "promptly" after analysis. *DNA Technology in Forensic Science*, Comm. on DNA Tech. in Forensic Sci. of the Nat'l Acad. of Sci. 122 (1992). The Academy reasoned, "In principle, retention of DNA samples creates an opportunity for misuses - *i.e.*, for later testing to determine personal information." *Id.* Yet state and federal law enforcement agencies continue to retain genetic samples even after creating the CODIS profile. EPIC has previously argued that the warrantless, suspicionless collection of DNA for CODIS profiling violates the Fourth Amendment.⁴⁸ However, even if CODIS profiling were permissible, the indefinite

⁴⁸ See Br. of Amici Curiae EPIC, et. al. in Supp. of Pet., *Kohler v. Englade*, 470 F.3d 1104 (5th Cir. 2006); Br. of Amici Curiae EPIC, et. al. in Supp. of Resp't., *United States v. Kincade*, 379 F.3d 813 (9th Cir. 2004), *cert. denied* 544 U.S. 924 (2005); and Br. of Amici Curiae EPIC, et. al. in Supp. of Resp't., *State v. Raines*, 857 A.2d 19 (Md. 2004).

retention of complete DNA samples is an unreasonable infringement of genetic privacy rights.

These DNA samples contain a wealth of personal information. Such samples can provide insights into a person's family, "susceptibility to particular diseases, legitimacy of birth, and perhaps predispositions to certain behaviors and sexual orientation." Biological and Env'tl. Research Info. Sys. (BERIS), *Human Genome Project Information: DNA Forensics*, U.S. Dep't of Energy Genome Program.⁴⁹ For example, genetic factors can combine with environmental processes to create vulnerabilities for behavioral issues, emotional problems, and substance abuse. See, e.g., Ronald Simons, et. al., *Differential Susceptibility to Context: A Promising Model of the Interplay of Genes and the Social Environment*, 29 *Biosociology and Neurosociology: Advances in Group Processes* 139 (Kalkhoff, et. al. ed. 2012); Gene H. Brody, et. al., *Using Genetically Informed, Randomized Prevention Trials to Test Etiological Hypotheses about Child and Adolescent Drug Use and Psychopathology*, *Am. J. of Pub. Health* (forthcoming 2013) (forthcoming 2013) (manuscript on file with EPIC).

The indefinite retention of complete DNA samples exacerbates "the threat to privacy implicit in the accumulation of vast amounts of personal information in computerized data banks or other massive government files." *Whalen v. Roe*, 429 U.S. 589, 605 (1977). The Maryland high court properly recognized the distinction between the privacy threat presented by DNA collection generally and the

⁴⁹http://www.ornl.gov/sci/techresources/Human_Genome/elsi/forensics.shtml (last modified June 16, 2009).

substantial risks associated with retention of DNA samples specifically. "[W]e can not turn a blind eye to the vast genetic treasure map that remains in the DNA sample retained by the State." *King v. State*, 42 A.3d 549, 577 (2012).

At issue in this case is not just the Respondent's identity contained in his CODIS profile, but also the State's seizure and indefinite retention of his entire genetic record.

C. Federal and State Statutory Provisions are Insufficient to Safeguard DNA Samples and Individuals' Genetic Privacy

Statutory protections are insufficient to cure the constitutional defect of the warrantless indefinite retention of genetic material. Current state and federal statutes show that genetic information is highly sensitive and subject to a substantial threat of misuse. Maryland and Federal law both create criminal penalties for anyone who obtains, uses, or discloses genetic information without authorization. Md. Code Ann., Pub. Safety § 2-512 (2012); 42 U.S.C. § 14135e (2012). Many other states do as well. While these statutory provisions are appropriate and necessary, they do not reduce the minimum privacy protections guaranteed by the Constitution.

The Fourth Amendment sets a constitutional floor that protects the privacy of individuals from unwarranted government intrusion.⁵⁰ States can

⁵⁰ "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized." U.S. Const. amend. IV.

regulate upward to add further safeguards, but they cannot give citizens lesser protection than the Constitution itself guarantees. "[W]e cannot forgive the requirements of the Fourth Amendment in the name of law enforcement." *Berger v. New York*, 388 U.S. 41, 63 (1967). The *Amici* States contend that their statutes foreclose all foreseeable abuse of genetic information. Br. for the States as *Amici Curiae* Supporting Pet. at 24-32. But it is antithetical to the principles of the Fourth Amendment to merely trust the government not to overstep the bounds of individual privacy. "With the benefits of more efficient law enforcement mechanisms comes the burden of corresponding constitutional responsibilities." *Arizona v. Evans*, 514 U.S. 1, 17-18 (1995) (O'Connor, J. concurring). Just because today's statutes limit the use and disclosure of genetic information does not mean that indefinite retention of complete DNA samples "compl[ies] with the basic command of the Fourth Amendment." *Berger* at 63.

