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DNA Testing in Criminal Justice: Background, Current Law, and Grants

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February 2, 2015

Congressional Research Service
7-5700
www.crs.gov
R41800

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

Deoxyribonucleic acid, or DNA, is the fundamental building block for an individual's entire genetic makeup. DNA is a powerful tool for law enforcement investigations because each person's DNA is different from that of every other individual (except for identical twins). DNA can be extracted from a number of sources, such as hair, bone, teeth, saliva, and blood. As early as the 1980s, states began enacting laws that required collecting DNA samples from offenders convicted of certain sexual and other violent crimes. The samples were then analyzed and their profiles entered into state databases. Meanwhile, the Federal Bureau of Investigation (FBI) Laboratory convened a working group of federal, state, and local forensic scientists to establish guidelines for the use of forensic DNA analysis in laboratories. The group proposed guidelines that are the basis of current national quality assurance standards, and it urged the creation of a national DNA database. The criminal justice community began to utilize DNA analyses more often in criminal investigations and trials, and in 1994 Congress enacted legislation to authorize the creation of a national DNA database.

Federal law (42 U.S.C §14132(a)) authorizes the FBI to operate and maintain a national DNA database where DNA profiles generated from samples collected from people under applicable legal authority and samples collected at crime scenes can be compared to generate leads in criminal investigations. Statutory provisions also authorize the collection of DNA samples from federal offenders and arrestees, District of Columbia offenders, and military offenders. State laws dictate which convicted offenders, and sometimes people arrested for crimes, will have profiles entered into state DNA databases, while federal law dictates the scope of the national database. Increasing awareness of the power of DNA to solve crimes has resulted in increased demand for DNA analysis, which has resulted in a backlog of casework. Some jurisdictions have started to use their DNA databases for familial searching, which involves using offender profiles to identify relatives who might be perpetrators of crimes. In addition to solving crimes, DNA analysis can help exonerate people incarcerated for crimes they did not commit.

Congress has authorized several grant programs to provide assistance to state and local governments for forensic sciences. Many of the programs focus on providing state and local governments with funding to reduce the backlog of forensic and convicted offender DNA samples waiting to be processed and entered into the national database. However, other grant programs provide funding for related purposes, such as offsetting the cost of providing post-conviction DNA testing.

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Introduction

Deoxyribonucleic acid, or DNA, is the fundamental building block for an individual's entire genetic makeup. DNA is a powerful tool for law enforcement investigations because each person's DNA is different from that of every other individual (except for identical twins). By analyzing selected DNA sequences (called loci), a crime laboratory can develop a profile to be used in identifying a suspect.

DNA can be extracted from a number of sources, such as hair, bone, teeth, saliva, and blood. Because the human body contains so many copies of DNA, even a minuscule amount of bodily fluid or tissue can yield useful information. Obtaining a DNA sample is not necessarily invasive; it can be as simple as a swab of the inside of the mouth to obtain saliva.

State and federal DNA databases have proved instrumental in solving crimes, reducing the risk of convicting the wrong person, and establishing the innocence of those wrongly convicted. DNA evidence is used to solve crimes in two ways:

- In cases where a suspect is known, a sample of that person's DNA can be compared to biological evidence found at a crime scene. The results of this comparison may then help establish whether the suspect was at the crime scene or whether he/she committed the crime.
- In cases where a suspect is not known, biological evidence from the crime scene can be analyzed and compared to offender profiles contained in existing DNA databases to assist in identifying the perpetrator. Through the use of DNA databases, biological evidence found at one crime scene can also be connected to other crime scenes, linking them to the same perpetrator or perpetrators.

This report provides an overview of how DNA is used to investigate crimes and help protect the innocent.[1] It also reviews current statutory law on collecting DNA samples, sharing DNA profiles generated from those samples, and providing access to post-conviction DNA testing. The report also includes a summary of grant programs authorized by Congress to assist state and local governments with reducing DNA backlogs, provide post-conviction DNA testing, and promote new technology in the field.

Background

Federal law authorizes the Federal Bureau of Investigation (FBI) to operate and maintain a national DNA database where DNA profiles generated from samples collected from people under applicable legal authority and samples collected at crime scenes can be compared to generate leads in criminal investigations. Statutory provisions also authorize the collection of DNA samples from federal offenders and arrestees, District of Columbia offenders, and military

[1] This report does not include a discussion of the use of DNA to identify missing persons and unidentified human remains, nor does it include an overview of grant programs to state and local governments for developing DNA profiles from samples from missing persons, close relatives of missing persons, or unidentified human remains. For more on this issue, see CRS Report RL34616, *Missing Adults: Background, Federal Programs, and Issues for Congress*, by Adrienne L. Fernandes-Alcantara.

offenders. State law dictates which convicted offenders and persons arrested for crimes will have profiles entered into state DNA databases, but federal law dictates which profiles entered into state databases can be uploaded into the national DNA database.

Increasing awareness of the power of DNA testing to solve crimes has increased demand for DNA analysis, which has resulted in a backlog of casework. The demonstrated ability of DNA testing to generate leads in criminal investigations has led some jurisdictions to use their DNA databases for familial searching, which involves using offender profiles to identify relatives who might be perpetrators of crimes. In addition to solving crimes, DNA analysis can also help exonerate people incarcerated for crimes they did not commit.

The National DNA Index System (NDIS) and the Combined DNA Index System (CODIS)

As early as the 1980s, states began enacting laws that required DNA samples from those offenders convicted of certain sexual offenses and other violent crimes. The samples were then analyzed and their profiles entered into state databases. Meanwhile, the FBI Laboratory convened a working group of federal, state, and local forensic scientists to establish guidelines for the use of forensic DNA analysis in laboratories. The group proposed guidelines that are the basis of current national quality assurance standards, and it urged the creation of a national DNA database.[2] In 1994, Congress authorized the FBI to establish and oversee the National DNA Index System (NDIS). When the NDIS launched in 1998, only nine states participated.[3] Currently, laboratories in all 50 states, the District of Columbia, the federal government, Puerto Rico, and the U.S. Army Criminal Investigation Laboratory participate in the NDIS.[4] The NDIS contains the DNA profiles provided by federal, state, and participating local crime laboratories.[5] As of December 2014, there are 194 laboratories in the United States participating in the NDIS.[6]

DNA profiles generated by laboratories operated by local law enforcement agencies are stored in Local DNA Index Systems (LDIS). DNA profiles generated by state laboratories, along with authorized profiles stored in participating LDIS, are uploaded into State DNA Index Systems (SDIS). Each state has its own laws specifying which profiles can be included in the SDIS.[7] DNA profiles generated by federal laboratories, along with authorized DNA profiles in participating

[2] Statement of Dwight E. Adams, Deputy Assistant Director, Laboratory Division, Federal Bureau of Investigation, in U.S. Congress, House of Representatives, Government Reform Committee, Subcommittee on Government Efficiency, Financial Management and Intergovernmental Relations, *How Effective are State and Federal Agencies Working Together to Implement the Use of New DNA Technologies*?, hearing, 107th Cong., 1st sess., March 29, 2004, pp. 53-54.

[3] John M. Butler, *Fundamentals of Forensic DNA Typing* (Burlington, MA: Academic Press, 2010), p. 265 (hereinafter, *Fundamentals of Forensic DNA Typing*).

[4] Ibid.

[5] U.S. Department of Justice, Federal Bureau of Investigation, *Frequently Asked Questions (FAQs) on the CODIS Program and the National DNA Index System*, http://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis-and-ndis-fact-sheet, hereinafter "CODIS FAQs."

[6] U.S. Department of Justice, Federal Bureau of Investigation, *CODIS—NDIS Statistics*, http://www.fbi.gov/about-us/lab/codis/ndis-statistics.

[7] The National Conference of State Legislatures (NCSL) maintains a searchable database of state DNA laws, including laws related to which convicted offenders are required to submit a sample for inclusion in the state's DNA database and whether, and if so, from whom, collects DNA samples from individuals arrested for certain crimes. The NCSL's database is available online at http://www.ncsl.org/research/civil-and-criminal-justice/dna-laws-database.aspx.

