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DNA STORAGE BANKS: THE IMPORTANCE OF PRESERVING DNA EVIDENCE TO ALLOW FOR TRANSPARENCY AND THE PRESERVATION OF JUSTICE

CRISTINA MARTIN

INTRODUCTION

In September 2014, two half-brothers who had been convicted of the rape and murder of a young girl in rural North Carolina in 1983 were exonerated by DNA evidence recently tested by an independent state agency.¹ Henry Lee McCollum had been on death row for three decades, and Leon Brown was serving a life sentence at the time.² Over the years, North Carolina's Innocence Inquiry Commission worked closely with the men and submitted a cigarette butt found at the scene of the crime for DNA testing in 2004.³ When the evidence was finally tested and submitted to the North Carolina state police DNA database, it matched a different offender, Roscoe Artis, who at that time was serving a sentence of life in prison.⁴ After further investigation, McCollum and Brown's attorneys found enough other evidence linking Artis to the murder, and presented a motion requesting that the convictions be vacated and charges dismissed.⁵ In September 2014, the judge granted the motion and Brown and McCollum were released after nearly 31 years in prison.⁶

Organizations such as the Innocence Project are devoted to exonerating wrongfully convicted prisoners.⁷ One of the strongest tools available for exonerations is DNA evidence. As the technology rapidly advances, DNA testing becomes more and more accurate and becomes

1. Jonathan M. Katz & Erik Eckholm, *DNA Evidence Clears Two Men in 1983 Murder*, N.Y. TIMES, Sept. 2, 2014, at A1.

2. *Id.*

3. NAT'L REGISTRY OF EXONERATIONS, EXONERATIONS IN 2014 22 (2015), http://www.law.umich.edu/special/exoneration/Documents/Exonerations_in_2014_report.pdf.

4. *Id.*

5. *Id.*

6. *Id.*

7. INNOCENCE PROJECT, <http://www.innocenceproject.org/> (last visited Mar. 29, 2016).

a much better tool to use in court to prevent innocent defendants from being convicted and to exonerate innocent convictees.⁸ Currently, there is legislation in place known as the Kirk Bloodsworth Postconviction DNA Testing Grant Program, named for a former Marine who was proven innocent by DNA for the rape and murder of a nine year old girl after being sentenced to death and spending eight years in prison.⁹ This grant program provides funding to states to “help defray the costs of post-conviction DNA testing” to prevent another situation like Kirk Bloodsworth’s.¹⁰

Unfortunately, not all cases are as successful as Brown and McCollum’s or Bloodsworth’s. There are no national standards for statutes requiring law enforcement or courtroom personnel to retain DNA evidence after a conviction.¹¹ The length of time to preserve the evidence, the types of crimes for which preservation is required, and the penalties for not preserving the evidence all vary from state to state.¹² Sixteen states¹³ do not even have any form of evidence-retention statutes.¹⁴

Consider the case of Robin Lovitt, a Virginia Death Row Inmate.¹⁵ In early 2000, Mr. Lovitt was convicted of capital murder and robbery of a pool hall employee in Virginia and was sentenced to death in early 2000.¹⁶ When Mr. Lovitt sought to appeal the decision, it came to light that the evidence, a blood-stained pair of scissors associated with his case, had been destroyed despite Virginia’s law requiring the preserva-

8. “DNA evidence creates special opportunities, risks, and burdens that implicate important state interests. Given those interests - and especially in light of the rapidly evolving nature of DNA testing technology - this is an area that should be (and is being) explored ‘through the workings of normal democratic processes in the laboratories of the States.’” Dist. Attorney’s Office for Third Judicial Dist. v. Osborne, 129 S.Ct. 2308, 2326 (2009) (Alito, J., concurring).

9. *Kirk Bloodsworth*, NAT’L REGISTRY OF EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3032> (last updated Apr. 18, 2014).

10. 42 U.S.C. § 14136e (2004).

11. See Brittany Ericksen & Ilse Knecht, *Evidence Retention Laws, A State-by-State Comparison*, NAT’L CTR. FOR CRIME VICTIMS (Aug. 21, 2013), <http://victimsofcrime.org/docs/default-source/dna-resource-center-documents/evidence-retention-check-chart-9-5.pdf?sfvrsn=2>.

12. *Id.*

13. These states are: Alabama, Delaware, Idaho, Indiana, Kansas, New Jersey, New York, North Dakota, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Washington, West Virginia, and Wyoming.

14. Ericksen & Knecht, *supra* note 11.

15. *Preservation of Evidence*, INNOCENCE PROJECT (June 4, 2015, 10:40 AM), <http://www.innocenceproject.org/free-innocent/improve-the-law/fact-sheets/preservation-of-evidence>.

16. *Id.*

tion of evidence for capital offenses until the judgment is executed.¹⁷ The DNA technology at the time could conclusively tie the blood on the weapon only to the victim, and not to anyone else.¹⁸ By the time Mr. Lovitt sought an appeal, DNA technology had advanced significantly, and could give a more accurate profile.¹⁹ While the technology was there, the evidence was not, and Robin Lovitt's execution was scheduled.²⁰ It was only through Virginia Governor Mark Warner's act of clemency that Lovitt's sentence was commuted to life in prison.²¹ Most prisoners in this sort of situation are not so lucky.

Preservation of evidence is critical, because DNA technology is rapidly advancing, and accordingly, old DNA tests were either faulty from the start, or were tested improperly.²² The possibility of human error in testing also creates a need to retest these samples.²³ Further, few safeguards exist to protect DNA evidence from manipulation by biased or corrupt forensic scientists. A better preservation system would help create accountability and transparency in the forensic sciences field.

Currently, there is no uniform system for regular retesting of DNA samples in federal or state law enforcement facilities.²⁴ With the development of DNA technology, more information will need to be tested and retested. A uniform DNA retention statute as well as a proper place for samples to be kept will help prevent these issues and create a better system for both the government and defendants to ensure that the guilty are convicted and the innocent do not need to be exonerated.

In this Note, I will discuss the importance of retention of DNA samples and ways in which the federal government could effectuate such retention. In Part I, I will formulate the creation of a DNA profile and will explain the importance of retaining DNA samples. In Part II, I will discuss current DNA preservation and policies that regard both federal and state-wide DNA retention statutes. I will elaborate on their

17. *Id.*; VA. ANN. CODE § 19.2-270.4:1 (West 2001).

18. *Preservation of Evidence*, *supra* note 15.

19. *Id.*

20. *Id.*

21. *Id.*

22. *See, e.g.*, Spencer S. Hsu, *FBI Admits Flaws in Hair Analysis over Decades*, WASH. POST (Apr. 18, 2015), https://www.washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfab310_story.html.