Moreover, statutory protections of private information are often inadequate practical safeguards against real-world misuse. In *NASA v. Nelson*, respondents and *amici* argued that statutory provisions preventing disclosure would be insufficient to protect highly sensitive personal information accumulated by NASA. Br. for Resp't at 43-46, 131 S. Ct. 746 (2011); Br. of *Amici Curiae* EPIC, et. al. in Supp. of Resp't. at 20-34, 131 S. Ct. 746 (2011). "Even the most rigorous statutory protections are no guarantee against exposure of personal information in data breaches." Br. of *Amici Curiae* EPIC, et. al. at 28. This Court disagreed, ruling that the statutory regime in question provided adequate protections. *Nelson* at 761-63. However, the scenario *Nelson* feared came to pass not once, but twice in this past

year. On March 16, 2012 and again on November 13, 2012, NASA notified its employees of data breaches resulting in the disclosure of their sensitive personal information. *NASA KSC Internal Memo: NASA KSC Laptop Theft*, SpaceRef (March 20, 2012);⁵¹ *Agencywide Message to All NASA Employees: Breach of Personally Identifiable Information (PII)*, SpaceRef (Nov. 13, 2012).⁵²

The best way to minimize privacy risks is to minimize the amount of sensitive information the government collects and retains in the first place. Destroying DNA samples after analysis would reduce the risks to individuals' genetic privacy without compromising law enforcement's capabilities.

IV. The Federal Bioethics Commission Recommends Limiting Nonconsensual Law Enforcement Access to Biospecimens

The Presidential Commission for the Study of Bioethical Issues recently highlighted privacy issues presented by whole genome sequencing. *Privacy and Progress in Whole Genome Sequencing*, Pres. Comm'n for the Study of Bioethical Issues (Oct. 2012).⁵³ The commission is composed of an advisory panel of leaders in the fields of medicine, science, ethics, religion, law, and engineering.⁵⁴ The report says that

⁵¹ <http://www.spaceref.com/news/viewsr.html?pid=40332>.

⁵² <http://spaceref.com/news/viewsr.html?pid=42609>.

⁵³ Available at <http://bioethics.gov/cms/sites/default/files/PrivacyProgress508.pdf>.

⁵⁴ The members and staff hold twenty Ph.D.'s, ten J.D.'s, five M.D.'s, and numerous other advanced degrees. The Commission is chaired by Dr. Amy Gutmann, President of the University of Pennsylvania, and vice-chaired by Dr. James W. Wagner,

genetic information is so comprehensive that it does not just implicate personal privacy, but the very core of a person's identity:

More than other medical information, such as X-rays, our genomes reveal something both objectively more comprehensive and subjectively (to many minds) more fundamental about who we are, where we came from, and the health twists and turns that life might have in store for us.

Id. at 24. The Commission explained that protection of individual privacy interests is essential to ethically "realize this promise of the great public good" inherent in genetic information. *Id.* at 2. Consequently, the Commission proposed several specific recommendations to safeguard genetic privacy.

In particular, the Commission recommended that "[o]nly in exceptional circumstances should entities such as law enforcement or defense and security have access to biospecimens or whole genome sequence data for non health-related purposes without consent." *Id.* at 84.

As our knowledge of genetics and its capabilities continues to expand, it brings with it new challenges to privacy. Once an individual's DNA sample is in a government database, protecting that information from future exploitation becomes more difficult.

President of Emory University. Among others, members include the Chief Medical Officer of the Department of Homeland Security and the Chief of the Bioethics Department at the National Institutes of Health Clinical Center. *Id.* at vii-viii.

This makes it important that governments and societies take great care not to make decisions that have a substantial chance of causing irreversible harm to current or future generations, and especially those who have little or no say over such decisions.

Id. at 45.

The principles guiding the Presidential Commission should likewise guide the collection and use of DNA in the law enforcement context. The complete DNA samples retained by law enforcement can be used for whole genome sequencing, giving rise to the risks the Commission identified. Even if federal, state, and local agencies could collect DNA for the CODIS database, such collection would still be invalid so long as it involves the indefinite retention of the DNA samples. Law enforcement agencies cannot warrantlessly collect and indefinitely retain genetic samples without infringing genetic privacy rights.

CONCLUSION

For the foregoing reasons, *amici* respectfully ask this Court to affirm the decision of the Court of Appeals of Maryland below.

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