SDIS, are uploaded into the NDIS.[8] Federal law dictates which DNA profiles can be stored in the NDIS (see below). The NDIS allows participating laboratories to compare DNA on the national level while the SDIS allows each state to compare DNA profiles stored at the state level. Federal, state, and local laboratories upload and compare DNA profiles using the Combined DNA Index System (CODIS) software produced and distributed by the FBI.[9]

CODIS searches three indexes (convicted offenders, arrestee, and forensic) to generate investigative leads. The convicted offender index contains DNA profiles developed from samples collected from convicted offenders; the arrestee index contains DNA profiles developed from samples collected from arrested but *not yet convicted* individuals; and the forensic index contains DNA profiles developed from samples collected at crime scenes. CODIS searches across these indexes to look for potential matches (also referred to as "hits").[10] Matches can occur between either the convicted offender or arrestee indexes and the forensic index, thereby providing law enforcement with the identity of one or more suspects.[11] Also, matches can occur between DNA profiles in the forensic index, thereby linking crime scenes to each other and identifying serial offenders.[12] Matches between multiple samples in the forensic index can allow law enforcement agencies in different jurisdictions to coordinate their efforts and share leads. No names or other personal identifiers for offender and arrestee DNA profiles are stored in the NDIS, so when a match is made in CODIS, the laboratories that submitted the DNA profiles to the NDIS are notified of the match and they contact each other to verify the match and coordinate their efforts.[13]

DNA Profiles

DNA profiles entered into CODIS are based on 13 core short tandem repeat (STR) loci selected by the FBI.[14] Currently, the 13 STR loci used by the FBI are non-coding, meaning that they have not been shown to be associated with human attributes such as height, eye or skin color, or susceptibility to a particular disease.[15] Each locus has two alleles, and it is these 13 pairs of alleles that are compared to match samples in the forensic index with profiles in either the offender or arrestee indexes. The 13 core loci chosen by the FBI provide a high level of discriminatory power. The probability that two unrelated individuals would share all 13 pairs of alleles is

[8] U.S. Department of Justice, Federal Bureau of Investigation, *CODIS—NDIS Statistics*, http://www.fbi.gov/about-us/lab/codis/ndis-statistics.

[9] CODIS FAQs.

[10] Ibid.

[11] Ibid. If an "offender hit" is obtained, that information typically is used as probable cause to obtain a new DNA sample from that suspect so the match can be confirmed by the crime laboratory before an arrest is made.

[12] Ibid.

[13] CODIS FAQs.

[14] Ibid.

[15] Jules Epstein, "Genetic Surveillance—The *Bogeyman* Response to Familial DNA Investigations," *University of Illinois Journal of Law, Technology and Policy*, vol. 2009, no. 1, (2009), p. 143.

estimated to be one in several hundred billion.[16] Two random Americans will, on average, share two or three alleles.[17]

It is important to ensure the quality of the DNA profiles entered into the NDIS. If the profiles are not accurate, they are of little use for making matches between forensic and offender or arrestee profiles. The FBI helps ensure the quality of DNA profiles included in the NDIS by signing memorandums of understanding with state laboratories whereby the laboratory agrees to adhere to the FBI's Quality Assurance Standards (QAS, see below).[18] Laboratories submitting DNA profiles to the NDIS must be accredited and audited annually.[19] Annual audits can be conducted by either an internal or external auditor, but laboratories must be audited by an external agency at least once every two years.[20] Laboratories that do not pass the annual audit can be prevented from entering DNA profiles in CODIS.[21] Currently, most labs in the United States are audited by the American Society of Crime Laboratory Directors and its Laboratory Accreditation Board (ASCLD/LAB) and Forensic Quality Services (FQS). In addition, DNA analysts must undergo semiannual proficiency testing.[22] DNA analysts who do not pass their semiannual proficiency tests are not allowed to enter profiles into CODIS.[23] Laboratories are also required to conduct two reviews of all DNA profiles before they are entered into CODIS.[24]

Currently, as prescribed by federal law (see below), only public laboratories that comply with the QAS can submit DNA profiles to the NDIS. However, public laboratories are allowed to outsource casework to private laboratories. All private laboratories that conduct DNA testing for public laboratories must be accredited, be audited annually, and adhere to the requirements of the QAS.[25] Public laboratories are required to conduct an initial site visit to each private laboratory it contracts with to conduct DNA analyses.[26] If the public laboratory signs a contract with a private laboratory that is longer than one year, the public laboratory must conduct an annual site visit.[27] Public laboratories are also required to review all outsourced DNA profiles generated by private laboratories.[28] The review by the public laboratory is in addition to the two reviews private laboratories are required to conduct per the QAS.

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[16] Henry T. Greely, Daniel P. Riordan, and Nanibaa' A. Garrison et al., "Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin," *Journal of Law, Medicine and Ethics*, vol. 34, no. 2 (Summer 2006), p. 250 (hereinafter, "Greely, Riordan, Garrison et al., 'Family Ties'").

[17] Ibid.

[18] *Fundamentals of Forensic DNA Typing*, p. 270.

[19] Ibid., p. 271.

[20] U.S. Department of Justice, Federal Bureau of Investigation, *Quality Assurance Standards for DNA Databasing Laboratories*, Standard 15, http://www.fbi.gov/about-us/lab/biometric-analysis/codis/qas_databaselabs. U.S. Department of Justice, Federal Bureau of Investigation, *Quality Assurance Standards for Forensic DNA Testing Laboratories*, Standard 15, http://www.fbi.gov/about-us/lab/biometric-analysis/codis/qas_testlabs (hereinafter "QAS").

[21] *Fundamentals of Forensic DNA Typing*, p. 271.

[22] Ibid.

[23] Ibid.

[24] U.S. Congress, House Committee on the Judiciary, Subcommittee on Crime, Terrorism, and Homeland Security, *Testimony of Jeffery S. Boschwitz, Ph.D.*, Hearing on "Rape Kit Backlogs: Failing the Test of Providing Justice to Sexual Assault Survivors", 111th Cong., 2nd sess., May 20, 2010, H.Hrg 111-115 (Washington: GPO, 2010), p. 81.

[25] QAS, Standard 17.

[26] CODIS FAQs.

[27] QAS, Standard 17.

[28] Ibid.

An offender or arrestee profile in a DNA database consists of 26 numbers representing each of the two alleles for the 13 STR loci, an agency identification number, a sample identification number, and an identifier for the analyst that entered the information.[29] However, most jurisdictions retain the DNA sample used to generate the profile placed in CODIS.[30] DNA samples are usually retained for quality assurance purposes, such as confirming a hit made using the NDIS, and it allows jurisdictions to retest the sample if new technology is developed in the future.[31] Privacy advocates are concerned that stored DNA samples include a wealth of genetic information that could be misused.[32] States and the federal government have sought to prevent the unauthorized use of DNA samples. Some states have criminal penalties in place for individuals who misuse DNA samples collected for law enforcement purposes.[33] Under current law, anyone who misuses a DNA sample collected under federal authority is subject to a fine of up to $250,000, or imprisonment for up to one year.[34]

The number of offender profiles included in the NDIS has increased as Congress has allowed states to include DNA profiles from a broader range of convicted offenders and persons arrested for certain crimes to be included in the database. States have also amended their DNA collection laws to reflect this expanded authority. Nearly 12.4 million new convicted offender and arrestee profiles have been added to NDIS since 2000.[35] In addition, over 580,000 new forensic profiles have been included in the NDIS since 2000. This is in part because more forensic profiles have been added to the NDIS as state and local governments have started to work their way through backlogs of forensic casework. The additional offender and forensic profiles have increased the number of investigate leads generated by DNA databases. Since 2000, the NDIS has aided in the investigation of nearly 258,000 crimes.[36]

One limitation of these data is that they do not describe how the investigations were aided, the outcomes of the investigations, or whether any of the hits solved the alleged crimes.[37] Database hits do not always generate a new investigative lead; investigators, if they have already identified a suspect and they know that the suspect's profile is already in the database, may enter a forensic profile into the database and wait for a hit to be returned before investigating further. In addition, not all hits generated by the DNA databases are probative; just because someone's DNA is found at a crime scene does not always mean that the person who left the DNA is the perpetrator. Also, it is possible that one forensic or offender hit might lead to several arrests or aid in multiple investigations. The data published by the FBI provide a measure of the output generated by the NDIS, but the "hits" and "investigations aided" metrics are poor indicators of whether DNA

[29] *Fundamentals of Forensic DNA Typing*, p. 270.

[30] Ibid., p. 262.

[31] Ibid.

[32] Tania Simoncelli, "Dangerous Excursions: The Case Against Expanding Forensic DNA Databases to Innocent Persons," *Journal of Law, Medicine, and Ethics*, vol. 34, no. 2 (Summer 2006), p. 392.

[33] Ibid., p. 392.

[34] 42 U.S.C. §14135e(c).

[35] The FBI reports data on the number of offender, arrestee, and forensic profiles in the NDIS in 2000 at http://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis_brochure. Data on the number of offender, arrestee, and forensics profiles as of December 2014 can be found at http://www.fbi.gov/about-us/lab/biometric-analysis/codis/ndis-statistics.