23. *See* Marc Green, *Human Factors in Forensic Evidence*, VISUALEXPERT.COM, <http://www.visualexpert.com/Resources/forensics.html> (last visited Mar. 29, 2016).

24. Ericksen & Knecht, *supra* note 11.

benefits and flaws. In Part III, I will address the importance of retaining knowledge, drawing from examples of other scientific and technical fields which create central repositories of such knowledge. I will then propose the solution of creating central evidence storage facilities in each state. In Part IV, I will consider some alternatives for legislation requiring DNA sample retention on a state-wide level and will offer sample legislation. Lastly, in Part V, I will consider some of the opposition to the proposed measures of DNA storage facilities and DNA retention statutes, namely Fourth Amendment concerns and administrative/funding issues, and I will offer my approach to these criticisms. Ultimately, the importance of DNA retention is paramount, and will provide a less costly improvement to the forensic sciences field than current reform measures.

I. CREATION OF A DNA PROFILE & RETENTION OF SAMPLES

This section will outline the process by which DNA evidence is obtained, tested, developed into a genetic profile, and added to a database. It will also explain what happens to the DNA samples after the information is added to a profile.

DNA evidence is biological material from a person, such as blood, urine, saliva, hair, and semen, found from physical evidence at the scene of a crime.²⁵ Although most of the human genome is identical, there are areas of variation among individuals, as individuals have unique repeated units of DNA.²⁶ Scientists have determined that one type of repeat, called short tandem repeat (STR), is easily measured and compared between individuals.²⁷ The FBI has determined that there are thirteen core STR loci that are used in the identification of individuals:

[a]ssuming that all 13 STRs follow the principle of independent assortment and that the population randomly mates, a statistical calculation based upon the FBI-determined STR allele frequencies reveals that the probability of two unrelated Caucasians having identical STR profiles, or so-called 'DNA fingerprints,' is approximately 1 in 575 trillion.²⁸

By comparing these profiles, forensic scientists are confident that DNA extracted from evidence found at a crime scene that matches an of-

25. David H. Kaye & George Sensabaugh Jr., *Reference Guide on DNA Evidence*, in ANNUAL REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 485, 497 (2d ed. 2000).

26. Karen Norrgard, *Forensics, DNA Fingerprinting, and CODIS*, 1 NATURE EDUCATION 35 (2008), <http://www.nature.com/scitable/topicpage/forensics-dna-fingerprinting-and-codis-736>.

27. *Id.*

28. *Id.*

fender's existing profile has a high probability of coming from that particular offender.²⁹

To obtain DNA evidence, samples first need to be collected from individuals or crime scenes by means of a warrant issued by a judge.³⁰ Some states do not require the issuance of a warrant and have different provisions under state law for collection of DNA evidence from offenders.³¹ In Maryland, for example, police may collect DNA evidence from all convicted felons and individuals arrested in the commission of violent crimes and burglary.³² These samples are submitted to laboratories to extract the DNA from the material, after which the sample is purified and analyzed to determine its unique identifying features, after which it is translated into an easy-to-read table, which becomes the DNA profile.³³

"A DNA profile is comprised of the data from various locations (loci) on chromosomes found in nucleated cells in the body."³⁴ Each nucleated cell in a person's body has the same genetic material and forensic laboratories test the chromosomal locations so they can interact meaningfully.³⁵ A DNA profile is essentially a map of the person's chromosomes, which is unique to each person due to factors such as heredity and recombination.³⁶

These profiles need to be used in comparison to one another in order to provide meaningful evidence.³⁷ DNA analysts need to be able to compare DNA evidence obtained from potential suspects with DNA evidence obtained at the scene of a crime or through a rape examination in order to find proper matches; hence, DNA database technology makes more sense than random unaffiliated profiles.³⁸

29. *Id.*

30. Rana Santos, *Why DNA Databasing is Good for Maryland: A DNA Analyst's Perspective*, 42 U. BALT. L. REV. 591, 594 (2013).

31. *See, e.g.*, *Nicholas v. Goord*, 430 F.3d 652 (2d Cir. 2005); *State v. Martines*, 355 P.3d 1111 (Wash. 2015) (holding "that a warrant authorizing the testing of a blood sample for intoxicants does not require separate findings of probable cause to suspect drug and alcohol use so long as there is probable cause to suspect intoxication that may be caused by alcohol, drugs, or a combination of both."); LINDA S. PIECZYNSKI, ILLINOIS PRACTICE SERIES: CRIMINAL PRACTICE & PROCEDURE § 28.26 (2d ed. 2015).

32. Santos, *supra* note 30, at 594.

33. *Id.* at 595.

34. *Id.*

35. *Id.*

36. *Id.*

37. *See generally* Kimberly A. Wah, *A New Investigative Lead: Familial Searching as an Effective Crime-Fighting Tool*, 29 WHITTIER L. REV. 909, 914-15 (2008).

38. *Id.*

Maryland is also the epicenter of a very crucial case for the progression of DNA technology and its admissibility in courts. In *Maryland v. King*, the Supreme Court found a new DNA dragnet law constitutional.³⁹ When officers make an arrest supported by probable cause to hold a suspect for a serious offense and bring him to the station to be detained, they can legally take a cheek swab of the arrestee's DNA.⁴⁰ This is reasonable under the Fourth Amendment, and such DNA can be added to the CODIS database.⁴¹ The addition of these profiles will vastly enlarge the size of the DNA databases, and will also have an enormous effect on physical DNA storage and retention.⁴²

After a DNA profile is initially created, the next step is to consider what to do with the rest of the sample of evidence: to keep it or to discard or destroy it after a particular point in sentencing of the suspect. In order to retain the possibility of retesting in the future, it is important for forensic laboratories to be able to retain the DNA samples for at least some time after the initial DNA profiles are created.

Currently, the FBI forensic laboratory in Quantico, Virginia accepts evidence related to all crimes under investigation by the FBI, as well as evidence from violent crimes under investigation in federal, state, and local law enforcement agencies.⁴³ These facilities include extensive long-term storage for DNA samples.⁴⁴ As of May 2011, the FBI laboratory had over 712,000 DNA samples that required storage, which were stored in a "room in boxes stacked to the ceiling."⁴⁵ At that time, the Department of Justice was looking into long-term storage alternatives,

39. *Maryland v. King*, 133 S. Ct. 1958 (2013).

40. *Id.*

41. *Id.*

42. Additionally, as of 2015, President Obama enacted the Sexual Assault Kit Initiative, "which is investing \$41 million this year to help communities accelerate testing of the estimated 400,000 rape kits that have been backlogged in law enforcement storage rooms and crime labs across the country." *Fact Sheet: Investments to Reduce the National Rape Kit Backlog and Combat Violence Against Women*, WHITE HOUSE, OFFICE OF THE PRESS SEC'Y (Mar. 16, 2015), <https://www.whitehouse.gov/the-press-office/2015/03/16/fact-sheet-investments-reduce-national-rape-kit-backlog-and-combat-viole>. This measure is an enormous step towards providing victims with justice for old crimes which could have been solved with DNA testing, but will also provide a vast amount of data to be input into CODIS as well as large amounts of physical data which will need to be retained.