[36] U.S. Department of Justice, Federal Bureau of Investigation, *CODIS—NDIS Statistics*, http://www.fbi.gov/about-us/lab/codis/ndis-statistics.

[37] Frederick R. Bieber, "Turning Base Hits into Earned Runs: Improving the Effectiveness of Forensic DNA Data Bank Programs," *Journal of Law, Medicine and Ethics*, vol. 34, no. 2 (Summer 2006), p. 227.

databases aided in resolving criminal investigations.[38] For example, the data provide no indication of whether the hits generated by the NDIS resulted in a conviction or how many investigations resulted in an arrest.

A study of database hits in San Francisco suggests that there is a need for more expansive data collection in order to properly to evaluate the effectiveness of DNA databases.[39] The study measured the outcomes of 198 DNA database hits in cold cases[40] generated by the San Francisco Police Department Forensic Biology Unit between 2001 and 2006. The researchers report that 90% of the cold hits were probative and provided investigators with substantive leads.[41] Probative hits led to judicial resolution (i.e., conviction, guilty plea, or parole revocation) 40% of the time.[42] Another 28% of the cases involving probative hits were either awaiting jury trial or the investigation was ongoing at the time the article was written. The researchers note that they found that nearly 70% of the probative hits could result in some form of judicial resolution. There were varying rates of success for database hits for different types of offenses. Nearly 9 in 10 probative hits in homicide and burglary cases either reached judicial resolution or could be resolved. However, judicial resolution or potential resolution was lower for sex offenses (approximately 1 in 2). In nearly half of the cases where a probative hit was made for a sex offense, either the prosecutor (17%) or the victim (31%) declined to move the case forward.[43]

DNA Backlog

Delays in processing DNA evidence can result in delays in apprehending or prosecuting violent or serial offenders or it can result in wrongfully convicted individuals serving time in prison for crimes they did not commit. In addition, persistent backlogs can result in crime laboratories prioritizing DNA analysis for violent offenses, such as homicide or sexual assault, over other offenses, such as property crimes, or it can result in law enforcement agencies establishing policies stating that biological evidence is not to be collected for minor offenses.[44] Not analyzing or collecting DNA samples for minor offenses could prevent law enforcement from apprehending offenders before they commit more serious crimes.

Context is important when evaluating data on DNA backlogs.[45] Backlogs must be considered in the context of each crime laboratory's capacity, size, and workload. For example, if there are two laboratories and the first laboratory has a backlog of casework that is three times the size of the

[38] Ibid.

[39] Matthew Gabriel, Cherisse Boland, and Cydne Holt, "Beyond the Cold Hit: Measuring the Impact of the National DNA Data Bank on Public Safety at the City and County Level," *Journal of Law, Medicine and Ethics*, vol. 38, no. 2 (Summer 2010), pp. 396-411.

[40] Ibid., p. 397. "Cold cases" were defined as crimes where the investigation has not generated a named suspect(s) through traditional methods of police investigation (e.g., interviewing witnesses, identification through non-DNA physical evidence left at the crime scene, or tips from confidential informants).

[41] Ibid., p. 398.

[42] Ibid., p. 400.

[43] Ibid.

[44] Edwin Zedlewski and Mary B. Murphy, "DNA Analysis for 'Minor' Crimes: A Major Benefit for Law Enforcement," *NIJ Journal*, vol. 253 (January 2006) (hereinafter, "DNA Analysis for 'Minor' Crimes").

[45] Mark Nelson, Ruby Chase, and Lindsay DePalma, *Making Sense of DNA Backlog, 2012s—Myths vs. Reality*, U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, NCJ 243347, Washington, DC, December 2013, p. 6.

casework backlog in the second laboratory, the backlog for the first laboratory might not be as daunting if the first laboratory's turnaround time is twice as fast as the second laboratory and the analysts in the first laboratory are more productive (i.e., each analyst analyzes more cases per month).

Forensic Casework

In a December 2013 report, the National Institute of Justice (NIJ) published estimates of the forensic casework backlogs in state and local laboratories in 2011.[46] The NIJ reported that the backlog of forensic cases increased from approximately 83,600 cases at the beginning of 2011 to approximately 91,300 cases at the end of 2011. The backlog of forensic cases at the beginning and end of 2011 was smaller than the reported backlogs at the beginning and end of 2009, but the trend could be the result of a lack of a uniform definition of what constituted a "backlogged case."[47]

Demand for analysis of forensic casework increased between 2009 and 2011. The NIJ reported that crime laboratories received nearly 241,600 cases for processing in 2011, a 16.4% increase compared to 2009.[48] However, crime laboratories increased their capacity to process forensic casework. Crime laboratories closed approximately 248,100 cases in 2011, a nearly 10% increase over 2009 (excluding cases closed through administrative means).[49] The NIJ concludes that backlogs of forensic samples continue to exist because requests for analysis continue to outpace increased capacity.[50]

Requests for DNA analysis in property crime cases is contributing to the backlog of forensic casework. The NIJ reported that 38% of requests for forensic DNA analysis in 2011 were from property crimes.[51] However, crime laboratories continue to make analysis of DNA evidence in violent crimes a priority. The average turnaround time for DNA evidence in violent crimes was 106 days, while the average turnaround time in property crimes was 154 days.[52]

Convicted Offender and Arrestee Samples

Data from the NIJ show that crime laboratories had a smaller backlog of convicted offender and arrestee DNA samples (the NIJ refers to these as "database samples") at the end of 2011. On

[46] NIJ defines a "backlogged case" as a case that has not been closed by a final report within 30 days of receipt by the laboratory. Ibid., p. iii. Backlog data was collected from the more than 120 public laboratories that receive NIJ grants. Ibid., p. 1.

[47] In 2011, the NIJ standardized the definition of "backlogged case" (a case that has not been closed by a final report within 30 days of receipt by the laboratory) so that all laboratories reported uniform data to the NIJ. Prior to that, many laboratories used their own definitions. In some instances, any unanalyzed case in a laboratory's possession was considered backlogged. Ibid., p. 2.

[48] Ibid.

[49] Requests for DNA analysis of a submitted sample can be closed either by completing the requested analysis or through administrative means. Forensic cases can be closed administratively, for example, when a suspect pleads guilty before the evidence is analyzed or when a victim declines to press charges. In prior years, the NIJ only collected data on closures that resulted from analysis. Ibid.

[50] Ibid., p. 3.

[51] Ibid.

[52] Ibid.

January 1, 2011, crime laboratories reported having approximately 187,000 backlogged database samples. On December 31, 2011, the backlog of database samples was down to approximately 113,500.[53] The NIJ attributes the reduction of the backlog of database samples to two factors: a decrease in the demand for testing of database samples and a significant percentage of samples that were closed administratively.[54] The backlog of database samples decreased even though crime laboratories completed 52% fewer samples in 2011 compared to 2009.[55]

Evidence in the Possession of Law Enforcement

One limitation to the backlog data discussed above is that they only include samples in the possession of crime laboratories. Samples from evidence still in the possession of law enforcement agencies and not yet transferred to laboratories are not counted as a part of the backlog. While there is no current count of the total amount of unanalyzed evidence in the possession of law enforcement agencies, one group of researchers that surveyed over 2,000 law enforcement agencies in 2007 found that law enforcement agencies had forensic evidence that had not been submitted to a crime laboratory for analysis in 14% of all unsolved homicide cases and 18% of unsolved rape cases.[56] The researchers estimated that nearly 40% of unanalyzed murder and rape cases contained DNA evidence.[57] The results of the survey indicate that there are many reasons why law enforcement agencies chose not to submit evidence for analysis, including that subsequent investigation may have shown that the evidence would not be probative; charges against an alleged perpetrator may have been dropped; or the suspect may have pled guilty.[58] However, data collected by the researchers also suggest that law enforcement agencies may not fully understand the potential value forensic evidence can have in generating leads in cases where they have not identified a suspect. Nearly half of the responding law enforcement agencies reported that they did not submit evidence for analysis because a suspect had not been identified. Also, nearly one in five agencies reported that they did not submit evidence because they felt it would not be useful to the case.[59] However, the survey does not reveal how many open cases with unanalyzed evidence would be solved or yield investigative leads if evidence were to be sent to the laboratory.

Sexual Assault Evidence Collection Kits

There continues to be concern about the backlog of sexual assault evidence collections kits—also referred to as "rape kits." While there have been several estimates of the backlog in some cities,[60] there is currently no comprehensive count of the number of untested rape kits in law

[53] Ibid., p. 4.

[54] Database samples can be closed administratively, for example, when there are duplicate submissions (i.e., the offender's DNA profile is already in the database) or the sample was collected from someone whose offense does not qualify them to have his or her sample entered into the database. Ibid.