43. U.S. DEPT. JUSTICE, HANDBOOK OF FORENSIC SERVICES (Jennifer Coleman ed., revised ed. 2013), <http://www.fbi.gov/about-us/lab/handbook-of-forensic-services-pdf>.

44. *Id.*

45. U.S. DEPT. JUSTICE, AUDIT OF THE FEDERAL BUREAU OF INVESTIGATION'S CONVICTED OFFENDER, ARRESTEE, AND DETAINEE DNA BACKLOG, AUDIT REPORT 11-39 (2011), <http://www.justice.gov/oig/reports/FBI/a1139.pdf>.

including off-site options.⁴⁶ The Department of Justice was concerned about the option of storing DNA offsite because it would add complexity to the current storage and retrieval protocols and would increase risk regarding the maintenance of the samples.⁴⁷ Currently there is no legislation to reform the way that the DNA samples are kept on the federal level.

On the state level, DNA samples are kept in accordance with state law: some states require retention for particular crimes, others require retention for a certain period of time only, and some states do not have any evidence retention laws at all.⁴⁸ This system is very fragmented and as a result, states have their own procedures and policies regarding evidence retention.⁴⁹ This is reflective of the fragmentation of the criminal justice system, where positive process is bogged down because of poor cooperation and communication between agencies.⁵⁰

One of the main failings of the criminal justice system is its vast size and fragmentation.⁵¹ In order to ensure that appropriate systems are in place for retention of DNA (as well as other real) evidence, cooperation and standardization among the federal, state, and local facilities is necessary.

II. CURRENT PRESERVATION OF EVIDENCE AND LEGISLATION

The ability to retest DNA evidence demands retention of DNA samples from the crime scene. However, there is no uniform standard across the states and federal government regarding DNA retention.⁵²

Even when states allow for post-conviction testing, such testing is thwarted if the DNA evidence has not been preserved. Even when statutes allow for the preservation of DNA evidence, the evidence can easily be destroyed between conviction and the filing of a post-conviction

46. *Id.* at 4.

47. *Id.*

48. Ericksen & Knecht, *supra* note 11.

49. As of 2014, there are 12,656 law enforcement agencies in the country, with approximately 899,212 law enforcement employees. *Table 74: Full Time Law Enforcement Employees, 2014 Crime in the United States*, FBI, <https://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2014/crime-in-the-u.s.-2014/tables/table-74> (last visited Mar. 29, 2016) [hereinafter *FBI Table 74*]; see Ericksen & Knecht, *supra* note 11; see also SUSAN BALLOU ET AL., *THE BIOLOGICAL EVIDENCE PRESERVATION HANDBOOK: BEST PRACTICES FOR EVIDENCE HANDLERS* iv (2013).

50. See DAVID NEUBAUER & HENRY FRADELLA, *AMERICA'S COURTS AND THE CRIMINAL JUSTICE SYSTEM* 7-8 (11th ed. 2013).

51. *FBI Table 74*, *supra* note 49.

52. See Ericksen & Knecht, *supra* note 11.

petition for testing or retesting the biological evidence.⁵³ Common shortcomings in existing statutes are:

Some legislation limits the preservation of evidence to only certain crimes; [n]early every state with legislation calling for the preservation of evidence allows for its premature disposal; [and b]y failing to sanction parties responsible for the disposal or corruption of evidence, most states do not adequately deter those who might destroy evidence.⁵⁴

For example, Virginia's statute, which was implicated in Brown and McCollum's case, provides that for non-capital felonies, DNA evidence must be retained for up to 15 years from the time of the conviction, unless the court determines that the evidence should be retained for a longer period of time.⁵⁵ For capital offenses, the DNA evidence must be preserved until the judgment is executed.⁵⁶ However, despite these restrictions, there are no penalties for unlawful destruction.⁵⁷

In 2004, President George W. Bush signed into law the Justice for All Act, which provides funding to the criminal justice system "in order to realize the full potential of DNA technology to solve crimes and protect the innocent."⁵⁸ The bill was introduced

'to protect the innocent and convict the guilty' and to 'move our criminal justice system to a new era of increased fairness and efficiency' so that no more innocent people are wrongly convicted, or worse, sentenced to death.⁵⁹

The Justice for All Act of 2004 has numerous provisions set on expanding forensic DNA databases and exoneration through post-conviction DNA testing including:

(1) eliminating the backlog of DNA samples collected from crime scenes and convicted offenders; (2) expanding the Combined DNA Index System (CODIS); (3) improving and expanding DNA testing capacity of federal, state, and local crime laboratories; (4) increasing research and development of new DNA testing technologies; (5) developing new training programs for the collection and use of DNA

53. *Preservation of Evidence*, *supra* note 15.

54. *Id.*

55. VA. ANN. CODE § 19.2-270.4:1 (West 2001).

56. *Id.*

57. *Id.*

58. Kimberly A. Polanco, Note, *Constitutional Law: The Fourth Amendment Challenge to DNA Sampling of Arrestees Pursuant to the Justice for All Act of 2004: A Proposed Modification to the Traditional Fourth Amendment Test of Reasonableness*, 27 U. ARK. LITTLE ROCK L. REV. 483, 495 (2005).

59. *Id.* (quoting Senator Orrin G. Hatch, Chairman, U. S. Senate Comm. on the Judiciary, Statement at the press conference to introduce the Advancing Justice Through DNA Technology Act of 2003 (Oct. 1, 2003), <http://justice.policy.net/proactive/newsroom/release.vtml?id=35281>).

evidence; (6) extending the statute of limitations for crimes where the suspect is linked to the crime through DNA evidence; (7) providing post-conviction DNA testing and the preservation of biological evidence.⁶⁰

The Act established the Kirk Bloodsworth Postconviction DNA Testing Grant Program, which awards grants to states providing post-conviction DNA testing and preservation of evidence within the eligibility guidelines set forth in the Act.⁶¹ However, the Act does not authorize sanctions against individuals or states that improperly dispose of DNA evidence after conviction, and seems to provide only a monetary incentive to those states that comply with the provisions in the Act.⁶²

This Act was to be supplemented by a bill called the Justice for All Reauthorization Act of 2013, drafted in April 2013 and reported by Committee in November 2013.⁶³ This Act updated and expanded the Justice for All Act by expanding eligibility for post-conviction DNA testing in criminal proceedings other than death penalty cases, and amended incentive grants to defray the costs of post-conviction testing as well as incentivizing consideration of claims of innocence.⁶⁴ However, this bill has since died in a previous session of Congress and was therefore not enacted.⁶⁵

Until 2012, the UK had a policy that allowed near indefinite retention of DNA and fingerprint evidence, but, in 2012, Parliament passed the Protection of Freedoms Act 2012, which outlines new procedures for police retention of DNA and fingerprint evidence.⁶⁶ Under the new law, police still indefinitely retain DNA evidence from adults *convicted* of an offense, but they must dispose of DNA evidence of individuals only charged with or arrested for an offense after a period of a few years.⁶⁷ While this is more restrictive than the previous policy of indefinite retention, DNA will still be preserved for individuals convicted of an offense, with the possibility of being retested if requested.