[55] Ibid., p. 5.

[56] Kevin J. Strom, Jeri Ropero-Miller, and Shelton Jones et al., *The 2007 Survey of Law Enforcement Forensic Evidence Processing*, U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, Washington, DC, October 2009, pp. 3-2.

[57] Ibid.

[58] Ibid., p. 3-7.

[59] Ibid., p. 3-6.

[60] The Joyful Heart Foundation, through its Accountability Project, reports a backlog of nearly 50,000 untested rape kits in 16 cities. See http://www.endthebacklog.org/backlog/where-backlog-exists.

enforcement's custody.[61] NIJ reports that it is currently funding research to better understand why some sexual assault evidence collection kits are not submitted to a crime laboratory for analysis.[62] The backlog of sexual assault evidence collection kits has raised concerns that additional victimizations could have been prevented had the evidence from any given kit been tested and the perpetrator apprehended in a timely manner.[63]

Sexual assault evidence collection kits are collections of tools used by a nurse examiner or another trained professional to collect evidence during a forensic medical exam conducted after someone has reported a sexual assault and consents to the exam.[64] Many jurisdictions have developed their own sexual assault evidence collection kits, or they purchase them from a commercial vendor. As such, the content of a kit can vary from jurisdiction to jurisdiction.[65] In general, sexual assault evidence collection kits include (1) instructions; (2) bags, sheets, and envelopes for evidence collection; (3) swabs for collecting fluids or secretions that could contain the perpetrator's DNA; (4) a comb for collecting hair samples; (5) blood collection devices; and (6) documentation forms.[66] An exam involves collecting a complete medical history from the victim and completing a full-body physical examination.[67] This may include

- collecting blood, urine, hair, and other body secretion samples;
- photo documentation of any injuries sustained during the assault;
- collecting the victim's clothing, especially undergarments; and
- collecting any possible physical evidence that may have transferred onto the victim from the crime scene.[68]

In addition to jurisdictional differences in the content of sexual assault evidence collection kits, procedures for analyzing the evidence collected using the kit can vary from jurisdiction to jurisdiction. In some jurisdictions, all sexual assault evidence collection kits are forwarded to a crime laboratory for analysis.[69] In other jurisdictions, it may be months or even years before the kit is tested, if at all.[70] Some law enforcement agencies might not submit sexual assault evidence collection kits to crime laboratories for various reasons: the identity of the perpetrator was not in question from the beginning of the investigation, detectives identified the suspect through other

[61] Nancy Ritter, *The Road Ahead: Unanalyzed Evidence in Sexual Assault Cases*, U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, NCJ 233279, May 2011, p. 1.

[62] U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, *Untested Evidence in Sexual Assault Cases*, http://www.nij.gov/topics/law-enforcement/investigations/sexual-assault/Pages/untested-sexual-assault.aspx.

[63] Armen Keteyian, "Untested Rape Kits Lead to More Crimes," *CBS News*, November 10, 2009, http://www.cbsnews.com/stories/2009/11/10/cbsnews_investigates/main5603492.shtml.

[64] Rape, Abuse and Incest National Network (RAINN), *What is a Rape Kit*, http://www.rainn.org/get-information/sexual-assault-recovery/rape-kit (hereinafter, *What is a Rape Kit*).

[65] U.S. Department of Justice, Office on Violence Against Women, *A National Protocol for Sexual Assault Medical Forensic Examinations*, NCJ 228119, April 2013, p. 7.

[66] *What is a Rape Kit.*

[67] Ibid.

[68] Ibid.

[69] Angela Wu, "Will Rape Kit Testing Laws Help Clear Cases?," *Newsweek*, July 26, 2010, http://www.newsweek.com/will-rape-kit-testing-laws-help-clear-cases-74393.

[70] Human Rights Watch, *Testing Justice: The Rape Kit Backlog in Los Angeles City and County*, 1-56432-461-3, New York, NY, March 2009, p. 22.

evidence not included in the kit, or the victim chooses not to proceed with the case.[71] Also, some law enforcement agencies might have a problem working through their backlog of old kits because crime laboratories are operating at full capacity analyzing DNA evidence collected from current cases.[72]

Investigation of Leads Generated from Database Hits

While reducing casework backlogs can help generate new leads in cases without suspects (so-called "cold cases"), law enforcement agencies have to devote time to investigating the leads that result from DNA database matches. Data from a 2009 survey of 235 law enforcement agencies suggest that law enforcement agencies, particularly small agencies, might not have the resources to fully investigate new leads. The survey found that 37% of agencies surveyed had designated "cold case units" (i.e., groups of investigators who are responsible for leads generated from a match between an offender and forensic profile in either the SDIS or the NDIS).[73] In addition, the larger the agency (as measured by the number of sworn officers) the more likely they were to have such a unit. Over two-thirds of law enforcement agencies with 1,000 or more sworn officers reported having a cold case unit.[74] However, less than half of law enforcement agencies with 379-999 sworn officers reported having this unit, and less than 20% of agencies with 378 or fewer sworn officers reported having such a unit.[75] Even if an agency reported having a cold case unit, the unit was typically small. Three-quarters of law enforcement agencies with cold case units reported that three or fewer staff members were assigned to the unit.[76] Law enforcement agencies that did not have cold case units reported that leads generated from DNA database hits were investigated when resources were available, which usually meant that investigators were paid overtime to follow-up on the new leads.[77] Data suggest that law enforcement agencies would expand cold case units if they had the resources. Surveyed law enforcement agencies were asked to identify, based on their agency's experiences, the resources they needed for DNA-related work. Two-thirds identified cold case unit staffing (both for staffing cold case units or paying overtime if the agency did not have a cold case unit) as a need.[78]

Partial Match Searching

Crime laboratories can use three levels of stringency—high, moderate, and low—when using CODIS to search for matches between an offender or arrestee and forensic profiles. Searches with high stringency require a match between all 26 alleles,[79] which, as discussed above, indicates that

[71] U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, *Untested Sexual Assault Evidence in Law Enforcement Custody*, http://www.nij.gov/topics/forensics/lab-operations/evidence-backlogs/law-enforcement-sexual-assault.htm.

[72] Department of Justice, Office on Violence Against Women, *Eliminating the Rape Kit Backlog: A Roundtable to Explore a Victim-centered Approach*, Washington , DC, May 10, 2010, p. 15.

[73] Dan Cantillon, Kathy Kopiec, and Heather Clawson, *Evaluation of the Impact of the Forensic Casework DNA Backlog Reduction Program*, ICF International, Fairfax, VA, February 2009, p. 10.

[74] Ibid., p. 11.

[75] Ibid.

[76] Ibid., p. 10.

[77] Ibid., p. 11.

[78] Ibid., p. 14.

[79] *Fundamentals of Forensic DNA Typing*, p. 275.

it is highly probable that the identified offender or arrestee was the source of the forensic sample. A moderate stringency search requires all available alleles to match, but the profiles can contain a different number of alleles.[80] Moderate stringency searches can be used to search for matches when the forensic profile contains a mixture of DNA from two or more sources, hence there might be more than two alleles at some loci. Low stringency searches require one allele at each loci to match.[81] Low stringency searches are sometimes required because a degraded sample might not have alleles at all loci.[82]

Crime laboratories can use low stringency searches to make partial matches between and offender or arrestee and forensic profiles. Partial match searching can be used for familial searching, which involves using DNA from known individuals in a database to identify relatives of those individuals as potential suspects in other crimes.[83] There is some debate about whether partial match searching is the same as familial searching. In some states, crime laboratories can release information on partial matches that result from a regular search of the SDIS or NDIS, but they do not consider these partial matches to be familial searches because they were not the result of a *deliberate* search of the database for partial matches between an offender or arrestee and forensic profiles.[84] Others argue that even if the partial match was not the result of a deliberate search of the database, it is still a familial search because it could implicate the relative of someone with a profile in the database.[85] Research indicates that there is a lack of transparency when it comes to policies regarding partial matches. In most cases where a state reports the results of partial matches, it is done without explicit statutory authorization, and in many instances the policy is unwritten or it is not available to the public.[86]

Familial searching is possible because of the way humans inherit genes. Close relatives—especially parents, children, and siblings—who are genetically related are more likely to share alleles used for identification in CODIS than two people who are not closely related.[87] Two unrelated people usually only share a few CODIS alleles, but a parent and his or her child must share no fewer than 13 alleles since children inherit half of their genes from each parent.[88] Parents and children will most likely share between 14 and 16 alleles.[89] It is possible that two siblings will share between 0 and 26 alleles, but on average they will share 16.7 alleles.[90] Familial searching can be conducted by using low stringency searching, but low stringency searches can result in hundreds or even thousands of partial matches, none of which might actually represent a biological relationship. The probability that two unrelated people will share more than 13 alleles

[80] Ibid.