60. ALICE A. NOBLE, AM. SOC'Y OF LAW, MED. & ETHICS, ASLME REPORTS: A SUMMARY OF THE JUSTICE FOR ALL ACT (2004), https://www.aslme.org/dna_04/spec_reports/justice_for_all.pdf.

61. *Id.*

62. *Id.*

63. Justice for All Reauthorization Act of 2013, S. 822, 113th Cong. (2013).

64. *Id.*

65. *Id.*

66. Jacqueline Beard & Sally Lipscombe, *Retention of Fingerprints and DNA Data* (HC Library, Briefing Paper No. 4049, 2015) (UK), <http://researchbriefings.files.parliament.uk/documents/SN04049/SN04049.pdf>.

67. *Id.*

While tension exists among state legislatures for retaining DNA evidence, most states provide for some sort of DNA post-conviction testing procedure.⁶⁸ These procedures can only be effectuated if there is adequate storage and preservation of DNA evidence. Another noteworthy concern is that forensic laboratories need a better system of cataloguing and preserving DNA evidence to create better accountability in its testing and prevent human error and bias in testing.⁶⁹

III. USING UNIVERSAL DNA BANKS AS A SOLUTION

A DNA profile is only as useful as how the evidence was tested. Sometimes the sample is improperly tested due to human error, cross-contamination of samples, and sometimes misconduct or falsification of the forensic scientist.⁷⁰ Having the original samples and a method for easily and efficiently retesting them would relieve this tension.

A. Preservation of Information from Other Fields

Preservation of knowledge for future use is extremely important. Over time, various researchers and scholars have noted the need to preserve other forms of knowledge. Libraries exist to preserve knowledge for everyone from laypeople to scholars.⁷¹ Reference systems “link one work to another, they establish and exercise underlying fabrics of trust.”⁷² These fabrics link scholars to each other, students to teachers, and researchers to one another, creating a vast web of knowledge that benefits everyone who uses that knowledge to better the community.⁷³ This web of knowledge can therefore be more easily

68. See Ericksen & Knecht, *supra* note 11.

69. False positives sometimes occur where there is no human error, but too much similarity between DNA samples. See William C. Thompson, *The Potential for Error in Forensic DNA Testing*, COUNCIL FOR RESPONSIBLE GENETICS, <http://www.councilforresponsiblegenetics.org/GeneWatch/GeneWatchPage.aspx?pageId=57> (last visited Mar. 29, 2016) (noting that false positives occur coincidentally, or due to shared DNA in families). Because there is a possibility that, even with no human error, the test will still be incorrect, retaining DNA evidence for future retesting becomes even more critical.

70. William C. Thompson, *Tarnish on the “Gold Standard”: Understanding Recent Problems in Forensic DNA Testing*, 30 CHAMPION 10, 10–11 (2006).

71. Ben White, *Guaranteeing Access to Knowledge: The Role of Libraries*, WIPO MAG. (Aug. 2012), http://www.wipo.int/wipo_magazine/en/2012/04/article_0004.html.

72. Donald J. Waters, *Preserving the Knowledge Commons*, in UNDERSTANDING KNOWLEDGE AS A COMMONS: FROM THEORY TO PRACTICE (Elinor Ostrom & Charlotte Hess eds., 2006).

73. *Id.*

used to develop new knowledge and progress the “knowledge commons.”⁷⁴

The Library of Congress in Washington D.C. is the “repository of a universal collection of human knowledge and the creative work of the American people” and its first priority is to make this material available in an efficient way to members of Congress, who represent the American people.⁷⁵ A main mission of the Library of Congress is to acquire and preserve the massive collections of materials of the library.⁷⁶ As of September 2013, the Library of Congress contains more than 158,007,115 physical items in the collections, including 23,592,066 catalogued books, and 12,344,477 other written materials.⁷⁷ The library also makes its collection available to anyone who wants to visit the Library of Congress, making it an invaluable resource for everyone from scholars to laypersons.

Similarly, in 2008, the Norwegian government created the Norwegian Government Global Seed Vault in Svalbard.⁷⁸ The purpose of the (now) Svalbard Global Seed Vault is to preserve the vast numbers of seeds to retain genetic diversity and as a safety measure for disasters, which could destroy seeds around the world.⁷⁹ The Svalbard Global Seed Vault currently has 839,804 seed samples of 4,868 species of plants from 232 different countries around the world.⁸⁰ The Svalbard Seed Vault (nicknamed the “Doomsday Seed Vault”) exists primarily to promote crop diversity, which is currently being lost due to farmers modifying crops to meet new needs.⁸¹ Crop diversity is necessary because it is the basis of agriculture, and with global climate change looming “genetic diversity [is] needed to breed crops that can with-

74. *Id.*

75. THE MISSION AND STRATEGIC PRIORITIES OF THE LIBRARY OF CONGRESS: FY 1997-2004, LIBRARY OF CONGRESS (1999), <http://www.4uth.gov.ua/usa/english/politics/legbranc/agencies/locmission.html>.

76. *About the Library*, LIBRARY OF CONGRESS, <http://www.loc.gov/about/> (last visited Mar. 29, 2016).

77. *General Information*, LIBRARY OF CONGRESS, <http://www.loc.gov/about/general-information/> (last visited Mar. 29, 2016).

78. *Svalbard Global Seed Vault*, MINISTRY OF AGRIC. & FOOD, <https://www.regjeringen.no/en/topics/food-fisheries-and-agriculture/agriculture/svalbard-global-seed-vault/id462220/> (last visited Mar. 29, 2016) (Nor.).

79. *Id.*

80. *Svalbard Global Seed Vault, the Seed Portal of the Svalbard Global Seed Vault*, NORDGEN, <http://www.nordgen.org/sgsv/index.php?page=welcome> (last modified July 11, 2010) (Nor.).