[81] Ibid.

[82] The FBI permits forensic profiles with 10 of the 13 CODIS loci to be uploaded into the NDIS for searching against the offender and arrestee indexes. CODIS FAQs.

[83] David Lazer, *Searching the Family Tree for Suspects: Ethical and Implementation Issues in the Familial Searching of DNA Databases*, A. Alfred Taubman Center for State and Local Government, Cambridge, MA, March 2008, p. 1.

[84] Natalie Ram, *DNA Confidential: State Law Enforcement Policies for Genetic Databases Lack Transparency*, Science Progress, October 2009, p. 2.

[85] Ibid., p. 1.

[86] Ibid., p. 3.

[87] Greely, Riordan, Garrison et al., "Family Ties," p. 251.

[88] Ibid., p. 252.

[89] Ibid.

[90] Ibid., p. 253.

with at least one match at each of the 13 loci is about 1 in 2,000.[91] While this probability is low, there are over 12.4 million offender profiles in the NDIS, meaning that a low stringency search for a common genotype could generate thousands of partial matches.

The FBI has been reluctant to allow the NDIS to be used for familial searching without explicit legislative approval,[92] but in July 2006 the FBI issued a policy that permits states, at their discretion, to share identification information with other states in the event that a search of the NDIS turns up a partial match.[93] While the FBI's policy might seem to be at odds with the bureau's reluctance to allow the NDIS to be used for familial searching, a closer review of the FBI's definition of "familial searching" shows how the FBI could allow states to share partial match information without contradicting its stance on familial searching. The FBI defines familial searching "as a 'second deliberate search … to identify close biological relatives of the perpetrator in the known offender database,' used only after an initial search of the database turns up no candidate matches."[94] The FBI's current policy allows states to share any partial matches; they do not have to be the result of a deliberate search for relatives of individuals with a profile in the NDIS. The FBI's policy means that states have the final say over whether to release identifying information in the case of partial matches.

Federal Law

While state law dictates whose profiles will be included in each state's DNA database, federal law provides for the collection of DNA samples from certain federal offenders for analysis and inclusion in the NDIS. Federal law also dictates which profiles included in SDIS can be uploaded into the NDIS. Federal law also states that agencies participating in the NDIS must meet certain specified standards. In addition, federal law provides for post-conviction DNA testing for federal offenders. The following section summarizes current federal law as it pertains to DNA used in a criminal justice capacity.

Quality Assurance and Proficiency Testing Standards

Under current law,[95] the FBI is required to issue (and revise from time to time) Quality Assurance Standards (QAS), including standards for testing the proficiency of forensic laboratories and forensic analysts, in conducting DNA analyses.[96] By law, the QAS must specify the criteria for quality assurance and proficiency tests to be applied to the various types of DNA analyses conducted by forensic laboratories.[97] In addition, the QAS must include a system for grading

[91] Ibid., p. 252.

[92] Ellen Nakashima, "From DNA of Family, a Tool to Make Arrests," *The Washington Post*, April 21, 2008.

[93] The FBI defines a "partial match" as a match between two single source profiles (i.e., offender profiles and forensic profiles that contain DNA from one perpetrator) having at least one allele in common at each locus. U.S. Department of Justice, Federal Bureau of Investigation, "Interim Plan for the Release of Information In the Event of a 'Partial Match' at NDIS," Bulletin #BT072006, July 20, 2006, http://www.bioforensics.com/conference08/Familial_Searches/CODIS_Bulletin.pdf.

[94] Sonia M. Suter, "All in the Family: Privacy and DNA Familial Searching," *Harvard Journal of Law and Technology*, vol. 23, no. 2 (Spring 2010), p. 324 (hereinafter, Suter, "All in the Family").

[95] 42 U.S.C. §14131(a)(2).

[96] The most recent QAS took effect on September 1, 2011.

[97] 42 U.S.C. §14131(a)(3).

proficiency testing performance to determine whether a laboratory is performing acceptably.[98] Under current law, FBI personnel who perform DNA analyses must undergo semiannual external proficiency testing by a DNA proficiency testing program that meets the standards set in the QAS.[99]

According to the FBI, the QAS describe the minimum standards for a laboratory's quality assurance program if performing forensic DNA analysis.[100] The minimum standards cover the following areas: organization, personnel, facilities, evidence or sample control, validation, analytical procedures, equipment calibration and maintenance, reports, review, proficiency testing, corrective action, audits, safety, and outsourcing.[101]

Index to Facilitate Law Enforcement Exchange of DNA Identification Information

The Violent Crime Control and Law Enforcement Act of 1994 (P.L. 103-322) authorized the FBI to establish an index of DNA profiles (i.e., NDIS). Under current law,[102] the NDIS can contain the DNA profiles of samples

- taken from individuals convicted of or charged with a crime, or collected under applicable legal authorities (e.g., people arrested for crimes), except for DNA samples that are voluntarily submitted solely for elimination purposes;
- recovered from crime scenes;
- recovered from unidentified human remains; and
- voluntarily contributed from relatives of missing persons.[103]

The NDIS can only include DNA profiles

- based on analyses performed by or on behalf of a criminal justice agency or the Department of Defense (DOD) in accordance with available standards that satisfy or exceed the FBI's published QAS;
- that are prepared by laboratories that (1) have been accredited by a nonprofit professional organization of persons actively involved in forensic science and nationally recognized within the forensic science community, and (2) undergo

[98] Ibid.

[99] 42 U.S.C. §14133(a)(1)(A).

[100] CODIS FAQs.

[101] Ibid.

[102] 42 U.S.C. §14132(a).

[103] Under the Violent Crime Control and Law Enforcement Act of 1994 (P.L. 103-322), the NDIS was only to include analyses of DNA samples collected from (1) individuals convicted of crimes, (2) crime scenes, and (3) unidentified human remains. The Justice for All Act of 2004 (P.L. 108-405) amended the authorizing legislation for the NDIS to allow analyses of DNA samples collected from persons who have been charged in an indictment or information with a crime and other persons whose DNA samples are collected under applicable legal authorities to be included in the NDIS, provided that profiles from arrestees who have not been charged with a crime and samples that are voluntarily submitted solely for elimination purposes are not included in the NDIS. The Violence Against Women and Department of Justice Reauthorization Act of 2005 (P.L. 109-162) amended the authorizing legislation for the NDIS to allow analyses of samples collected from arrestees to be included in the NDIS.

external audits, not less than once every other year, that demonstrate compliance with the FBI's QAS;[104] and

- that are maintained by federal, state, and local criminal justice agencies or the DOD pursuant to rules that allow the disclosure of profiles only to other criminal justice agencies for identification purposes, judicial proceedings, criminal defense purposes, and, if personally identifiable information is removed, for research and quality control purposes.[105]

Under current law, the FBI is required to expunge the DNA profile of an individual who had a DNA profile entered into the NDIS on the basis of being convicted for a qualifying federal offense (see below) if the individual provides a certified copy of a final court order showing that the conviction was overturned.[106] Also, the FBI is required to expunge the DNA profile of an individual who had a DNA profile entered into the NDIS on the basis of being arrested under the authority of the United States if the individual provides a certified copy of a final court order that establishes that the charge was dismissed or resulted in an acquittal, or that no charge was filed within the applicable time period.[107] As a condition of having access to the NDIS, states must also have in place a procedure whereby the state will expunge a profile from the state's database based on the same conditions applicable to a profile being expunged from the NDIS.[108] Also, under current law the Department of Defense is required to expunge the DNA profile of an individual who had a DNA profile entered into the NDIS on the basis of being convicted of a qualifying military offense (see below) if the individual provides a certified copy of a final court order showing that the conviction was overturned.[109]

Collection of DNA Samples from Certain Federal, District of Columbia, and Military Offenders

Under current law,[110] the Attorney General is permitted to collect DNA samples from "individuals who are arrested, facing charges, or convicted of a crime or from non-United States citizens who are detained under the authority of the United States."[111] In addition, the Bureau of Prisons (BOP)

[104] According to the FBI, the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) and Forensic Quality Services, Inc. (FQS) meet the definition specified at 42 U.S.C. §14132(b)(2)(A) for an accrediting organization. CODIS FAQs.

[105] 42 U.S.C. §14132(b).

[106] 42 U.S.C. §14132(d)(1)(A)(i).

[107] 42 U.S.C. §14132(d)(1)(A)(ii).

[108] 42 U.S.C. §14132(d)(2)(A)(i).