81. Neal Lineback & Mandy Lineback Gritzner, *Geography in the News: Svalbard Global Seed Vault*, NAT'L GEOGRAPHIC (May 25, 2014), <http://voices.nationalgeographic.com/2014/05/25/geography-in-the-news-svalbard-global-seed-vault/>.

stand changes in temperature, water availability, wind strength, and other extreme events.”⁸² This repository of agricultural information is crucial in the event of a world crisis, or if farmers destroy certain crop varieties. It is an extraordinary measure in case the worst were ever to come about.

B. DNA Storage

Like both the Library of Congress, and the Svalbard Global Seed Vault, law enforcement needs a repository of information. Currently, due to the fragmentation of law enforcement across the country, biological evidence is stored by different methods in different kinds of facilities across the country.⁸³ For example, local law enforcement storage facilities may be much smaller and unable to store a large amount of material as compared with state or federal facilities. This fragmentation can create incentive problems as well as allow corruption to go unchecked for vast periods of time.

1. Problems with Current Storage Facilities

Law enforcement’s close involvement with forensic laboratories is a system which may lead to corruption.⁸⁴ Additional scandals can arise from individual forensic scientists and lab workers who can influence testing due to shoddy workmanship or overt falsification.

As of September 2013, there have been numerous scandals in New York, Boston, Oklahoma City, and St. Paul where lab technicians and other laboratory workers either intentionally or unintentionally mishandled evidence, and even tampered with evidence or falsified test results.⁸⁵ A particularly egregious example is that of Serologist Fred Zain, who falsified test results in as many as 134 cases during a ten-year period, and was discovered after a DNA exoneration of a convicted rapist he identified as the perpetrator.⁸⁶

But even without inherent corruption, many public crime laboratories are funded in part per conviction, which could easily create an

82. *Id.*

83. BALLOU ET AL., *supra* note 49.

84. Mark Hansen, *Crime Labs Under the Microscope After a String of Shoddy, Suspect and Fraudulent Results*, ABA J. (Sept. 1, 2013, 10:20 AM), http://www.abajournal.com/magazine/article/crime_labs_under_the_microscope_after_a_string_of_shoddy_suspect_and_fraudu/.

85. *Id.*

86. *Id.*

incentive to increase the number of false convictions.⁸⁷ While the funding situation would be no different, better oversight over the physical evidence storage along with the possibility of retesting the evidence would serve a similar purpose in dissuading forensic scientists from taking matters into their own hands.

2. A Potential Solution Using the California Biobank Program as a Model

Each state should have its own storage facility that holds all the DNA samples retained for law enforcement purposes. In conjunction with uniform retention statutes,⁸⁸ these facilities should be uniform across the country, and contain the same facilities, categorization system, indexing, packing system, and storage systems. Law enforcement can send the samples to the facilities, and forensic laboratories will take the samples directly from the facilities for testing.

This will also serve the purpose of ostensibly removing law enforcement from forensic laboratories; a system which currently breeds bias and corruption.⁸⁹

A good example of a system to consider is California's Biobank Program. Like all other states, California collects blood samples from approximately 500,000 newborns and 350,000 pregnant women yearly in order to screen the blood for over eighty genetic and congenital disorders.⁹⁰ California has been taking these samples since the early 1980s and after testing, the state stores the samples labeled with only a unique identifying number.⁹¹ The specimens are available for several purposes such as identifying risk factors for diseases, developing and evaluating screening tests and strategies, and developing and evaluating treatments.⁹² This facility is one of the largest of its kind, and makes the specimens available to researchers who wish to study genetic disorders.⁹³

87. See Roger Koppl & Meghan Sacks, *The Criminal Justice System Creates Incentives for False Convictions*, 32 CRIMINAL JUSTICE ETHICS 126 (2013).

88. *Infra* Part IV.

89. Hansen, *supra* note 84.

90. *Genetic Disease Screening Program, Background and History*, CAL. DEP'T OF PUB. HEALTH, <http://www.cdph.ca.gov/programs/GDSP/Pages/MoreAboutTheCBP.aspx> (last visited Mar. 29, 2016).

91. *Id.*

92. *Id.*

93. *California Biobank Program*, CAL. DEP'T OF PUB. HEALTH, <http://www.cdph.ca.gov/programs/GDSP/Pages/California%20Biobank%20Program.aspx> (last visited Mar. 29, 2016).

A similar system for law enforcement purposes would be very useful. A large warehouse bank system in each state specifically for law enforcement purposes would create uniformity in the system. This would vastly streamline the process, and eliminate some of the errors associated with cross-contamination and storage. Also, this is a system that effectively removes the forensic laboratory from law enforcement control. Removing forensic laboratories from law enforcement control helps to remove some of the inherent biases suffered by forensic scientists that come with reporting to law enforcement.⁹⁴

A great benefit of this system would be its uniformity. All law enforcement agencies in this country are highly fragmented. Federal, state, and local agencies all follow their own policies, and have their own systems for taking care of evidence.⁹⁵ These can range from large federal storage facilities to smaller facilities for local agencies. There is no set uniformity among these facilities, even with federal funding in place.⁹⁶ Creating these evidence storage facilities in each state, and ensuring that each facility stores and labels the DNA evidence uniformly would unify and streamline the entire criminal justice system.

Retention of DNA samples is not only desirable to retest specimens in the future if better technology is developed, but it creates accountability within the forensic science community as well. Another reason to keep DNA evidence is for quality control purposes—in case any technician makes an error in labeling, testing, or creating DNA profiles in CODIS; the sample would be readily available for retesting.⁹⁷ A unified system such as this would increase accountability and transparency, giving the forensic science community a better name.

By creating another level of accountability to hold forensic scientists and laboratory technicians, we can ensure that incidents of corrupt technicians falsifying data would diminish. Sloppy technical work would also be seriously curtailed under this system. These benefits of DNA retention would then pass on to the affected arrestees. This would streamline the system and help prevent the conviction of innocent

94. Forensic Science Regulator, *Draft Guidance: Cognitive Bias Effects Relevant to Forensic Science Examinations*, FORENSIC SCI. Q. 5, 5–6 (2014), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356003/2014_08.28_FSR_Cognitive_bias_draft.pdf.

95. See KEVIN STROM ET AL., *THE 2007 SURVEY OF LAW ENFORCEMENT FORENSIC EVIDENCE PROCESSING* (2009).

96. Noble, *supra* note 60.

97. Dustin Hays, *DNA, Forensics, and the Law*, GENETICS & PUB. POL'Y CTR. (2007), <http://www.policyarchive.org/handle/10207/9650>.

arrestees who, like Brown and McCollum, could be incarcerated for many years before exoneration. This creates a more just system, which can better mete out justice and ensure that the wrong people do not spend undue time in prison.

IV. UNIFORM DNA RETENTION STATUTE

While the creation of a new facility to house DNA evidence is a crucial component in assisting DNA exonerations, legislative reform is necessary to ensure that states are authorized to retain DNA evidence for a certain length of time. Current state statutes regarding retention of DNA evidence are very disparate and will need to be made uniform.⁹⁸

The problems with retaining DNA and retesting DNA can be solved by creating a new statute that incorporates elements of current DNA retention statutes some states have. Primarily, the statutes need to contain some sort of provision regarding penalties for unlawful destruction of the evidence. The first step in ensuring that the statute is complied with is to make sure that there is an appropriate penalty attached. For example, Colorado,⁹⁹ Maryland,¹⁰⁰ and Minnesota¹⁰¹ have laws with provisions allowing for potential penalties for failure to retain DNA evidence. The sort of penalty that the statute should contain includes sanctions for parties involved in the improper destruction of evidence and provisions enabling courts to determine the appropriate remedy when evidence is improperly destroyed. If DNA evidence is improperly destroyed before conviction, such legislation could also allow the court discretion in dismissing the case if necessary. While the sanctions are harsh, they would properly dissuade technicians or forensic scientists from improperly destroying DNA evidence in connection with an ongoing case.

Next, the types of crimes for which retention is necessary should be considered. If forensic laboratories were required to keep all DNA evidence in relation to all crimes for which someone was arrested, it would create incredible storage and backlog issues. Some states specify which crimes require retention of evidence: such as crimes of violence,¹⁰² capital murder,¹⁰³ or all felonies resulting in conviction and

98. See Ericksen & Knecht, *supra* note 11.

99. COLO. REV. STAT. § 18-1-1104 (2009).

100. MD. CODE. CRIM. PROC. § 8-201 (2013).

101. MINN. STAT. § 590.10 (2005).

102. See, e.g., D.C. CODE § 22-4134 (2013).

sentencing.¹⁰⁴ Because DNA evidence is sometimes necessary in cases that are not only violent crimes, such as murder or rape, a broader specification may be necessary. Illinois is a good exemplar of how to cover these types of crimes. Illinois' statute requires DNA retention in all homicides, sexual offenses, attempts, and any felony for which a genetic profile may be added to the database.¹⁰⁵ This provides enough guidance about specific crimes but still allows for contingencies or unexpected scenarios where DNA preservation would be helpful.

The best way to ensure that the proper DNA is retained and to prevent an overload of evidence at forensic laboratories is to also standardize the lengths of time that various items of evidence are retained. The Illinois statute also provides a good guideline for this.¹⁰⁶ Under the Illinois statute, DNA will be permanently retained for death penalty cases; it will also be retained for the length of a conviction for homicide or sexual assault.¹⁰⁷ For any other felony that the defendant's profile may be taken by a law enforcement agency and submitted to a DNA database, retention will be seven years.¹⁰⁸ This statute represents a good solution because the important crimes for which DNA retention and retesting is more likely to be critical for are given priority and the other crimes for which DNA evidence could be retested but are not as critical are given less priority.

The permanent retention of DNA evidence in these storage facilities is not necessary, nor should it even be desired. What is necessary is enough time to allow for retesting of DNA evidence should it be requested by a defendant. The proposed statute should have provisions allowing for this, and ensure the DNA evidence is retained for enough time where it can be used by the defense effectively.

V. POTENTIAL PROBLEMS WITH EVIDENCE STORAGE FACILITIES

While the existence of DNA evidence storage facilities in each state would be a great boon to law enforcement as well as defendants who want to clear their names, there could be numerous problems in implementing such a system. First, the entire notion of retaining DNA evidence in a large facility could raise Fourth Amendment concerns

103. See, e.g., CONN. GEN. STAT. § 54-102j (2012).

104. See, e.g. ME. REV. STAT. tit. 15, § 2138 (2013).

105. 725 ILL. COMP. STAT. 5/116-4 (2013).

106. *Id.*

107. *Id.*

108. *Id.*

among citizens. Also, there could be some tension in the legislature regarding the administrative costs of such a facility. Who would create the evidence storage facilities and fund them? The cooperation of the legislature would also be necessary to create a new federal statute requiring retention of DNA samples. However, over the past ten years, multiple attempts have been made by experts in the forensic sciences field and legislators to make some reforms in the field.¹⁰⁹ The introduction of an evidence retention statute as well as the development of new evidence holding facilities could run across similar problems to previous attempts.

A. Fourth Amendment Concerns

The California Biobank Program is extraordinarily important in screening California residents for genetic disorders, and has been doing this work for over thirty years.¹¹⁰ However, the program, which stores millions of blood samples, has drawn extreme criticism from privacy advocates.¹¹¹ These privacy advocates, led by Assemblyman Mike Gatto, are mistrustful of a facility that holds the genetic information for millions of Californians.¹¹² The lawmaker wants the state to get written consent from parents before storing children's blood samples in the facility indefinitely.¹¹³ Under this proposed legislation, parents would have to give consent before the children's DNA is stored in the facility, and when the blood donor turns eighteen, he or she can request to have his or her blood samples destroyed.¹¹⁴

These concerns all revolve around the possibility of citizens' genetic information being leaked or falling into the wrong hands.¹¹⁵ Mike Gatto specifically noted that "[i]magine the discrimination a person might face if their HIV status or genetic predisposition to a mental disorder were revealed to the public."¹¹⁶ However, while the California Biobank Program sends the genetic information to researchers for

109. See, e.g., COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCI. CMTY. ET AL., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) [hereinafter A PATH FORWARD]; Criminal Justice and Forensic Science Reform Act, S. 2177, 113th Cong. (2014).

110. *California Biobank Program*, *supra* note 93.

111. Patrick McGreevy, *Millions of DNA Samples Stored in Warehouse Worry Privacy Advocates*, L.A. TIMES (Feb. 1, 2015, 6:45 PM), <http://www.latimes.com/local/politics/la-me-pol-dna-privacy-20150202-story.html>.

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.*

116. *Id.*

testing, the program does not include identifying information with the genetic material.¹¹⁷ In fact, the California Bloodbank only stores each piece of genetic information with an identifying number—blood donors' personal information is not kept on record.¹¹⁸ A similar system could easily be put in place for criminal offenders, such as identification based on case number or a unique serial number linked to a case.