[109] 10 U.S.C. §1565(e).

[110] 42 U.S.C. §14135a(a)(1)(A).

[111] The DNA Analysis Backlog Elimination Act of 2000 (P.L. 106-546) required BOP and U.S. probation offices to collect DNA samples from anyone in their custody who was convicted of qualifying federal offenses. The act defined a "qualifying federal offense" as murder, voluntary manslaughter, or other offenses relating to homicide; an offense relating to sexual abuse, sexual exploitation or other abuse of children, or transportation for illegal sexual activity; an offense relating to peonage or slavery; kidnapping; an offense relating to robbery or burglary; any offense committed in Indian country relating to murder, manslaughter, kidnapping, maiming, a felony sexual abuse offense, incest, arson, robbery, or burglary; or any attempt or conspiracy to commit any of these crimes. The Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT) Act of 2001 (P.L. 107-56) expanded the definition of "qualifying federal offense" to include crimes of terrorism, crimes of violence, or any attempt or conspiracy to commit either crime. The Justice for All Act of 2004 (P.L. 108-405) amended the (continued...)

is required to collect a DNA sample from each federal prisoner who is, or has been, convicted of a felony, a sexual abuse crime under chapter 109A of title 18 of the U.S. Code, a crime of violence,[112] or any attempt or conspiracy to commit any of these crimes.[113] Federal probation offices responsible for supervising individuals on probation, parole, or supervised release are required to collect DNA samples from individuals who are, or have been, convicted of any of the crimes outlined above.[114] Collected samples are required to be submitted to the FBI for analysis and their resulting DNA profiles are included in the NDIS.[115]

Current law contains similar provisions regarding the collection of DNA samples from District of Columbia offenders. BOP is required to collect a DNA sample from each prisoner who is, or has been, convicted of a qualifying District of Columbia offense.[116] In addition, the Court Services and Offender Supervision Agency for the District of Columbia is required to collect DNA samples from individuals on probation, parole, or supervised release, who are, or have been, convicted of any qualifying District of Columbia offense.[117] The government of the District of Columbia may determine which offenses under the District of Columbia Code are considered qualifying offenses for the purposes of supplying a DNA sample.[118] Collected samples must be submitted to the FBI for analysis and their resulting DNA profiles are included in the NDIS.[119]

Under current law,[120] the DOD is required to collect DNA samples from each member of the Armed Forces who is, or has been, convicted of an offense under the Uniform Code of Military Justice for which a sentence of confinement of more than one year can be imposed, or of any other offense under the Uniform Code of Military Justice that is comparable to the offenses for which a DNA sample can be collected from a federal offender (see above).[121] DOD is required to

(...continued)

definition of "qualifying federal offense" to include any felony, sexual abuse offense, crime of violence, or attempt or conspiracy to commit any of these crimes. The Violence Against Women and Department of Justice Reauthorization Act of 2005 (P.L. 109-162) authorized DOJ to collect DNA samples from arrestees and non-citizens who are detained under the authority of the United States. The Adam Walsh Child Protection and Safety Act of 2006 (P.L. 109-248) authorized DOJ to also collect DNA samples from individuals facing charges in addition to those who have been arrested or convicted.

[112] As defined at 18 U.S.C. §16.

[113] 42 U.S.C. §14135a(a)(1)(B).

[114] 42 U.S.C. §14135a(a)(2).

[115] 42 U.S.C. §14135a(b).

[116] 42 U.S.C. §14135b(a)(1).

[117] 42 U.S.C. §14135b(a)(2).

[118] 42 U.S.C. §14135b(d).

[119] 42 U.S.C. §14135b(b). The following are considered qualifying offenses under the D.C. Code: (1) any felony; (2) any offense for which the penalty is greater than one year imprisonment; (3) lewd, indecent, or obscene acts knowingly committed in the presence of a child under 16 years of age (D.C. Code §22-1312(b)); (4) certain obscene activities involving minors (D.C. Code §22-2201); (5) sexual performances using a minor (D.C. Code §22-3102); (6) misdemeanor sexual abuse (D.C. Code §22-3006); (7) misdemeanor sexual abuse of child or a minor (D.C. Code §22-3010.01); or (8) any attempt or conspiracy to commit any of these crimes. D.C. Code §22-4151.

[120] 10 U.S.C. §1565(a)(1).

[121] The requirement to collect DNA samples for people convicted of certain offenses under the Uniform Code of Military Justice is separate from the DNA samples the Department of Defense collects to aid in the identification of human remains.

conduct an analysis of the collected sample and submit the results to the FBI for inclusion in the NDIS.[122]

Post-conviction DNA Testing

The Justice for All Act of 2004 (P.L. 108-405) established procedures for post-conviction DNA testing in federal courts. Under current law,[123] upon a written motion from an individual sentenced for a federal offense (hereinafter, "applicant"), the court must order DNA testing of evidence if all of the following apply:

- The applicant asserts, under penalty of perjury, that the applicant is actually innocent of the federal crime for which the applicant was sentenced, or another federal or state offense, if (1) "the evidence was entered during a federal death sentence hearing and exoneration for the offense would entitle the applicant to a reduced sentence or a new sentencing hearing"; or (2) "in the case of a [s]tate offense, the applicant demonstrates that there is no adequate remedy under [s]tate law to permit DNA testing of the … evidence … and, to the extent available, the applicant has exhausted all remedies available under [s]tate law for requesting DNA testing of … evidence."
- The specified evidence to be tested was secured in relation to the investigation or prosecution of the federal or state crime for which the applicant claims to be innocent.
- The evidence to be tested (1) "was not previously subjected to DNA testing, and the applicant did not knowingly and voluntarily waive the right to request DNA testing of the evidence in a court proceeding after the date of enactment of the [Justice for All Act of 2004 (October 30, 2004)] or [did not] knowingly fail to request DNA testing of the evidence in a prior motion for post-conviction DNA testing"; or (2) "was previously subjected to DNA testing and the applicant requests DNA testing using a new method or technology that is substantially more probative that prior testing."
- The evidence to be tested "is in the possession of the [g]overnment and has been subject to a chain of custody and retained under conditions sufficient to ensure that such evidence has not been substituted, contaminated, tampered with, replaced, or altered in any respect" that would affect the DNA testing.
- The proposed DNA testing is "reasonable in scope, uses scientifically sound methods, and is consistent with accepted forensic practices."
- The applicant "identifies a theory of defense that is not inconsistent with an affirmative defense presented at trial and would establish the actual innocence of the applicant."
- If the applicant was "convicted following a trial, the identity of the perpetrator was at issue in the trial."

[122] 10 U.S.C. §1565(b).

[123] 18 U.S.C. §3600(a).

- The proposed DNA testing may produce new material evidence that would support the affirmative defense theory presented at trial and raise a reasonable probability that the applicant did not commit the crime.
- The applicant certifies that he or she will provide a DNA sample for comparison purposes.
- The motion is made in a timely fashion.[124]

If the court orders DNA testing, the testing is carried out by the FBI.[125] However, the court can order DNA testing to be conducted by another "qualified laboratory if the court makes all necessary orders to ensure the integrity of the … evidence and the reliability of the testing process and results."[126] The cost of any DNA testing is borne by the applicant, unless the applicant is indigent; in that case, the cost of the DNA testing is borne by the government.[127]

Test results relating to the DNA sample provided by the applicant are to be included in the NDIS.[128] If the test results ordered by the court are "inconclusive or show that the applicant was the source of the tested evidence, the applicant's DNA profile may be retained in the NDIS."[129] Moreover, if the test results show that the applicant was not the source of the tested evidence, and a comparison of the applicant's DNA profile with other forensic profiles in the NDIS result in a match, DOJ is to contact the appropriate agency and preserve the applicant's DNA sample.[130] However, if the test results exclude the applicant as the source of the tested evidence, and a comparison between the applicant's DNA profile and forensic profiles in the NDIS does not result in a match, DOJ must destroy the applicant's DNA sample and ensure that the applicant's DNA profile is not stored in the NDIS if there is no other legal authority to retain the profile in the NDIS.[131]

If the results of the DNA test are inconclusive, the court can order further testing, if appropriate, or it can deny the applicant relief.[132] If the results of the DNA test demonstrate that the applicant was the source of the evidence tested, the applicant is denied relief, and on a motion of the

[124] There is a rebuttable presumption of timeliness if the motion is made within 60 months of the enactment of the Justice for All Act of 2004 (October 30, 2004) or within 36 months of conviction, whichever comes later. The presumption of timeliness may be rebutted upon a showing that the applicant's motion for DNA testing is based solely upon information used in a previously denied motion or of clear and convincing evidence that the applicant's filing is done solely to cause delay or harass. For any motion that is not made within 60 months of the enactment of the Justice for All Act of 2004 or within 36 months of conviction, there is a rebuttable presumption against timeliness. The presumption against timeliness can be rebutted upon the court's finding (1) that the applicant was or is incompetent and such incompetence substantially contributed to the delay in the applicant's motion for a DNA test; (2) the evidence to be tested is newly discovered DNA evidence; (3) that the applicant's motion is not based solely upon the applicant's own assertion of innocence and, after considering all relevant facts and circumstances surrounding the motion, a denial would result in a manifest injustice; or (4) upon good cause shown. 18 U.S.C. §3600(a)(10)(B).