California has had other concerns more specifically about DNA information taken from felons: a California appellate court has ruled that the California DNA Act¹¹⁹ is unconstitutional because it too deeply invades the privacy concerns of arrestees.¹²⁰ The case, *People v. Buza*,¹²¹ concerned a San Francisco man who was found guilty of four counts of arson, possession of a combustible device, vandalism, and "refusal or failure to provide a DNA specimen."¹²² The California DNA Act requires law enforcement agencies to collect DNA from all adults arrested for felonies and arrestees who refuse are charged with a misdemeanor.¹²³ Despite the ruling in the Supreme Court case of *Maryland v. King*, the California appellate court found the California DNA law was significantly different than the Maryland DNA law.¹²⁴ Under the California Constitution, the holding of *King* is impermissible: the analysis of DNA collected from arrestees does not serve the asserted governmental purpose of identification, and "cannot be squared with established constitutional principles protecting against suspicionless searches."¹²⁵ The California court was very concerned with the seemingly indefinite retention of DNA samples, and the implications of holding stockpiles of genetic information.¹²⁶

California's reluctance regarding the storage of genetic information exemplifies a concern of privacy advocates across the country—is the storage of genetic information an unreasonable intrusion

117. *Id.*

118. *Genetic Disease Screening Program*, *supra* note 90.

119. Pursuant to *Maryland v. King*, 133 S. Ct. 1958 (2013).

120. Cyrus Farivar, *Court Strikes California Law Requiring DNA Collection for Felony Arrestees*, ARS TECHNICA (Dec. 4, 2014, 2:50 PM), <http://arstechnica.com/tech-policy/2014/12/court-strikes-california-law-requiring-dna-collection-for-felony-arrestees/>.

121. *People v. Buza*, 231 Cal. App. 4th 1446 (Cal. Ct. App. 2014), *petition for review granted and opinion superseded by*, 342 P.3d 415 (Cal. 2015).

122. Farivar, *supra* note 120.

123. William Dotinga, *Appeals Court Rips Calif. DNA-Collection Law*, COURTHOUSE NEWS SERV. (Dec. 4, 2014, 11:16 AM), <http://www.courthousenews.com/2014/12/04/appeals-court-rips-calif-dna-collection-law.htm>.

124. *Id.*

125. *Id.*

126. *Id.*

into our privacy?¹²⁷ It is likely that the uniform retention of DNA may raise similar concerns, especially among states that do not currently have any DNA retention statutes.

However, unlike the California Biobank Program, the DNA which should be retained is solely that of criminal offenders, i.e. those individuals who have been convicted of a crime. Lower courts have rejected Fourth Amendment challenges to DNA sample collection from offenders because (1) offenders have a diminished expectation of privacy; and (2) the special needs of law enforcement for efficient investigation of future crimes outweighs an individual's privacy interest in their DNA being excluded from databases.¹²⁸

To prevent Fourth Amendment complaints regarding possible inclusion of DNA from DNA dragnets, like those authorized in *Maryland v. King*, a policy should be put in place for those as well. DNA evidence from such dragnets should only be retained and included in the DNA evidence storage facility if it results in a conviction. This Note does not express any further comment on such a system regarding DNA dragnets.

The DNA samples could be kept in a centralized facility, under appropriate supervision, with no identifying information. Unlike the California Biobank Program, these samples are for law enforcement purposes only, and will not be sent to researchers. And unlike DNA dragnets (for example, those in *Maryland v. King*) implicating Fourth Amendment concerns for some states, the samples to be retained will only be taken from individuals *already convicted of a crime*, not all arrestees generally. While the notion of retaining DNA samples from future programs such as DNA dragnets, and from future Rapid DNA Analysis testing does raise some Fourth Amendment concerns, this Note is concerned primarily with the retention of DNA samples from individuals who have been *convicted*. This is a streamlining of the current system, designed to alleviate some current concerns about the storage and testing of DNA evidence in exonerating criminal defendants.

127. Many articles have been written about the Fourth Amendment and DNA databases. See, e.g., Nadia Beniquez, *We Have Your DNA, Come Out with Your Hands Up! The Three D's of DNA: A Fourth Amendment Analysis of a Trilemma*, 13 T.M. COOLEY J. PRAC. & CLINICAL L. 521 (2011); Laura A. Matejik, *DNA Sampling: Privacy and Police Investigation in a Suspect Society*, 61 ARK. L. REV. 53 (2008); Albert E. Scherr, *Genetic Privacy & The Fourth Amendment: Unregulated Surreptitious DNA Harvesting*, 47 GA. L. REV. 445 (2013).

128. Hays, *supra* note 97.

A system allowing the defendants more control over their DNA samples could also assist with Fourth Amendment concerns. Like the proposed legislation limiting the reach of the California Biobank Program, a system to allow defendants to petition for destruction of their DNA samples would be effective in preserving Fourth Amendment concerns.¹²⁹ Defendants could petition to destroy their DNA samples after their DNA profiles have been entered into CODIS. Law enforcement will retain the CODIS profile, retaining the ability to search for the profile in connection to different crimes. However, the DNA sample itself could be destroyed, if the defendant has concerns about the information being used for alternative, impermissible purposes. This could give a bit of control to individuals with privacy concerns. At the same time, defendants who feel as if the DNA evidence should be re-tested would be assured that the samples would not be destroyed.

While the facilities where the samples will be stored will be necessarily affiliated with law enforcement, the facilities would not be part of forensic laboratories, and therefore not under the influence of some biases or corruption of forensic scientists. While the testing of the genetic information will stay the same, removal of the DNA samples from laboratories as well as placing them under rigorous supervision, would decrease opportunities and incentives to improperly test samples.

B. Administration and Funding of Facilities

Another problem with the creation of new facilities for storage of evidence is what agency/governmental body (if any) will provide the funding and administration. Local and state governments often do not have the funding to even adequately run their own facilities. Creating a new evidence storage facility in each state will be costly to implement.

In 2009, the National Academy of Sciences (NAS) created a report to streamline and reform forensic sciences in this country.¹³⁰ One of their recommendations was the creation of a National Federal Agency for forensic sciences.¹³¹ In 2014, the Department of Justice (DOJ) and the National Institute of Standards & Technology (NIST) teamed up to create a National Commission on Forensic Science which will attempt

129. McGreevy, *supra* note 111.

130. A PATH FORWARD, *supra* note 109.

131. *Id.* at 18–19.

to put the NAS' recommendations into action.¹³² However, developments such as these have happened before: shortly after the NAS report was published in 2009, the White House created the interagency National Science & Technology Council charged with making reform recommendations about forensic sciences.¹³³ This Council has not produced any results publicly.¹³⁴ Congress also has not had much luck introducing new bills attempting reform.¹³⁵

The federal government also does not have power over the states' efforts at reform, so the introduction of a new evidence storage facility in each state, where state, local and federal evidence will be kept, could be problematic.