[125] 18 U.S.C. §3600(c)(1).

[126] 18 U.S.C. §3600(c)(2).

[127] 18 U.S.C. §3600(c)(3).

[128] 18 U.S.C. §3600(e)(2).

[129] 18 U.S.C. §3600(e)(3)(A).

[130] 18 U.S.C. §3600(e)(3)(B).

[131] 18 U.S.C. §3600(e)(3)(C).

[132] 18 U.S.C. §3600(f)(1).

government, the court can determine whether the applicant's claim of actual innocence was false. If the court finds the claim was false, it can

- hold the applicant in contempt of court;
- assess against the applicant any cost of DNA testing;
- forward the findings to BOP, who may wholly, or in part, deny the applicant's good conduct time;[133]
- if the applicant is eligible for parole, forward the finding to the U.S. Parole Commission so the commission can deny parole on the basis of the finding; or
- if the test results relate to a state offense, forward the findings to the appropriate state official.[134]

Under current law, if the applicant is convicted for making false assertions relating to post-conviction DNA testing, the applicant is to be sentenced to no less than three years imprisonment, to run consecutively with any other term of imprisonment the applicant is serving.[135]

If the results of the DNA testing demonstrate that the applicant was not the source of the tested evidence presented as a part of the case against the applicant, the applicant can file a motion for a new trial or resentencing, as appropriate, notwithstanding any law that would bar the motion as untimely.[136] Under current law, the applicant would be granted a new trial or resentencing, if the DNA results, when considered with all other evidence in the case (regardless of whether such evidence was introduced at trial), establish by compelling evidence that a new trial would result in an acquittal of the federal offense the applicant is currently sentenced for, or in the case of resentencing, if evidence of a federal or state offense was admitted during a federal death sentencing hearing and exoneration for the offense would entitle the applicant to a reduced sentence or a new sentencing hearing.[137]

Preservation of Biological Evidence

The Justice for All Act of 2004 (P.L. 108-405), among other things, established standards for the preservation of biological evidence by the government. Under current law,[138] the federal government is required to preserve biological evidence[139] that was secured in the investigation or prosecution of a federal offense, if a defendant was imprisoned for the offense, unless[140]

[133] Each prisoner serving a term of imprisonment of more than one year, but not prisoners serving a life sentence, can receive a good time credit of up to 54 days per year to count toward serving the sentence. The amount of the credit is subject to the determination of BOP. 18 U.S.C. §3624(b).

[134] 18 U.S.C. §3600(f)(2).

[135] 18 U.S.C. §3600(f)(3).

[136] 18 U.S.C. §3600(g)(1).

[137] 18 U.S.C. §3600(g)(2).

[138] 18 U.S.C. §3600A(a).

[139] "Biological evidence" is defined as a sexual assault forensic examination kit, or semen, blood, saliva, hair, skin tissue, or other identified biological material. 18 U.S.C. §3600A(b).

[140] 18 U.S.C. §3600A(c).

- "the court denied a request or motion for DNA testing [of the evidence] and no appeal is pending";
- the defendant "knowingly and voluntarily waived the right to request DNA testing [of the evidence] in a court proceeding conducted after the date of enactment of the [Justice for All Act of 2004 (October 30, 2004)]";
- "after a conviction becomes final and the defendant has exhausted all opportunities for direct review of the conviction, the defendant is notified that the evidence may be destroyed and the defendant does not file a motion [for post-conviction DNA testing] within 180 days of receipt of notice";
- "the evidence must be returned to its rightful owner, or it is of such size, bulk, or physical character as to render retention impracticable and the [g]overnment takes reasonable measures to remove and preserve portions of the evidence sufficient to permit future DNA testing"; or
- the evidence has been the subject of post-conviction DNA testing (see above) and the results of the testing demonstrate that the defendant was the source of the evidence.

Grants for DNA-Related Programs

Several grant programs provide assistance to state and local governments for forensic sciences. A bulk of the programs focus on providing state and local governments with funding to reduce the backlog of forensic and convicted offender samples waiting to be processed and entered into the NDIS. However, some grant programs provide funding for other purposes, such as offsetting the cost of providing post-conviction DNA testing. This section of the report provides a brief overview of grants for forensic sciences.

Debbie Smith DNA Backlog Grant Program

The Debbie Smith DNA Backlog Grant Program (hereinafter, "Debbie Smith grants") provides grants to state and local governments for five major purposes: (1) conducting analyses of DNA samples collected under applicable legal authority for inclusion in the NDIS, (2) conducting analyses of forensic DNA samples for inclusion in the NDIS, (3) increasing the capacity of state and local laboratories to carry out DNA analyses, (4) collecting DNA samples from people required to submit them and forensic samples from crimes, and (5) ensuring that analyses of forensic DNA samples are carried out in a timely manner. The Katie Sepich Enhanced DNA Collection Act of 2012 (P.L. 112-253) amended the Debbie Smith program to set aside up to $10 million of the amount appropriated for Debbie Smith grants for FY2013-FY2015 to assist states with the costs associated with collecting DNA samples from arrestees (assuming there is statutory authority in the state to collect DNA sample from people arrested for certain offenses). The Sexual Assault Forensic Evidence Reporting Act of 2013 (the SAFER Act of 2013, Title X of P.L. 113-4) added two new purposes for which Debbie Smith grants can be used: to conduct an audit of the samples of sexual assault evidence in the possession of a state or unit of local government that are awaiting testing and to ensure that the collection and processing of DNA evidence by law enforcement and to ensure the collection and processing of DNA evidence is carried out in a timely manner and in accordance with the protocols and practices the FBI is required to develop under the act.

The Attorney General is required to award funds using a formula. The formula distributes funds amongst state and local governments to maximize the effective utilization of DNA technology to solve crimes and protect public safety. The formula must also allocate funding amongst state and local governments to reduce backlogs by considering the number of offender and forensic samples awaiting DNA analysis in the jurisdiction along with the population and number of violent crimes in the jurisdiction. Current law requires DOJ to award not less than 0.5% of the total amount appropriated each fiscal year to each state and the District of Columbia. The territories are to receive 0.125% of the total appropriation.

Agencies receiving a grant under the program are required to certify that DNA analyses are conducted in laboratories that satisfy the FBI's QAS and are operated either by a state or local government or by a private laboratory under contract with the state or local government. Grants for conducting analyses of DNA samples collected under applicable legal authority for inclusion in the NDIS, conducting analyses of forensic casework for inclusion in the NDIS, and ensuring that analyses of forensic DNA samples are carried out in a timely manner can be made in the form of a contract or voucher for laboratory services that can be redeemed by nonprofit or for-profit laboratories that satisfy the QAS and have been approved by the Attorney General.

State and local governments receiving funding under the program are required to submit a report to DOJ with a summary of the activities carried out under the grant and an assessment of whether such activities are meeting the needs identified in the grant application, as well as other information the Attorney General may require. DOJ may award not more than 1% of grant funding each fiscal year to states, units of local government, and nonprofit professional organizations of persons actively involved in forensic science and nationally recognized within the forensic science community to help offset the cost of accrediting and auditing laboratories.

The SAFER Act of 2013 established a series of conditions for states or units of local government receiving a grant under the Debbie Smith program for the purposes of conducting an audit of sexual assault evidence. The act, among other things, requires states and local governments receiving grants for this purpose to (1) submit a plan for performing an audit of samples, (2) provide an estimate of the number of samples, (3) complete the audit within one year of receiving the grant, and (4) submit a report to DOJ every 60 days for at least one year after the audit is completed that provides data on the number of samples in the state's or unit of local government's possession along with data on new sexual assault evidence the state or local government receives and how those samples are being processed.

The SAFER Act of 2013 also requires the FBI, in consultation with federal, state, and local law enforcement agencies, to develop protocols and practices for the accurate, timely, and effective collection and processing of DNA evidence, including protocols and practices specific to sexual assault cases. The protocols and practices are required to address (1) what evidence should be collected by law enforcement and forwarded for testing and the order in which that evidence should be tested, (2) a reasonable period of time for evidence to be forwarded to a laboratory for testing, (3) a reasonable period of time in which each stage of laboratory testing should be conducted, (4) a system to encourage communication between actors in the criminal justice system (e.g., law enforcement, courts, and laboratory personnel and crime victims) about the status of evidence testing, and (5) standards for audits of sexual assault evidence in the possession of state and local governments.

Debbie Smith grants were originally authorized under the Justice for All Act of 2004 (P.L. 108-405). This law amended the DNA Backlog Elimination Act of 2000,[141] authorizing appropriations of $151.0 million for each of FY2004-FY2009.[142] The program was reauthorized under the Debbie Smith Reauthorization Act of 2008 (P.L. 110-360), which includes authorized appropriations of $151.0 million for FY2009-FY2014. The Debbie Smith Reauthorization Act of 2014 (P.L. 113-182) extended the $151.0 million per fiscal year authorization until FY2019. A funding history for this program since FY2006 is provided in **Table 1**.

Kirk Bloodsworth Post-Conviction DNA Testing Grant Program

The Kirk Bloodsworth DNA Post-conviction DNA Testing Grant program was authorized by the Justice for All Act of 2004 (P.L. 108-405). The act authorized the Attorney General to make grants to states to help defray the costs of post-conviction DNA testing programs. The act authorized appropriations of $5.0 million for FY2005-FY2009. A funding history for this program since FY2006 is provided in **Table 1**.

Sexual Assault Forensic Exam Program Grants

The Sexual Assault Forensic Exam Program Grants were authorized under the Justice for All Act of 2004 (P.L. 108-405). The program provides grants for training, technical assistance, education, equipment, and information relating to the identification, collection, preservation, analysis, and use of DNA samples and evidence by medical personnel and those treating victims of sexual assault. Under the program, entities eligible to receive grants include states, units of local government, and sexual assault examination programs. The act authorized appropriations of $30.0 million for each of FY2005-FY2009. P.L. 110-360 extended the same authorized amount through FY2014. The Debbie Smith Reauthorization Act of 2014 (P.L. 113-182) extended the $30.0 million per fiscal year authorization until FY2019. A funding history for this program since FY2006 is provided in **Table 1**.

DNA Research and Development Grants

The Justice for All Act of 2004 authorized grants for research and development for improving forensic DNA technology, including increasing the accuracy and efficiency of DNA analysis, decreasing the time and expense of conducting DNA analysis, and increasing its portability. In addition, the law authorized grants for demonstration projects to evaluate the use of DNA technology in conjunction with other forensic analyses. The act authorized funding of $15.0 million for each of FY2005-FY2009. This program has not received any appropriations since FY2006.

[141] The DNA Backlog Elimination Act of 2000 (P.L. 106-546) authorized grants to increase the capacity of state and local government laboratories to conduct DNA analysis of biological samples from crime scenes.

[142] On March 11, 2003, President George W. Bush announced his DNA Initiative, "Advancing Justice Through DNA Technology," which provided "funds, training, and assistance to ensure that DNA technology reaches its full potential to solve crimes, protect the innocent, and identify missing persons." From FY2004 to FY2007, Congress appropriated funding for the President's DNA initiative, although the initiative was not authorized in statute.

DNA Training and Education for Law Enforcement, Correctional Personnel, and Court Officers

Under this program, the Attorney General is required to make grants to provide training, technical assistance, education, and information regarding the identification, collection, preservation, analysis, and use of DNA samples and evidence by law enforcement personnel, court officers, forensic science professionals, and corrections personnel. The program was originally authorized under the Justice for All Act of 2004 (P.L. 108-405), which authorized $12.5 million for each of FY2005-FY2009. P.L. 110-360 extended the same authorized amount through FY2014. The Debbie Smith Reauthorization Act of 2014 (P.L. 113-182) extended the $12.5 million per fiscal year authorization until FY2019. This program has not received a direct appropriation since FY2006, but since FY2013, Congress has granted the DOJ the authority to use up to 4% of the appropriation for the DNA Analysis, Capacity Enhancement, and Debbie Smith Grants for the purposes of this program.

Appropriations for DNA-Related Grant Programs

Since FY2006, Congress has appropriated over $100 million each fiscal year for DNA analysis and other forensic programs and activities. As shown in **Table 1**, most funding each fiscal year was dedicated to reducing DNA backlogs, enhancing crime laboratory capacity, and other activities related to DNA analysis. In FY2006 and FY2007, Congress gave the Administration discretion in how to award appropriated funding for DNA-related activities. The report to accompany the FY2006 Science, State, Justice, Commerce, and Related Agencies Appropriations Act (P.L. 109-108) stated that the appropriation was for a "capacity enhancement program including eliminating casework backlogs, eliminating offender backlogs, strengthening crime lab capacity, training of the criminal justice community and identifying missing persons."[143] Starting in FY2008, Congress continued to appropriate funding for DNA analysis and capacity enhancement, *including* the purposes authorized by the Debbie Smith Grant program.[144] The language in the FY2008-FY2015 appropriations bills did not require DOJ to use *all* of the funding for DNA analysis and capacity enhancement for Debbie Smith grants, rather, it just had to award a portion of the funding for purposes consistent with the program. As such, DOJ has awarded funding it received for DNA analysis and capacity enhancement under a variety of programs, including Forensic DNA Backlog Reduction, Convicted Offender DNA Backlog Reduction, Forensic Science Training Development and Delivery, Forensic DNA Unit Efficiency Improvement, Solving Cold Cases with DNA Evidence, DNA to Identify Missing Persons, and DNA Research and Development.

[143] U.S. Congress, House Committee on Appropriations, Subcommittee on Science, The Departments of State, Justice, and Commerce, and Related Agencies, *Making Appropriations for Science, the Departments of State, Justice, Commerce and Related Agencies for the Fiscal Year Ending September 30, 2006, and for Other Purposes*, Report to Accompany H.R. 2862, 109th Cong., 1st sess., November 7, 2005, H.Rept. 109-272 (Washington: GPO, 2005), p. 121.

[144] See P.L. 110-161, P.L. 111-8, P.L. 111-117, P.L. 112-55, P.L. 113-6, P.L. 113-76, and P.L. 113-235.

Table 1. Appropriations for Forensic Science Grant Programs

Appropriations in millions of dollars

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013[a]	FY2014	FY2015
DNA-Related and Forensic Programs and Activities	107.1	112.1	152.3	156.0	161.0	133.4	125.0	116.2	125.0	125.0
DNA Analysis, Capacity Enhancement, and Debbie Smith Grants	*(103.2)*	*(108.2)*	*(147.4)*	*(151.0)*	*(151.0)*	*(125.1)*	*(117.0)*	*(108.8[b])*	*(117.0[b])*	*(117.0[b])*
Kirk Bloodsworth Post-conviction DNA Testing	*(3.9)*	*(3.9)*	*(4.9)*	*(5.0)*	*(5.0)*	*(4.1)*	*(4.0)*	*(3.7)*	*(4.0)*	*(4.0)*
Sexual Assault Forensic Exam		—	—	—	*(5.0)*	*(4.1)*	*(4.0)*	*(3.7)*	*(4.0)*	*(4.0)*

Source: FY2006-enacted appropriations are taken from OJP's FY2008 congressional budget submission; FY2007-enacted appropriations are taken from OJP's FY2009 congressional budget submission; FY2008-enacted appropriations are taken from OJP's FY2010 congressional budget submission; and FY2009- and FY2010-enacted appropriations are taken from OJP's FY2011 congressional budget submission; FY2011-enacted appropriations are based on a CRS analysis of the text of P.L. 112-10; FY2012-enacted appropriations are taken from H.Rept. 112-284; FY2013 appropriation provided by the U.S. Department of Justice; FY2014-enacted appropriations were taken from the joint explanatory statement to accompany P.L. 113-76, printed in the January 15, 2014, *Congressional Record* (pp. H507-H532); FY2015-enacted appropriations were taken from the joint explanatory statement to accompany P.L. 113-235, printed in the December 12, 2014, *Congressional Record* (pp. H9342-H9363).

Notes: Amounts under the DNA-Related and Forensic Programs and Activities might not sum to total due to rounding.

a. The FY2013 enacted amount includes a 1.877% rescission per section 3001 of P.L. 113-6 and a 0.2% rescission ordered by the Office of Management and Budget per section 3004 of P.L. 113-6. The FY2013 enacted amount also includes the amount sequestered per the Budget Control Act of 2011(P.L. 112-25).

b. Up to 4% of the funding for DNA analysis can be used for the purposes described under the DNA Training and Education for Law Enforcement, Correctional Personnel, and Court Officers program.

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