The answer may be found in the federal funding provided by the Paul Coverdell Forensic Science Improvement Grant and the 2004 Justice for All Act.¹³⁶ The Coverdell National Forensic Science Improvement Grants Program creates funding for eligible states and local governments who wish to improve the quality and timeliness of forensic science and medical examiner services.¹³⁷ In order to request a Coverdell grant, an applicant must submit a plan for forensic science laboratories, description of laboratory practices, costs of new facilities, and external investigations into allegations of serious neglect and misconduct.¹³⁸ Funds are allocated to applicants that meet all eligibility requirements.¹³⁹ The 2004 Justice for All Act gives grants to states providing post-conviction DNA testing and preservation of evidence within the eligibility guidelines set forth in the Act.¹⁴⁰

Between these two measures is adequate funding for forensic laboratories that wish to improve their facilities and eliminate their backlogs. A new provision of the Justice for All Act could provide funding for new state evidence facilities. This would allocate a percentage of the funds in place for creation of these new facilities. Since this is not a total rehaul of the forensic laboratory system, nor any kind of enhancement of the federal statutes currently in place regarding laborato-

132. Carmen Drahl & Andrea Widener, *Forcing Change in Forensic Science*, 19 CHEMICAL & ENGINEERING NEWS 10–15 (May 12, 2014), <http://cen.acs.org/articles/92/i19/Forcing-Change-Forensic-Science.html>.

133. *Id.*

134. *Id.*

135. *Id.*

136. 42 U.S.C. § 3797k(4) (1979).

137. *Id.*

138. *Id.*

139. *Id.*

140. Noble, *supra* note 60.

ry conditions, it would be easier for this legislation to pass Congress. Most measures looking to improve forensic laboratories in this country are still too sweeping and demand too much change all at once.¹⁴¹ The addition of a new facility for evidence retention does not require too much modification of the current systems, and is therefore not an overwhelming change. Such legislation is more likely to be put forward than changes to legislation that alter too many features.

Changes to DNA retention statutes may be more difficult to get into motion. A federal statute that preempts state law would need to be put in place. Currently, according to the federal case *United States v. Kriesel*, the federal government can retain DNA samples indefinitely.¹⁴² The majority noted two legitimate reasons for sample retention: (1) if there is a cold hit in the database, the laboratory could compare the database profile to a new profile using the DNA sample, therefore protecting those suspects whose profile was incorrectly recorded; and (2) the government randomly samples 1% of the offender samples processed in the preceding six months for inconsistencies in order to review improper processes and retest other samples which may have been misanalyzed.¹⁴³

There is already federal policy in place allowing for (potentially) indefinite retention of DNA evidence. Federal legislation could be drafted to elaborate upon the *Kriesel* opinion and extend it to states. *Indefinite* retention is not even necessary, and may prove to be too unpopular for many states such as California. A more restrictive statute that allows for a defendant to petition to destroy evidence after a certain time period has elapsed or even retains evidence for a set period of time after conviction is more appropriate. While indefinite retention guarantees that the DNA samples are always available to recheck testing procedures and database entries for error, indefinite retention may not be appropriate for states which are already wading through their extensive backlogs of DNA tests, and consider the implications of indefinite retention to be too dire.

Some sort of penalty for failing to retain DNA samples will also help. Currently, the Justice for All Act does not include a penalty for individuals who destroy DNA evidence improperly.¹⁴⁴ A penalty for

141. See, e.g., A PATH FORWARD, *supra* note 109.

142. *United States v. Kriesel*, 720 F. 3d 1137, 1147 (9th Cir. 2013).

143. *Id.*

144. Noble, *supra* note 60.

improper destruction could go a long way toward creating a new system of accountability and transparency in the forensic sciences field.

Middle ground is necessary between an indefinite retention time and no retention statute at all. Such legislation coupled with new forensic evidence storage facilities could create a new system of accountability for the forensic sciences. Information will need to be retained for a period of time to allow for retesting and auditing of testing procedures. This will ensure that arrestees who have been incarcerated due to faulty DNA tests have the opportunity to retest their samples. Without needing to completely overhaul the current forensic science system in America, much change could be accomplished in only a few years.

CONCLUSION

The current criminal justice system across the country poses some problems for defendants. The forensic sciences field in particular is in need of some serious reform. While it may take many years to completely reform the field so that the standards are acceptable to the experts in the field, certain action can be taken sooner. Reform of statewide DNA retention efforts would be a good solution before systemic change can be effected. The current system allows for too many mistakes with not enough oversight, leading to innocent arrestees being incarcerated in some cases for most of their lives. If DNA samples were retained in a statewide facility, with procedures in place for proper testing and retesting of the information, we could gain more accountability over this system. This would prevent rogue technicians from feeling free to falsify data, but it would also help prevent human error in other situations. Taking the evidence out of police hands and keeping it in a separate facility could only help all players in the criminal justice system. This could help create a streamlined, efficient system for the police, which gives greater transparency and accountability to the forensic sciences community and helps ensure that innocent arrestees are not unduly convicted.

The outcome of Robin Lovitt's case could have been changed if the state of Virginia had better evidence retention statutes.¹⁴⁵ There are numerous other cases of arrestees experiencing similar circumstances. Since DNA exoneration was first used in 1989, there have been (as of

145. *Preservation of Evidence*, *supra* note 15.

May 2014) 316¹⁴⁶ DNA exonerations nationwide.¹⁴⁷ These exonerated individuals collectively have served “more than 4,000 total years in prison.”¹⁴⁸ On average, these individuals were incarcerated for thirteen years, and were found guilty at the age of twenty-seven.¹⁴⁹ Nine percent entered a guilty plea for a crime they did not commit, six percent were serving on death row, and a further five percent were charged with capital crimes but not sentenced to death.¹⁵⁰ Sixty-two percent of the freed prisoners are African-American.¹⁵¹

Scientific mistakes due to flawed forensics account for convictions of around half of those who were ultimately exonerated through DNA testing.¹⁵² While there have been some egregious examples of forensic scientist and technician misconduct, many mistakes are due to simple human error, and unrealized cognitive biases. A mechanism in place to prevent these sorts of mistakes from occurring in the first place can help innocent defendants before exoneration becomes necessary.

A system requiring preservation of DNA evidence for a set period of time away from the control of police or forensic scientists would be a useful tool in righting and preventing these injustices which have plagued the criminal justice field.

146. As of February 3, 2016, there have been 26 additional exonerations in 2015 in part or in whole based on DNA evidence. NAT'L REGISTRY OF EXONERATIONS, EXONERATIONS IN 2015 5 (2016), http://www.law.umich.edu/special/exoneration/Documents/Exonerations_in_2015.pdf.

147. Ben Piven, *DNA Exoneration: Redeeming the Wrongfully Convicted*, AL-JAZEERA AM. (May 27, 2014, 10:00 AM), <http://america.aljazeera.com/watch/shows/ajam-presents-the-system/articles/2014/5/8/dna-exoneration-wrongfullyconvicted.html>.

148. *Id.*

149. *Id.*

150. *Id.*

151. *Id.*

152. *Id.*

